Low-Income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents

FINAL GUIDANCE DOCUMENT

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*Organizations are listed in alphabetical order

Abstract

Pursuant to the Clean Energy and Pollution Reduction Act of 2015, Senate Bill (SB) 350 (De León, Chapter 547, Statutes of 2015), the California Air Resources Board (CARB or Board) presents its findings on the barriers low-income residents, including those in disadvantaged communities, face to access zero-emission and near zero-emission transportation and mobility options, and recommendations to increase access. Recommendations establish a pathway to overcome these barriers statewide.
This document supplements the California Energy Commission's "*Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities"* that presents the barriers and opportunities to expand low-income residents' access to energy efficiency, weatherization, and renewable energy investments, and for small businesses contracting opportunities in disadvantaged communities.

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List of Acronyms and Abbreviations

Air Quality Improvement Fund (AQIF)
Active Transportation Program (ATP)
Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP)
Assembly Bill (AB)
Battery Electric Vehicle (BEV)
California Air Resources Board (CARB or Board)
California Bureau of Automotive Repair (BAR)
California Climate Investments (CCI)
California Department of Community Services Development (CSD)
California Department of Motor Vehicles (DMV)
California Department of Public Health (CDPH)
California Department of Transportation (Caltrans)
California Energy Commission (CEC or Energy Commission)
California Environmental Protection Agency (CalEPA)
California Governor's Office of Business and Economic Development (GO-Biz)
California Highway Patrol (CHP)
California Natural Resources Agency (CNRA)
California Office of Traffic Safety (OTS)
California Public Utilities Commission (CPUC)
California State Treasurer's Office (STO)
California Strategic Growth Council (SGC)
California Transportation Commission (CTC)
California Workforce Association (CWA)
California Workforce Development Board (CWDB)
Census Designated Place (CDP)
Clean Vehicle Rebate Project (CVRP)
Community-Based Organization (CBO)
Council of Governments (COG)
Electric Vehicle (EV)
Employment Training Panel (ETP)
Enhanced Fleet Modernization Program (EFMP)
Environmental Justice Advisory Committee (EJAC)
Fuel Cell Electric Vehicle (FCEV)
Greenhouse gas (GHG)
Greenhouse Gas Reduction Fund (GGRF or Cap-and-Trade Auction Proceeds)

Housing and Community Development (HCD)
Investor-owned Utility (IOU)
Low Carbon Fuel Standard (LCFS)
Metropolitan Planning Organization (MPO)
Nitrogen Oxides (NOx)
Plug-in Electric Vehicle (PEV)
Plug-in Hybrid Electric Vehicle (PHEV)
Publically-owned Utility (POU)
Senate Bill (SB)
State Treasurer's Office (STO)
Transformative Climate Communities (TCC)
Zero-Emission Vehicle (ZEV)

Glossary

Provided below are definitions used in this Guidance Document to clarify terminology. To the extent feasible, CARB ensured definitions were consistent with statutes, CARB, or other relevant programs.

Active Transportation: For the purposes of this document, active transportation refers to the use of active modes of transportation such as biking and walking, pedestrian safety, and supporting infrastructure such as sidewalks and dedicated bike facilities.

Bike Facilities and Dedicated Pedestrian Sidewalks: The Streets and Highway Code Section 890.4, (as referenced in Caltrans, 2006), defines a "Bikeway" as a facility that is provided primarily for bicycle travel. Bikeways fall under the umbrella terminology “bike facilities” used in this Guidance Document. A Class I Bikeway (Bike Path) provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow by motorists minimized. A Class II Bikeway (Bike Lane) provides a striped lane for one-way bike travel on a street or highway. A Class III Bikeway (Bike Route) provides for shared use with pedestrian or motor vehicle traffic. A Class IV Bikeway is a separated bike lane exclusively for bicyclists that is located within or directly adjacent to the roadway and that is physically separated from motor vehicle traffic with a vertical element. Separated bike lanes are differentiated from standard and buffered bike lanes by the vertical element. They are differentiated from shared use paths (and sidepaths) by their more proximate relationship to the adjacent roadway and the fact that they are bike-only facilities. Separated bike lanes are also sometimes called "cycle tracks" or "protected bike lanes."[1] The term sidewalks fall under the umbrella terminology “dedicated pedestrian sidewalks” used in this Guidance Document.

Carsharing: For the purposes of this document, carsharing is a shared mobility option that allows individuals to have short-term access to vehicles on an as-needed basis to gain the benefits of private vehicle use without the costs and responsibilities of ownership. Carsharing can include car rental for short periods through a commercial business, or users organized as a company, public agency, cooperative, or other type of group.

Case Study Community: For the purposes of this document, this term describes communities that were evaluated using community-based meetings and a review of publicly available data and information sources.

Census Designated Place: Several of the low-income communities selected for review in the Guidance Document are identified by the U.S. Census Bureau as “Census

1 FHA, 2015

Designated Places" (CDPs). This designation is given to communities that lack separate municipal governments. CDPs are defined by State and local agencies and tribal officials before each decennial census using Census Bureau criteria. The CDP designation allows these localities to be in the same category of census data as incorporated places.

Clean Transportation and Mobility Options: For the purposes of this document, clean transportation and mobility options refers to clean vehicles that include zero-emission and near zero-emission light-duty cars, trucks, transit buses, and school buses and supporting charging and fueling infrastructure, active transportation and supporting safe pedestrian sidewalks and bike facilities, and clean mobility options such as ride share, carshare, bike share, and vanpools.

Disadvantaged Community: For the purposes of this document, disadvantaged community refers to a community identified by the California Environmental Protection Agency (CalEPA) pursuant to Section 39711 of the Health and Safety Code.[2] These communities may include, but are not limited to, areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation and areas with concentrations of people that are of low-income, high unemployment, low levels of home ownership, high rent burden, sensitive populations, or low levels of educational attainment.[3]

Infrastructure: For the purposes of this document, infrastructure refers to charging and fueling infrastructure (i.e., electric charging stations and hydrogen fueling stations) for near zero-emission light-duty and heavy-duty vehicles, as well as active transportation infrastructure, such as dedicated pedestrian sidewalks and bicycle facilities.

Literature Review Community: For the purposes of this document, this term describes communities evaluated using only a literature review of publicly available data and information sources. No community meetings were held in these locations and the depth and scope of the reviews is limited.

Low-Income Communities: For the purposes of this document and as defined in AB 1550 (Gomez, Chapter 369, Statutes of 2016), low-income communities are census tracts with median household incomes at or below 80 percent of the statewide median income or with median household incomes at or below the threshold designated as low

2 California Environmental Protection Agency. *Designation of Disadvantaged Communities Pursuant to Senate Bill 535 (De Leon)*. Available at: https://calepa.ca.gov/envjustice/ghginvest/

3 CARB acknowledges that there are additional equity assessment tools available (e.g. Healthy Places Index) that may provide important insights on community impacts based on public health, socioeconomic, and other indicators.

income by the Department of Housing and Community Development's list of state income limits adopted pursuant to Section 50093 of the Health and Safety Code.

Low-Income Household: For the purposes of this document and as defined in Assembly Bill (AB) 1550 (Gomez, Chapter 369, Statutes of 2016), low-income households are households with incomes at or below 80 percent of the statewide median income or with household incomes at or below the threshold designated as low-income by the Department of Housing and Community Development's list of state income limits adopted pursuant to Section 50093 of the Health and Safety Code.

Low-Income Residents: For the purposes of this document, low-income residents include, but are not limited to, residents living in disadvantaged communities, low-income communities, and those living in low-income households.

Near Zero-Emission Vehicle: A vehicle that utilizes zero-emission technologies, enables technologies that provide a pathway to zero-emission operations, or incorporates other technologies that significantly reduce criteria pollutants, toxic air contaminants, and greenhouse gas emissions.

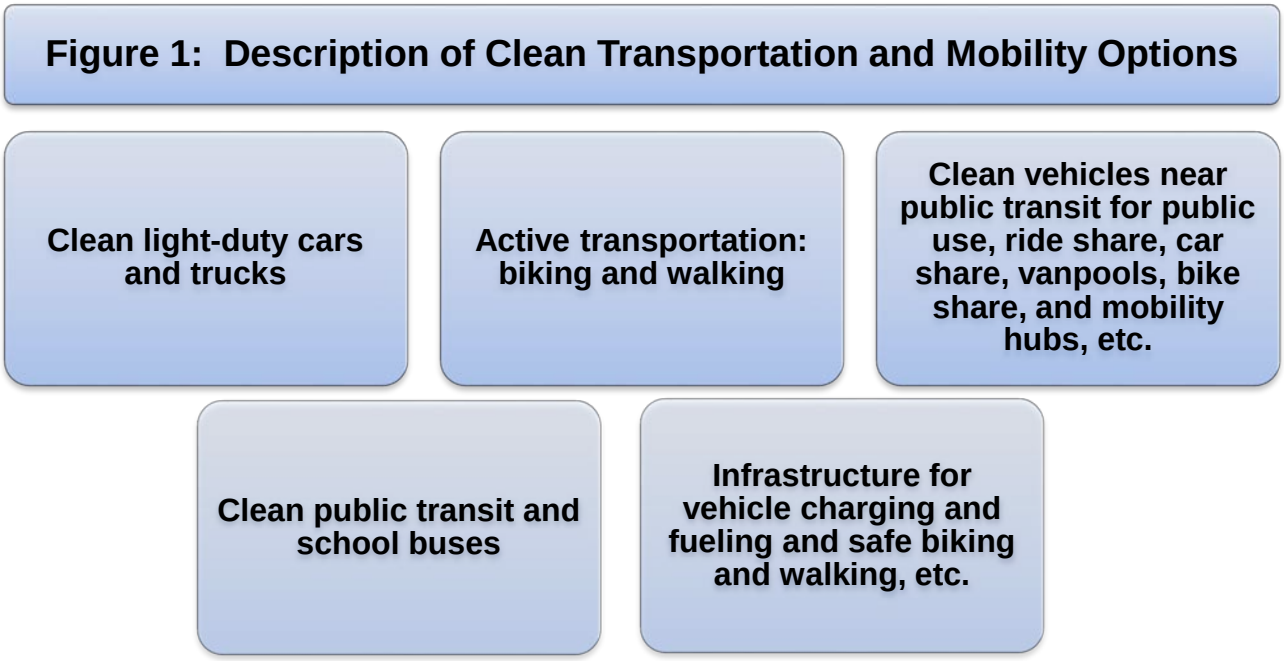
Transportation Network Company: For the purposes of this document, a transportation network company is an on-demand ride service that connects paying passengers with drivers who provide transportation using their own non-commercial vehicles. All parties connect to the service via websites and smartphone mobile apps. These commercial, for-profit transportation platforms have also been called "ridesourcing" and "ridehailing."

Executive Summary

Transportation electrification, including access to clean transportation and mobility options, is the cornerstone of California's future towards meeting air quality, public health, and climate goals, along with ensuring economic prosperity, social equity, and energy security needs. Towards this end, the Clean Energy and Pollution Reduction Act of 2015 (SB 350, De León, Chapter 547, Statutes of 2015) establishes as a State priority the reduction of greenhouse gas emissions through the promotion of various clean energy policies, including widespread transportation electrification, for the benefit of all Californians.

Transforming the State's transportation sector to support widespread electrification requires increasing access for all Californians, including low-income residents and those living in disadvantaged communities, across a broad spectrum of clean transportation and mobility options to address community specific transportation needs. Some of these options are described in Figure 1.

Figure 1: Description of Clean Transportation and Mobility Options



SB 350 directs the California Air Resources Board (CARB or Board) to examine the barriers low-income residents must overcome to increase access to zero-emission and near zero-emission transportation and mobility options and develop recommendations on how to address these barriers. SB 350 also directs the Energy Commission to examine the barriers for low-income residents' to access to energy efficiency, weatherization, and renewable energy investments, and small businesses contracting opportunities in disadvantaged communities.

The purposes of the CARB and Energy Commission SB 350 reports are to increase awareness of the barriers low-income residents and disadvantaged communities face across the State and identify recommendations which provide clear pathways to increase access. Recommendations include steps that the Legislature, communities, State and local planning, transportation, public health, and air quality agencies can take to formulate innovative, meaningful solutions in addressing clean transportation and energy access barriers.

Many of CARB's recommendations for clean transportation access build upon ongoing efforts at the State and local level to increase access for all Californians, such as implementation of the Assembly Bill (AB) 32 (Núñez and Pavley, Chapter 488, Statutes of 2006) Scoping Plan and SB 375 (Steinberg, Chapter 728, Statutes of 2008) Sustainable Communities Strategies. Community focused programs and incentives, such as those being administered through the AB 617 (Garcia, C., Chapter 136, Statutes of 2017) Community Air Protection Program, provide new opportunities to understand community needs and address some of the most critical barriers to access. CARB continues to discuss recommendations with State and local agencies and organizations to ensure implementation provides substantial benefits for low-income residents and disadvantaged communities, including improving air quality and public health, increasing opportunities for safe access to transportation and mobility options and increasing access to greater economic opportunities throughout California.

Public Process and Community Outcomes

In order to better understand the barriers that low-income residents face in gaining greater access to clean transportation and mobility options, CARB conducted a public process. During the first phase, CARB developed a Draft Guidance Document (released in April 2017) by:

- Holding information gathering sessions and public roundtable meetings;
- Organizing one-on-one meetings with stakeholders;
- Visiting communities, including directly engaging with local community members and low-income residents;
- Developing case studies to capture the unique barriers across various regions; and
- Providing an informational update to the Board.

During the second phase, CARB developed this final Guidance Document by:

- Incorporating feedback on the Draft Guidance Document;
- Holding an additional roundtable meeting;
- Holding additional one-on-one meetings;
- Returning to case study communities, meeting with residents, and updating the case study community write-ups; and
- Providing a second informational update to the Board.

The case study communities CARB visited are described further in Chapter 1 and Appendix B.

To complement the public process, CARB reviewed existing transportation literature and research and consulted with the Energy Commission and various other State and local agencies. Through these efforts, CARB has been able to better understand and explore community-identified challenges, identify various policies needed to develop solutions for increasing access to clean transportation and mobility options, and inform residents of the opportunities currently available to allow for more empowered transportation decisions. Residents identified some specific needs through the public process, including:

- Increasing awareness of local community transportation needs across the State;
- Supporting and funding clean transportation and mobility solutions that are viable to the community;
- Considering an array of potential unintended consequences that may stem from targeted investments in clean transportation and mobility option projects and programs, such as the potential for residential or economic displacement of people or businesses, or increased emissions in low-income and disadvantaged communities;
- Providing, as part of the State's clean transportation investment programs, opportunities for businesses that operate in low-income and disadvantaged communities, and avoiding substantial burdens to the same business, to the extent feasible;
- Furthering the State's and public's understanding of clean transportation and mobility option benefits such as expanding economic and public health opportunities and improving air quality; and
- Addressing the fundamental constraint of a lack of permanent, long-term funding sources to maintain programs, investments, and access to clean transportation and mobility options. This includes funding for CARB's priority recommendations, as described later in this section and in Chapter 4.

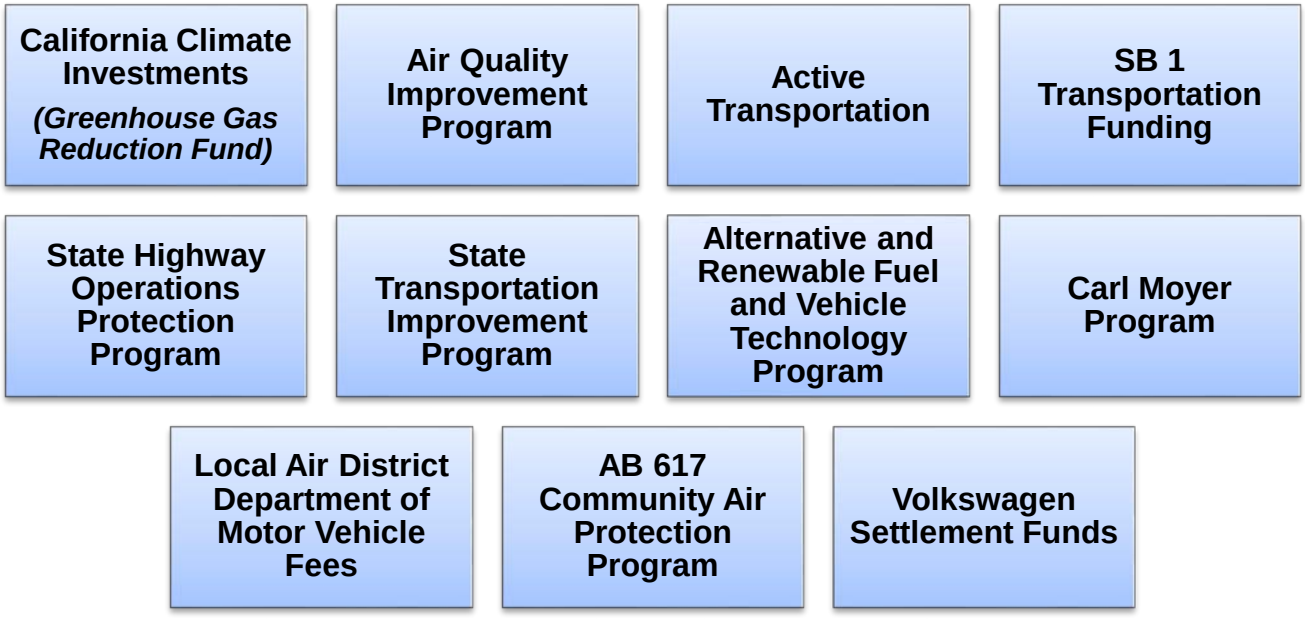
Barriers to Accessing Clean Transportation and Mobility Options

CARB recognizes that all California residents face similar barriers to access clean transportation and mobility options, but that the barriers low-income residents and disadvantaged communities face are magnified. Each community has unique needs and barriers which can depend on many factors, including geographic, economic, demographic, or cultural attributes. This increases the importance of developing equitable solutions and targeting resources for those residents that are most in need or facing disproportionate impacts. Some of the fundamental barriers to clean transportation access for low-income residents, as described in Chapter 2, include: 1) barriers low-income residents face within a community, (e.g., access, convenience, safety, etc.), 2) barriers in affordability, 3) barriers in funding for clean transportation investments, and 4) barriers in residents' awareness of clean transportation and mobility options.

Barriers are exacerbated by a lack of permanent, long-term funding for transportation, especially clean transportation and mobility options in low-income and disadvantaged communities. Current funding sources, such as the Greenhouse Gas Reduction Fund (GGRF), have played and will continue to play a critical role in providing near-term funding opportunities for clean transportation and mobility projects (i.e., equity pilot projects, active transportation, and public transit). New funding sources, such as SB 1, also create opportunities for new, clean transportation investments. Some examples of current programs and funding sources are included in Figure 2.

Leveraging multiple sources of funding, such as federal, State, local and private sources, offers the potential for community clean transportation benefits that are larger, longer-term, and more cost effective and efficient than those funded through single funding sources. This approach requires coordination and collaboration across multiple parties; State and local elected officials, as well as private businesses and universities, need to work together to leverage existing funding sources to the maximum extent feasible. Some examples of existing funding sources which could be leveraged to support clean transportation community needs are identified in this Guidance Document. In the longer-term, once clean transportation and mobility needs are better understood across communities throughout the State, CARB and other State agencies will work with the Governor's Office and the Legislature to identify potential new, creative funding mechanisms.

Figure 2: Current Transportation Programs and Funding Sources



CARB, with the assistance of low-income residents and other stakeholders developed various recommendations to overcome these barriers, many of which support existing or expanding strategies to increase access to clean transportation and mobility options

and build community-driven solutions, and some that provide new ideas based on specific community-identified transportation needs.

Recommendations to Overcome Barriers

CARB, in consultation with the public and stakeholders, identified many recommendations that would help overcome the barriers to access clean transportation and mobility options. Throughout this effort, it has become clear that there is not a singular statewide solution to addressing barriers and increasing clean transportation access for low-income residents. Each community has unique needs and barriers which can depend on many factors, including geographic, economic, demographic, or cultural attributes. Based on discussions with low-income residents, it is also clear that increasing access will require further understanding of community-based needs on the part of State agencies and other groups that implement transportation policies and planning activities. This highlights the importance of a robust community engagement process that values community knowledge and includes residents in developing solutions. Recommendations are framed around the unique community needs across the State, and building solutions from a local perspective.

This report focuses on six priority recommendations that most directly address the barriers and can begin to be implemented over the next two years. This Guidance Document also provides information on current efforts working to increase access to clean transportation and mobility options, which are vital to increasing our continued understanding of how to overcome barriers to access. Recommendations that are included for additional consideration will not be the focus of implementation over the next two years, but are essential to future implementation efforts and the broader vision for increasing clean transportation and mobility option access for low-income residents and disadvantaged communities across the State. These recommendations include:

- Providing a foundation for clean transportation and mobility option policy development and funding decisions;

- Ensuring progress towards increasing access for all residents ; and

- Building upon the successes and lessons learned of current State and local transportation programs to further increase clean transportation access, while also allowing flexibility to create new innovative strategies in low-income and disadvantaged communities.

A description of the priority recommendations presented in this Guidance Document, and the barriers they address is provided below.

1. **Expand Assessments of Low-Income Resident Clean Transportation and Mobility Needs to Ensure Feedback is Incorporated in Transportation Planning and for Guiding Investments**

   Barriers Addressed: Understanding the transportation needs of low-income residents and disadvantaged communities, affordability, availability of long-term, secure funding, and residents' awareness of clean transportation and mobility options.

- Focus on access to clean transportation and mobility options for all low-income residents across California, including those in disadvantaged communities.
- Expand existing assessments of transportation planning agencies to focus on the clean transportation and mobility option needs of low-income residents and disadvantaged communities.
- Ensure resident feedback is included when establishing priorities for funding programs that maximize clean transportation and mobility option access.
- Some examples include: promoting a more localized review of unmet clean transportation and mobility option needs of low-income residents as part of Regional Transportation Plan development and other local, State, and regional planning; determining potential methods of incorporating needs assessments into the SB 375 Sustainable Communities Strategies and Regional Transportation Plan process.

2. **Develop an Outreach Plan Targeting Low-Income Residents across California to Increase Residents' Awareness on Clean Transportation and Mobility Options**

   Barriers Addressed: Understanding the transportation needs of low-income residents and disadvantaged communities, and residents' awareness of clean transportation and mobility options.

- Develop a comprehensive outreach plan and community-based materials for engaging with low-income residents and disadvantaged communities across the State.
- Expand and better coordinate education, outreach, and exposure for clean transportation and mobility options, (including existing incentive programs, such as car scrap and replace and rebate programs), and to improve accessibility of information and streamline outreach efforts.
- Some examples include: ensure outreach efforts include State and local transportation, energy, and air quality programs, and continued coordination with local entities and air districts; design outreach and education materials specific to community needs; tie clean transportation and mobility option education and outreach on clean transportation and mobility options to health and safety education.

3. **Develop Regional One-Stop-Shops to Increase Consumer Awareness and Technical Assistance**

   Barriers Addressed: Understanding the transportation needs of low-income residents and disadvantaged communities, affordability, and residents' awareness of the clean transportation and mobility options.

- Provide targeted outreach and technical assistance for low-income residents.
- Develop a single application tool for consumers to access incentive projects such as EFMP Plus-Up, CVRP, and Financing Assistance for Lower-Income Consumers. Eventually include additional transportation, energy, and housing programs targeting low-income residents.
- Expand and better coordinate community-based outreach efforts utilizing local resources to increase program participation.

4. **Develop Guiding Principles for Grant and Incentive Solicitations to Increase Access to Programs and Maximize Low-Income Resident Participation**

   Barriers Addressed: Understanding the transportation needs of low-income residents and disadvantaged communities, affordability, availability of long-term, secure funding, and residents' awareness of clean transportation and mobility options.

- Develop best practices based on lessons learned for State and local agencies to incorporate into designing competitive solicitations that promote inclusive and equitable competition for clean transportation and energy investments, including low-income residents, disadvantaged communities, rural, and tribal communities.
- Some examples include: streamline and simplify the grant and incentive application process to ensure rural and tribal communities, small businesses, governments, and organizations can better compete for clean transportation investments; promote inter-agency coordination and maximize participation and benefits from programs; and coordinate technical assistance across agencies and local programs.

5. **Maximize Economic Opportunities and Benefits for Low-Income Residents from Investments in Clean Transportation and Mobility Options by Expanding Workforce Training and Development**

   Barriers Addressed: Understanding the transportation needs of low-income residents and disadvantaged communities and residents' awareness of clean transportation and mobility options.

- Prioritize incentive projects that demonstrate local economic benefits for low-income residents such as connections to good quality clean transportation jobs, training opportunities, and workforce development, including for youth.
- Some examples include: expand access to vocational training, pre-apprenticeship, and apprenticeship programs for clean transportation; increasing access and advanced knowledge and skills to acquire good quality clean transportation jobs; and targeted hiring in local communities.

6. **Expand Funding and Financing for Clean Transportation and Mobility Projects, including Infrastructure, to Meet the Accessibility Needs of Low-income and Disadvantaged Communities**

   Barriers Addressed: Understanding the transportation needs of low-income residents and disadvantaged communities, affordability, availability of long-term, secure funding, and residents' awareness of clean transportation and mobility options.

- Modify existing programs where necessary to prioritize investments and minimize barriers for low-income residents.
- Some examples include: establishing a long-term, permanent funding source for used and new light-duty zero-emission and near zero-emission vehicle ownership programs such as creative financing mechanisms, vehicle retirement and replacements, and charging installation.

In addition to these priorities, there are recommendations to continue and expand ongoing efforts along with additional new recommendations which are described in further detail in Chapter 4.

Conclusions and Next Steps

CARB believes it is important and necessary to continue this SB 350 effort on an ongoing basis to support a more robust understanding of the barriers and continue developing innovative solutions to increase access to clean transportation.
In May 2017, the Governor's Office convened an SB 350 Task Force, comprised of multiple State agencies, to facilitate multi-agency coordination to ensure the implementation of both CARB and Energy Commission barriers reports recommendations.

Since release of the draft Guidance Document, CARB has continued meeting with community members, stakeholders, and State agencies to determine priority recommendations to address over the next two years, the resources needed, and potential funding sources. CARB also returned to communities included in the case studies to apprise residents' of how their input has informed this Guidance Document. Looking forward, CARB will continue incorporating lessons learned from existing programs that increase access for low-income residents and promote ongoing stakeholder engagement to ensure progress is being made. CARB will continue working with the Governor's Office, Legislature, Energy Commission, and other relevant public agencies to implement recommendations to further increase access to clean transportation and mobility options for low-income residents and those living in disadvantaged communities. Ongoing program coordination between the AB 617 Community Air Protection Program, and the SB 350 Task Force will be used to maximize the co-benefits of community outreach, and when feasible and appropriate, share data, research results, and lessons learned from project implementation.

Increasing access to clean transportation for all Californians is crucial to achieving the State's air quality, public health, and climate change goals. The CARB and the Energy

Commission reports identify many key barriers and provide recommendations intended to have a transformative effect on access to clean transportation and energy investments for low-income residents, including those in disadvantaged communities.

CHAPTER 1: Introduction

Purpose In 2015, Governor Edmund G. Brown Jr. and the Legislature found and declared that there is insufficient understanding of the barriers low-income residents face in accessing zero-emission and near zero-emission transportation and mobility options. As a result, Governor Brown signed into law the Clean Energy and Pollution Reduction Act of 2015 (SB 350, De León, Chapter 547, Statutes of 2015) that directs CARB to conduct a study to better understand the barriers low-income residents, including those in disadvantaged communities, must overcome to increase access to zero-emission and near zero-emission transportation and mobility options, and develop recommendations to increase access.[4] In addition, SB 350 requires the Energy Commission to explore the barriers and opportunities to expand low-income residents' access to energy efficiency, weatherization, and renewable energy investments, and contracting with small businesses located in disadvantaged communities.

These two separate but related reports provide recommendations intended to have a transformative effect on access to clean transportation and energy investments for low-income residents, including in disadvantaged communities. These reports include the *Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities*, developed by the Energy Commission, and the *Low-Income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents,* developed by CARB.

CARB undertook a public process to study and better understand the barriers that low-income residents need to overcome in order to increase access to clean transportation and mobility options. The purpose of the CARB and Energy Commission SB 350 reports is to increase awareness of the barriers low-income residents face across the State and identify recommendations which provide clear pathways to increase access to clean transportation and energy investments for low-income residents, including those in disadvantaged communities. These recommendations would allow for substantial benefits for all Californians, including increasing access for low-income residents and disadvantaged communities to clean transportation and mobility options, improving air quality, and providing greater economic opportunities. Recommendations are framed around the unique community needs across the State, however, these general themes were common among the communities CARB consulted:

4 Clean Energy and Pollution Reduction Act of 2015. SB 350 bill text is available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350

- In making vehicle purchase decisions, clean vehicles are not yet viewed as affordable, reliable or as convenient as gas counterparts.
- Reliability and convenience are key factors in making decisions on using public transportation.
- Fear of crime, injury and personal safety are overarching accessibility concerns and deterrents to using active transportation (biking, walking), and public transportation.
- The absence of dedicated pedestrian sidewalks and bicycle facilities, and unsafe conditions created by high vehicular traffic speeds and volumes create accessibility barriers that deters many low-income residents (adolescents, adults, persons with disabilities, and elderly), from walking and biking.

Identifying permanent, long-term funding sources and expanding funding for clean transportation and mobility projects is needed to support the following priorities:

- Expand assessments of low-income residents transportation and mobility needs,
- Develop an outreach plan targeting low-income residents and in disadvantaged communities, including in rural and tribal regions;
- Develop regional one-stop-shops to increase consumer awareness of clean transportation incentives and programs, provide technical assistance, and develop guiding principles for grant and incentive solicitations;
- Maximize economic opportunities and benefits for low-income residents from investments in clean transportation and mobility options by expanding workforce training and development;

To ensure adequate long-term funding sources are available, State and local elected officials, as well as private businesses and universities, need to work to leverage existing and develop new, creative funding mechanisms. There is also a continued need to discuss funding needs collaboratively with the Governor's Office and legislature across clean transportation and energy programs.

Methodology and Public Process in Developing this Guidance Document

From the beginning of this process, stakeholders, including community-based organizations, requested that CARB meet directly with low-income residents in order to better understand the barriers that inhibit them from accessing clean transportation and mobility options. Given CARB's finding that there is a lack of understanding of local community clean transportation and mobility needs, the main methodology followed to was to directly engage communities and form partnerships with community-based organizations. Through this approach, CARB staff were able to speak directly with residents regarding the specific issues they face and work collaboratively towards building community driven solutions that can result in the biggest impact. This will be an ongoing discussion as part of the SB 350 implementation process.

In addition to meeting directly with low-income residents, CARB conducted a public process that included five additional methods of seeking input on the barrier to access clean transportation and mobility options.

- Meetings: Hosting public roundtable meetings, engaging in community-based meetings, engaging in Environmental Justice Advisory Committee (EJAC)[5] and local community meetings, and holding numerous individual meetings with community-based organizations, environmental groups, various State and local agencies, and stakeholders.

- Case Studies of Four Communities: Developing case studies involving four low-income communities, located in rural, urban and tribal areas. These case studies were based on CARB's attendance at meetings hosted by community-based organizations and by CARB staff communicating directly with low-income residents.

- Literature Review of Case Study and Additional Communities: Conducting a literature review of transportation issues for the low-income communities, including those located in rural and tribal areas.

- Research Project Review: Reviewing research projects across the State, along with current efforts, to understand the barriers and programs for increasing access to clean transportation and mobility options.

- Multi-Agency Consultation: Consulting with the Energy Commission, CPUC, Caltrans, CTC, CalSTA, and other relevant public agencies.

Further information on meetings is included in Appendix A. Further information on research project review is included in Appendix C.

Case Studies

CARB developed four community-based case studies as a result of attending community-based meetings and interacting directly with low-income residents. This allowed for review of different geographic locations that have unique demographic and transportation characteristics, including urban, rural, and tribal communities. Case studies provided information that framed the barriers and allowed for the formation of community specific recommendations.

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5 The California Global Warming Solutions Act of 2006, (AB 32; Stats. 2006, chapter 488) requires that CARB convene an Environmental Justice Advisory Committee (EJAC), to advise the CARB in developing the Scoping Plan and implementing AB 32. EJAC members represent communities in the State with the most significant exposure to air pollution, including, but not limited to, communities with minority populations or low-income populations, or both (AB 32; Part 7. Miscellaneous Provisions Section 38591). Committee meetings are open to the public and include a public comment period. More information on EJAC is available at: https://www.arb.ca.gov/cc/ejac/ejac.htm

The low-income communities chosen as case studies represent some of the ongoing activities by State and local agencies to increase access to clean transportation and mobility options. The selected case study communities include:

- Huntington Park
- Huron
- Redwood Valley
- North Richmond

The dialogue CARB had with low-income residents in these communities has been invaluable and allowed for engagement, participation, and empowerment of the residents. As a result of these interactions, one of CARB's priority recommendations is to expand assessments of community-based transportation and mobility needs to better understand barriers and guide clean transportation planning and decision-making in geographically diverse rural, urban, and tribal low-income communities.
Case studies are supplemented by a literature review identifying barriers and recommendations for increasing access to clean transportation and mobility options in these communities. Additional information on these case studies is provided in Appendix B.

Literature Review
CARB reviewed existing clean transportation and mobility option accessibility literature for the case study communities, and additional low-income and disadvantaged communities across the State. The purpose of this literature review is to supplement and validate the input and feedback received through the public process and community-based case studies. This review provides insight into the most common barriers to transportation, including clean transportation access for low-income residents, such as a lack of knowledge and awareness of rebate and incentive programs and clean transportation options, and the need for CARB and other agencies to increase the State's education and outreach efforts designed to reach these communities. The selected literature review communities include:

- Coachella Valley
- Lemon Hill
- Merced
- McFarland
- Oroville
- Tipton and Woodville

Additional information on the Literature Review communities is provided in Appendix B.

Multi-Agency Consultation
CARB continues to coordinate closely with the Energy Commission on this effort and in the implementation of the recommendations in the *Low-Income Barriers Study: Part A*

report. This coordination includes co-leading the Task Force, sharing lessons learned from the public process and input from low-income residents, including for barriers and opportunities to increase access to clean transportation and energy efficiency programs. CARB attends Energy Commission public meetings and participates in their public process. The work with the Energy Commission has provided an opportunity build more comprehensive solutions to the biggest challenges low-income residents and disadvantaged communities face across the State.

In addition to the Energy Commission, there were many other agencies at the State and local level, as well as other organizations, providing consultation for this effort, including the California Public Utilities Commission, California Transportation Commission, California Department of Transportation, California State Transportation Agency, and the California Department of Public Health. CARB also consulted with various local transportation planning agencies and organizations, local air districts, universities, environmental organizations and many other stakeholder groups. Additional information on multi-agency engagement is provided in Appendix A.

Recommendations

Through this effort, CARB has learned that there is not a singular solution to addressing barriers and numerous actions will be necessary to increase clean transportation access for low-income residents and residents of disadvantaged communities. Each community across the State has unique transportation needs. There are, however, specific barriers which are common amongst all of the communities CARB visited as part of this effort, including the need to secure permanent, long-term funding, increase education, outreach, and residents' awareness on clean transportation and mobility options, access to workforce training and good quality jobs, and affordability of transportation, clean technologies, or other alternative options.

CARB, in consultation with the public and community residents and other stakeholders, has identified many potential recommendations that would help overcome the barriers identified in this Guidance Document. However, because of the magnitude of potential solutions, CARB prioritized these recommendations and focused on the six main actions that can make the most significant difference in low-income and disadvantaged communities over the next two years. Recommendations are discussed in more detail in Chapter 4.

CHAPTER 2: Barriers and Opportunities to Access Clean Transportation and Mobility Options

This chapter provides a description of the barriers and opportunities to increase access to clean transportation and mobility options identified through conversations with low-income residents, case studies, literature reviews, and feedback from stakeholders.

Community-based concerns were used as the basis in defining barriers to access clean transportation and mobility options, and were used extensively in formulating the Guidance Document recommendations described in Chapter 4. Public engagement was conducted using the methods and process previously described, and resulted in CARB gaining insight and understanding on the barriers impacting low-income residents' ability to access clean transportation. This chapter does not contain an exhaustive list of all the barriers and opportunities identified through the public process; rather, within each barrier category, high-priority barriers identified by community residents were chosen as examples. This approach provides a general characterization of each barrier category using examples that touch upon different transportation mode types and different organizational levels (i.e., individual, neighborhood or community, local, regional, statewide). Appendix B contains more in-depth discussions of barriers and opportunities associated with each of the case study and literature review communities.

CARB recognizes that all California residents face many similar barriers in accessing clean transportation and mobility options, but these barriers are magnified for those with limited financial resources and that live in communities with limited transportation options. Based on feedback gained through CARB's public process, the priority for low-income residents and those in disadvantaged communities is accessible, reliable, convenient and affordable clean transportation and mobility options. Using this priority as the basis for clean transportation decision-making and investments is vital to achieving social, economic, and environmental equity, while concurrently supporting the State's air quality, climate, and transportation electrification goals.

Barriers and opportunities to access clean transportation and mobility options are presented in terms of: 1) barriers low-income residents face within a community, (e.g., access, convenience, safety, etc.), 2) barriers in affordability, 3) barriers in funding for clean transportation investments, and 4) barriers in residents' awareness of clean transportation and mobility options.

Understanding the Clean Transportation Needs of Low-Income Residents and Disadvantaged Communities

A theme heard consistently among residents and stakeholders participating in CARB's statewide public process is that transportation and mobility needs and opportunities vary widely throughout California, are often unique to a specific community, and differ among residents within the same community. Another theme is that low-income residents and those from disadvantaged communities feel their voices are not heard, and interests not taken into account, under current transportation planning methods. Consequently, low-income residents unanimously recommend additional and ongoing evaluations of transportation barriers and opportunities at the community level as part of the ongoing SB 350 effort. In support of this approach, CARB's priority recommendation presented in Chapter 4 is to expand assessments of low-income resident transportation and mobility needs to ensure feedback is incorporated in transportation planning.

Community barriers and opportunities are grouped into five categories: 1) access and reliability, 2) convenience, 3) safety, 4) demographic characteristics and community setting, and 5) planning, infrastructure and investments.

Accessibility and Reliability

Low-income residents face ongoing challenges in accessing reliable and convenient transportation services to meet their daily life needs (e.g. food, medical care, employment, school, social relationships, etc.). Residents from communities throughout the State identified accessibility, reliability and convenience as key determinants in making household and personal decisions on transportation mode choice and in the selection of mobility options. Studies have shown that reliable transportation contributes to increased access to job opportunities, higher earning, and increased employment stability.[6] In addition, low-income households have also been shown to weigh convenience and reliability over cost when making decisions on the use of public transit.[7] Examples of access and reliability barriers identified through CARB's public process include:

- Lack of access to sidewalks, benches, bike lanes, safe crossing zones, shade (or shade structures), streetlights, and other measures considered essential for walking, biking and public transportation.

- Fixed-route transit and Dial-a-Ride services with limited routes, hours of operation, frequency of service, and service boundaries. Dial-a-Ride often restricts rider eligibility, (e.g., seniors or disabled residents only), and purpose, (medical appointments only). Public transit agencies and community health services, especially those serving large, rural service areas, are experiencing growing

6 Blumberg and Pierce, 2012

7 Rice, 2004

demand as the population ages. Without access to a transportation sales tax or additional funding sources, some transportation providers are limited in expanding service, meeting growing demand, or transitioning to clean vehicle fleets and deploying clean mobility options.

- Many low-income residents lack credit cards and bank accounts required for using carsharing and ride sourcing through transportation network services[8] and for purchasing monthly, re-loadable public transit cards. Language barriers for non-English speakers also deter some from using shared mobility services.

- Community-based organizations and small, local public agencies are not always able to successfully access State grant funds for clean transportation projects. These organizations often lack the staff and budget resources and technical expertise required to successfully complete the application process. As such, small communities feel they are at a continual disadvantage competing against larger communities for the same funding streams.

- Low-income households with multiple occupants may lack a car or have only one car. When making vehicle purchasing decisions, clean vehicles are not viewed as an option due to higher initial costs, lack of convenient home, workplace and public charging, reduced range compared to gas vehicles, and fewer models available that can carry multiple passengers and equipment.

Statewide community needs assessments are the first step in identifying barriers, opportunities, and solutions best suited to meet the needs of residents within individual communities. Based on the example barriers above, opportunities to improve access and reliability in biking, walking and public transit include funding for complete streets, bike lanes, and other safety improvements, (lighting, shade, benches, security patrols), along with funding to improve transit services and develop transportation hubs supporting regional, multi-modal travel connectivity.

Opportunities to supplement transit service, especially in rural communities, through shared mobility options such as ridesharing, carpooling, and worker vanpools, while also expanding payment options may provide increased access and reliability.

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8 For the purposes of this document, carsharing is a shared mobility option that allows individuals to have short-term access to vehicles on an as-needed basis to gain the benefits of private vehicle use without the costs and responsibilities of ownership. Carsharing can include car rental for short periods through a commercial business, or users organized as a company, public agency, cooperative, or other type of group. For the purposes of this document, a transportation network company is an on-demand ride service that connects paying passengers with drivers who provide transportation using their own non-commercial vehicles. All parties connect to the service via websites and smartphone mobile apps. These commercial, for-profit transportation platforms have also been called “ridesourcing” and “ridehailing.”

Streamlining and simplifying the clean transportation grant and incentive application process for State and local funds, providing coordinated technical assistance across agencies and programs, and designating funding for small, rural communities could allow local and regional transportation providers additional opportunities to clean transportation funding. For household vehicle purchases, targeted community investments in electric vehicle charging infrastructure, expanded incentive options for clean vehicle purchases, along with continued advancements in battery technology, competitive pricing, and larger cars will increase adoption rates by low-income residents.

Convenience

Low-income residents, similar to more affluent residents, place a priority on convenience when making transportation decisions. Examples include physical proximity, time required (travel and wait time), ability to travel at desired times and for desired reasons, and ease in accessing necessary travel information (e.g., routes, schedules, fares, connections). Compared to the population average, vehicle ownership rates are lower in low-income populations, and households in poverty are limited to a shorter radius of travel compared to higher income households.[9] However, low-income residents that participated in CARB's statewide public process voiced that they have travel demands similar to higher-income households and often have unmet transportation needs, especially in multi-occupant, multi-generational households. For example, one trip may be for multiple purposes, (such as school, work, medical appointments, groceries, etc.), and may not be easily accommodated through a transportation mode other than a personal vehicle. Examples of convenience barriers that low-income residents identified through CARB's public process include:

- Public transit and biking or walking for many residents is inconvenient and does not meet their individual and household travel demands.

- Individual or household travel demands require flexibility to meet multi-purpose trips and unexpected, time-sensitive trips (e.g., picking up a sick child at school), which cannot usually be met through public transit, biking or walking.

- School bus service is often unreliable, especially in rural areas, leaving children standing in unsafe, unhealthy conditions (sometimes up to an hour), and consistently delivering them late for school. Children also lack transportation to after-school sports and extracurricular activities because both parents work or do not own multiple vehicles.

- Clean vehicles are considered less convenient than traditional vehicles due to limited range, lack of charging infrastructure and limitations in transporting multiple passengers and work equipment.

9 U.S. DOT 2009

Based on the example transportation barriers above, potential opportunities include funding for subsidized clean commuter shuttles, community vanpools or carpools as an alternatives to or compliment to fixed-route transit, and funding for expansion of clean school bus fleets and youth-centered transportation. Opportunities to support clean vehicle adoption are similar to those discussed in the previous section on accessibility and reliability (e.g., targeted charging infrastructure investments, expanded incentive options, increasing vehicle choices). As new vehicle models with improved range are brought to market, anxieties associated with limited range will also lessen.

Safety

Addressing safety barriers is critical for increasing access to clean transportation and mobility options, particularly biking, walking, and public transportation use. This barrier includes ensuring physical safety and perceptions of safety, and conformity to laws in the California Vehicle Code for pedestrian, bicyclists and motorists. Examples of safety barriers that were identified through CARB's public process include:

- Concerns of crime, injury and personal health and safety are barriers to biking, waking and using public transit. In a City of Merced study of pedestrian bicycle collisions with cars near schools, collisions in low-income census tracts ranked among the highest in the city.[10] Residents in North Richmond and Huntington Park said crime and personal safety were barriers to walking, biking and transit use.

- Some rural areas, such as tribal communities near Redwood Valley, are so remote, isolated, and lacking in basic infrastructure (sidewalks and paved roads), that biking and walking are not viewed as viable modes of transportation.

Based on the example barriers above, opportunities to increase use of active transportation and public transportation include funding for security improvements (e.g., guard patrols, building and street lighting, secure storage, shade, benches, dedicated pedestrian and bike facilities, etc.). Opportunities also include incorporating traffic calming measures, safe crosswalks and intersections, pedestrian and bike overcrossings, sidewalks, and other active transportation considerations into roadway and transportation projects. Improvements should be based on the results of community needs assessments and consider the demographics and geographic setting of communities.

Demographic Characteristics and Community Setting

Demographic characteristics, climate, and community setting all influence transportation needs, barriers, opportunities and solutions. For example, youth transportation (for school, extra-curricular activities, jobs, maintaining family and social networks, etc.), is a significant unmet need for many low-income residents and disadvantaged communities

10 City of Merced, 2013

evaluated in this Guidance Document. In several San Joaquin Valley and Coachella Valley communities (e.g. south Merced, Huron, Tipton, McFarland, Oasis) youth under 18 years of age comprise a disproportionally large percentage of these communities when compared to the State average. Other communities, such as Redwood Valley, have a disproportionally large population of older adults, and fewer working-age adults due to a lack of economic opportunity and local jobs. The need for medical and other transportation services for elderly residents is a growing demand in many low-income and disadvantaged communities across the State (e.g., Redwood Valley, Huron, Oasis and Coachella).

Age also affects mode choice and methods for accessing transportation. Younger people may be more apt to use shared mobility services using smart technology or find community carpools using websites, whereas older residents may be more likely to access Dial-a-Ride services through a call center, or rely on rides from family members, friends, or traditional taxi services. The spoken languages and cultural characteristics of communities also influence transportation access and is further discussed in the upcoming section on Awareness.

Climate and terrain may also be more or less conducive to the use of different mode types. Active transportation may be accessible seasonally, or in some cases mountainous terrain and community isolation may preclude its use. Community needs assessments will help identify opportunities within specific communities, and build-upon the ongoing efforts of local and regional agencies to incorporate the needs of low-income and transit-dependent residents in local and regional transportation and land use plans.

Planning, Infrastructure, and Investments

Transportation planning, infrastructure, and investments, including for clean transportation, do not always promote equitable access, or consider the impact of access on economic opportunities for low-income residents. Opportunities for overcoming these issues include considering low-income residents in multi-modal transportation planning and mobility hubs at the local, regional and state level, in the planning and placement of vehicle charging and fueling infrastructure, and increasing and expanding clean transportation investments that provide direct benefits, to low-income residents and disadvantaged communities. Residents from across the State support workforce development and economic empowerment created through clean transportation access in their communities.

Community assessments should build upon the ongoing efforts of local and regional agencies to incorporate the needs of low-income and transit-dependent residents in local and regional transportation and land use plans and Sustainable Community Strategies. Maintaining community connectivity is an important consideration when planning new highways, arterial roadways, and other public infrastructure projects with the potential to isolate or divide communities.

In addition, low-income residents and stakeholders commented to us that as community livability, clean transportation access, and economic health improves, policies and actions must be implemented to avoid and minimize the displacement of low-income residents through neighborhood gentrification. Ongoing coordination is necessary between State and local planning agencies and low-income residents and disadvantaged communities in order to maintain process flexibility and provide the input and feedback necessary for informed decision making.

Affordability

According to the California Budget Project's 2013 report, *Making Ends Meet: How Much Does It Cost to Raise a Family in California,* the statewide average monthly transportation cost ranges from 11.9 percent of a household's total monthly budget, (for a single adult), to 8.3 percent, (for two parent and two children with both parents working).[11] For many of California's low-income households, basic transportation costs consume an even greater percentage of a household's budget. The cost burden of transportation expenses on total household budget in the four case study communities included in the Guidance Document ranges from 17 percent in North Richmond, to 36 percent in Redwood Valley.[12]

Households in poverty have less access to personal vehicles (for households with income lower than $25,000 per year, 80 percent own at least one vehicle compared to the national average of 94 percent), and household members are more likely to travel by modes other than cars.[13] The vast majority of Americans, including those of lower economic means, continue to rely on personal vehicles as their predominant mode of transportation, despite the economic hardship of vehicle ownership for low-income families. An American Automobile Association study indicated that the annual cost of owning a vehicle in 2017 is approximately $8,500 a year.[14] In making mode-choice decisions, low-income travelers, similar to all travelers, carefully evaluate the costs of travel (time and out-of-pocket expenses) against the benefits of each transportation mode available to them. Examples of affordability barriers that were identified through CARB's public process include:

- Low-income car buyers aware of the State's clean vehicle incentives and wanting to make an incentivized clean vehicle purchase may not qualify for a low-interest loan or lease option, or be able to afford the upfront price and wait for the rebate reimbursement. Residents' distrust dealerships and financial lenders, and feel they will inflate prices on clean vehicles.

11 California Budget Project, 2013

12 CNT, H+T Index, 2016

13 U.S. DOT, 2009

14 American Automotive Association, 2017, available at: http://newsroom.aaa.com/auto/your-driving-costs/

- Subsidized transit is not available to low-income residents in many communities. If reduced fares are offered, eligibility may be restricted (e.g., elderly or disabled residents only), or travel purpose restricted (e.g., medical appointments only).

- Low-income residents using public transit may require additional transportation services (e.g., first and last-mile connections), using taxis or transportation network companies, making the total trip expense not cost effective.

Based on the example affordability barriers above, potential opportunities include additional funding (e.g., transportation taxes, clean transportation grants and other sources) for clean public transit investments and other clean mobility strategies that meet a community's needs. Opportunities to increase clean vehicle ownership include dedicated long-term funding for incentives promoting new and used clean vehicle ownership, expanding incentive options to better meet the needs of low-income consumers, (such as point of sale incentives, low interest loan guarantees, and other creative financing mechanisms), and funding to increase access and convenience to public, workplace, and home charging infrastructure.

Awareness

Lack of residents' awareness is another barrier low-income community residents and stakeholders described to accessing clean transportation and mobility options. Examples of awareness barriers identified through CARB's public process include:

- Low-income communities in remote areas of the State may lack access to broadband internet service, leaving residents unable to access information on clean vehicles and consumer incentives, regional maps of public charging stations, information on public transportation, and websites for coordinating car sharing and commuter vanpools.

- Community based organizations and local transportation agencies may be unaware of clean transportation grant solicitations and other funding opportunities in which they have interest. Grants are offered through multiple agencies and through multiple funding sources, all having different requirements and timelines.

- Residents lack awareness of clean vehicles and have anxieties and fears of newer technologies, resulting in a reluctance to purchase advanced technology clean vehicles.

Though much progress has been made to increase education and outreach efforts on clean transportation and mobility options in low-income communities, CARB agrees with the need that additional opportunities must be undertaken to expand outreach and education for residents in these communities. These topics are discussed further in the sections below.

Outreach

Outreach to low-income and disadvantaged communities must be culturally sensitive to the community's characteristics, and relevant to the transportation needs of residents' in the community in order to be effective. The examples below are barriers to outreach identified through CARB's public process:

- Outreach is not conducted in the predominant language(s) spoken in the community.
- Rural and tribal communities feel overlooked by State agencies in outreach plans and education efforts.
- When outreach occurs, it may not be targeted to low-income residents' needs, or have enough context or recognizable branding for residents to recognize it or realize its value to them.

One potential solution to overcome this barrier is to broaden multi-lingual outreach and communication strategies. Residents want to ensure information is disseminated in a relatable format they can understand. In addition, residents would benefit from repeated outreach and visits to ensure a more consistent presence in the community, to build trust, and ensure community-based organizations have the tools and resources they need to pass along information to their residents.

Residents voiced that these efforts must include providing outreach to rural, tribal, and urban communities. Developing regional one-stop-shops that provides low-income residents with access to multiple clean energy, transportation, and housing project information could be an important part of the solution, and is in alignment with a recommendation in the Energy Commission's Low-Income Barrier Study, Part A.

Education

Education is both a critical barrier and potential solution for addressing some of the fundamental clean transportation accessibility needs of low-income residents. Providing educational curricula for kindergarten through 12th grade students (including vehicles and biking and walking benefits and safety), better access to educational opportunities in vehicle production, maintenance, and infrastructure deployment, as well as vocational training, pre apprenticeship, and apprenticeship programs are all opportunities to educate residents on clean transportation and mobility options. Residents expressed interest in gaining further knowledge of clean transportation and associated programs that could benefit low-income residents, and reduce costs of clean vehicle ownership in particular (see Appendix A and B).

CHAPTER 3: Current Actions to Understand and Address Barriers

This chapter includes a description of current laws and State programs across California targeted at directly and indirectly reducing barriers for low-income residents to access clean transportation and mobility options. Research projects are also underway that have direct application to SB 350 goals and are presented in Appendix C.

Current State programs cover a multitude of clean transportation and mobility options, including active transportation, public transportation, shared mobility and clean vehicle ownership projects. For example, the Active Transportation Program, (funded through CTC and implemented by Caltrans), supports increased access to biking and walking for low-income residents through infrastructure investments and other needed improvements. California Climate Investments, funded through the State's Greenhouse Gas Reduction Fund using Cap-and-Trade Auction Proceeds, facilitates comprehensive and coordinated statewide investments in clean transportation and mobility option projects that benefit low-income residents, including those in low-income and disadvantaged communities. In addition, the AB 617 Community Air Protection Program supports transformative changes in community level planning, including actions and investments to improve air quality in communities the bear the greatest pollution burdens.

CARB also has regulations, (such as Advanced Clean Cars), and plans, (such as Assembly Bill 32 Scoping Plan, Mobile Source Strategy, California Sustainable Freight Action Plan, Short-Lived Climate Pollutant Reduction Strategy, and ZEV Action Plan), and efforts, (Innovative Clean Transit Program), to achieve emission reduction goals and overcome barriers to clean transportation access.

The State also has a goal of approximately 1.5 million zero-emission vehicles on the road by 2025. Increased funding, awareness, and access to clean transportation and mobility options to low-income residents and disadvantaged communities is an important part of the solution in meeting these goals.

Existing Laws to Expand Clean Transportation and Mobility Options for Low-Income Residents

The following summary contains laws that direct projects and funding toward a variety of clean transportation and mobility options for low-income residents and in disadvantaged communities. These legislative actions have created and support a variety of transformative programs that are moving the State toward transportation electrification, including projects that specifically address the needs of low-income residents.

Assembly Bill 1475 (Soto, Chapter 663, Statutes of 1999)

In 1999, the State Legislature passed and Governor Brown signed Assembly Bill 1475. This bill requires the Department of Transportation, in consultation with the Department of the California Highway Patrol, to establish and administer a "Safe Routes to School"

construction program pursuant to authority granted under specified federal law and to use federal transportation funds for construction of bicycle and pedestrian safety and traffic calming projects.

Assembly Bill 32 (Núñez and Pavley, Chapter 488, Statutes of 2006)
AB 32 requires California to reduce its greenhouse gas (GHG) emissions to 1990 levels by 2020, a reduction of approximately 15 percent below emissions expected under a "business as usual" scenario. Pursuant to AB 32, CARB must adopt regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. The full implementation of AB 32 will help mitigate risks associated with climate change, while improving energy efficiency, expanding the use of cleaner transportation, renewable energy resources, and reducing waste. By requiring in law an ambitious reduction of GHG emissions, California set the stage for its transition to a sustainable, low-carbon future. AB 32 was the first program in the country to take a comprehensive, long-term approach to addressing climate change, and does so in a way that aims to improve the environment and natural resources while maintaining a robust economy. In addition, AB 32 also requires CARB to develop a Scoping Plan. The Scoping Plan lays out California's strategy for meeting GHG reduction goals and must be updated every five years.

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007)
AB 118 establishes three separate programs designed to improve air quality and reduce GHG emissions. The Air Quality Improvement Program, administered by CARB, is a voluntary incentive program to fund, through grants, revolving loans, or loan guarantees, projects that improve air quality, promote research on the air quality impacts of alternative fuels and advanced technology vehicles, and support work force training. The Alternative and Renewable Fuel and Vehicle Technology Program, administered by the Energy Commission, provides about $100 million annually to develop and deploy alternative and renewable fuels and advanced transportation technologies. EFMP, implemented by BAR in accordance with regulations adopted by CARB, is a voluntary vehicle retirement and replacement incentive program for lower-income motorists to scrap their older, high-emitting vehicles and replace them with newer, cleaner, and more fuel efficient vehicles. All of these programs incentivize the development, demonstration, and deployment of clean vehicles and fueling infrastructure to further California's air quality and climate goals.

Senate Bill 375 (Steinberg, Chapter 728, Statutes of 2008)
SB 375, also known as the Sustainable Communities and Climate Protection Act, supports the State's climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities. Under SB 375, CARB sets regional targets for GHG emissions reductions from passenger vehicle use. In 2010, CARB established these targets for 2020 and 2035 for each region covered by one of the State's metropolitan planning organizations (MPO). CARB periodically reviews and updates the targets. Positive steps are already evident from the regional transportation and sustainable communities planning occurring across the State, including: 1) increased public dialogue about equitable

distribution of public benefits, 2) increased outreach and public participation, 3) more engagement and coordination between MPOs and local jurisdictions on land use policy, 4) increased funding allocated to public transit and active transportation, and 5) advances in transportation modeling, including more sophisticated scenario testing.

Assembly Bill 1358 (Leno, Chapter 657, Statutes of 2008)
In 2008, the State Legislature passed and Governor Brown signed the Complete Streets Act. Deputy Directive 64-R2 first signed in October 2008, and renewed in October of 2014, directs Caltrans to implement complete streets. This bill supports the shift of transportation mode share from single passenger cars to public transit, bicycling, and walking in meeting California's short- and longer-term planning goals to reduce vehicle miles traveled and reduce GHG emissions as required by current law. Walking and bicycling provide the additional benefits of improving public health and reducing treatment costs for conditions associated with reduced physical activity such as obesity, heart disease, lung disease, and diabetes.

The California Blueprint for Bicycling and Walking, prepared pursuant to the Supplemental Report of the Budget Act of 2001 states that to achieve this goal, bicycling and walking must be considered in land use and community planning, and in all phases of transportation planning and project design. These design principles help fulfill the commitments to reduce GHG emissions and use urban land and transportation infrastructure efficiently, and improve public health by encouraging physical activity. Transportation planners must continue to find innovative ways to reduce vehicle miles traveled and to shift from short trips in an automobile to biking, walking, and using public transportation.

Senate Bill 535 (De León, Chapter 830, Statutes of 2012)
This bill established the original requirements relating to Greenhouse Gas Reduction Fund investments in disadvantaged communities in order to provide economic and health benefits to these communities. In 2016, AB 1550 revised these requirements, increasing the percent of the State's auction proceeds that must be invested within disadvantaged communities and adding new requirements to direct additional investments to low-income communities and low-income households.

Assembly Bill 101 (Committee on Budget, Chapter 354, Statutes of 2013)
In 2013, the State Legislature passed and Governor Brown signed the Budget Act of 2013, noting funds appropriated to the Active Transportation Program (ATP). The program promotes mobility goals, as well as improves safety, achieves efficiencies, accelerates and streamlines project delivery, and improves project outcomes. This legislation consolidated separate State programs supporting active transportation into one, the ATP established by SB 99.

Senate Bill 99 (Committee on Budget and Fiscal Review, Chapter 359, Statutes of 2013)
In 2013, Governor Brown signed SB 99, creating the ATP in Caltrans. The bill provides funds for allocation to eligible projects by the CTC, and consolidates existing federal

and State transportation programs into a single program administered by the Division of Local Assistance. Forty percent of available funds are available for programming by MPOs in urbanized areas with a population greater than 200,000, 10 percent for small urban and rural regions, and 50 percent on a statewide basis, with all awards to be made competitively. The bill requires CTC to develop guidelines and procedures, including project selection criteria, for the program in consultation with various agencies and interested parties. The bill also requires that CTC initially adopt a two-year program, with subsequent 4-year programs thereafter. No later than 45 days prior to adopting the initial set of final ATP guidelines CTC must submit the draft guidelines to the Joint Legislative Budget Committee.

Senate Bill 1275 (De León, Chapter 530, Statutes of 2014)
2014, the State Legislature passed and Governor Brown signed the California Charge Ahead Initiative, a bill supporting consumer incentives and rebates to enable one million ZEVs in California by January 1, 2023. The law requires that CARB adopt programs that specifically benefit low-income residents and disadvantaged communities.

Senate Bill 1204 (Lara, Chapter 524, Statutes of 2014)
In conjunction with SB 1275, this bill established the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program to fund purchase incentives for commercially available heavy-duty zero-emission and near zero-emission vehicles and technologies. Projects currently funded include zero-emission transit and school buses through CARB's Low Carbon Transportation Investments.

Senate Bill 32 (Pavley, Chapter 249, Statutes of 2016)
In 2016, the Legislature passed and Governor Brown signed SB 32. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in Governor Brown's April 2015 Executive Order B-30-15. SB 32 builds on AB 32, and keeps CARB on the path toward achieving the State's objective of reducing emissions to 80 percent below 1990 levels. This objective is consistent with the analysis of the emissions trajectory by the Intergovernmental Panel on Climate Change, to stabilize atmospheric GHG concentrations at 450 parts per million carbon dioxide equivalent, and to reduce the likelihood of catastrophic impacts from climate change.

Assembly Bill 197 (Garcia, Chapter 250, Statutes of 2016)
The companion bill to SB 32, AB 197 provides further direction to CARB on adoption of strategies to reduce GHG emissions, and improving public access to air emissions data CARB collects, requiring annual posting of GHG, criteria pollutant, and toxic air contaminant data throughout the State. Data is organized by local and sub-county level for stationary sources, and a minimum of county level for mobile sources. Additionally, when CARB adopts rules and regulations to achieve emissions reductions protective of California's most affected and disadvantaged communities, CARB shall consider the social costs of GHG emissions, and prioritize emission reduction rules and regulations that result in direct emission reductions at large stationary sources of GHG emissions, direct emission reductions from mobile sources, and emission reduction rules and

regulations that result in direct emission reductions from sources other than those listed above. CARB must also identify a market-based compliance mechanism for each emissions reduction measure, including each alternative compliance mechanism, and potential monetary and nonmonetary incentives for the range of projected GHG and air pollution emissions reductions resulting from the measure. Lastly, CARB must assess the cost-effectiveness of the measure, including avoided social costs.

Assembly Bill 1550 (Gomez, Chapter 369, Statutes of 2016)
AB 1550 changed the investment requirements for disadvantaged communities under SB 535 to require at least 25 percent of auction proceeds be invested for projects within and benefiting disadvantaged communities; 5 percent for projects within and benefiting low-income communities or benefiting low-income households statewide; and 5 percent for projects within and benefiting low-income communities, or low-income households, that are within ½ mile of a disadvantaged community. Some project types funded may include clean transportation and mobility options with a prioritization towards low-income households and disadvantaged communities.

Assembly Bill 2722 (Burke, Chapter 371, Statutes of 2016)
This bill creates the Transformative Climate Communities Program, administered by the Strategic Growth Council (SGC). The bill requires SGC to award competitive grants to specified eligible entities for the development and implementation of neighborhood-level transformative climate community plans that include greenhouse gas emissions reduction projects that provide local economic, environmental, and health benefits to disadvantaged communities, as defined. The bill requires SGC to develop guidelines and selection criteria for the implementation of the program and the California Environmental Protection Agency to provide assistance in performing outreach to disadvantaged communities and assessing the environmental justice benefits of project awards.

Senate Bill 1 (Beall, Chapter 5, Statutes of 2017)
Senate Bill 1, *The Road Repair and Accountability Act of 2017*, provides the first significant, stable, and ongoing increase in State transportation funding in more than 20 years under the Road Maintenance and Rehabilitation Program. SB 1 will result in the investment of $52.4 billion over the next decade to fix roads, freeways, and bridges in communities across California and put resources toward transit and safety. The Active Transportation Program augmentation provides $100 million per year to programmed projects, or to projects that applied for funding in 2017 but were not selected. SB 1 also provides funds for the Local Partnership Program ($200 million per year), State Highway Operation and Protection Program ($1.9 billion per year), Local Streets and Roads ($1.58 billion per year), Solutions for Congested Corridors Program ($250 million per year), Trade Corridor Enhancement Account ($300 million per year), and stabilizes funding for The State Transportation Improvement Program. The statute provides increased revenue, including new fees on zero-emission vehicles, (specifically, a $100 zero emission vehicle fee that will apply to 2020 model year and later vehicles), and ties DMV registration to compliance with CARB's Truck and Bus Regulation. The bill also authorizes annual appropriations of $5 million and $2 million of the funds

available for the program to the University of California and the California State University, respectively, for conducting transportation research and transportation-related workforce education, training, and development, as specified. In addition, the statute provides $5 million for five years to the California Workforce Development Board to assist local agencies in promoting pre-apprenticeship training programs.

Assembly Bill 398 (Garcia, E., Chapter 135, Statutes of 2017)
Among several measures included in this bill, AB 398 provides further direction on a post-2020 Cap-and-Trade Auction Proceeds Program, and identifies a list of priorities for the Legislature to consider for future appropriations from the Greenhouse Gas Reduction Fund. The statute helps ensure California continues to meet its ambitious climate goals.

Assembly Bill 617 (Garcia, C., Chapter 136, Statutes of 2017)
AB 617 provides important new tools to reduce pollution in neighborhoods most burdened by poor air quality. Key elements include development of a statewide monitoring plan and deployment of community-focused air quality monitoring networks, and a statewide strategy coupled with implementation of local community emission reduction plans. AB 617 also includes provisions for enhanced reporting of emissions data, and accelerated retrofit of control technologies on large industrial sources.

AB 97 (Ting, Chapter 14, Statutes of 2017)
In the AB 97 Budget Act of 2017, the Legislature appropriated $25 million to CARB to implement California's partial consent decree for 3.0 liter Volkswagen engines, (as part of the State's settlement with Volkswagen to resolve claims against the company for equipping its diesel vehicles with illegal defeat devices). The Legislature specified that a portion of these funds be used to support the expansion of EFMP Plus-Up statewide, including the development of a tool to improve program administration and efficiency, and increase community outreach.

State Projects for Increasing Access for Low-Income Residents to Clean Transportation and Mobility Options

The State of California currently funds a number of projects and programs that increase access and viability of clean transportation and mobility options for State residents, including those living in low-income and disadvantaged communities. Lessons learned by agencies during implementation of these projects will inform the ongoing development of mechanisms to increase access for low-income consumers. As an example, CARB continues to expand its portfolio of incentives to increase participation by low-income residents, such as including financing mechanisms for new and used vehicles, consumer pre-qualification for point-of-sale incentives, and increasing the rebate incentive for low-income consumers to purchase or lease a clean vehicle. As new projects are implemented, follow-up monitoring will help identify additional

opportunities to maximize benefits for low-income residents. Below is a brief summary of some of these projects.

California Air Resources Board
Funding for these projects comes from a number of sources, including the GGRF, motor vehicle fees, and other local funding sources.

Carl Moyer Memorial Air Quality Standards Attainment Program
The Carl Moyer Memorial Air Quality Standards Attainment Program, established in 1998, provides incentive funding for cost-effectively replacing, repowering or converting engines, equipment, and other sources of air pollution with cleaner technologies. These incentivized projects result in reductions in smog-forming and toxic emissions levels that are "surplus," meaning that the reductions are beyond those required by statute. Local air districts administer the program, including final project selection based on local priorities. Air districts are preparing to receive about $250 million in additional Moyer funds for projects primarily focused in disadvantaged communities, as early actions to support the AB 617 Community Air Protection Program. A core objective of the Moyer Program is the reduction of pollutant emissions in communities disproportionately impacted by air pollution, including minority and low-income communities. Statutorily, each air district with a population of one million or more must select projects so at least 50 percent of its Moyer funding is expended in these communities.

A new project category for Moyer that air districts may select as of 2017 is infrastructure projects primarily for commercial charging and alternative fueling stations for on- and off-road vehicles and equipment, for marine shore power electrification, and for stationary agricultural projects. Air districts may suggest other project types, such as residential battery charging stations for low-income and multi-unit dwellings, which CARB will consider on a case-by-case basis.

Community Air Protection Program
AB 617 is designed to address air pollution at the neighborhood level. The new Community Air Protection Program will fundamentally transform the way California approaches community level planning efforts and provides a new framework to make sure that all communities benefit from CARB's clean air programs, especially those communities that bear the greatest air pollution burdens. Specifically, AB 617 sets out a planning framework for the Community Air Protection Program that includes:

- A State monitoring plan and community-level air quality monitoring.
- A State strategy and community specific emission reduction plans.
- An expedited schedule for the installation of the cleanest controls on industrial facilities.
- Enhanced requirements for the reporting of emissions data.
- Increased penalty provisions for polluters.
- Grants to local community groups to support capacity building and active engagement in implementation of the Program.

AB 617 includes near-term deadlines to ensure expeditious action to reduce exposure to criteria pollutants and air toxics and protect public health. By October 1, 2018, CARB must prepare a statewide monitoring plan and State emission reduction strategy, and identify the most impacted communities for deployment of community monitoring networks and development of community action plans. By October 2019, air districts must adopt community action plans and have deployed the community monitoring networks. By January 1, 2019, air districts must also adopt a schedule for accelerated retrofit of controls on large industrial facilities throughout the State. CARB staff will be working closely with local air districts, community members, environmental organizations, and regulated industries to reduce harmful air emissions as the Community Air Protection Program is developed and implemented.

Clean Vehicle Rebate Project (CVRP)

The State provides monetary rebates to California residents for the purchase or lease of clean vehicles, (zero-emission and near-zero emission). CVRP helps get the cleanest vehicles on the road in California by providing consumer rebates to partially offset the higher initial cost of these advanced technologies. Per vehicle rebate amounts are based on consumers' income and vehicle technology. Beginning in March 2016, the rebate amount increased by $1,500 for lower-income consumers in an effort to broaden the adoption of ZEVs by low-income residents. In September 2016, the Legislature and Governor Brown signed Senate Bill 859, (Committee on Budget and Fiscal Review, Chapter 368, Statutes of 2016), requiring an additional rebate of $500 for low-income consumers and prioritizing rebate payments for low-income consumers. The low-income consumer rebate amounts and eligibility thresholds (i.e., household incomes of less than or equal to 300 percent of the federal poverty level) are prescribed in SB 859.

In December 2017, CARB approved the Fiscal Year 2017- 2018 Funding Plan for Clean Transportation Incentives, which included $140 million from GGRF to fund the CVRP, and an additional $25 million from GGRF specifically for CVRP rebates for low-income applicants.

Enhanced Fleet Modernization Program (EFMP) and EFMP Plus-Up Pilot Project

The EFMP, authorized by AB 118 (Nunez, Chapter 750, Statutes of 2007), consists of two component programs, a vehicle Retirement-only, and a Retire and Replace Program. EFMP has two funding sources; a one-dollar surcharge on vehicle registration provides funding for the Retirement-only program, while the GGRF funds the majority of the Retire and Replacement Program.

The Retirement-only program complements the State's existing vehicle retirement program, or Consumer Assistance Program, and was developed by CARB in consultation with the California Bureau of Automotive Repair (BAR). This statewide program provides $1,500 for low-income consumers to scrap older vehicles that meet certain eligibility guidelines.

The Retire and Replace component of EFMP, (including the EFMP Plus-Up Pilot Project), focuses on promoting advanced technology vehicle replacements, both new and used, to low-income consumers who retire and replace their older vehicles by providing additional financial assistance for the purchase of cleaner vehicles. This CARB program is currently available to low-income consumers residing in the South Coast Air Quality Management District and San Joaquin Valley Air Pollution Control District. In the next few years, expansion of the EFMP Plus-Up pilot project for low-income residents is expected to include the Bay Area, Sacramento, and San Diego regions.

In December 2017, CARB approved the Fiscal Year 2017- 2018 Funding Plan for Clean Transportation Incentives, which included $10 million from the GGRF and $10 million from the Volkswagen Settlement Agreement to fund EFMP Plus-Up.

Financing Assistance for Lower-Income Consumers

Vehicle financing can be a significant barrier to vehicle ownership for many lower-income consumers, especially for the purchase or lease of zero-emission and near zero-emission vehicles, which have higher upfront costs. The goals of this pilot project are to help improve access to affordable financing mechanisms for the purchase or lease of these vehicles. Financing includes vehicle buy-down grants or point-of-sale incentives, low cost consumer loans, and loan-loss reserves allowing lenders more flexibility in offering loan assistance to low-income consumers.

A local pilot project is currently benefiting lower-income residents in and near disadvantaged communities in the Bay Area. The pilot project, though still new, has already provided information useful in developing the recommendations included in this guidance document.

In addition, a $6 million grant solicitation released in May 2017 funds statewide and local financing projects. Beneficial State Foundation has been competitively selected to administer a statewide project, with an expected launch in early 2018. The statewide project provides financial help to low-income residents by facilitating low-cost loans for the purchase of new or used clean vehicles. The financing assistance for the consumer is a low interest loan combined with a vehicle price buy-down. The lender partnership will use a loan loss reserve to mitigate the risk to the bank. Initially, the project focuses on low- and moderate-income individuals in underserved and disadvantaged communities in Oakland, Fresno and Los Angeles, followed by project expansion to lower-income individuals statewide. The project is intended to complement both CVRP and EFMP Plus-Up Projects.

In December 2017, CARB approved the Fiscal Year 2017- 2018 Funding Plan for Clean Transportation Incentives, which included $10 million from the GGRF and $10 million from the Volkswagen Settlement Agreement to fund Financing Assistance for Lower-Income Consumers.

One-Stop-Shop for CARB's Equity ZEV Replacement Incentive Projects
This project includes development of a web-based application tool with support for phone and mail applications that pre-qualifies consumers based on income eligibility and other specific project requirements. The application tool would also inform consumers about available clean vehicle technology and incentive options, and increase program efficiency to make it easier for consumers to access and stack relevant incentives in a simple, clear manner.

A second component of the project involves a coordinated community-based outreach effort to increase program participation by lower-income consumers. It complements existing project efforts to ensure potential low-income participants are aware of the one-stop-shop and how to access CARB's clean vehicle incentives.

In December 2017, CARB approved the Fiscal Year 2017- 2018 Funding Plan for Clean Transportation Incentives, which included $5 million from the Volkswagen Settlement Agreement to fund one-stop-shop.

Clean Mobility Options Pilot Projects
This pilot project is designed to help individuals in disadvantaged communities benefit from the use of zero-emission and near zero-emission vehicles without the responsibility of car ownership costs, and to offer alternate modes of clean transportation that encourage the shared use of clean transit, vanpools and other mobility options.

Currently, two pilot projects are being developed and administered. The City of Los Angeles is starting a new car share service for low-income residents in six neighborhoods in disadvantaged communities currently underserved by car sharing. Also, in 2017 the Sacramento Metropolitan Air Quality Management District launched a new car share service for low-income residents at three disadvantaged community multi-unit subsidized housing projects.

In addition, a solicitation was released in early 2017 for $6 million seeking new car sharing and mobility option projects to help serve residents in disadvantaged communities. All of these pilot projects will provide clean transportation options for low-income residents and help identify unforeseen barriers and provide information on potential solutions that can be incorporated in future years for possible expansion opportunities.

In December 2017, CARB approved the Fiscal Year 2017- 2018 Funding Plan for Clean Transportation Incentives, which included $22 million from the GGRF for Clean Mobility Options for Disadvantaged Communities.

Agricultural Worker Vanpools Pilot Project
This pilot project expands access to clean transportation vanpools for agricultural workers in the disadvantaged communities, including substantial investments within the San Joaquin Valley. This project supports the statutory goals of SB 1275 and SB 350 by prioritizing funding for clean transportation, increasing access to vanpools in

disadvantaged communities, and funding installation of charging infrastructure at multi-unit dwellings in disadvantaged communities.

CARB approved $3 million in Fiscal Year 2016 -17 funds from the GGRF for this project. In December 2017, CARB approved the Fiscal Year 2017- 2018 Funding Plan for Clean Transportation Incentives, which included an additional $3 million in funding from the same source, for a combined total of $6 million for the Agricultural Worker Vanpools Pilot Project.

Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) and Low Nitrogen Oxides (NOx) Engine Incentives

HVIP and Low NOx Engine Incentives provides vouchers to help California fleets purchase advanced technology trucks and buses, (including transit and school buses), and plays a crucial role in accelerating early market penetration of clean technologies with the goal of transforming the California fleet.

Zero-Emission Truck and Bus Pilot Commercial Deployment Project

CARB designed its zero-emission truck and bus pilot commercial deployment projects to support larger-scale deployments of zero-emission heavy-duty vehicles, thereby accelerating their introduction and market penetration. Funded projects include battery electric transit and school buses and supporting charging infrastructure, battery electric delivery trucks, and fuel cell electric transit buses with supporting hydrogen fueling infrastructure. CARB approved $23.4 million from the GGRF in Fiscal Year 2014-15 and $60 million from the GGRF in Fiscal Year 2016-17 for funding 9 projects that cover areas of the Central Valley, Bay Area, and coastal and inland regions in Southern California.

Rural School Bus Pilot Project

The Rural School Bus Pilot Project provides funding for zero-emission and near zero-emission school buses. Applicants in small air districts are prioritized for funding, followed by those in medium air districts, and then large air districts. This pilot project will also provide funding for new conventional-fueled school buses that use renewable fuels. This project provides immediate benefits to school children by reducing their exposure to both cancer-causing and smog-forming pollution, while also reducing GHG emissions. Information from this project is important to understanding access, adoption, and deployment of clean school bus transportation in low-income and disadvantaged communities. In Fiscal Year 2016-17, $15 million in funds from the GGRF was approved by CARB for this project, and the subsequent grant solicitation drew over $125 million in applicant requests for funding. In December 2017, CARB approved the Fiscal Year 2017- 2018 Funding Plan for Clean Transportation Incentives, which included $10 million from the GGRF to fund the Rural School Bus Pilot Project.

Innovative Clean Transit Program

Increasing access to public transit is especially important for residents living in low-income and disadvantaged communities who may have limited mobility choices. Providing clean transit and mobility options must include a long-term transition

to zero-emission technologies while continuing to provide transportation options as part of sustainable communities strategies. The transformation of the transit fleet is an important step to accelerate the use of advanced technologies in heavy-duty vehicles to meet air quality, climate, and public health goals.

Adopted in 2000, the existing rule, the Fleet Rule for Transit Agencies, requires reductions in both criteria pollutant emissions and exposure to air contaminants from urban buses and transit fleet vehicles. The transit fleet rule also established a demonstration and purchase requirement of zero-emission technologies for large transit agencies. The Innovative Clean Transit program aims to accelerate deployment of the cleanest transportation options and access to public transit and mobility options. The key goals of the Innovative Clean Transit Program include:

- Support the near-term deployment of zero-emission buses where the economics are viable and where transit service can be maintained or expanded.
- Secure binding commitments from the State's transit providers for a long-term vision for transitioning to zero-emission technologies across all transit modes.
- Partner with transit agencies to pilot innovative approaches to improve access to transit systems with zero-emission first- and last-mile solutions.

<u>CalEPA Environmental Justice Program</u>
The CalEPA Environmental Justice Task Force coordinates the compliance and enforcement work of CalEPA's boards, departments and office in areas of California that are burdened by multiple sources of pollution and are disproportionately vulnerable to its effects. The task force develops new initiatives in communities where increased environmental compliance has the potential to have the greatest impact, (examples include the 2013-14 Fresno Initiative, and 2015-16 Los Angeles Initiative).

This program also supports CalEnviroScreen 3.0, a screening methodology used to help identify California communities that are disproportionately burdened by multiple sources of pollution. The program supports Environmental Justice Small Grants which help eligible 501(c)(3) non-profit community organizations and federally-recognized Tribal governments address environmental justice issues in areas disproportionately affected by environmental pollution and hazards. In 2016, this program awarded $1.1 million in grant funding to 25 projects, with a maximum amount per project of$50,000. This doubled the amount awarded from the last cycle in 2015.

California Energy Commission
Through the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP), the Energy Commission has been the State's principal investor in charging and refueling infrastructure for zero emission vehicles in California. The ARFVTP was created through AB 118, which authorizes the Energy Commission to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the State's climate change policies. The program has an annual budget of

up to $100 million. Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) re-authorized the program through January 1, 2024.

The Energy Commission's portfolio of investments spans all aspects of fueling infrastructure, including market and needs assessments, alternative fuel production, infrastructure deployment planning and installations, and manufacturing. ARFVTP activities also support the Energy Commission's research and development investment in advanced charging technologies and complement its analysis of future transportation energy demand.

ARFVTP also funds regional readiness plans for zero-emission vehicles including both electric and fuel cell electric vehicles. One of the goals of these plans is to increase community diversity, including increasing outreach and participation by disadvantaged communities. In October 2016, the Energy Commission announced the availability of up to $1.9 million in grant funds to support new and existing planning efforts for zero-emission vehicles.

In March 2016, with ARFVTP funds the Energy Commission and the National Renewable Energy Laboratory began joint development of a statewide infrastructure demand model to assess the mass market refueling needs of a growing number of plug-in electric vehicles. Currently, staff uses the Electric Vehicle Infrastructure Projections ("EVI-Pro") Model in collaboration with ARB, CPUC, and others to assess how potential changes in localized travel or needs and overall market trends affect the need for charging to support initiatives like the ZEV Mandate and SB 350 Transportation Electrification policies.

In November, 2016, under the ARFVTP, the Energy Commission released a solicitation seeking a block grant recipient to design and implement up to $200 million in grant funds that will enable a streamlined process for quicker and focused deployment of electric vehicle charging projects throughout California.

Integrated Resource Plans

SB 350 requires the Energy Commission to develop guidelines for, and to review, Integrated Resource Plans from Publically Owned Utilities. Integrated Resource Plans are electricity system planning documents intended to ensure that publically-owned utilities lay out the resource needs, policy goals, physical and operational constraints, and general priorities or proposed resource choices of an electric utility, including customer-side preferred resources. These plans provide a framework to evaluate how utilities have chosen to align with GHG emission reduction targets, in addition to energy and other policy goals outlined in SB 350, including, but not limited to:

- Reductions in electricity sector GHG emissions commensurate with economy-wide reductions of 40 percent from 1990 levels by 2030;
- A Renewables Portfolio Standard of 50 percent by 2030; and
- Energy efficiency, gas use efficiency and vehicle electrification targets.

California Public Utilities Commission

Transportation Electrification Guidance Ruling

The CPUC published the "Guidance Ruling" on SB 350 Applications for Transportation Electrification to assist utilities in developing programs to increase the use of electric power in the State's transportation system. The ruling emphasizes the need for utilities to coordinate their applications with existing transportation and renewable energy planning efforts at other State and regional agencies, and includes "Priority Review" for expeditious actions toward transportation electrification. This ruling builds upon CPUC's prior programs supporting the ZEV Executive Order and subsequent Action Plans and Vehicle-Grid Integration Roadmap.

Originally ordered by the Clean Energy and Pollution Reduction Act of 2015, transportation electrification will provide infrastructure and other programs to encourage the use of grid power for vehicles, vessels, boats, trains, and other mobile pollutant sources.

Low Carbon Fuel Standard (LCFS) Electric Vehicle (EV) Credit Program

The investor-owned utilities' electric vehicle rebate programs began in early 2017. An electrical distribution utility can generate low carbon credits in its service territory for electricity supplied to vehicle chargers in single or multi-family residences. To receive such credits, the Electrical Distribution Utility must meet certain criterion (e.g. use all credit proceeds to benefit current or future EV customers; educate the public on the benefits of EV transportation, including environmental benefits and costs of EV charging, or total cost of ownership, as compared to gasoline). The design of these Investor Owned Utility rebate programs for light-duty EVs do not yet differentiate by income or offer increased incentives due to location within a disadvantaged community. However, outside of the Investor Owned Utility rebate programs, low carbon credits are separately given to local transit agencies for the use of electric buses, light rail, and other low carbon-fueled transit options. The LCFS credit value helps promote opportunities for low carbon transportation across a variety of modes, fuels and income brackets.

Strategic Growth Council

Transformative Climate Communities (TCC) Program

The TCC program was established by AB 2722 (Burke, Chapter 371, Statutes of 2016), and focuses on the development and implementation of neighborhood-level plans that include multiple, coordinated GHG emission reduction projects that provide local economic, environmental, and health benefits to disadvantaged communities. The program is funded through CCI using Greenhouse Gas Reduction Funds administered by the SGC. TCC Implementation Grants will integrate several California Climate Investment supported project types to achieve GHG emissions reductions from reduced vehicle miles traveled, reduced fuel and electricity consumption, waste reduction and recycling, and carbon sequestration. TCC aims to demonstrate how strong community leadership coupled with strategic investments in transportation, housing, greening, and clean energy can simultaneously reduce GHG emissions and enhance economic opportunity and community resilience in California's most impacted communities.

CARB and SGC are coordinating on areas of potential overlap between low-carbon transportation and TCC efforts, especially as it relates to outreach and technical assistance.

California Transportation Commission

Active Transportation Program

The Active Transportation Program, created by Senate Bill 99, and Assembly Bill 101, encourages increased use of active modes of transportation, such as biking and walking, and consolidates several transportation programs into a single program. Program goals include increasing the proportion of biking and walking trips, and increasing mobility and safety for non-motorized users. This program supports regional agencies' efforts to achieve GHG reductions and enhance public health, and commits 25 percent of program funding to disadvantaged communities. Grant funding is separated into three competitive programs: 1) 50 percent for a statewide competitive program; 2) 10 percent to small urban and rural regions with populations of 200,000 or less; and 3) 40 percent to MPOs in urban areas with populations greater than 200,000.

Volkswagen Investment Commitment – Settlement Agreement for Diesel Defeat Devices

Between 2009 and 2015, Volkswagen sold 2.0- and 3.0-liter diesel vehicles in California that used illegal devices to defeat emission tests. To remedy the environmental harm caused by the use of defeat devices, California will receive about $1.2 billion for air pollution mitigation and zero emission vehicle (ZEV) advancement projects in the State. This amount includes about $423 million from a national Environmental Mitigation Trust for projects to reduce NOx emissions from medium- and heavy-duty vehicles, $800 million that Volkswagen will invest in ZEV related programs in the State, and $25 million to support ZEV aspects of EFMP Plus-Up and similar low-income or disadvantaged community vehicle replacement programs.

The Environmental Mitigation Trust provides funding opportunities for specified eligible actions that are focused mostly on "scrap and replace" projects for the heavy-duty sector, including on-road freight trucks, transit and shuttle buses, school buses, forklifts and port cargo handling equipment, commercial marine vessels, freight switcher locomotives, and ZEV infrastructure. Before funds may be expended, CARB must develop a Beneficiary Mitigation Plan describing the eligible mitigation actions. CARB has initiated a public process and is currently developing a Beneficiary Mitigation Plan for approval in 2018.

The ZEV Investment will occur over a 10-year period, and eligible projects include installing zero-emission vehicle fueling infrastructure (for both electric- and hydrogen-powered cars), funding brand-neutral consumer awareness campaigns that will help grow the ZEV vehicle market, and investing in projects such as car-sharing programs that will increase access to ZEVs for all consumers in California, including those in low-income and disadvantaged communities. Volkswagen has submitted one of four ZEV Investment Plans to CARB for approval describing how it proposes to spend the

money in accordance with the requirements of the Consent Decree; each Plan will cover 30 months and cover project spending of at least $200 million.

The California Cycle 1 ZEV Investment Plan is expected to directly address some key recommendations of the SB 350 Barriers to Clean Transportation Access for Low-income Residents report of April 2017, which are 1) to increase funding for supporting infrastructure for low-income residents, 2) to increase residents' awareness of ZEVs by expanding education and outreach, and 3) to maximize economic opportunities and benefits for low-income residents from investments.

Senate Bill (SB) 92, passed in June 2017, further directs how California's Volkswagen funding is to be spent. The legislation directs CARB to strive to ensure that at least 35 percent of California's allocations benefit low-income or disadvantaged communities that are disproportionately impacted by air pollution.

In addition to State projects, innovative and transformative clean transportation projects benefiting low-income residents are underway across the State at the local and regional levels. These projects are taking form through community-based initiatives, local public investments, non-governmental organizations, private sector sponsors, and through combinations of public and private partnerships. Often, these local projects are the catalyst for new ideas and provide an opportunity to pilot clean transportation and mobility concepts, which may lead to the development of new project types or expansion of existing projects at the State level.

In summary, the State programs discussed in this section are positive steps in moving California towards more widespread transportation electrification and increased access for low-income residents. Additional, long-term funding is needed, however, to continue building upon the momentum that has been generated. Ongoing coordination between these SB 350 efforts and related programs is also critical to integrating low-income and disadvantaged community benefits into larger policy and planning decisions.

CHAPTER 4: Recommendations to Overcome Barriers, Next Steps, and Conclusions

SB 350 requires that CARB provide recommendations to increase access to clean transportation and mobility options. As barriers were identified, staff consulted with the various State and local agencies as well as the public and communities to determine what could be done to address them, including through existing processes and activities. Therefore, these recommendations acknowledge and support many efforts already underway to increase clean transportation and mobility access across the State, with the continued goal of ensuring that existing programs evolve over time to reflect critical lessons learned, reduce barriers for participation across programs, and be more inclusive of low-income residents and disadvantaged communities.

Through this effort, it is clear that there is no singular solution to addressing all barriers for increasing access for low-income residents since communities are unique with potentially varying challenges and solutions. Where feasible, CARB has worked to capture the commonalities between communities, such as the need to secure permanent, long-term funding, as means of prioritizing potential solutions. CARB recognizes that to overcome the barriers it will take coordination and resources from all levels of government as well as the local communities. This was the main reason for CARB, the Energy Commission, and the Governor's Office establishing an ongoing Task Force to support SB 350 barriers report implementation activities. Opportunities for SB 350 co-benefits are also associated with the AB 617 Community Air Protection Program and through increased funding for public transportation and clean transportation initiatives authorized under SB 1, (*The Road Repair and Accountability Act of 2017*).

Lead and Supporting Agencies

Recommendations describe lead and supporting roles for State and local government agencies, community-based organizations, and other organizations or groups. Lead agencies are responsible for coordinating closely with the supporting agencies and organizations listed in the recommendations tables, identifying and engaging the appropriate resources, and reporting progress on recommendations to the Governor's Office. The process of identifying existing programs or new measures necessary to meet the goals of the recommendations will be ongoing through the Governor's Office Task Force. Together, the lead and supporting agencies and organizations are identifying where legislative action is required, and the resource needs, timelines and major milestones for implementing recommendations and evaluating implementation success.

Task Force

The Governor's Office convened the SB 350 Task Force in May 2017 which is comprised of State agencies that oversee the State's clean transportation and mobility, energy, housing, and infrastructure programs. The core purpose of the Task Force is to

facilitate multi-agency coordination in implementing CARB and Energy Commission barriers report recommendations. State agencies listed in a lead or supporting role in the CARB and Energy Commission barriers report recommendations attend Task Force meetings. The Task Force will be an ongoing mechanism to coordinate State agencies around implementing the critical SB 350 priorities which are necessary to increase access to clean transportation and energy opportunities.

The guiding principles of the Task Force include:

- Encourage multi-level collaboration, standardization, streamlining, integration, and co-funding opportunities;

- Leverage State and local agency resources and expertise across various programs;

- Ensure State and local entities identify and prioritize best practices to serve and meet the clean transportation and energy needs of low-income and disadvantaged communities;

- Design and prepare a public reporting process to ensure that State and local agencies are transparent in how the State is moving ahead with implementing barriers report recommendations; and

- Develop guiding principles and common measurements to track progress of implementing recommendations over time.

Priority Recommendations

Through the public and community process, CARB has identified many recommendations that would help overcome the barriers across a broad spectrum of clean transportation and mobility options previously identified. These recommendations are supported by observations included in the community case studies and literature reviews described in Appendix B.

However, because of the unique nature of community transportation needs and the magnitude of potential solutions across the State, CARB and the Energy Commission prioritized recommendations through the Task Force and in consultation with communities that can make the most significant difference in low-income and disadvantaged communities over the next two years. These priorities and related recommendations are described further in the following section. Following these are additional recommendations that include continuing ongoing efforts and new recommendations to be implemented in future years.

CARB identified six priority recommendations that will have the biggest impact over the next two years as shown in Table 1.[15] These priorities were discussed and confirmed with case study communities as part of CARB's return visits to these communities in mid-2017 and with the broader stakeholder groups.

In addition, many of the recommendations are closely aligned with the priority recommendations the Energy Commission has identified through the Task Force, including the need for better understanding what can be done to move ahead with clean transportation and energy jobs, training, and workforce development, identifying long-term sustainable funding sources to support expansion of our clean transportation and energy programs, and developing regional one-stop-shops to increase education and outreach. These joint priorities will allow for maximizing resources to increase access to clean transportation and energy access programs for low-income residents and disadvantaged communities across the State. Supporting recommendations are included to further outline the goals.

Table 1: Priority Recommendations for Two-Year Implementation

1. Expand Assessments of Low-Income Resident Transportation and Mobility Needs to Ensure Feedback is Incorporated in Transportation Planning	**Lead**	**Supporting**
a) Directly engage with low-income residents and partner with community-based organizations to leverage community knowledge and established trust. Ensure feedback is incorporated in transportation and land-use planning and investments.	• Caltrans	• Local transportation authorities • MPOs • COGs • Transit Agencies • CTC • CARB • CEC • CPUC • SGC • CDPH • CBOs

15 Recommendations in this document are not listed in order of importance and do not correspond with the table of recommendations in the Draft Guidance Document released in April 2017. Progress is anticipated in each of these areas in parallel, with a specific focus on the recommendations that allow substantial impacts in the next two years.

b) Broadly engage community-based organizations, low-income residents, and affordable housing groups as part of clean transportation access community needs assessments, outreach, and regional one-stop-shops. Provide communities with clean transportation and mobility option outreach and educational materials and receive feedback on additional needs.	• CARB	• Air districts • CalAHA[16] • CBOs • CEC • SGC • CDPH • City and county housing authorities • Colleges and universities
c) Leverage the Caltrans Division of Transportation Planning study and SB 1 Sustainable Communities Planning Grant Program to further understand community needs and develop guidance for local and regional agencies.	• Caltrans	• Local transportation authorities • CARB
d) Focus on local needs of low-income residents and disadvantaged communities as part of Regional Transportation Plan development and other local, State, and regional planning and direct funding to gaps identified.	• CTC	• CARB • Caltrans • CEC • CDPH • MPOs
e) Determine potential methods of incorporating needs assessments into the SB 375 Sustainable Communities Strategies and Regional Transportation Plan process (e.g. September 2018 report to the legislature on best management practices for MPOs, pursuant to SB 150).	• CARB	• Caltrans • Local transportation authorities • CBOs
f) Develop and provide a template of needs assessment activities for potential inclusion in the 2018 Regional Transportation Plan update.	• Caltrans	• CTC • CARB
g) Modify the language in understanding low-income resident clean transportation and mobility needs Statewide in the next Transportation Plan.	• Caltrans	• CTC • CARB

16 California Affordable Housing Agency (CalAHA)

2. Develop an Outreach Plan Targeting Low-Income Residents across California to Increase Residents' Awareness of Clean Transportation and Mobility Options		
a) Develop an outreach plan targeting low-income residents in rural, urban, tribal and disadvantaged communities. Ensure outreach efforts include State and local transportation, energy, health, and air quality programs. Design outreach and education materials, including online resources, which are specific to community needs across the State and relevant, accessible, practical and available in the spoken languages of those communities.	• CARB • CEC • CPUC • SGC	• CBOs • CTC • Caltrans • Go-Biz • CDPH • Local entities • Air districts • DMV • IOUs • POUs
b) Link education and outreach on clean transportation and mobility options to health education, particularly in support of active transportation and opportunities to increase physical activity to promote a healthy and active lifestyle from childhood. Leverage existing health education and physical activity programs at schools.	• CARB • CDPH	• Schools
3. Develop Regional One-Stop-Shops to Increase Consumer Awareness and Provide Technical Assistance		
a) Provide targeted outreach and technical assistance for low-income residents. Develop a single application tool for consumers to access incentive projects such as EFMP Plus-Up, CVRP, and Financing Assistance for Lower-Income Consumers. Eventually include additional transportation, energy, and housing programs targeting low-income residents. Expand coordinated community-based outreach efforts utilizing local resources to increase program participation.	• CARB • CEC • SGC	• CPUC • CSD • CNRA • HCD • Water Resources • CBOs

4. Develop Guiding Principles for Grant and Incentive Solicitations to Increase Access to Programs and Maximize Low-Income Resident Participation		
a) Develop guiding principles for State and local agencies to incorporate into designing competitive solicitations and promote inclusive and equitable competition for clean transportation and energy investments. Streamline and simplify grant and incentive application process. Ensure rural and tribal communities along with small businesses, governments, and organizations can better compete for these investments, and that there is increased access to funds for low-income and disadvantaged communities.	• CARB • CEC • CPUC • SGC	• CTC • Caltrans • DGS • CDPH
b) Streamline and simplify the clean transportation grant and incentive application process for State and local funds in a way that promotes inter-agency coordination and enables more low-income residents to apply and benefit from programs. Provide coordinated technical assistance across agencies and local programs.	• CARB • CEC	• Air districts • Caltrans • CBOs • CPUC • CTC • SGC
c) Better understand community needs through the local assessments and regional one-stop-shops to determine if there is a need for bilingual grant and incentive applications and a paper process, in addition to online.	• CARB • CEC • SGC	• CPUC • CSD • CNRA • HCD • CBOs
5. Maximize Economic Opportunities and Benefits for Low-Income Residents from Investments in Clean Transportation and Mobility Options by Expanding Workforce Training and Development		
a) Strategize and track progress of clean transportation and mobility option access workforce goals.	• CLWA	• CARB • CEC • CPUC • CSD • CDPH • WIBs

b) Prioritize incentive projects that demonstrate local economic benefits for low-income residents such as job creation, training opportunities, and workforce development, including for youth.	• CARB	• CDPH • Local agencies
c) Expand access to vocational training, pre-apprenticeship, and apprenticeship programs to support clean transportation jobs and workforce development in low-income and disadvantaged communities, especially for youth.	• CWDB • CCC[17]	• ETP • CARB • CEC • Community colleges (ATTE)[18] • DIR[19] • CWA • EDD[20] • Labor unions
d) Expand opportunities and create connections for good quality clean transportation jobs in low-income and disadvantaged communities. Work with local and regional government partners to maximize job creation benefits, including through targeted hiring.	• CWDB	• CARB • CEC • ETP • Community colleges (ATTE) • Local agencies • Regional agencies

17 California Conservation Corps (CCC)

18 Advanced Transportation Technology & Energy Center (ATTE)

19 California Department of Industrial Relations (DIR)

20 Employment Development Department (EDD)

6. Identify and Expand Funding and Financing for Clean Transportation and Mobility Projects, including Infrastructure, to Meet the Accessibility Needs of Low-income and Disadvantaged Communities		
a) Identify long-term funding needs and sources to be utilized to support implementing SB 350 recommendations and meet the demand for expanding clean transportation and mobility programs for all Californians. Work with the Governor's Office and legislature to identify potential new, creative funding mechanisms. Work with State and local elected officials, as well as private businesses and universities, need to work together leverage existing funding sources to the extent feasible.	• CARB • CEC • CPUC • CTC • Caltrans	• SGC • Air districts
b) Ensure State and local funding is dedicated to the clean transportation and mobility access needs of low-income residents and disadvantaged communities, as identified through the community needs assessments and related efforts across the State, including in rural and tribal communities. Review the geographic distribution of funding and potentially opportunities for maximizing participation and access for low-income residents.	• CARB • Caltrans • CTC	• SGC • Air districts

Continue Implementation of Existing Projects

Recommendations that support current CARB and other State and local agency activities to address the barriers and increase clean transportation access for low-income residents and disadvantaged communities are provided in Table 2. In addition, these efforts continue to provide valuable lessons learned for multiple clean transportation and energy programs, including how we can better incorporate community needs into transportation policies and investments.

Table 2: Recommendations to Continue and Expand Existing Ongoing Efforts

	Lead	Supporting
Light-Duty Vehicle Ownership Projects a) Expand, develop, and implement used and new light-duty vehicles ownership programs, including creative financing mechanisms, such as point-of-sale incentives and low-cost loans, available to low-income consumers, and make modifications as necessary to improve access.	• CARB	• Air districts • CBOs • STO
b) Fund and expand used and new light-duty vehicle retire and replace EFMP and EFMP Plus-Up projects.	• CARB	• Air districts • BAR
Zero-Emission Vehicle Infrastructure - Multi-Unit and Family Dwellings c) Support and incentivize charging infrastructure installation, including in existing multi-unit or family dwellings, for low-income residents. Track deployment of utility infrastructure investments in low-income and disadvantaged communities, with an emphasis on multi-unit dwellings, to identify impacts and potential to enable the market in these areas.	• CARB • CEC • CPUC	• Air districts • Caltrans • GO-Biz • IOUs • POUs
Zero-Emission Vehicle Infrastructure - Public and Private Spaces d) Support charging infrastructure installation in public and right of way locations (e.g. rest stops, Park and Rides) and private locations (e.g. places of employment, grocery stores, and hospitals) to increase access for low-income residents and disadvantaged communities across the State.	• Caltrans	• CARB • CEC • Cities and counties

Zero-Emission Vehicle Readiness Plan e) Require cities and counties across the State to update or develop new zero-emission vehicle readiness plans, and that these plans address widespread transportation electrification in order to ensure low-income households and disadvantaged communities have access to ZEV infrastructure and facilities.	• OPR	• CARB • CEC • Cities and counties • CTC • MPOs • SGC
Low Carbon Fuel Standard EV Rebates f) Monitor and assess the Low Carbon Fuel Standard Electric Vehicle Rebate program as it matures to determine potential adjustments to rebates for low-income residents and disadvantaged communities.	• CARB • CPUC	• IOUs • POUs
Low-Cost Clean, Renewable Electricity for Electric and Fuel Cell Vehicle Owners g) Develop electricity rates that minimize the cost of clean, renewable power to low-income residents who purchase or lease zero-emission vehicles.	• CPUC	• IOUs • POUs • CARB
Heavy-Duty Vehicles and Supporting Infrastructure h) Fund programs that pay or reduce the cost of zero-emission and near zero-emission vehicles used in public transportation and school bus fleets.	• CARB	• Air districts • CalSTA • Caltrans • School bus owners
i) Fund programs that incentivize charging and fueling infrastructure for public transportation and school bus fleets.	• CARB • CEC • CPUC	• Air districts • Caltrans • CTC • School bus owners • Transit agencies
Transformative Clean Transportation and Mobility Projects j) Fund programs that create or expand transformative clean transportation car sharing, ride sharing, bike sharing, vanpooling, micro-transit, and other mobility options.	• CARB	• Air districts • Caltrans • CEC • CBOs • SGC • Transit agencies

Discounted or Free Transit Passes k) Pay for programs that direct funding toward increased availability of discounted or free transportation passes for public transportation, car sharing, bike sharing, micro-transit, and other transformative clean transportation and mobility options.	• CARB	• Caltrans • Transit agencies • Air districts • COGs
Convenience of Public Transportation l) Identify and implement policies that increase the frequency, reliability, and safety of clean public transportation options.	• Caltrans	• Transit agencies
m) Promote affordable housing in transportation planning and investments with connectivity to multiple clean options in support of SB 375.	• CHD • CSD	• CARB • CEC • Colleges and universities • CTC • Local agencies • SGC
Bicycle and Pedestrian Improvements n) Expand the implementation of pedestrian and bicycle infrastructure improvements, including for separated bikeways or cycle tracks (Class IV bikeways) and mobility hubs.	• Caltrans	• CARB • Cities and counties • CTC • SGC
Understand Bicycle and Pedestrian Needs o) Develop District-level plans to identify bicycle and pedestrian needs and priority projects on or parallel to the State highway system, with a focus on closing gaps and building complete, comfortable regional networks.	• Caltrans	• CARB
Bicycle and Pedestrian Safety p) Develop and expand the systemic safety analysis program to address infrastructure that poses a higher risk to pedestrians and bicycles.	• Caltrans	• CARB

q) Support new active transportation projects and policies that promote safety and increased pedestrian and bike facilities. Expand funding for current projects including the California Transportation Commission's Active Transportation Program, Complete Streets, and Safe Routes to School.	• Caltrans	• CARB • CTC • CHP • DMV • MPOs • OTS • SGC
r) Fund the Pedestrian Safety Improvement Monitoring Program to identify and address pedestrian related high collision concentration locations, with the long-term goal of substantially reducing pedestrian fatalities and injuries on the California State Highway System. Develop and implement a Bicycle Safety Improvement Monitoring Program.	• Caltrans	• CARB
Understand Community Impacts s) Design clean transportation and infrastructure projects to avoid substantial burdens, such as physical or economic displacement of residents or businesses in low-income and disadvantaged communities or increased exposure to toxics or other health risks.	• CARB • Caltrans	• CARB • CalEPA • MPOs • State and local agencies

Additional Recommendations

Recommendations provided in Table 3 are included because they are critical to continue to increase access to clean transportation and mobility options for low-income residents and disadvantaged communities across the State. These recommendations will be considered for implementation after progress is made on priority recommendations. The schedule for implementation will be developed and based upon discussions with the Task Force and stakeholders. CARB anticipates review of recommendations to be ongoing in order to determine if there are additional actions that should be taken to meet the goals of increasing access.

Table 3: Additional Recommendations For Implementation in Future Years

	Lead	Supporting
Green Mobility in Schools a) Develop a green mobility in schools concept to address air quality concerns and increase awareness in low-income and disadvantaged communities. Couple charging infrastructure with zero-emission vehicle incentives, working with OEMs, dealers, air districts, etc. Increase exposure of students, small business, and communities to zero-emission technology.	• CARB	• School Districts • CDE • CEC • CPUC • SGC • GO-Biz • CAPCOA • STO
Binding Commitments to Purchase Transit Buses b) Secure binding commitments from the State's public transportation agencies to purchase and transition to zero-emission and near zero-emission buses.	• CARB • Caltrans	• Transit agencies
c) Secure binding commitments from school bus fleet owners across the State to purchase and transition to zero-emission and near zero-emission school buses and install supporting charging and fueling infrastructure in vehicle yards and maintenance facilities.	• CARB	• Air districts • School bus owners
Local City and County Sale Taxes d) When local city and county sales taxes address local transportation and land-use planning needs are adopted, ensure there is a specific allotment of funding dedicated to clean transportation projects prioritized towards low-income and disadvantaged communities.	• OPR21	• Cities and counties • CARB

21 California Governor's Office of Planning and Research (OPR)

Diverse Payment Options e) Secure and direct funding toward increasing the availability of diverse fare payment options for low-income residents. Allow for cash loading options for payment cards. Consider the local needs of the community, and potential lack of access to credit and internet service.	• OPR	• Caltrans • Regional transit agencies • Cities and counties • CARB • Air districts
Educational Curriculum f) Develop and expand education curriculum on clean transportation, including biking, walking, driver safety, and technologies for elementary, high school, and college students.	• CalEPA • CARB	• School districts • Air districts • Caltrans • CTC • OTS • CHP

Metrics for Success

CARB is currently working with the Task Force to develop metrics to measure and track progress in increasing access for low-income residents and disadvantaged communities over time. CARB anticipates that these metrics will follow best practices and build from existing activities, such as the Caltrans Active Transportation Program and Statewide Transit Strategic Plan, the Metropolitan Transportation Commission's performance targets, and California Department of Public Health's access and equity indicators.

Metrics will be developed in close collaboration with the Energy Commission, and will complement the energy equity framework and indicators that are in the process of being finalized, and were presented in draft in the Energy Commission's *Draft Staff Report, California Clean Energy Equity Framework and Indicators*.[22] It is critical that these metrics define progress in implementing SB 350 recommendations and clean transportation programs from the community perspective, consistent with the methodology of this Guidance Document, to allow for benefits to be understood and realized for all residents. Therefore, CARB anticipates the public process for SB 350 implementation will include providing updates to the public and soliciting feedback from communities, environmental and advocacy groups, and community-based organizations that work closely with residents, and stakeholders.

22 California Energy Commission (CEC), 2017, available at: http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-08/TN217611_20170515T154916_California_Clean_Energy_Equity_Framework_and_Indicators.pdf

Next Steps

The SB 350 effort, including the work of the Governor's Office Task Force, will be ongoing as CARB, the Energy Commission, and other lead and supporting agencies move ahead with implementing the recommendations. Some of these activities include:

- Continue coordinating with State and local agencies, the public, stakeholders, and communities. A public process could include joint CARB and Energy Commission meetings or workshops to ensure progress in increasing clean transportation and energy access. In addition, CARB and Energy Commission will hold work group discussions on implementing recommendations, additional one-on-one meetings with stakeholders, and coordination with community-based organizations and low-income residents on recommendation progress and metrics for success;

- Continue working with the Governor's Office, the Legislature, Energy Commission, other relevant State and local, regional, and metropolitan planning and transportation agencies, air districts, environmental organizations, environmental justice, equity, and advocacy groups to help expand, or modify as necessary, current successful programs. Create new programs that address transportation barriers to further prioritize access for low-income residents and disadvantaged communities to clean transportation and mobility options. Identify areas where additional funding is needed, especially based on lessons learned from expanding local community needs assessments;

- Develop metrics through a public process to measure progress towards increasing access to clean transportation and mobility options;

- Continue to work through the Task Force to identify long-term funding needs and sources to be utilized to support implementing the recommendations; and

- Work in collaboration with the Task Force and the public to develop a reporting process for implementation progress.

Conclusions

When implemented, the recommendations in this Chapter will increase access to clean transportation and mobility options for low-income residents and disadvantaged communities, and bring the State closer to reaching our air quality, climate change, and public health goals. Current efforts across the State are working to move California towards a clean transportation and energy future, however, additional steps are necessary in order to ensure progress continues. CARB will continue to consider additional refinements to existing programs based on lessons learned from this SB 350 effort and other efforts.

Further community engagement and feedback is essential in supporting the ongoing SB 350 implementation process, in addition to continuing to build a stronger understanding of community needs. Ongoing stakeholder engagement is critical to

ensure all Californians benefit from the transformation to clean energy and transportation.

Appendix A: Public Process

To better understand the barriers and opportunities to clean transportation and mobility option access, CARB staff undertook a public process throughout low-income and disadvantaged communities in California to hear directly from community members and clean transportation advocates what issues and barriers they encounter. CARB and the Energy Commission integrated public processes where feasible, given the importance of connecting access to clean transportation and affordable energy for low-income residents and disadvantaged communities.

Staff appreciates and thanks community residents, community-based organizations, community advocacy and environmental organizations, and other stakeholders for dedicating time and resources participating in this effort. Input and feedback from the community meetings summarized in this appendix is included in the Guidance Document analysis of barrier categories and reflected in staff's recommendations. While each of the communities exhibited unique characteristics, several common themes were present among them. Top themes among communities included the following:

- The higher cost of new and used clean vehicles is an affordability barrier to ownership. Increase clean vehicle and charging infrastructure incentives for low-income residents, and improve incentive and education outreach to low-income consumers. Multi-language outreach is needed, especially Spanish.
- Unacceptable commute times, chronic delays, lack of weekend and evening service, and lack of regional connectivity are reliability barriers to using public transit.
- Fear of crime, injury and personal safety are overarching accessibility concerns and deterrents to using active transportation (biking, walking), and public transportation.
- Subsidized vanpools, shuttles or carpools were suggested by residents for groups of commuters going to the same work location (e.g., hotel, industrial site, agricultural facility), and as a transportation accessibility solution for off-hours shift workers, or for addressing parking issues.
- The absence of dedicated pedestrian sidewalks and bicycle facilities, and unsafe conditions created by high vehicular traffic speeds and volumes creates a multiage accessibility barrier that deters many low-income residents (adolescents, adults, persons with disabilities, and elderly), from walking and biking.
- Transportation and mobility needs vary among low-income communities. Statewide community-based assessments should be a continuing component of this effort moving forward.

The steps below were included in CARB's public process:

1. Meetings in Low-Income and Disadvantaged Communities: CARB engaged in community-based roundtable meetings, participated in Environmental Justice Advisory

Committee (EJAC) local community meetings, and held numerous individual meetings with community-based organizations, environmental groups and various State and local agencies.

2. Case Studies of Four Communities: CARB evaluated four low-income communities, representing rural, urban and tribal regions, through meetings hosted by community-based organizations. In these meetings, staff had the opportunity to hear directly from low-income residents. Case studies also included a literature review component to further understand the regional setting, community characteristics, and community transportation profile. Information from the meetings and literature reviews were used to identify transportation barrier and opportunities, and provide recommended actions to increase clean transportation access.

3. Additional Literature Reviews: In addition to those above, CARB conducted literature reviews for an additional seven low-income communities. While more limited in scope than the case studies, the reviews were nonetheless of value and may lead to further study of these communities in subsequent project phases. Low-income communities were selected from throughout the State that are representative of urban, suburban, and rural settings.

4. Research Project Reviews: Current and proposed CARB-sponsored research projects and other transportation-related research relevant to the SB 350 goals were identified and reviewed.

5. Ongoing Stakeholder Coordination: CARB has maintained ongoing, informal dialogue with key stakeholders during development of the guidance document and recommendations. CARB provided stakeholders with early review drafts, asking for feedback and input that went into developing the public drafts.

The case studies and literature reviews are contained in Appendix B: Case Study and Literature Review Information, while research projects are in Appendix C: Research Projects.

Process Initiation

This section describes how the public process was initiated, what meetings where held, and what groups participated. Meetings included the project kick-off call, public roundtable meetings, community-based meetings associated with case study development, EJAC community-based meetings, the public comment period, and ongoing consultation with the Energy Commission and other participating agencies.

The public process began in early 2016 when staff contacted various local, regional, and metropolitan planning and transportation agencies, air districts, environmental organizations, environmental justice, equity, and advocacy groups. CARB took a multifaceted approach to outreach for this effort to maximize input and foster continued collaboration. A description of each step in CARB's process is provided in more detail below.

Project Kick-Off Conference Call
On February 3, 2016, CARB held a project kick-off conference call with Charge Ahead California campaign steering committee members, many of whom are also part of the SB 535 Coalition, in addition to other stakeholder groups. The purpose was to introduce the SB 350 effort, explain the statute's requirements, and discuss expectations for outcomes with the stakeholders. Participants also discussed a plan to guide outreach efforts, leading to the development of a distribution list and a dedicated informational website on upcoming meetings and project-related information.

Public Roundtable Meetings
CARB held two public roundtable meetings to discuss barriers, opportunities, and recommendations to increase clean transportation access and mobility options for low-income residents and those in disadvantaged communities. These meetings provided an opportunity to speak collaboratively with the stakeholders engaged in the SB 350 effort and other related ARB programs, and discuss their input interactively. Both meetings were held in Sacramento on the following dates:

- March 30, 2016
- June 1, 2016

<u>First Roundtable Meeting Summary</u>
The March 30, 2016 roundtable meeting was held in Sacramento at the CalEPA headquarter building, with a conference call available for those unable to physically attend. The purpose of the meeting was to introduce the project, and ask for feedback on potential barrier categories to clean transportation and mobility options.

CARB invited guest speakers for this meeting to ensure multiple perspectives on transportation issues communities across California face, and to encourage open discussion. CARB provided an overview of the SB 350 requirements, proposed barrier categories to review in 2016, and existing transportation and accessibility research. Speaker comments are summarized below:

Sekita Grant (Greenlining Institute) provided an overview of the geographic and regional differences facing low-income residents that should be considered given Guidance Document's statewide focus. Additionally, she stressed that each community around the State will have its unique challenges. She discussed current transportation and infrastructure, and how it relates to overall accessibility for low-income residents to employment, goods and services, etc.

Bahram Fazeli (Communities for a Better Environment) provided an overview of community needs and the importance of working at the local level with community-based organizations to ensure transportation and mobility requirements are better understood.

Creighton Randall (Shared-Use Mobility Center) provided an overview of the importance of connecting clean transportation policy and implementation.

The following themes, observations and issues were discussed:

- Roads must be in good condition to allow for viable clean transportation and mobility options in low-income and disadvantaged communities.
- Rural communities need to be considered in SB 350 discussions.
- Communities have long-term needs and policies in place, but not funding. GGRF investments are limited and do not reach in all areas of the State. A focus on rural and tribal areas, and Census Designated Places is needed, but often critical data is lacking and the tools used for making important decisions exclude these vulnerable locations of the State.
- Across California, public transit maintenance is facing funding cuts and experiencing funding shortfalls. Funding sources in additional to GGRF is needed to meet the needs of these projects.
- Stakeholders support the framework of this study to be a "guidance document," designed as a path forward to a better understanding of how to increase access to clean transportation and mobility options for low-income residents. Low carbon transportation projects and investments require partnerships with community-based organizations that already have an established sense of trust in low-income and disadvantaged communities.
- A community driven approach to understanding barriers to clean transportation access is critical. However, CARB should also keep in mind that community-based organizations have limited resources and time. As such, stakeholders requested that staff make sure resources and opportunities are provided that allow communities to engage effectively.
- Caltrans needs to be engaged in the SB 350 effort because they control State dollars used for transportation projects. Infrastructure is important. More planning agencies need to be involved and providing input. Highway placement can cut off and marginalize communities, and reduce residents' mobility.
- The study goal should focus on recommendations to get low-income residents into biking and walking, and other alternative mobility options and out of cars, or into clean vehicles.
- CARB should highlight other programs that may complement this effort, such as the Energy Commission's vehicle ownership surveys to be completed in 2017, which can provide important insight into what influences zero-emission vehicle purchases. In addition, the Energy Commission has been providing funding for zero-emission vehicle readiness planning which can provide important insight into this effort.
- Traditional funding sources for clean transportation and mobility projects are not yet in synch with policy-level goals. Funding needs to be coordinated across agencies and long-term commitments made across multiple funding sources (State, local, federal, and private).
- There is a substantial need for biking infrastructure in rural areas, and a corresponding need for safety education.

- Zero-emission ferries should be considered as a transportation option for review when evaluating communities in the San Francisco Bay Area.

Second Roundtable Meeting Summary

On June 1, 2016 a roundtable meeting was held in Huntington Park in southeast Los Angeles, at the Communities for a Better Environment headquarters building. The purpose of the meeting was to provide the public with an update on the project and discuss barriers, opportunities, and recommendations to increase clean transportation access for low-income residents. Staff invited guest speakers for this meeting to ensure multiple perspectives, and to encourage an open discussion.

Staff facilitated the discussion, first providing an overview of the SB 350 project and the importance of ensuring the study included reviewing and understanding multiple clean transportation and mobility options, such as bilking and walking. Laurie Waters from the California Transportation Commission then provided an overview of the Active Transportation Program, and current efforts underway to increase active transportation in disadvantaged communities.

The meeting continued with breakout sessions allowing focused discussions on different barrier categories, including:

- Transportation Planning, Infrastructure, and Investment
    - *Facilitated by: Jeanie Ward-Waller, California Bicycle Coalition*
- Accessibility and Convenience of Transportation Options, Including Public Safety and Access to Technology and Banking, and Reliability and Affordability of Transportation Options
    - *Facilitator: Ashley Dunn, California Air Resources Board*
- Community-based Needs, Including Public Health and Safety
    - *Facilitator: Bahram Fazeli, Communities for a Better Environment*
- Transportation Education and Outreach, Including Awareness, Attitudes, Interest and Potential Opportunities
    - *Facilitator: Violet Martin, California Air Resources Board*

The main observations and feedback from this meeting included:

- Communities need additional assistance and resources to apply to State and local grant programs.
- Selection criteria for grant funding needs to place less emphasis on conventional credentials, (i.e., college degrees, experience, etc.). The selection criteria for grant funding needs to consider whether a project can be replication in additional area (leapfrog approach to minimize resources and share lessons learned across communities).

- Interagency coordination is a barrier in and of itself, in addition to local government planning.
- "Not in my backyard" philosophies can be a barrier to using cleaner public transportation or mobility options.
- The perception that roads are meant only for cars needs to be changed to allow for adoption of active transportation, including safe paths and pedestrian spaces.
- Even though SB 350 mentions barriers to zero-emission and near-zero emission, CARB should focus on zero-emission technology now rather than a partial transition to near-zero. Transformational changes are needed to increase access for low-income residents.
- Different communities have different clean transportation needs.
- This project is an opportunity for CARB to gain familiarity at the local and regional levels and change perception of clean transportation through pilot projects.
- Needs assessment/evaluation are necessary for non-infrastructure projects
- When considering improved public transportation, 'anti-displacement' strategies are vital to eliminate the risk of gentrification.
- Better integration with other low-income programs (e.g. one-stop-shop) is critical to streamline grant and rebate application processes.
- User experience and comfort/safety are often a barrier to access clean transportation options.
- Linking technology with clean transportation and mobility programs (e.g. provide smart phone with application), is necessary.

Community-Based Meetings

Staff attended community meetings hosted by four community-based organizations. These meetings were held on a regular basis with low-income residents in attendance. This allowed staff to leverage a forum that promoted collaboration and trust, and did not increase workload for the communities. CARB provided information on clean transportation and mobility options within the community, the Guidance Document being developed, and received input and feedback on barriers and opportunities to increase access as described in Appendix B. Following completion of the draft Guidance Document, staff returned to these communities to present the barrier study findings and seek additional comments on the draft Guidance Document recommendations. The community-based meetings were as follows:

- Huntington Park, Los Angeles County: June 1, 2016; follow-up August 30, 2017
- Huron, Fresno County: August 11, 2016; follow-up August 31, 2017
- Redwood Valley, Mendocino County: August 31, 2016; follow-up September 14, 2017
- North Richmond, Contra Costa County: September 6, 2016; follow-up September 5, 2017

Environmental Justice Advisory Committee Community-Based Meetings
The California Global Warming Solutions Act of 2006, (Assembly Bill 32; Stats. 2006, chapter 488) calls for CARB to convene an Environmental Justice Advisory Committee (EJAC), to advise the Board in developing the Scoping Plan, and any other pertinent matters in implementing AB 32. The bill requires that EJAC consist of representatives from communities within the State that experience the most significant exposure to air pollution, including, but not limited to, communities with minority populations or low-income populations, or both.

Throughout the summer of 2016, EJAC and CARB held a series of community-based meetings throughout California on the State's climate plan. These meetings included presentations and discussion groups featuring the major topics and sectors of the State's climate plan, including industry, transportation, agriculture and more. CARB's SB 350 staff attended eight of these meetings and gained information applicable to the barriers study, including meeting attendees' responses to questions concerning their travel behavior and perceived gaps in current transportation access. Below is a listing of these meetings:

- July 11, 2016: San Bernardino
- July 14, 2016: San Diego
- July 19, 2016: Oakland
- July 28, 2016: Modesto, Fresno, and Bakersfield (via video conference system)
- July 26, 2016: South Los Angeles
- July 29, 2016: Sacramento
- October 22, 2016: Brawley
- November 4, 2016: Orleans

Information from these meetings was used in CARB's analysis of barrier categories and in the development of Guidance Document recommendations. A summary of participants' comments is contained in the list below.

<u>San Bernardino</u>
- Use innovative outreach and education strategies when targeting low-income residents.
- The higher cost of electric vehicles is a barrier to ownership.
- The range of clean cars and available charging options is not clear to residents.
- Accessibility, affordability, and safety are significant concerns that keep some residents from using public transit services.

<u>San Diego</u>
- Organized transportation is needed for hotel service, shift, and shipyard workers, who cannot access public transportation during their working hours, and are not comfortable using on-demand services at night or in early morning hours. Informal vanpools run by workers could be a solution to this need.

- Parking is a major concern for the community and local businesses. Companies often do not provide employee parking or transportation, forcing employees to park throughout the neighborhood. This includes the largest shipyard in San Diego.
- A positive example is a shipyard that provides rented parking spaces at a hotel on the edge of Downtown San Diego, and shuttle services to its shipyard employees. Additional employee shuttles also run from the California-Mexico border where many workers live.
- Employee shuttles have the potential to be zero-emission vehicles and serve as a model for other employers. Employers could contribute towards the purchase and maintenance of the clean vehicles. The U.S. Navy has expressed interest in a program like this, providing an interesting opportunity for federal/State collaboration.

Oakland

- The State should increase incentives and conduct better outreach for electric vehicles. More ride sharing options are needed that take into account language barriers and financial constraints, (such as the lack of a credit card).
- Better coordination among agencies is necessary.
- Accessible, reliable, and frequent, public transit is vital.
- Residents lack awareness and understanding of Climate Change Investment Programs, including funding availability for consumer programs and qualifications for funding.

Modesto, Fresno, and Bakersfield

- Affordable, reliable, safe, and frequent public transit is needed. Clean, green buses are necessary.
- Infrastructure improvements for active transportation are vital to adoption.
- Low-income individuals need higher incentive amounts for electric vehicles.
- Encourage utilization of alternative workweek schedules to minimize work trips.
- Fund agricultural worker vanpools. Prioritize commercial vehicle replacements over personal vehicles because they provide more benefit to environmental justice communities.

South Los Angeles

- Affordable, reliable, and frequent public transportation is necessary in addition to better connectivity.
- Safe bike lanes, biker safety and paved sidewalks are vital.
- Increase car sharing or other mobility options, and eliminate barriers associated with needing credit/debit cards.
- Increase funding for low-income residents to afford electric.
- More education on electric vehicle operation and maintenance is necessary.

Sacramento

- Increased incentives for zero-emission vehicles are necessary.
- Bike share incentives and improvement in community infrastructure is necessary.
- Funding availability for advanced technology projects such as creative mechanisms for energy production and passenger and freight transportation is important.

Brawley and Orleans

- Residents want frequent, reliable, affordable and safe transit.
- Residents want improved infrastructure in the community e.g., sidewalks, shaded bus stops and security at the stops, especially late at night and early morning hours.

Consultation with the Energy Commission

Staff consulted with the Energy Commission on the development of this Guidance Document, and anticipates ongoing coordination as each agencies' SB 350 recommendations are developed into implementable actions. When feasible, staff from CARB and the Energy Commission attended EJAC community-based meetings jointly to speak to low-income residents about clean transportation and energy efficiency programs, and seek input on barriers to access. CARB invited Energy Commission staff to attend its public roundtable meetings, and shared information on lessons learned regarding barriers, opportunities, and recommendations from community-based meetings with low-income residents. CARB and Energy Commission staff also met to discuss coordinated release of the barriers reports.

Individual Meetings

Staff organized at least one hundred one-on-one conference calls and meetings with various community-based organizations, environmental groups, State and local agencies and other stakeholder groups to seek input on barriers, opportunities and recommendations for increasing clean transportation access. These meetings complimented and often built upon feedback from low-income residents in the community-based meetings.

Staff values input from community-based organizations and the importance of their roles; from representing a community and its concerns, to identifying barriers and opportunities, and providing important lessons learned through their ongoing community enhancement efforts. The City of Los Angeles, for example, is developing the L.A. City Car Share project to assist low-income individuals in disadvantaged communities. The City of Los Angeles, Office of Sustainability, has developed strong project partners in community-based organizations who are contributing substantially to this project and its success. Staff met with these organizations to seek their input in developing this Guidance Document.

On August 23, 2016, staff met community-based organization representatives from Trust South LA, Koreatown Immigrant Workers Alliance, Salvadoran American Leadership and Education Fund, Shared Use Mobility Center, and Center for Sustainable Energy in Downtown Los Angles. During this meeting, participants voiced

concerns about ensuring car sharing and other mobility projects provide direct benefits to targeted communities, and are not over-ridden by the general public. Concerns about community gentrification also were raised, and the potential for clean transportation projects to result in displacement of existing residents and price them out of their current communities. Residents stated that barriers to active transportation include bike safety and safe walking paths, and that protected bike lanes are necessary. Participants see outreach and education as opportunities to remove knowledge barriers on the types and availability of clean transportation and mobility options, but communication approaches must be culturally sensitive and tailored to the community's characteristics.

Going forward, as SB 350 efforts shift to implementation of the Guidance Document recommendations, CARB will continue individual meetings with stakeholders and community members to continue relationship building and establish dialogue, build upon existing knowledge, and foster an inclusive process.

Appendix B: Case Studies and Literature Reviews

Community-based concerns form the basis of understanding barriers to clean transportation access and mobility options, and were used in formulating the Guidance Document recommendations and actionable measures described in Chapter 4. A theme consistent among stakeholders throughout the outreach process is that transportation and mobility needs vary tremendously throughout California, and are often unique to each community. Stakeholders unanimously recommended evaluations of barriers and opportunities for clean transportation access and mobility options at the local level, prompting CARB to undertake qualitative evaluations on a small number of low-income communities statewide. Limitations on time and resources precluded quantitative transportation analyses, and limited the number of communities CARB could review. Low-income communities were chosen for these reviews based upon stakeholder input and reflect different geographic regions, demographic characteristics, and community types, (such as rural, suburban, urban or tribal). The two methods CARB used to evaluate these communities included case studies and literature reviews. The case study communities include:

Case Study Communities

- Huntington Park
- Huron
- Redwood Valley
- North Richmond

Staff held meetings with community residents and local stakeholders, and reviewed publicly available data and information sources. Two community meetings were conducted in each of the case study communities. The initial meeting took place early in the study development in which staff sought community input on: 1) demographic and other characteristics unique to the community, 2) existing transportation options and barriers, and 3) opportunities and strategies to improve clean transportation access and mobility options. Staff met with community members a second time following release of the Draft Guidance Document. During the second meeting staff presented the Guidance Document findings and explained how the community's concerns were used in developing the Guidance Document's recommendations. Staff also sought community feedback on whether the draft document accurately reflected input received at the first meeting, and whether the community had additional input not previously documented. In addition, staff sought community feedback on the recommendations, including prioritizing them for implementation over the next two years. Lastly, information from the community meetings was supplemented with a literature review of existing planning documents, online census data, online interactive database tools, and other publicly available data and information sources related to transportation access and mobility in the community. The literature review communities include:

Literature Review Communities

- Coachella Valley
- Lemon Hill
- McFarland
- Merced
- Oroville
- Tipton and Woodville

No community meetings were held in these locations and staff's evaluation of these communities consisted of only a literature review of publicly available data and information sources.

The case study and literature review communities follow a similar format, (except for the section on community meetings which applies to case study communities only), and includes the following sections: 1) basis for community selection; 2) regional setting; 3) community characteristics; 4) transportation profile; 5) barriers and opportunities; and 6) recommendations to improve clean transportation access that link to Guidance Document recommendations. For the case study communities, community meetings are described following the transportation profile. The case study communities and literature review communities are presented separately.

Data and Information Sources

Staff used primary government sources for data and information whenever possible. Sources include federal, State, regional, and municipal agencies and organizations, such as the U.S. Census Bureau (federal), Office of Environmental Health Hazard Assessment (State), council of governments and county planning and transportation agencies (regional), and city government departments (local). Information was also obtained from peer-reviewed scholarly journal sources, reputable media outlets and news organizations, and publicly recognized non-governmental and trade organizations. In some cases, information was supplemented through informal communication with community residents, non-governmental organizations, and public and private sector stakeholders.

Community characteristics were obtained primarily through 2010 U.S. Census data. Online, interactive database tools were used in assessing each community's transportation profile and economic opportunity profile.

The Regional Opportunity Index online mapping tool, developed by the University of California, Davis, Center for Regional Change,[23] is an interactive index used to query social and economic opportunities in California communities. This tool was used in describing community and transportation characteristics in the case study and literature review communities. The tool contains data layers to assess parameters such as

23 U.C. Davis, 2014

education access, job availability, job growth and job quality, access to housing, mobility and transportation, and health and environment in a chosen community. The stated goal of the Regional Opportunity Index is to help target resources and policies toward people and places with the greatest need.

Transportation profiles were developed using proprietary datasets owned by the nonprofit research and advocacy organization Center for Neighborhood Technology (CNT).[24,25] CNT's stated mission includes improving urban economies and environments across the U.S., and promoting more livable and sustainable communities. Before undertaking the assessments, CARB evaluated CNT's AllTransit tool and the Housing + Transportation Affordability Index (H+T) tool and concluded that both tools are widely used and regarded as accurate by practitioners in the field of transportation planning.

Case Study Communities

This section contains the four case study communities that staff evaluated by engaging directly with low-income residents. Throughout CARB's public process, low-income residents and community-based advocates stressed that selection of these communities for targeted review is a starting point, and that additional and more comprehensive analyses of the State's low-income and disadvantaged communities are needed to adequately address the range of transportation barriers low-income residents' face. As a result, one priority recommendation in Chapter 4 of this Guidance Document is to continue local community needs assessments as part of the SB 350 efforts moving forward.

Huntington Park

Huntington Park was selected for a case study because it is a low-income community with a history of poor air quality resulting from factories in the neighboring cities of Vernon and Commerce. Based on Huntington Park's pollution burden and population characteristics, it ranks in the highest percentile of California communities impacted by pollution in CalEnviroScreen 3.0.[26] CARB was also able to leverage its relationship with Communities for a Better Environment and draw upon the organization's existing knowledge and community relationships to reach out to the low-income residents here.

Regional Setting

Huntington Park is an urban community located within the South Gate-East Los Angeles Census Class Code. The Census Class Code indicates an active incorporated place

24 CNT, *H+T Index*, 2016
25 CNT, *AllTransit*, 2016
26 OEHHA, 2017

that does not serve as a county subdivision equivalent. Huntington Park is an industrial center located about five miles southeast from downtown Los Angeles

Community Characteristics

Huntington Park was incorporated in 1906 and encompasses an area just over three square miles. The population from the 2010 census is 58,114 people and the average age is 29.8 years.[27] The population is overwhelmingly Latinos and Mexican immigrants (97 percent), with non-Hispanic whites, Asian and Blacks making up the remaining ethnicities.[28]

Transportation Profile

As of 2010, there are 14,597 households in the community, and vehicle ownership is 1.5 per household. The average vehicle miles traveled per household is 13,960 and the majority of work commuters drive (78 percent), of which 63 percent drive alone and 15 percent carpool. Public transit is used by 14 percent of workers, while biking is used by 1.4 percent and walking is used by 5 percent.[29] The H+T Index rates Huntington Park as having good access to public transportation (7.5 of 10) and compact, very walkable neighborhoods (8.8 of 10).[30] Huntington Park's ratings on these two metrics was highest of all the case study and literature review communities evaluated. The Regional Opportunity Index[31] rated Huntington Park "Low" for job availability, "Lowest" for job quality, and "Low" for job growth.

Active Transportation: There are currently no bike paths, lanes or routes within Huntington Park, however the 2014 Draft Bicycle Transportation Master Plan includes policy recommendations to improve bike access for transit commuters who ride bikes to connect to transit, children who ride bicycles to school, and college students who commute by bike.

Public Bus and Rail Services: Two local public bus systems operate within Huntington Park, HP Express and COMBI. COMBI runs a fixed loop throughout the city, while HP Express has fixed routes. In addition, a Dial-A-Ride program is available to eligible (elderly and disabled) Huntington Park residents. Rail services are limited; there are no Los Angeles County Metropolitan Transportation Authority Metro locations in the city, however, the Metro Blue Line's Slauson Avenue and Florence Avenue stations are located approximately 0.25 and 0.3 miles west of Huntington Park within unincorporated Los Angeles County. The closest Amtrak station is located 6 miles from Huntington Park in Los Angeles.

27 U.S. Census Bureau, 2010
28 U.S. Census Bureau, 2010
29 U.S. Census Bureau, 2010
30 CNT, H+T Index, 2016
31 U.C. Davis, 2014

Ride Sharing: Currently no bike-share or car share programs are operating in Huntington Park.

Clean Vehicle Incentives: In the Huntington Park zip code 90255, 34 vehicle rebates were issued as of October 2, 2017 under the State's Clean Vehicle Rebate Project (CVRP) clean vehicle purchase incentive, (18 plug-in hybrid electric vehicles and 16 battery electric vehicles), for a combined incentive total of $76,000.[32]

EFMP offers State incentives to qualifying low-income residents for the retirement of a high-emitting vehicle and replacement with a cleaner vehicle. This program is available through the South Coast Air Quality Management District. Within the Huntington Park zip code, as of June 2017, five residents have participated in the program, with incentives totaling $28,500[33] and as of October 2017, one $23,000 voucher has been issued under the Hybrid and Zero-Emission Truck and Bus Voucher Incentive (HVIP) for incentivizing a clean truck purchase.[34]

Community Meetings

Staff had two community-based meetings with low-income residents in the southeast Los Angeles community of Huntington Park; both meetings were hosted by Communities for a Better Environment. Communities for a Better Environment is a community-based organization with a presence in Los Angeles and the Bay Area, focused on empowerment, environmental justice, clean energy and healthy communities.[35] This group played a large role in shaping the language in SB 350 to increase access to clean transportation and mobility options for low-income residents. The first meeting was on June 1, 2016, and the second meeting was on August 30, 2017.

June 1, 2016 Meeting

This meeting provided an opportunity for staff to receive input directly from low-income residents on the barriers they face in accessing clean transportation and mobility options. Twenty-four community members attended the meeting, most from Huntington Park, but others from neighboring cities such as Maywood, Walnut Park, and South Gate. The meeting was conducted only in Spanish, with a meeting logistics coordinator from Communities for a Better Environment serving as a moderator and translator when needed. Staff conducted the discussion and asked questions to engage community

32 CSE, 2017

33 Data from Nicholas Nairn-Birch, CARB Project Lead for EFMP. 26 October 2017

34 Data from Ryan Murano, CARB Project Lead for HVIP. 30 October 2017

35 See the Communities for a Better Environment website, available at: http://www.cbecal.org/

members. A Spanish-speaking staff member took notes to document the discussion. A photo from the Huntington Park meeting is presented in Figure 3.

Figure 3: Huntington Park Community Meeting, June 1, 2016

Community Transportation Barriers and Opportunities

During the meeting, residents described the following barriers to transportation access in their surrounding communities:

- More frequent bus stops, additional routes, and more direct routes are needed. The wait times between service are too long (exceeding 30 minutes to an hour).
- Dial-a-ride ceased operation on the weekend, limiting usability for many of the residents and this is how residents travel the most to run errands, etc.
- Safer streets and roads are needed to walk and ride bikes throughout the community. Assessments need to be done of what the specific needs of the community are to ensure solutions meet those needs.
- Safer end of trip bike facilities are needed, such as secure bike parking and storage locations, at schools, workplace, and public spaces.
- Community members believe the price of electric cars was not affordable and needs to be reduced to be within their financial reach.
- There is distrust of dealerships, and an overall feeling on the part of residents that costs are inflated especially when buying specialty vehicles, (such as zero-emission and near-zero emission), or with incentives.
- Payment plans for vehicles being purchased need to be more tailored to low-income individuals based on their individual disposable income availability.
- Discounts or subsidies are needed for transit. Community members want to learn more about clean transportation and mobility options.
- Participants expressed overall uncertainty about electric vehicle technology.

- Participants also lacked knowledge on the State's equity-based vehicle incentives such as EFMP, and how to access this funding.

Community Recommendations to Increase Clean Transportation Access
Residents provided the following recommendations to increase access to transportation and mobility options, which also applies to clean transportation:

- More frequent bus stops and more bus routes with direct service.
- Safer streets to walk and safer roads to ride bikes.
- Broader access to clean transportation information, including benefits and cost savings.
- More direct bus services to allow for easier access to medical appointments.
- Incentive opportunities to purchase or lease electric vehicles.
- Education and outreach to learn about the programs that can be accessed via South Coast Air Quality Management District Retire and Replace Program, Clean Vehicle Rebate Project vouchers for low-income individuals, and other incentive projects for infrastructure.
- Additional policies that will invest in active transportation and walking paths.
- Easier access to infrastructure to support electric vehicle adoption. Some residents suggested communal locations for charging.

August 30, 2017 Meeting
Staff returned to Huntington Park a second time following release of the Draft Guidance Document to meet with residents again. Staff presented the draft study findings and recommendations, and described recommendations prioritized for implementation over the next two years. Staff also described how the community's feedback was incorporated into the Guidance Document recommendations. Six of the 23 participants had also attended the 2016 meeting. The meeting included a group exercise in which participants identified their preferred modes of transportation, and identified sources that adversely affect the community's air quality. Additional community comments received at this meeting have been incorporated into the final set of recommendations.

Additional Community Recommendations to Increase Clean Transportation Access
Residents provided the following recommendations to increase access transportation and mobility options, which also applies to clean transportation:

- Support for community electric bike sharing projects and charging infrastructure;
- Reduced public transit fares for all low-income residents, not just elderly;
- Increased bike safety using one-way streets, separated bike lanes;
- Increased walking safety and comfort by providing shade, benches; and
- Increased security guard presence may encourage more active transportation.

The recommendations below, (as provided in Chapter 4), are some examples of those intended to address barriers to clean transportation access in Huntington Park:

- *Table 1, recommendation b.* Broadly engage community-based organizations, low-income residents, and affordable housing groups as part of clean transportation access community needs assessments, outreach, and regional one-stop-shops. Provide communities with clean transportation and mobility option outreach and educational materials and receive feedback on additional needs.
- *Table 2, recommendation j.* Fund programs that create or expand transformative clean transportation car sharing, ride sharing, bike sharing, vanpooling, micro-transit, and other mobility options.
- *Table 2, recommendation k.* Pay for programs that direct funding toward increased availability of discounted or free transportation passes for public transportation, car sharing, bike sharing, micro-transit, and other transformative clean transportation and mobility options.
- *Table 2, recommendation n.* Expand the implementation of pedestrian and bicycle infrastructure improvements, including for separated bikeways or cycle tracks (Class IV bikeways) and mobility hubs.

Huron

This community was selected as a case study representing a rural and predominantly agricultural community, that has been historically challenged in meeting the transportation and mobility needs of its residents. Huron is identified by CalEnviroScreen 3.0[36] as being in the top 85 percent of worst pollution impacted California communities. CARB has an existing relationship with the Valley Latino Environmental Advancement Project (Valley LEAP), who arranged the community meetings. Valley LEAP has participated in development of CARB's Low Carbon Transportation investments and staff wanted to leverage this relationship and their in-depth knowledge of the Huron community to reach out and hear from low-income residents about their experiences accessing advanced clean technology transportation.

Regional Setting

The City of Huron is a rural community located on the west side of Fresno County. The county's population was 930,450 during the 2010 census, with a population density of 150 people per square mile. In 2010, when the State's overall poverty rate was 15.8 percent, 26.8 percent of the county's residents lived in poverty—nearly 25,000 residents—and was the highest poverty rate of any California county.

Community Characteristics

Huron is a small farming community of 6,754 residents, of which over 96 percent are Hispanic. The community's population is dynamic and changes according to the

36 OEHHA, 2017

seasons. For example, the population is known to double during the harvest season from March to October.[37] Huron is located five miles east of Interstate 5 and is about an hour west of the City of Fresno or north east of Paso Robles on the Pacific Coast. The city is compact and comprises 1.34 square miles, with a public library, elementary school, and a middle-school; the nearest public high school is 25 miles away in Coalinga. The Housing and Transportation Affordability Index indicates Huron residents have low access to jobs (2.9 out of 10), and only 2 percent of residents commute by public transit.[38]

Transportation Profile

Active Transportation: AllTransit indicates that Huron residents do not walk to work but almost 4 percent bike.[39] The Huron Local Government Commission indicates the importance of biking and walking in Huron and the potential the city has to support and increase the use of active transportation modes. There is a need for street connectivity for biking and walking, safety improvements, and supporting biking and walking facilities.[40]

Public Bus and Rail Services: The Fresno County Rural Transit Agency operates demand response and fixed route inter-city bus services that serves Huron and provides connections to other rural cities and the Fresno area, such as Coalinga. Service is generally available Monday through Friday from 7:00 a.m. to 5:30 p.m. There is also a demand response service via Huron Transit, which is a part of the Fresno County Rural Transit Agency. This service is available from 6:00 a.m. to 6:00 p.m. Monday through Friday. An intercity express service runs a few times between 7:00 a.m. and 7:30 p.m.[41]

Ridesharing: The Fresno Council of Governments, through funding made possible by passage of Measure C, offers subsidizes Agricultural Worker Vanpools, Commuter Vanpools, and incentive cash and prize programs for carpools that originate within Fresno County. The organization also sponsors a ridesharing website called ValleyRides.com that provides web-based information on air, rail, bus, taxi and other transportation services, and downloadable maps of bicycling and walking trails. The San Joaquin Valley Air Pollution Control District Vanpool Voucher Incentive Program to encourage vanpooling to reduce single occupant vehicle commuters within the San Joaquin Valley Air Basin.

Clean Vehicle Incentives: Within the Huron zip code 93234, as of October 2017 one vehicle rebate has been issued under the State CVRP for clean vehicle purchases, (one

37 Huron Local Government Commission, 2014
38 CNT, *H+T Index*, 2016
39 CNT, *AllTransit*, 2016
40 Huron Local Government Commission, 2014
41 Huron Local Government Commission, 2014

plug-in hybrid electric vehicle), for an incentive total of $3,500.[42] Two residents participated in vehicle replacements through EFMP as of June 30, 2017 with incentives totaling $14,000,[43] As of October 2017, no vouchers have been issued under the Hybrid and Zero-Emission Truck and Bus Voucher Incentive (HVIP) for incentivizing a clean truck purchase.[44]

Community Meetings

Staff attended two community-based meetings in Huron with low-income residents. Both were hosted by the Latino Environmental Advancement Project (Valley LEAP), a prominent nonprofit, community-based organization focused on empowering communities to achieve environmental and climate justice in the San Joaquin Valley. The first meeting occurred on August 11, 2016, and the second was on August 31, 2017.

August 11, 2016 Meeting

Staff provided information on transportation options and clean transportation programs available in Huron and surrounding areas, and received input from low-income residents regarding barriers they face in accessing clean transportation and mobility options. Eighteen community members were in attendance, mostly from Huron, but also from the neighboring cities of Stratford and Avenal. The meeting was conducted only in Spanish. A coordinator from Valley LEAP moderated the meeting and discussed the areas of biggest opportunity for the community to increase clean transportation access. Staff led the discussion and engaged directly with community members. A CARB and community note taker documented the discussion from multiple perspectives. A photo from the Huron community meeting is presented in Figure 4.

42 CSE, 2017

43 Data from Nicholas Narn-Birch, CARB Project Lead for EFMP. 26 October 2017

44 Data from Ryan Murano, CARB Project Lead for HVIP. 30 October 2017

Figure 4: Huron Community Meeting, August 11, 2016

Community Transportation Barriers and Opportunities

Residents described the following barriers to transportation access:

- Many of Huron's residents are retired agricultural workers, living on a fixed monthly income. Needs of the community need to be assessed and understood based on this demographic.
- The residents are not familiar with clean transportation programs and incentives, or are not eligible if they live in certain parts of Avenal or Coalinga that are not within a census tract or zip code designated as a disadvantaged community.
- There is a lack of charging infrastructure in the San Joaquin Valley.
- Public transportation is not convenient and therefore not used frequently.
- Bus routes are limited, and public transportation overall is not timely or reliable. Buses are typically running behind and drive fast down rural roads, making residents feel unsafe.
- An average trip to Fresno for residents of Huron and surrounding communities takes hours round trip and is very expensive. Currently, the community relies on informal vanpooling or ride sharing, which can be costly (up to $100 for a ride to the local valley children's hospital). There is a need to empower members of the community to increase clean transportation access. Residents argued that a dispatch service is needed to maximize the number of rides or "raites" that community members can take and reduce the costs over time.
- Residents lack knowledge on EV technology, clean car makes and models, costs and access. Community members felt the price of electric cars was more reasonable than they thought, and wanted to better understand the technology and what it can do. Many had questions on how electric vehicles are charged, and whether they can be charged using a standard outlet.

- Given the large elderly population, medical transportation is critical. This is a huge barrier for the community. Current medical transport services are limited to 4 times a month and only available for some types of appointments, which is restricting. Taxi scrip is discounted for seniors, but is still very expensive and tends to only be used by Huron residents for emergency purposes.
- School transportation is also a major concern. School buses are also not reliable and make it difficult to get children to school on time. Sometimes students are waiting for the bus from 6 am and ride until 8 am and are sometimes late to school. Parents found that taking students to afterschool practice or activities and picking them up is nearly impossible.
- There is a lack of supporting infrastructure for walking and biking. Speeding vehicles, and large commercial trucks and tractor trailers on the road make active transportation dangerous. Many of the roads are too narrow for biking and walking infrastructure. There are not places to park and lock bikes.
- Roadways in Huron are not well maintained. For example, in the rainy season water does not drain well from the roads; they are not in a good state of repair.

<u>Community Recommendations to Increase Clean Transportation Access</u>
Residents provided the following recommendations to increase access transportation and mobility options, which also applies to clean transportation:

- Provide funding for and formalize vanpooling to make it more broadly available to residents.
- Provide bike safety and security education to students and employers.
- Improve punctuality of public transportation.
- Increase the number of school buses serving the student population.
- Make clean transportation information widely available in Spanish and update information routinely.

August 31, 2017 Meeting
Staff returned to Huron to meet with residents following release of the Draft Guidance Document. Staff presented the draft study findings and recommendations, and described recommendations prioritized for implementation over the next two years. Staff also described how the community's feedback was incorporated into the Guidance Document recommendations. Additional community comments received at this meeting have been incorporated into the final set of recommendations.

<u>Additional Community Recommendations to Increase Clean Transportation Access</u>
Residents provided the following additional input on the community's transportation challenges:

- Two school buses are not enough to serve the student population. In addition to reliability concerns, school bus frequency is insufficient.

- Personal safety keeps residents from walking, particularly in areas of town that lack sufficient lighting.
- Many of the shade trees died because of drought, making the lack of shade worse.
- Residents' listed the priorities for Huron as: 1) safety, 2) clean cars, 3) biking and walking infrastructure and shade, 4) walking trails, and 5) education – introducing information at an early age.

The recommendations below, (as provided in Chapter 4), are some examples of those intended to address barriers to clean transportation access in Huron:

- *Table 1, recommendation 2a*. Develop an outreach plan targeting low-income residents in rural, urban, tribal and disadvantaged communities. Ensure outreach efforts include State and local transportation, energy, health, and air quality programs. Design outreach and education materials, including online resources, which are specific to community needs across the State and relevant, accessible, practical and available in the spoken languages of those communities.
- *Table 1, recommendation 2b*. Link education and outreach on clean transportation and mobility options to health education, particularly in support of active transportation and opportunities to increase physical activity to promote a healthy and active lifestyle from childhood. Leverage existing health education and physical activity programs at schools.
- *Table 2, recommendation c*. Support and incentivize charging infrastructure installation, including in existing multi-unit or family dwellings, for low-income residents. Track deployment of utility infrastructure investments in low-income and disadvantaged communities, with an emphasis on multi-unit dwellings, to identify impacts and potential to enable the market in these areas.
- *Table 3, recommendation a.* Develop a green mobility in schools concept to address air quality concerns and increase awareness in low-income and disadvantaged communities. Couple charging infrastructure with zero-emission vehicle incentives, working with OEMs, dealers, air districts, etc. Increase exposure of students, small business, and communities to zero-emission technology.

Redwood Valley

Redwood Valley was selected for a case study representing both a low-income census designated place and tribal communities. In recognition that tribal populations are not well represented in the U.S. Census, and often excluded or underserved in regional transportation planning, staff chose to focus the two community-based meetings on tribal residents living on tribal lands in and around Redwood Valley. Staff then focused the literature review on the census-designated place of Redwood Valley, which is represented in the U.S. Census.

<u>Regional Setting</u>

Mendocino County is a sparsely populated rural county in Northern California, with a population of about 90,000 residents. Situated along the Pacific Coast, agriculture and tourist services are the main economic drivers, and land use policies focus on

agriculture and forestlands. Air quality in Mendocino County is good; none of the County's census tracts are ranked by CalEnviroScreen 3.0 as among the top (worst) 25 percent most burdened by pollution.[45] These scores reflect relatively good air quality conditions and relatively small populations when compared to the rest of the State.

However, the County ranks near the worst quartile of California counties for residents living below the federal poverty level. Hispanics are the largest ethnic minority in the County, which is also home to eleven federally-recognized Native American Rancherias (Pomo, Yuki, and other native peoples), some of which are located in the County's most isolated locations. There are no dedicated commuter passenger rail service in the County, and the primary source of transportation is personally owned vehicles, with 88 percent of residents owning a vehicle and over 90 percent using a car or truck to commute to work.

Community Characteristics of Redwood Valley Census Designated Place

Redwood Valley, Zip Code 95470, is a census designated place with a population of 1,729 at the time of the 2010 census survey. Redwood Valley is located mid-county about ten miles north of Ukiah and 15 miles south of Willits, and is primarily a residential community surrounded by wine-grape growing operations. Residents are predominantly white (77 percent), with Hispanic (17.6 percent) and Native American (2.6 percent) as the next largest groups; the median age is 42.9 years old.[46] Redwood Valley's pollution burden is ranked low in CalEnviroScreen 3.0 (11 to 15 percent).[47] However, the percentage of residents living in poverty in 2013 was 16.8 percent.[48] Redwood Valley residents face many transportation access barriers. According to the H+T Index,[49] residents budget 36 percent of household income for transportation, compared to a national average of 31 percent. The H+T Index also reports that residents have very low access to jobs (scoring 0.7 on a scale of 10), and are car-dependent with very limited access to public transportation (scoring 0 out of 10). Neighborhoods are low density with limited walkability (scoring 0 out of 10).[50] AllTransit reports that nearly 100 percent (98.9) of Redwood Valley workers commute by car, truck, or van, with less than one percent commuting by other sources.[51] Access to public transit is hindered by limited destinations, low route frequency, and long distances from housing.

45 OEHHA, 2017
46 U.S. Census Bureau, American Fact
47 OEHHA, 2017
48 U.S. Census Bureau, *2010*
49 CNT, H+T Index, 2016
50 CNT, *H+T Index*, 2016
51 CNT, AllTransit, 2016

Transportation Profile of Redwood Valley Census Designated Place

Active Transportation: AllTransit indicates that less than 1 percent of Redwood Valley residents commute by walking or biking.[52] The 2012 Mendocino County Rail-with-Trail Corridor Plan identifies rail-to-trail projects to increase access to walking, bicycling, and equestrians along multiple sections of former Northwestern Pacific Railroad right-of-way.[53]

Public Bus and Rail Services: Redwood Valley is relatively well-served for public transit by Mendocino Transit Authority (MTA), but riders needing off-peak service or who have beginning/end-points that are not near bus stops may experience difficulties accessing the system. Routes between Ukiah and Willits stop in Redwood Valley several times on weekdays, but service ends between 7:00 p.m. and 7:00 a.m. Once-a-day routes offer transit to points further north or south. From Fort Bragg, Ukiah, and Santa Rosa, riders can transfer to routes that run to coastal towns such as Bodega Bay and Point Arena. Santa Rosa is a transfer point for Lake Transit, Sonoma County Transit, Golden Gate Transit, and Amtrak.

A 2015 Mendocino Countywide Transit Ridership Survey noted that the County's Tribal members were much less satisfied with transit service than other groups. Tribal members also indicated that they do not get updated schedule information and are confused about what transit services are available. The survey also revealed 20 percent of respondents have no internet access, 49 percent lack home internet access, and 81 percent do not own smart phones.[54]

Ride Sharing: The Dial-A-Ride and Paratransit services offered by MTA in the County's larger communities are not available in Redwood Valley. Some health agencies and Tribal governments in Mendocino County operate vehicles or vans for clients, but no formal car sharing service currently exists in Mendocino County. Other transit networking companies such as Lyft and Uber are not currently available in Redwood Valley. An MTA project to provide 15-passenger vans to transport farmworkers to fields with volunteer drivers was discontinued.

Clean Vehicle Incentives: Within the Redwood Valley zip code 95470, as of October 2017, eight vehicle rebates had been issued under the State's clean vehicle purchase incentive, (7 plug-in hybrid electric vehicles and one battery electric vehicle), for a combined total of $13,000,[55] and no vouchers have been issued under HVIP, CARB's incentive for clean trucks and buses.[56] The State's EFMP incentive does not cover this geographic area.

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52 CNT, *AllTransit*, 2016

53 MCOG, 2012b

54 Mendocino Transit Authority, 2015

55 CSE, 2017

56 Data from Ryan Murano, CARB Project Lead for HVIP, 30 October 2017

The closest charging sites to Redwood Valley are in Ukiah about 10 miles to the south. The Mendocino Council of Governments (MCOG) is currently working on Phase 2 of its Mendocino County Zero Emission Vehicle Regional Readiness Plan to develop 18 public "opportunity charging" stations approximately 25 miles apart across the county, and allowing electric vehicle travel into more isolated areas. The intent of the public network is to have a system that pays for itself. MCOG is seeking funding to help with site preparation, charging equipment and installation, but operation and maintenance costs would be recovered through payments collected from clean vehicle owners using the stations.[57]

Redwood Valley Meetings with Tribes and Other Community Members

Staff attended two community meetings with low-income residents and tribal members representing many of Northern California's tribes. Meeting participants also included county and local transportation and planning agencies, and nonprofit and community-based organizations. The first meeting was on August 31, 2016 and included both CARB and the Energy Commission's SB 350 barriers studies as part of a larger public roundtable meeting agenda. The second meeting was held on September 14, 2017 and focused on CARB and the Energy Commission's barriers studies under SB 350, and the Affordable Housing Sustainable Communities Program administered by the Strategic Growth Council. Both of the community meetings were at the Consolidated Tribal Health Project Wellness Center in Redwood Valley, and hosted by the North Circle Indian Housing Authority, in cooperation with the Nevada California Indian Housing Authority Tribal Task Force. The North Circle Indian Housing Authority is a consortium of seven California tribes that constructs and manages housing for member tribes and works with tribal leaders to address community issues, provide affordable housing, and promote healthy communities.[58] The Nevada California Indian Housing Authority helps tribes provide quality affordable housing for Native peoples.[59] Staff from the Strategic Growth Council was also instrumental in organizing, planning and outreach for both meetings.

August 31, 2016 Meeting

Twelve tribal members representing five tribes, residents of tribal communities, CARB, the Energy Commission, the Strategic Growth Council, the California Department of Housing Community Development, and California Coalition for Rural Housing attended the meeting. A Nevada California Indian Housing Authority Tribal Task Force member moderated the meeting. Participants were asked to complete a survey of transportation-related questions.

Community Transportation Barriers and Opportunities

Residents described the following barriers to transportation access:

57 MCOG, 2015b; MCAQMD and MCOG, 2013

58 Northern Circle Indian Housing Authority, available at: http://www.nciha.org/

59 National American Indian Housing Council, 2206

Active Transportation:

- Active transportation choices of walking and biking are not only hindered by time and distance but also by roadway safety concerns and the real threat from wildlife to walkers and bikers. Thus, vehicle ownership is a primary necessity.

Public Bus and Rail Services:

- Infrequent routes and lack of service in rural areas are barriers for tribes.
- Providing fixed-route public transit in rural areas is expensive, and despite long-term efforts by the Mendocino Council of Governments to address unmet transit needs, many areas are under or unserved.[60]

Clean Vehicle Incentives:

- Tribal residents report a lack of up-to-date information on financial incentives available to purchase or lease plug-in hybrid or battery-electric vehicles.
- Many expressed concerns about insufficient battery range and lack of public charging infrastructure to support electric vehicle technology in their community.
- Tribes feel overlooked by government agencies, and distrust that incentive programs will deliver on promises.

<u>Community Recommendations to Increase Clean Transportation Access</u>
Residents provided the following recommendations to increase access transportation and mobility options, which also applies to clean transportation:

- Opportunities exist in rural areas to increase attractiveness and appropriateness of active transportation through adoption of Complete Streets protocols and to follow through with proposed bicycle and trail projects, such as the Mendocino County Rail-with-Trail Program.
- Public transit in rural areas could better accommodate riders who need off-peak hours. Subsidized vanpooling or shared car services placed in small communities could supplement transit bus routes for these riders.
- Transportation planners and providers can seek more input from tribal groups about the unique barriers to clean transportation they experience. Planners and providers should also take steps to accommodate the large number of low-income and rural residents who do not have reliable access to the internet, do not own a smart phone, or do not use banking services.
- Public entities could increase outreach and education to tribal members to better inform them of available programs and services. Programs should address tribal needs and make provisions to assist tribes to apply for funding. Project design

[60] MCOG, 2016; MGOG, 2015; MCOG, 2012a

should also incorporate feedback loops to create follow through and ongoing communication.

- More transportation electrification infrastructure is needed in rural areas. Assessments would need to be done on placement of this infrastructure. As California moves to an increasingly electrified transit grid, rural areas stand to become further isolated if charging infrastructure sites are primarily based in high traffic locations.
- Tribal areas present a good opportunity to test all-encompassing "green-cities" projects to install, test, and learn about the latest transportation, energy, and housing technologies.

September 14, 2017 Meeting
Staff returned to Redwood Valley a second time following release of the Draft Guidance Document to meet with residents again. Staff presented the draft study findings and described how the community's feedback was incorporated into the Guidance Document recommendations. This meeting included staff from the Energy Commission's barriers study and staff from the Strategic Growth Council, who also gave presentations. Additional community comments received at this meeting have been incorporated into the final set of recommendations. A photo from the Redwood Valley meeting is presented in Figure 5.

Figure 5: Redwood Valley Roundtable Meeting, August 31, 2016

<u>Additional Community Recommendations to Increase Clean Transportation Access</u>
Residents provided the following additional input on the community's transportation challenges:

- Indian health organizations can no longer support transportation and would like a car share program (similar to San Francisco's City CarShare), but tribes' small size and lack of representation leave them at a competitive disadvantage.

- Residents asked if definitions for “disadvantaged community” and “low-income” have been developed that includes tribes. Allow tribes to self-certify that they are a “disadvantaged” and “low-income” community, or develop new definitions distinct to tribes.
- CalEnviroScreen relies on U.S. Census data and local air quality data, and tribal communities lack representation in both. A community’s CalEnviroScreen score determines how competitive or even eligible it will be for grant funding opportunities. Tribes will be unable to effectively compete until something is done to address this issue.
- Tribal people have a connection to their land and will not move away for jobs; young people need employment opportunities in the area. Look into establishing “Enterprise Zones” on tribal lands to create jobs and spur the economy, while also supporting clean transportation and clean energy use.
- Tribal members pay higher costs for basic necessities and services, (such as drinking water, electricity, etc.), which leaves them with less money for other things.
- Mendocino County is rural and struggling economically, and is unlikely to pass a transportation tax. Outside grant funding is desperately needed to meet unmet transit needs of low-income, transit-dependent residents, but the county’s relatively clean air and small population size make it uncompetitive in CalEnviroScreen for grant funding opportunities. A community’s “transportation access” and “access to health” should be included as selection criteria in State grants, including clean transportation.
- Mendocino College offers a sustainability curriculum and could support training for clean transportation and clean energy jobs. Work with Mendocino College to link its sustainability program with local workforce development in the clean transportation and clean energy sectors.
- Participants strongly endorse a standardized and streamlined grant application process among State agencies.
- Tribes and rural communities often lack internet and even phone access. State agencies must make an extra effort to get information on grants, consumer incentives, meeting, etc. to tribes. Find effective ways to communicate with tribes outside of using the internet, and make an extra effort to ensure tribes are knowledgeable of opportunities.

The recommendations below, (as provided in Chapter 4), are some examples of those intended to address barriers to clean transportation access in Northern California tribal lands in and around Redwood Valley, and in the census designated place of Redwood Valley:

- *Table 1, recommendation 2a*. Develop an outreach plan targeting low-income residents in rural, urban, tribal and disadvantaged communities. Ensure outreach efforts include State and local transportation, energy, health, and air quality programs. Design outreach and education materials, including online resources, which are specific to community needs across the State and relevant, accessible, practical and available in the spoken languages of those communities.

- *Table 1, recommendation 4a*. Develop guiding principles for State and local agencies to incorporate into designing competitive solicitations and promote inclusive and equitable competition for clean transportation and energy investments. Streamline and simplify grant and incentive application process. Ensure rural and tribal communities along with small businesses, governments, and organizations can better compete for these investments, and that there is increased access to funds for low-income and disadvantaged communities.
- *Table 1, recommendation 4b*. Streamline and simplify the clean transportation grant and incentive application process for State and local funds in a way that promotes inter-agency coordination and enables more low-income residents to apply and benefit from programs. Provide coordinated technical assistance across agencies and local programs.
- *Table 2, recommendation a.* Expand, develop, and implement used and new light-duty vehicles ownership programs, including creative financing mechanisms, such as point-of-sale incentives and low-cost loans, available to low-income consumers, and make modifications as necessary to improve access.

North Richmond

North Richmond was selected as a case study community representing an unincorporated, urban, low-income community with a high pollution burden. North Richmond has historic challenges with transportation and gaps in access, particularly for low-income residents. CARB's existing relationship with Community Housing Development Corporation, (administrator of the Light-Duty Financing Assistance Pilot Project in Disadvantaged Communities), was also a selection factor. North Richmond is characterized as a geographically isolated community with deteriorating infrastructure, and with high poverty and crime rates.

Regional Setting

North Richmond is a census designated place in Contra Costa County that is located on the west edge of Contra Costa County between the City of San Pablo and the San Pablo Bay. North Richmond is surrounded by the municipal boundaries of the City of Richmond. A portion of North Richmond is incorporated in the City of Richmond, while the remainder is in unincorporated Contra Costa County, resulting in neighbors having different governments with which to interact in accessing services.[61] North Richmond is considered a disadvantaged community per Cal EPA Senate Bill 535, and is in the top 25 percent of California communities burdened by pollution.[62] The city is urban, about 1.5 square miles in size and is located adjacent to two main interstates, Interstate 80 to

61 Contra Costa County, available at: http://www.co.contra-costa.ca.us/6812/North-Richmond-Annexation-information

62 OEHHA, 2017

the east and Interstate 580 to the south. The main thoroughfare running through the North Richmond area is Richmond Parkway.

Community Characteristics

The population of North Richmond from the 2010 census is 3,717 people, and the population density is 2,400 residents per square mile. The racial makeup of North Richmond was 50 percent Hispanic or Latino, 33 percent African American, 17.1 percent White, 11.6 percent Asian, 0.6 percent Native American, 0.5 percent Pacific Islander, and 32 percent from other races.[63] The median age is 28.7 years. Of 1,237 total housing units, 83 percent were occupied, 45.9 percent by the owner and 54.1 percent by renters. Family households were most common (70.1 percent) and the majority of households were occupied by four or more people (46.7 percent) with 1-person households the second common (26.1 percent). The median household income annually was $31,490, and the per capita income was $15,759. The percent of individuals living below poverty level was 32.3 percent.[64]

Transportation Profile

North Richmond residents own an average of 1.8 vehicles per household. The H+T Index reports that North Richmond has good access to public transportation (rating 6.2 of 10), and compact, walkable neighborhoods (rating 6.4 of 10).[65] This rating, however, may not capture residents' concerns with safety and access to different mobility options. The AllTransit Performance Score (0-10) for North Richmond is 3.9, the score is a look at connectivity, access to land area and jobs, and frequency of service. Transit Connectivity Index (0-100) is 5; it's a measure of the number of bus routes and train stations within walking distance for household in a given area. The majority of North Richmond residents commute by car (81 percent), while 7 percent use public transit, 1 percent commute by motorcycle, 7 percent walk and 2 percent use other means.[66]

Active Transportation: The surrounding City of Richmond currently has approximately 12 miles of on-street bikeway facilities and 20 miles of multi-use paths, consisting of approximately: 28.6 miles of Class I multi-use paths, 6.7 miles of Class II bike lanes, and 5.3 miles of Class III bike routes. There are several bike paths that extend into North Richmond. In a recent announcement on September 15, 2016, the San Francisco Bay Conservation and Development commission approved a 4-year pilot project to open up a new eastbound vehicle traffic lane during afternoon peak hours on the Richmond-San Rafael Bridge and a new bi direction pedestrian /bicycle lane on the upper level.

63 U.S. Census Bureau, 2010
64 U.S. Census Bureau, 2010
65 CNT, *H+T Index*, 2016
66 CNT, *AllTransit*, 2016

Public Bus and Rail Services: The public bus system includes Alameda-Contra Costa Transit (AC Transit) and West Contra Costa Transit Authority (WCCTA), each operates in North Richmond. Richmond has a para transit system with service provided by AC Transit. R-Transit provides door-to-door transportation service to persons with disabilities and seniors (age 55 and older) living in North Richmond as well as other neighboring cities.

There is no train station in North Richmond, the distance from North Richmond to the nearest Bay Area Rapid Transit (BART) station, is approximately 2.5 miles. This is too far to reasonably walk for a commute, and there is no dedicated bike route. There is limited bus service at roughly 20-minute intervals. The bus service may not be convenient for residents to access. The Amtrak station is located at the same place as the BART station so the same challenges face residents in reaching the station for services.

Ride Sharing: The Richmond Car Share pilot project funded by the Metropolitan Transportation Commission (MTC) was available to Atchison Village Residents and City of Richmond employee carpool groups. Atchison Village is a cooperative housing community comprised of 450 apartments. Residents were able to use the car share vehicles to plan transportation trips for personal errands. The Richmond Car Share program aimed to lower greenhouse gas emissions by providing automotive access on an as-needed basis. Due to lack of funding for this project, the project could not be sustained and ceased operations.

Clean Vehicle Incentives: In the North Richmond zip code 94801, 75 vehicle rebates had been issued as of October 2017, under the State CVRP clean vehicle purchase incentive, (21 plug-in hybrid electric vehicles; 52 battery electric vehicles; and 2 fuel cell vehicle).[67]

EFMP is not available in this region, but is expected to expand in the next few years to include the Bay Area.[68] As of October 2017, one voucher under the State's Hybrid and Zero Emission Truck and Bus Voucher Incentive Project has been issued for $69,000 in the North Richmond zip code 95801.[69]

In November 2015, the Community Housing Development Corporation (CHDC) based in Richmond, California was awarded a grant to administer a Financing Assistance Pilot Project for the Air Resources Board. This program improves financing options for lower-income consumers living in disadvantaged communities to purchase hybrid, plug-in hybrid or battery electric vehicles. The project combines a point-of-sale grant with a low interest loan (capped at 8 percent). As of August 31, 2017, 22 consumer

67 CSE, 2017

68 Information provided by Nicholas Nairn-Birch, CARB Project Lead for EFMP, October 2017

69 Data provided by Ryan Murano, CARB Project Lead for HVIP, August 2016

loans are funded, with one loan issued in the North Richmond zip code.[70] The pilot project has a goal to fund 100 loans for clean vehicles over three years. CARB will use project data to better understand the costs, types, and issues associated with vehicles purchased or leased, how well the needs of participating consumers are met, and future opportunities to continue or expand this project. In addition, this data will help inform anticipated funding needs in the future.

Community Meetings

Staff had two community-based meetings with low-income residents in North Richmond. The first was on September 6, 2016, and hosted by the North Richmond Municipal Advisory Council and Community Housing Development Corporation at the Senior Center in North Richmond. The second meeting was on September 5, 2017, hosted by the North Richmond Municipal Advisory Council at the Council's community resource center in North Richmond. The North Richmond Municipal Advisory Committee was established to provide community members with an opportunity to provide feedback to their local supervisors on community issues related to public health, safety, welfare, and public works and planning. The Community Housing Development Corporation was founded in 1990 by local leaders in North Richmond working to improve housing opportunities and better economic conditions for current and future residents.

September 6, 2016 Meeting

This meeting was attended by 15 community members, and moderated by the meeting logistics coordinator for the North Richmond Municipal Advisory Committee and Community Housing Development Corporation. Meeting participants were asked to complete a transportation survey to determine travel behavior and needs within their community. Residents provided the following input on the community's transportation challenges and opportunities:

Community Transportation Barriers and Opportunities

- Community assessments need to be done to ensure there is a better understanding of transportation gaps and residents' needs.
- More bus stops are needed, since existing bus stops are limited with connections to Bay Area Rapid Transit and are not convenient or safe.
- Bus stops are in blighted areas, are not clean and do not have shelter to protect individuals from the elements.
- More bike lanes are needed to promote biking.
- More infrastructure and outreach for advanced technology vehicles is needed.
- More advanced technology vehicles are needed.

70 Data provided by Laura Zaremba-Schmidt, CARB Project Lead for the Financing Assistance Pilot Project, October 2017

Community Recommendations to Increase Clean Transportation Access

- Conduct a community based needs assessment of the community. Identifying where there is a need for transportation improvements in both transit, bike and active transportation, in existing communities.
- Provide access to better transportation options to connect with the BART station. Conduct an analysis to determine if it is better to increase the reach of bus service, frequency of service, or subsidize a transportation network company.
- Determine how to increase interest and safety in active transportation.

September 5, 2017 Meeting

Staff returned to North Richmond to meet with residents following release of the Draft Guidance Document. Staff presented the draft study findings and recommendations, and described recommendations prioritized for implementation over the next two years. Staff also described how the community's feedback was incorporated into the Guidance Document recommendations. Additional community comments received at this meeting have been incorporated into the final set of recommendations.

Community Recommendations to Increase Clean Transportation Access

Residents provided the following recommendations to increase access transportation and mobility options, which also applies to clean transportation:

- Residents want electric transit buses in their communities.
- Residents like the regional "one-stop-shop" idea and considered these types of services a critical resource. There were similar places in North Richmond before, so it would be good to build from the lessons learned in the community.
- A hydrogen fuel station used to be located at the AC Transit fuel yard but it is no longer there.
- How is this clean transportation and mobility process going to engage teenagers? Teenagers do not attend meetings or read flyers, but they need this information?
- Look at opportunities to engage youth on clean jobs such as new, clean automotive technology, clean energy like solar, etc. Get teens off the street. A different level of engagement is needed. Block by block intensity. Work through community-based organizations for outreach. Look at "Richmond Build" as an example.
- Provide opportunities for working-age people with prior criminal backgrounds who have served their time. They need a fresh start and job opportunities.

The recommendations below, (as provided in Chapter 4), are some examples of those intended to address barriers to clean transportation access in North Richmond:

- *Table 1, recommendation 5b.* Prioritize incentive projects that demonstrate local economic benefits for low-income residents such as job creation, training opportunities, and workforce development, including for youth.

- *Table 1, recommendation 5c.* Expand access to vocational training, pre-apprenticeship, and apprenticeship programs to support clean transportation jobs and workforce development in low-income and disadvantaged communities, especially for youth.
- *Table 3, recommendation b*. Secure binding commitments from the State's public transportation agencies to purchase and transition to zero-emission and near zero-emission buses.
- *Table 3, recommendation c*. Secure binding commitments from school bus fleet owners across the State to purchase and transition to zero-emission and near zero-emission school buses and install supporting charging and fueling infrastructure in vehicle yards and maintenance facilities.

Literature Review Communities

This section contains the six communities staff evaluated through literature reviews.

Coachella Valley

The Coachella Valley was selected for a literature review because it contains a high proportion of low-income and disadvantaged communities, and census tracts ranking among the top 25 percent of California communities burdened by pollution.[71],[72] The review is specifically focused on the communities of Indio City, Coachella City, and Oasis, (a census designated place). The selection was also based on strong community feedback requesting inclusion, and results of a report by the California Institute for Rural Studies identifying disadvantaged and environmental justice communities in the valley as Indio, Coachella, Thermal, Oasis, Mecca, and North Shore.[73] The Coachella Valley is unique in having a range of socioeconomic levels and population characteristics, with high- and low-income macro-scale regions adjacent to each other.

Regional Setting

Coachella Valley is a geographically isolated desert valley in Southern California that is approximately 45 miles long and 15 miles wide. It lies approximately 130 miles east of Los Angeles on Interstate 10 in Riverside County. Riverside County encompasses 7,206 square miles and had a population of about 2.1 million and a population density of 303 people per square mile at the time of the 2010 Census.[74] The unemployment rate in Riverside County has decreased consistently since 2011 and was 5.5 percent in June 2017; slightly higher than California's rate of 4.7 percent.[75] The major population

71 OEHHA, 2017

72 U.S. Census Bureau, 2010

73 U.C. Davis, 2013

74 U.S. Census Bureau, *2010*

75 U.S. BLS. 2017

centers are in the west end of Riverside County, where it contains a significant portion of the greater Los Angeles area, and in the Coachella Valley.[76] Coachella Valley makes up 15 percent of the land area of the county and 16 percent of the population. The top, northwest end of the valley is framed by the San Bernardino Mountains, while the bottom, southeast end terminates at the Salton Sea. The climate is arid and desert-like. Temperatures in July average approximately 91˚F, and the average in December is approximately 53˚F. The average annual rainfall is very low at 0.26 inches.[77]

Coachella Valley contains seven incorporated cities with an average population of 40,074 in 2010. Indio is the largest city in the valley with 76,036 people, and Coachella is the fifth largest with 40,704 people. Oasis, in the far South of the valley, has 6,890. The estimated populations in 2016 show growth of 10 to 11 percent in these three regions over the six year span. The majority of the population lives in the central portion of the valley; the cities of Coachella, Indio, La Quinta, Palm Desert, Cathedral City, and Palm Springs have a combined 315,622 residents, or 90 percent of the population. The total population of the valley is 351,305, with 30,725 living in unincorporated areas. The population density is 1092 people per square mile. There are many unincorporated areas and towns throughout the valley.[78]

In the Northwestern Coachella Valley the communities are mostly suburban, and land uses include golf and tennis oriented communities, vacation residences, and resort hotels. In the winter and spring, the population swells to include vacationers and retirees. Tourism and hospitality services are the primary industries.[79,80] Most of the low-income residents that work in these industries live near city limits in the central valley or in the Southeastern Coachella Valley, where the commute is much further. In the Southeastern Coachella Valley, tribal lands encompass a significant land area. Over 70 percent of the land in the Southeastern Coachella Valley is agricultural, unlike the Northwestern Coachella Valley, which contains almost none. Most land in the Northwestern Coachella Valley is designated as either incorporated city land or rural, open space.[81]

Community Characteristics

The communities of Indio, Coachella and Oasis all have census tracts ranking among the top 25 percent in the State for pollution burden based on CalEnviroScreen 3.0 scores.[82] The poverty rate in Indio is 19.5 percent, which is higher than the Riverside County rate of 16.2 percent and the California rate of 15.3 percent.[83] The City of

76 County of Riverside, 2015

77 Climate and Weather Averages in Coachella, California. 2017

78 U.S. Census Bureau, 2010

79 U.C. Davis, 2013

80 Call with Mariela – Leadership Council, Coachella Valley. September 26, 2016

81 County of Riverside, 2015

82 OEHHA, 2017

83 U.S. Census Bureau, 2010

Coachella has a 28 percent poverty rate, while the five-year estimated poverty rate in Oasis is 47 percent.[84] The majority of Native Americans in the region live in poverty as do the indigenous Mexican population (including many Purhépecha people).[85] In these three regions of focus, the pollution burden scores in CalEnviroScreen 3.0 are significantly higher than in the Northwestern Coachella Valley, at approximately the 50th percentile. This may result from higher pesticide use and water contamination, and is not a function of air quality.[86] The spectrum of CalEnviroScreen 3.0 scores in Coachella and Indio vary to cover nearly the full spectrum from around 10 to 90, approximately linearly distributed across all census tracts. This makes this literature review unique in that it includes non-DAC census tracts in order to gain a wider perspective on the DAC's that exist in the focus area.

Distinct demographics in the focus area are age and race. The population is significantly younger in low-income and disadvantaged areas. In Oasis, 42.1 percent of people are under 18, and 2.9 percent are over 65. This is the opposite trend of Coachella valley as a whole, in which 27.9 percent of people are over 65, compared to approximately 11 percent in both Riverside County and California. The valley average is skewed towards the older end because the majority of the population is not low-income or in a DAC.[87]

There is a very high proportion of Latino/Hispanic origin and foreign-born persons in Indio, Coachella, and Oasis. Indio has 67.8 percent, Coachella is 96.4 percent, and Oasis is 97.7 percent Latino/Hispanic. Foreign-born persons make up approximately 60 percent of the population in Oasis, although only three and four percent respectively in Indio and Coachella.[88]

The ratio of jobs to housing units in Coachella is 0.65, far below the ratio of 1.5 needed to meet the typical number of workers in a household, indicating that citizens must look and travel outside the city for work. In 2010, jobs had fallen by 11 percent within the city. The job distribution was 29.7 percent Agriculture, 11.3 percent Education and Health, 14.7 percent Retail, 4.1 percent leisure and hospitality, 12.6 percent Transportation, Warehousing, and Utilities, and 6.8 percent Wholesale.[89]

The Coachella general plan identified five disadvantaged communities within the city of Coachella using the definition of disadvantaged community given at the beginning of this document. Further stipulations for classifying them as disadvantaged were that the communities are isolated within the city boundary and contain 10 or more dwelling units

84 U.S. Census Bureau, 2010
85 U.C. Davis, 2013
86 U.C. Davis, 2013
87 U.C. Davis, 2013
88 U.S. Census Bureau, 2010
89 City of Coachella, 2015

in close proximity to each other. The five communities are all near the city limits, and distributed 1.5 to 3 miles from the city center. The low-income and DAC's in Indio follow a similar pattern.[90]

Transportation Profile

Mean travel times to work in the three focus communities in the valley are similar at approximately 22 minutes, which is less than the nation and State average.[91] Transportation costs are 26 percent of total household income.[92] The number of automobiles in each household is 1.91, which is approximately average for the State. Driving alone is the most common commute mode at 78 percent, followed by carpooling, which is unusually high in Coachella at 21.2 percent but is average in Indio and Oasis. Public transit is used 0.9 percent, commuting by bicycling and walking comprises 1.6 percent.[93] In 2008, Coachella generated 245 million vehicle miles traveled. In 2010, this number was 308 million, indicating than vehicle use is still increasing rapidly.[94] Despite this, the City is incorporating alternative transportation modes in future planning, and has a well-defined vision for a rapid-transit bus system, increased active transportation, and a move away from a vehicle-centric approach. Annual VMT per household is 23,981 miles, 23,802 miles, and 26,621 miles in Indio, Coachella, and Oasis respectively, indicating high vehicle use throughout the region.[95]

Active Transportation

The bicycle system in Coachella and Indio primarily consists of shared bicycle and motor vehicle facilities. There are few dedicated bicycle facilities and the City is actively working to expand the network of bicycle lanes and bicycle paths.[96] The temperature in the valley gets too high for many residents to use active transportation in the summer. Field investigations indicate that walking is a common form of transportation for residents in the older neighborhoods despite low crosswalk availability and sidewalk prevalence, particularly in the southern half of the city where a higher proportion of disadvantaged communities are located.[97]

As part of the Coachella Valley Association of Government Regional Transportation Plan, a wide active transportation and low-speed electric vehicle pathway is planned within the right-of-way of the Whitewater River. The project, called CV Link, scheduled for groundbreaking in 2017 and completion in 2020, will be a paved path for bicycles, pedestrians, and low-speed electric vehicles, (such as golf carts and neighborhood

90 Call with Mariela – Leadership Council, Coachella Valley. Sept. 26, 2016
91 CNT, AllTransit, 2016; CNT, H+T Index, 2016
92 CNT, H+T Index, 2016
93 City of Coachella, 2015.
94 City of Coachella, 2015.
95 CNT, AllTransit, 2016; CNT, H+T Index, 2016
96 "Call with Leila Namvar - Assistant Planner Indio City." 28 July 2017.
97 City of Coachella, 2015

electric vehicles), that travel up to 25 miles per hour.[98] The CV Link project will connect with eight of nine Coachella Valley cities and three Indian reservations. This will provide a safe, continuous route through the Valley. The project will include dual pathways to separate pedestrians from bicycles and low-speed electric vehicles, shade structures with solar panels and Wi-Fi, and vehicle charging stations. However, it will be running in a single corridor across the valley, and so arterial access to the path will be essential to attaining high use levels. The initial project route will run along the Whitewater River from Palm Springs to Coachella. Future route segments include connections to Desert Hot Springs, Mecca, and the Salton Sea, and will thus extend the full length of the valley and connect the low-income regions in the South to the hospitality-centric areas they serve.

Public Transportation

SunLine Transportation Agency operates the only public transportation option in the valley. Ridership on weekdays is significantly higher, indicating use for work commuting. This ridership pattern occurs on both of the routes operating in Coachella, indicating some commutes within and into/out of the city.[99] Sunline offers an employer pass incentive to reduce the cost of bus passes over time and often provides cheaper bus passes to employees and promotes transit use.[100] There are currently no bus routes running to Oasis but local transportation agencies are trying to add a bus route there.[101]

AllTransit reports that there are about 20,000 commuters in Indio and 12,000 in Coachella within one-half mile of transit, and that 108 and 183 trips respectively are available in each city via bus each week. Despite this, only 1.76 percent of workers use transit to commute in Indio and 1.14 percent use it in Coachella. In Oasis, 1.44 percent of commuting is via public transportation.

According to the Housing and Transportation (H&T) Index, Transit Access scores in Coachella, Indio, and Oasis are 2.7, 4, and 2.2 respectively (out of 10). Job access is 2, 3.3, and 3 (out of 10). The transit connectivity index is 1, 1, and 0 out of 100, indicating very low connectivity. First-hand reports indicate a lack of bus stops with good sun shelter and a need for rapid bus transit in order to increase ridership.[102]

Ridesharing

Coachella residents carpool more frequently than most regional averages. There is potential for a vanpool project specific to agricultural workers being in place in 3 to 4

98 CVAG, 2016, available at: http://www.coachellavalleylink.com/images/documents/CV-LINK_FAQ_ENG2.pdf

99 CVAG, 2016

100 U.C. Davis, 2013

101 Call with Mariela – Leadership Council, Coachella Valley. Sept. 26, 2016

102 “Call with Leila Namvar - Assistant Planner Indio City.” 28 July 2017

years.[103] There are no car sharing or bike sharing programs in the focus area of the valley.[104]

There are multiple dial-a-ride services within the valley with free and/or low-cost service to seniors, and one which specifically tailors to low-income individuals.[105]

Clean Vehicle Incentives

Out of all the zip codes in the focus area (Coachella – 92236; Indio – 92201, 92202, 92203; Oasis – 92274), Indio zip code 92201 was the only one with participants in the EFMP or Plus-Up programs. As of June 30, 2017, two participants had received funding amounting to $8,750 each.[106] The Clean Vehicle Rebate Program has seen moderate use in the focus areas. Through October 2017, nine rebates were issued with a total value of $15,500 in Coachella, (7 plug-in hybrid electric vehicles and 2 battery electric vehicles). In Indio, 123 rebates have been issued, (69 plug-in hybrid electric vehicles and 54 battery electric vehicles), for a total value of $238,500.[107] No incentives have been issued within the zip code of Oasis.[108] There are no electric vehicle charging stations in Coachella or Oasis, but there are five in Indio and many more in the central portion of the Coachella Valley such as Palm Desert, Indian Wells and La Quinta.[109] As of October 2017, one $23,000 voucher under the State's Hybrid and Zero Emission Truck and Bus Voucher Incentive Project has been issued Coachella, while Indio had two vouchers in zip code 92201 for a combined $46,000, and one voucher is zip code 92203 for $37,000. No vouchers were issued in the Oasis zip code.[110]

Transportation Barriers and Opportunities

Infrastructure Shortfalls

There is a lack of infrastructure, particularly in the Southeastern Coachella Valley. Limited bus routes, sidewalks, and bike lanes restrict residents' safe and affordable access to education, health services, employment, and other important resources. This includes transportation infrastructure (lack of bus stops and bus stops with shade, lack of EV charging stations) and lack of pedestrian infrastructure (bike lanes, walking paths, clear signs, shaded spaces, etc.).[111]

A significant opportunity in the valley to address infrastructure shortfalls is the planned CV Link active transportation and neighborhood electric vehicle system. In this plan, there is one major thoroughfare connecting all cities in the valley and many arterial

103 Call with Mariela – Leadership Council, Coachella Valley. Sept. 26, 2016

104 CNT, AllTransit, 2016; CNT, H+T Index, 2016

105 Paratransit options for seniors and People with Disabilities. Riverside County. 2017

106 Information provided by Nicholas Nairn-Birch, CARB Project Lead for EFMP, October 2017

107 CSE, 2017

108 CSE, 2017

109 SolvingEV, 2017. Coachella Valley charging station map. http://solvingev.com/charging-stations/fwg-indio-ca

110 Information provided by Ryan Murano, CARB Project Lead for HVIP, October 2017

111 U.C. Davis, 2013

routes which create an extensive neighborhood electric vehicle and bicycle network within every city in the valley. Construction will likely begin in the Northwestern Coachella Valley and will connect the wealthier communities first. Because of lower new vehicle purchase prices and reduced long-term maintenance costs, neighborhood electric vehicles can be attractive to those with a wide range of household incomes, and have the potential to increase independence and mobility options of older residents who are no longer able to operate a motor vehicle. As the infrastructure and market develop, the barriers to neighborhood electric vehicle ownership and operation will decline.[112] The use of neighborhood electric vehicles may promote electric vehicle charging infrastructure.

Lack of Reliability and Speed of Transit

Multiple stakeholders and government reports have pointed out that reliability and speed of public transportation in the valley is lacking significantly. SunLine Transportation does not offer enough routes, and routes are not useful for commuters due to multiple stops which drastically increase time taken.[113] In the far southeastern Coachella Valley, there are only two different bus lines - North Shore (Line 95) and Mecca (Line 91). There is currently no route through Oasis. This is an area where support and funding are especially needed. Currently, bus stops are funded and operated by SunLine.[114]

Equity

Unequal access to housing, jobs, and services have caused unequal access to effective transportation.[115] A mismatch between the location of affordable housing and the location of low-wage jobs means that lower-income people must commute long distances for work. 21.7 percent of homes in Coachella are in multi-family structures, which can create a barrier to home EV charging.[116] Affordable housing in Indio and Coachella consists primarily of mobile home parks on the outskirts of the cities, which raises the challenge of being able to install charging infrastructure or other energy infrastructure in the home.[117] County and regional transportation planning has tended to focus resources in the wealthier Western Coachella Valley.[118]

In general, those that live in the Northwestern Coachella Valley have better access to transportation services, including bus lines, than those in the Southeastern Coachella Valley. Since many of the residents in the Southeastern Coachella Valley work in the Northwestern Coachella Valley due to the tourism economy, this presents a huge

112 CVAG, 2016
113 U.C. Davis, 2013
114 Call with Leila Namvar - Assistant Planner Indio City. 28 July 2017
115 U.C. Davis, 2013
116 City of Coachella, 2015
117 U.C. Davis, 2013
118 Call with Leila Namvar - Assistant Planner Indio City. 28 July 2017

barrier to transportation and livelihoods because there is no way to get to work without a car or a spending a long time on a bus.[119]

Currently, there is limited access to medical services which forces many residents to travel long distances (including across the border to Mexicali) to access health services.[120]

Some local advocates and groups have prioritized equitable access to transportation as a top regional priority. Currently the Leadership Counsel is working with Riverside County and the City of Coachella to pinpoint where there is a need for signal lights and crosswalks. Other non-profit organizations such as Lideras Campesinas (working on vanpooling for farm workers), and the Inland Congregations United for Change do some work on transportation issues within the valley.[121] Equity and DAC's are also mentioned extensively in the Coachella General Plan. The City of Indio is in the process of producing a general plan that includes equity issues.[122]

Funding and Legislation

Funding for transportation in the valley is increasing and presents an opportunity to leverage local and State funds for clean transportation in disadvantaged communities. The Coachella Valley Association of Governments executive committee approved changes in its policy to authorize reimbursement from regional transportation funds for costs associated with locating bicycle lanes in the street travel way. This clarified Measure A funds to include right-of-way construction of paved bicycle lanes.[123]

Local and regional general plans and transportation plans provide pathways to increase access to clean transportation in low-income and disadvantaged communities. The Coachella Valley Association of Governments has several plans to improve and expand access to clean transportation and mobility options, in its CV Link Master Plan, such as an active transportation plan, plug-in electric vehicle readiness plan, and neighborhood electric vehicle transportation plan, in addition to studies identifying regional transportation priorities. [124]

Data

A final barrier is the lack of data collection. Data is needed to direct transportation resources to where the greatest need is. Some opportunities for this occur with the creation and maintenance of the general plans, but multiple unincorporated communities throughout the valley that lack local governments create a landscape of

119 U.C. Davis, 2013

120 U.C. Davis, 2013

121 U.C. Davis, 2013

122 Call with Leila Namvar - Assistant Planner Indio City. 28 July 2017

123 CV Link Outline

124 CVAG, 2015 at https://www.cvag.org/

complex jurisdictions making coordinated data collection, environmental, land use and health regulation challenging.[125]

Recommendations to Increase Clean Transportation Access

To the extent feasible, clean transportation access goals under SB 350 should maintain compatibility with, and enhance, existing strategies adopted by Riverside County, the Coachella Valley Association of Governments, The Southern California Association of Governments, and the Cities of Indio, Coachella, and Oasis.

- Improve active transportation safety and connectivity for residents, especially youths, who are biking and walking daily to school, and promote use of the CV Link path in the cities of Coachella and Indio now and Oasis in the future.
- Expand multi-modal transportation options, including clean-technology transit services to facilitate easier and less polluting commutes to the hospitality industry in the Central and Western Coachella Valley from the Southern and Eastern portions.
- Promote understanding of clean transportation options and funding sources in the unincorporated regions and tribal lands in the South and East Coachella Valley. Further, address language barriers when developing solutions for increased education and outreach.
- More comprehensively include the low-income and disadvantaged areas of the Southern and Eastern CV in CVAG and Riverside County transportation planning for clean transportation in unincorporated, rural, and tribal areas.

The recommendations below, (as provided in Chapter 4), are some examples of those intended to address barriers to clean transportation access in the Southeastern Coachella Valley:

- *Table 1, recommendation 1a.* Directly engage with low-income residents and partner with community-based organizations to leverage community knowledge and established trust. Ensure feedback is incorporated in transportation and land-use planning and investments.
- *Table 1, recommendation 1d.* Focus on local needs of low-income residents and disadvantaged communities as part of Regional Transportation Plan development and other local, State, and regional planning and direct funding to gaps identified.
- *Table 2, recommendation l.* Identify and implement policies that increase the frequency, reliability, and safety of clean public transportation options.
- *Table 2, recommendation j.* Fund programs that create or expand transformative clean transportation car sharing, ride sharing, bike sharing, vanpooling, micro-transit, and other mobility options.

125 UC Davis, 2013

Lemon Hill

The selection of Lemon Hill was based on its high CalEnviroscreen 3.0 scores,[126] input received from community roundtable meetings, and our desire to include an urban, Central Valley low-income community.

Regional Setting

Lemon Hill is a CDP in southern Sacramento County, approximately 10 miles from Downtown Sacramento. Sacramento County encompasses 994 square miles in Northern California's Central Valley. The City of Sacramento is both the State's Capital and the Sacramento County Seat. It is the largest city and most urbanized area in the county, with a population density of 4,660 residents per square mile, compared to the county's population density of 1,427 per square mile. The topography of Sacramento County is predominantly flat, ranging from sea level to just under 1,000 feet.

Community Characteristics

Lemon Hill is unique in that it lies in county jurisdiction but is surrounded on the north, east, and west by city jurisdiction, thus having a different mix of public services than neighborhoods only blocks away. Lemon Hill has a relatively young population, and the community is experiencing growth, sprawl, and a rising cost of living. Lemon Hill's boundary streets, including Fruitridge Boulevard to the north, 47th Avenue in the south, Stockton Blvd. on the east, and Franklin Blvd. to the west, are major arteries in the city's and county's street network.

Lemon Hill is a mixed industrial, commercial, and residential area with a population of 13,729 and a population density of 8,422 people per square mile at the time of the 2010 census. The unemployment rate was 15.2 percent, with the highest rates of unemployment among 16 to 19 year olds (30.7 percent), followed by 20 to 24 years olds (26.3 percent). The annual mean family income was $37,213, while the average annual per capita income was $11,941.[127]

The racial makeup is diverse (45 percent Hispanic, 22 percent White, 19 percent Asian, and 11 percent Black),[128] which is reflected in the mix of ethnic shopping and restaurants in the area, including the city-designated Little Saigon commercial area. According to the Housing and Transportation Affordability Index, Lemon Hill has very high access to jobs (8.5 of 10). Major employment sectors include service, sales, and production and transport materials moving.

126 OEHHA, 2017

127 U.S. Census Bureau, *2010*

128 U.S. Census Bureau, *2010*

This combination of low-income and high exposure to pollution is reflected in several of Lemon Hill's census tracts ranking in the top (worse) 25 percent for pollution burden in the State.[129]

Transportation Profile

Lemon Hill residents primarily commute alone by car (71.4 percent), which is about average for California, but 16.7 percent carpool, exceeding the State's 10.9 percent. The H+T Index rates Lemon Hill as having good access to public transit (7.2 of 10), and compact, walkable neighborhoods (7.5 of 10), surpassing the average scores for the county and city. [130] About 10 percent of residents use public transit, while 1.9 percent commute by bicycle, (above the State's 1.1 percent average), and 2.3 percent walk (below the State's 2.7 percent average).

Active Transportation: Existing opportunities for safe, convenient and connected bikeways throughout the community are somewhat lacking. However, the 2016 City of Sacramento Bicycle Master Plan[131] includes five new Class II bike lanes specific to Lemon Hill (along Fruitridge Boulevard, 41st / Lemon Hill Avenue, 47th Avenue, 44th Street, and Sampson Boulevard). Regional efforts are ongoing to enhance bikeway connectivity, bikesharing, and assist low-income residents with bike ownership and upkeep.

Public Bus and Rail Services: Sacramento Regional Transit offers five routes that service Lemon Hill. Buses are powered by compressed natural gas and equipped with two to three bicycle racks. Bikes are allowed on the regional transit light rail system, and lockers and racks are at many stations. Sacramento Area Council of Governments plans to implement "Connect Card", a single fare card system that works on other transit operations in the area and allows fare payment by smartphone. Sacramento Regional Transit operates a 4-line, 53-station light-rail system in the County, with an extension to the Sacramento International Airport expected in 2018. The Blue Line directly serves Lemon Hill and provides connections to two community colleges and the city downtown area. A Downtown/Riverfront Streetcar project is also planned. Inter-city rail service is provided by Amtrak's Capitol Corridor, a passenger train system with 32 daily trains between Sacramento and the Bay Area and San Jose.[132] The San Joaquin Line runs two trains and connects Bakersfield and Stockton with Sacramento.

Ride Sharing: The Sacramento Metropolitan Air Quality Management District has installed the Our Community CarShare Sacramento project, an eight-vehicle electric-vehicle car sharing system for three Sacramento-area subsidized housing complexes in

129 OEHHA, 2017

130 CNT, *H+T Index*, 2016

131 City of Sacramento, 2016

132 Capitol Corridor Joint Powers Authority, 2016

disadvantaged communities[133]. One of the housing complexes is located on Lemon Hill Avenue offers two electric vehicles and chargers for the shared use of community residents. Other rideshare services available in the County include Lyft, Uber, taxis, Paratransit, Dial-a-Ride, and eRideShare. Craigslist Sacramento also lists ridesharing offers.

Clean Vehicle Incentives: Based on data through October 2017, from the State's Clean Vehicle Incentive Program, 21 rebates have been issued in the Lemon Hill zip code 95824, (14 plug-in hybrid electric vehicles and 7 battery electric vehicles), for a rebate total of $28,000,[134] which is below the per capita average for the County. Lemon Hill currently has no public charging sites. The County has one public hydrogen station and 92 public electric vehicle charging sites, but currently no public charging is available in Lemon Hill. As of October 2017, no vouchers under the State's Hybrid and Zero Emission Truck and Bus Voucher Incentive Project have been issued in the zip code.[135]

Transportation Barriers and Opportunities

Poverty limits the choices of Lemon Hill residents. Some residents walk or bike if they are physically able. Others may use public transit services, but for some residents it may not meet their late-night or early-morning transit needs or is too expensive. Residents also may not be able to access other ridesharing options that require a credit card, bank account, smart phone, or internet service. Residents who can afford a vehicle purchase or lease may not be able to afford the increased expense of an advanced technology vehicle. Most importantly, public charging is not readily available in this community in order for these residents to be convinced that advanced technology vehicles can fit into their day-to-day routine. While active transportation is an option they can consider, concerns about crime and personal safety limit their use of cycling, walking, and using public transportation.

The main opportunities for low-income residents in Lemon Hill to gain better access to clean transportation are to improve the affordability of public transportation, transform the transit bus fleet to clean technology buses, increase the safety of streets for pedestrian and bicycle use, make the purchase of clean technology vehicles more affordable, and increase the availability of public and multi-family electric vehicle charging stations in the neighborhood.

Recommendations to Increase Clean Transportation Access

- Enhance clean transportation and infrastructure program funding opportunities for low-income individuals and disadvantaged community residents.

133 Our Community CarShare, 2016

134 CSE, 2017

135 Information provided by Ryan Murano, CARB Project Lead for HVIP, 30 October 2017

- Develop and fund clean transportation programs that increase information and accessibility to clean first-mile and last-mile transit connectivity options.
- Work with transit providers to develop or expand programs that provide discounted or free transit passes and offer diverse and easy to use payment options.
- Begin collecting and reporting vanpool usage information to the Federal Transportation Database to justify additional funds for new, clean transportation services.[136]

The recommendations below, (as provided in Chapter 4), are some examples of those intended to address barriers to clean transportation access in Lemon Hill:

- *Table 2, recommendation a*. Expand, develop, and implement used and new light-duty vehicles ownership programs, including creative financing mechanisms, such as point-of-sale incentives and low-cost loans, available to low-income consumers, and make modifications as necessary to improve access.
- *Table 2, recommendation j*. Fund programs that create or expand transformative clean transportation car sharing, ride sharing, bike sharing, vanpooling, micro-transit, and other mobility options.
- *Table 2, recommendation k*. Pay for programs that direct funding toward increased availability of discounted or free transportation passes for public transportation, car sharing, bike sharing, micro-transit, and other transformative clean transportation and mobility options.
- *Table 2, recommendation n*. Expand the implementation of pedestrian and bicycle infrastructure improvements, including for separated bikeways or cycle tracks (Class IV bikeways) and mobility hubs.

Merced

Three low-income census tracts within the Merced Zip Code 95341 zip were selected because of the disproportionately high percentages of residents living in poverty[137] and because county-level transportation assessments and published transit quality indices indicate residents have limited transportation access and connectivity.[138] These census tracts also rank among the highest 25 percent of communities in the State burdened by pollution.[139] These census tracts represent urban, high-density communities in the northern San Joaquin Valley.

136 Pers. Comm. between CARB staff and members of the Sacramento Transit Management Association and the California Vanpool Authority. No entity in the Sacramento region is collecting and reporting vanpool data to the Federal Transit Authority National Transit Database, leaving Vanpool reimbursement money unclaimed that could otherwise be providing additional transit initiatives to serve area residents (every $4 spent on Vanpools returns $10 of FTA funds).

137 U.S. Census Bureau, 2010

138 MCAG, 2014; City of Merced, 2013; CNT, *H+T Index*, 2016; CNT, *AllTransit*, 2016; U.C. Davis, 2014

139 OEHHA, 2017

Regional Setting

Merced County encompasses 1,979 square miles and had a population of 255,793, and a population density of 130 people per square mile at the time of the 2010 US Census. The City of Merced is the largest of Merced County's six incorporated cities with close to 79,000 residents, followed by Atwater, Los Banos, Livingston, Dos Palos and Gustine. The remaining 77,500 residents are in unincorporated areas.[140]

Agriculture accounts for more than 90 percent of Merced County's total area and is the largest employer, supporting one third of the County's work force. Though prosperous in agriculture, Merced County's annual unemployment rate ranked fourth highest in the State and first among San Joaquin Valley counties in 2015 at 11.4 percent.[141]
The City of Merced had a population of 78,958 with a population density of 3,400 people per square mile according at the time of the 2010 census. The overall racial makeup of the city is predominantly white and Latino, followed by "other races," then Asian. Nearly all of the population lives in households, and of those, 72 percent are families. The average household size is 3.1 and the average family size is 3.6. The median age is 28 years. The annual unemployment rate in 2010 was 8.6 percent, increasing to 14.5 percent in 2013, and dropping to 11.4 percent in 2015.[142]

Community Characteristics

This literature review describes the following three, low-income census tract communities in south Merced.

- Census Tract 60470015.02
- Census Tract 60470015.03
- Census Tract 60470016.01

In cases where census-tract level information and data are not available, including transportation needs and opportunities identified through local planning efforts, information is provided at the Zip Code 95341 level.

Census tract sizes range from 0.3 square mile (Census Tract 15.02) to 0.8 square mile (Census Tract 16.01). Compared to city averages, population densities in the three low-income census tracts are more concentrated, with an average household size of four people. A larger segment of the population is under 18, and the ethnic ratio is more heavily Latino or Hispanic (ranging from 60 to 82 percent), followed by Asian (9 to 27 percent). Job availability, growth, quality and accessibility are low for all three

140 U.S. Census Bureau, 2010
141 U.S. BLS, 2016
142 U.S. BLS, 2016

census tracts,[143] resulting in higher unemployment and poverty rates. The unemployment rate in Zip Code 95341 is 14 percent. The median household income ranges from $24,791 to $28,186, and poverty rates range from 33 percent (Census Tract 15.02) to 56 percent (Census Tract 16.01) below the federal poverty level.[144]

Transportation Profiles

Transportation costs average about 30 percent of the total household income in these census tracts[145]. The number of autos per household averages 1.6, which is below the city and State average and in the lowest ranking for vehicle availability.[146] The two most common commute modes reported for zip code 95341 are driving alone (73 percent) and carpooling (10 percent).

Active Transportation: The City of Merced has the most extensive bike path system in the country, however, significant safety issues exist in these census tracts related to active transportation.[147] Incidents of pedestrian and bicycle collisions near school sites within the City of Merced were studied from 2007 to 2009, and the number of collisions in these census tracks was documented among the highest in the city.[148] Efforts are ongoing to improve active transportation safety, especially close to schools, parks, and businesses, and to enhance neighborhood connectivity.

Public Bus and Rail Services: Commuters using transit within the three census tracts range from 0.82 percent (Census Tract 15.03), to 1.6 percent (Census Tract 16.01). Transit performance scores are moderately low, based on the low combination of trips per week and number of jobs accessible, enabling few people to take transit to work.[149] The Transit Connectivity Index score is poor, averaging 7.3 out of 100.[150]

Ride Sharing: Commute Connection is an employer-based Travel Demand Management program that has served Merced County since 2010.[151] The program helps commuters transition from driving alone to a convenient ridesharing option such as carpooling, vanpooling, bicycling/walking or riding transit. The program includes free services such as commuter ridematching, Emergency Ride Home and Employer Services. Other carpool connections are available through Uber Merced, Merced rideshare through Craigslist, and carpoolworld.com. No ridesharing programs are located specifically in these census tract communities.

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143 U.C. Davis, 2014
144 U.S. Census Bureau,2010; UC Davis, 2014
145 CNT, *H+T Index*, 2016
146 U.C. Davis, 2014
147 MCAG, 2014
148 City of Merced, 2013
149 CNT, *AllTransit*, 2016; CNT, *H+T Index*, 2016
150 CNT, *H+T Index*, 2016
151 See Commute Connection at: http://www.commuteconnection.com/

Clean Vehicle Incentives: In the Merced zip code 95341, 10 vehicle rebates were issued as of October 2, 2017 under the State's Clean Vehicle Rebate Project clean vehicle purchase incentive, (2 plug-in hybrid electric vehicles and 8 battery electric vehicles), for a combined incentive total of $27,500.[152] As of June 30, 2017, the Enhanced Fleet Modernization Program had nine participants from within the zip code for a combined incentive total of $63,000.[153] The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project had incentivized two truck purchases within the zip code as of October 2017, for a combined incentive total of $48,000.[154]

Transportation Barriers and Opportunities

Regional and city transportation planning efforts have made progress in increasing transportation access, but have also identified many challenges and opportunities associated with improving transportation access for low-income residents and transit-dependent populations in both Merced County and the City of Merced.[155]

The City of Merced's General Plan includes policies and capital improvement projects that respond to many of the transportation needs of low-income populations within these zip codes (i.e., complete streets policies, bikeway improvements, improved transit service for workers and transit-dependent citizens, and promoting clean technologies).[156] The benefits will likely be gradual within these communities as projects will take time and sustained funding to implement. New bikeway improvements were approved as part of Merced's bicycle transportation plan in 2013.[157] Several new bike lanes and dedicated bike boulevard options were identified within the census tracts, in addition to other bikeway and bike facility improvements.

Recommendations to Increase Clean Transportation Access

To the extent feasible, clean transportation access goals under SB 350 should maintain compatibility with, and enhance, existing strategies adopted by Merced County and the City of Merced.[158]

- Improve active transportation safety and connectivity for residents, especially youths, who are biking or walking daily to school, parks and other youth-oriented venues.
- Expand multi-modal transportation options, including clean-technology transit service, to allow low-income residents access to employment, and to higher-wage jobs outside of these census tracts.

152 CSE, 2017

153 Information provided by Nicholas Nairn-Birch, CARB Project Lead for EFMP, 27 October 2017

154 Data from Ryan Murano, CARB Project Lead for HVIP. 30 October 2017

155 MCAG, 2014; City of Merced, 2012, 2013

156 City of Merced, 2012

157 City of Merced, 2013

158 MCAG, 2014; City of Merced 2012, 2013

- Local, State and federal incentives funding should be increased to help defray upfront costs of the City of Merced's planned capital improvements that will benefit clean transportation access to low income residents. This includes public fleet expansions using clean technology vehicles, public charging infrastructure, and dedicated bike lanes. The City of Merced's prioritized improvements for active transportation and enhanced public transit are expected to benefit residents living in these three census tracts.

The recommendations below, (as provided in Chapter 4), are some examples of those intended to address barriers to clean transportation access in Merced:

- *Table 1, recommendation 1a*. Directly engage with low-income residents and partner with community-based organizations to leverage community knowledge and established trust. Ensure feedback is incorporated in transportation and land-use planning and investments.
- *Table 1, recommendation 4a.* Develop guiding principles for State and local agencies to incorporate into designing competitive solicitations and promote inclusive and equitable competition for clean transportation and energy investments. Streamline and simplify grant and incentive application process. Ensure rural and tribal communities along with small businesses, governments, and organizations can better compete for these investments, and that there is increased access to funds for low-income and disadvantaged communities.
- *Table 1, recommendation 5d*. Expand opportunities and create connections for good quality clean transportation jobs in low-income and disadvantaged communities. Work with local and regional government partners to maximize job creation benefits, including through targeted hiring.
- *Table 2, recommendation q*. Support new active transportation projects and policies that promote safety and increased pedestrian and bike facilities. Expand funding for current projects including the California Transportation Commission's Active Transportation Program, Complete Streets, and Safe Routes to School.

McFarland

McFarland is an incorporated city within Kern County in the San Joaquin Valley, approximately 30 miles north of Bakersfield and 90 miles south of Fresno. The closest neighboring city is Delano, which is approximately 7 miles to the south and one of the largest cities in Kern County.[159] The selection of McFarland was based on its high pollution burden, (ranging in the top 80th percent in CalEnviroscreen 3.0[160]), plus input received from SB 350 stakeholders, and the desire to include an urban, agricultural community representing the southern end of the San Joaquin Valley.

Regional Setting

Kern County encompasses 8,161 square miles and had a population of 839,631 and a population density of 100 people per square mile at the time of the 2010 census.[161] The western portion of Kern County is in the San Joaquin Valley Air Basin, while the eastern portion is in the Mojave Desert Air Basin. Kern County serves as a transportation corridor for vehicles, trucks, rail, and pipelines, and is a central hub for goods movement across the State and internationally. Bakersfield is the largest population center in the county, with approximately 347,483 people supporting about 60 percent of the county's total population, followed by Delano, Ridgecrest, and Wasco that all have populations less than 55,000.[162]

Kern County's economy is strongly tied to agriculture and petroleum extraction, and approximately 70 percent of the land in the county is dedicated to non-urban uses. The county consistently ranks among the top five agriculturally productive counties in the country and is also one of the nation's top petroleum producers. Kern County was one of the top ten fastest growing counties in the nation from 2012 to 2013, and is forecasted to grow by more than 500,000 people by the year 20140.[163] While the economic health of the county is trending upward, unemployment in the region remains consistently higher than the California average, and was the third highest of the eight counties in the San Joaquin Valley in August 2015.[164] Growth over the last 10 years has been concentrated in urbanized areas and smaller communities, but much of the county's employment opportunities remain dispersed, resulting in workers commuting to outlying employers such as food processing facilities, farms, oil fields and energy facilities, prisons and government installations.[165]

159 City of McFarland Transportation website: http://www.mcfarlandcity.org/269/Transportation

160 OEHHA, 2017

161 US Census Bureau, 2010

162 US Census Bureau, 2010

163 KCOG, 2014

164 U.S. BLS, 2016

165 KCOG, 2014; Kern Economic Development Corporation, 2012

Community Characteristics

This review provides a demographic and transportation profile of McFarland Zip Code 93250 and for the following two low-income census tracts:

- 6029004701
- 6209004702

McFarland covers an area of about 2.5 square miles in the northern portion of Kern County and is east-west by State Route 99. The median age of McFarland residents is 26 years old, which is younger on average than other communities statewide, and 48 percent of the population is under 25 (compared to the State average of 35 percent). Persons with disabilities comprise about 7.2 percent of the city's population. Household with children under 18 comprise 70 percent of households, and the average household contains 4.4 occupants, even though the median household income of $34,212 is significantly lower than the California or national average[166]. The average per capita income is $8,594. Although jobs are seasonally available, in 2015, the average unemployment rate was 10.2 percent (exceeding the California average of 6.2 percent), and 32.9 percent of residents were living in poverty. Sixty percent of jobs are associated with agriculture, and are located outside urbanized areas of the city. High school graduation rates are low and nearly 60 percent of the population over 25 reports lacking a high school education.[167] This is likely due to many residents being "first-generation Americans" from countries where English is not the primary language.[168]

McFarland is one of several communities in Kern County that is experiencing rapid population growth. The population in 2010 was 12,707 with a population density of 4,763 people per square mile. In 2015, the population had grown to 13,985.

Transportation Profile

McFarland faces both challenges and opportunities in meeting the current and expanding transportation needs of its residents, many of whom are transit-dependent. Population growth is expected to continue, resulting in increased regional traffic and congestion and the need to invest in cleaner, more efficient means of meeting the accessibility needs of its residents.[169] The single largest transit-dependent population in McFarland is youth (40 percent), followed by low-income residents (30 percent).[170]

166 U.S. Census Bureau, 2010

167 KCOG, 2015

168 KCOG, 2015

169 See Complete Street 2035 Circulation Element: http://www.dot.ca.gov/hq/tpp/offices/ocp/dist6/fy10-11/McFarlandFinalCirculationElement.pdf

170 KCOG, 2015

Transportation costs in McFarland comprise 30 percent of the household income and housing comprises 25 percent.[171] The number of autos per household averages 1.6, which is lower than the California average.[172] Commute modes reported include personal vehicle (60 percent), carpool/vanpool (33 percent), walk (2.4 percent), bicycle (3.2 percent), public transportation (0.7 percent), and work at home (0.6 percent).[173] The most commonly reported commute time for those living within Zip Code 93250 is 30 to 35 minutes.

Active Transportation: Youth mobility is dependent on Dial-A-Ride and addressed by school, friends and family, but many youth also walk from the eastern end of the city to the western portion where safety and access concerns exist crossing State Route 99. Two miles of new Class II bike lane were approved in McFarland as part of the 2012 Kern County Bike Master Plan.[174]

Public Bus and Rail Services: Transit access is rated poor based on the low combination of trips per week and number of jobs accessible enabling few people to take transit to work.[175] Transit connectivity is very low (0.8 out of 100 possible), based on most homes being located greater than one-half mile from a transit location. The City of McFarland offers a first-come, first-served Dial-A-Ride service within city limits and open to the general public with no eligibility requirements. This service is provided to nearly 16 percent of its residents at no cost.[176]

Dial-A-Ride fleets utilize compressed natural gas-powered cut-away vehicles. The service is available Monday through Friday from 8:00 a.m. to 4:15 p.m. and fares are $1.00 for adults and $0.50 for children and seniors. Children under 16 must be accompanied by an adult. McFarland's Transit Development Plan reported that Dial-A-Ride ridership is likely low because most employment opportunities are outside its service area which is the city limits.[177] There is no fixed route bus service within the city. Kern Transit is a public operator providing weekday and weekend bus connections via its Route 110 from Bakersfield connecting McFarland to popular inter-city destinations. Delano Area Rapid Transit is a public operator connecting McFarland residents to Bakersfield and Delano on weekdays and weekends.

Ride Sharing: Carpooling and vanpooling opportunities are available to McFarland residents through the California Vanpool Authority, and the Kern Council of

171 CNT, *H+T Index*, 2016
172 U.C. Davis, 2014
173 U.S. Census Bureau, 2010
174 KCOG, 2015
175 CNT, *H+T Index*, 2016
176 KCOG, 2015
177 KCOG, 2015

Governments sponsors a ride matching website called “CommuteKern” for residents and employers wanting to reduce single-occupant vehicle trips.[178]

Clean Vehicle Incentives: Within McFarland’s zip code 93250, as of October 2017, eight clean vehicle rebates were reported under the State’s Clean Vehicle Rebate Project, (8 plug-in hybrid electric vehicles and 2 battery electric vehicles), for a combined incentive total of $19,250.[179] As of June 2017, the EFMP shows 4 participants within the 93250 zip code for a combined incentive total of $27,500.[180] No clean truck or bus voucher incentives were reported in the zip code under the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project as of October 2017.[181]

Transportation Barriers and Opportunities

Transportation planning efforts undertaken by Kern County and McFarland have led to the identification of key challenges and opportunities associated with improving transportation access for low-income residents, including those that are transit-dependent.[182] Key findings include:

- Extend and enhance existing Dial-A-Ride services.
- Introduce a fixed-route bus service.
- Develop a vanpool service for agricultural workers.
- Develop a park and ride facility adjacent to regional travel transfer facilities and ridesharing locations.
- Increase transportation funding for bike, pedestrian, and transit facilities.
- Integrate land use and transportation in the county to double the number of homes within walking distance to quality transit.

Financial challenges were the largest barrier identified in meeting transportation needs. The county reported that projected population growth, employment travel demand, and multimodal transportation costs surpass projected revenues available from the gas tax, which is the county’s historic transportation funding source. The City of McFarland is struggling to balance service enhancements, rising operating costs and required farebox recovery ratios with passenger fares.[183]

178 Commute Kern, http://commutekern.org/blue-sky-partners/

179 CSE, 2017

180 Information provided by Nicholas Nairn-Birch, CARB Project Lead for EFMP, 27 October 2017

181 Information provided by Ryan Murano, CARB Project Lead for HVIP. 30 October 2017

182 KCOG, 2015, 2014

183 KCOG, 2015

Recommendations to Increase Clean Transportation Access

Clean transportation access goals under SB 350 should enhance existing regional and local transportation strategies. State clean transportation funding to support McFarland's efforts to reduce single driver vehicle trips might include:

- Funding to purchase hybrid, plug-in hybrid or zero-emission passenger vans for agricultural workers and other worker vanpools.
- Funding to support implementation of a new fixed-route transit bus service in the McFarland city limits.
- Funding for a safe and accessible bike and pedestrian crossing over SR 99 and an increased number of designated bike lanes and pedestrian routes for youth.
- Funding to extend Class II bike lanes beyond the two miles within the City limits.
- Foster community ownership in clean public transportation options and supporting infrastructure. For example, McFarland participates in the Play Everywhere Survey Challenge, a national competition that promotes creative ways of making outdoor play easy, available, and fun for kids and families.[184] Recently McFarland was selected as one of 200 finalists for their proposal to redesign the Veteran's Memorial Bus Stop. McFarland's proposal includes promoting creativity, health, and safety for youth. This is an example of community involvement in improving transportation facilities that could be applied to other forms of transportation as well.

The recommendations below, (as provided in Chapter 4), are some examples of those intended to address barriers to clean transportation access in McFarland:

- *Table 1, recommendation 6b.* Ensure State and local funding is dedicated to the clean transportation and mobility access needs of low-income residents and disadvantaged communities, as identified through the community needs assessments and related efforts across the State, including in rural and tribal communities. Review the geographic distribution of funding and potentially opportunities for maximizing participation and access for low-income residents.
- *Table 2, recommendation a*. Expand, develop, and implement used and new light-duty vehicles ownership programs, including creative financing mechanisms, such as point-of-sale incentives and low-cost loans, available to low-income consumers, and make modifications as necessary to improve access.
- *Table 2, recommendation q.* Support new active transportation projects and policies that promote safety and increased pedestrian and bike facilities. Expand funding for current projects including the California Transportation Commission's Active Transportation Program, Complete Streets, and Safe Routes to School.

184 See the City of McFarland's website: http://www.mcfarlandcity.org/CivicAlerts.aspx?AID=21

- *Table 3, recommendation f.* Develop and expand education curriculum on clean transportation, including biking, walking, driver safety, and technologies for elementary, high school, and college students.

Oroville

Oroville was selected for a literature review because it is one of the few Northern California communities included in CalEnviroScreen 3.0's top 25 percent of communities most impacted by pollution.[185] This literature review describes Butte County and provides a demographic and transportation profile for Oroville, including transportation needs and gaps identified through review of local planning documents, and identifies community-specific opportunities to increase clean transportation access in these communities.

Regional Setting

The City of Oroville (Oroville) is located in the middle of Butte County located off of the Highway 70, about 20 miles southeast of Chico and 70 miles north of Sacramento. Butte County, in Northern California's Central Valley, is a primarily rural county of 1,165 square miles. At the time of the 2010 census, the county population was 220,000, with a population density of 189 people per square mile[186], less than the State average of 234. The Sacramento and Feather rivers running north to south through the county serve the agricultural lands in the west and central areas, with Lake Oroville and the Oroville Dam hydroelectric project lying in the county's center. Elevations in the county climb from 50 feet above sea level in the west to foothills and the Sierra Nevada Mountain Range in the east with elevations over 7,000 feet.

The county ranks near the worst quartile of California counties for people living below the federal poverty level, and this population has grown from 18.5 percent in 2005-2009 to 21.8 percent in 2010-2014.[187] The largest racial/ethnic groups in the county are White (74.2 percent) followed by Hispanic (14.9 percent). Residents rely upon vehicles for transportation; 74 percent commute to work alone and 13 percent by carpool. About 6 percent of residents bicycle or walk to work, while approximately 1 percent use public transit to get to work[188].

Community Characteristics

Oroville, with 15,546 residents, is the third largest city in the county. Residents are primarily White (75.2 percent), with the next largest groups Hispanic (12.5 percent), Asian (8 percent, of which Vietnamese Hmong represent 4.8 percent), Native American (3.7 percent), and African American (2.9 percent). Over 96 percent of workers commute by car, truck, or van, and less than 1 percent commute by public transit or

185 OEHHA, 2017

186 U.S. Census Bureau, 2010

187 U.S. Census Bureau, *2010*

188 CNT, *AllTransit*, 2016

bicycling, although 2.38 percent walk to work[189]. CalEnviroScreen 3.0 ranks Oroville in the State's top (worst) 25 percent of census tracts for exposure to pollution.[190] The U.S. EPA reports one active superfund site[191] and 2 delisted (cleaned-up) sites[192,193] in the Oroville area. The percentage of Oroville residents living in poverty in 2013, 23.3 percent, is higher than that of the county (21.5 percent), the State (16.8 percent), and the nation (15.7 percent).[194]

The Housing and Transportation Affordability Index reports that in Oroville, transportation costs account for 29 percent of a household's income expenditures, compared to a national average of 31 percent.[195] Job access scores rank 7.5 on a scale of 10. A score of 1.4 out of 10, indicates limited access to high-frequency public transportation, and low walkability (score of 3.5 out of 10), due to low density neighborhoods. According to AllTransit indices, 95.8 percent of workers commute by car, truck, or van, 2.4 percent walk to work, and less than 1 percent commute by other sources.[196]

Transportation Profile

The 2015 Butte County Association of Government Transit and Non-motorized Plan presents a long-range vision for encouraging alternate modes of transportation such as walking, biking, and transit, with priority projects for walking, bicycling, and increased access to transit. The Draft Butte County 2016 Regional Transportation Plan/ Sustainable Communities Strategy identifies county transportation policies, projects, and programs for the next 24 years, including new policies to ensure that traditionally

189 CNT, AllTransit, 2016
190 OEHHA, 2017
191 U.S. EPA, "Koppers Co., Inc. (Oroville Plant)," 2016
192 U.S. EPA, "Western Pacific Railroad Co. (rail yard), Oroville," 2016
193 U.S. EPA, "Louisiana Pacific Corp. (Sawmill), Oroville," 2016
194 U.S. Census Bureau, 2010
195 CNT, *H+T Index*, 2016
196 CNT, *AllTransit*, 2016

underrepresented groups are included in the planning process[197]. The Plan includes strategies for assisting low-income and minority communities, as shown in Figure 6.

Figure 6: Effects of Butte County Regional Transportation Plan on Low-Income and Minority Communities[198]

Intended Population	Special Needs / Concerns	Transportation Modes	Potential Solutions
Low-income / Homeless Population in the county	- Easy access to trip planning information - Fare subsidies for tokens or passes (non-cash) - Breaking down barriers to transportation - Barriers faces by mothers with multiple children - Need to bring shopping carts - Difficulties with transfers within and between systems; long trips	- Fixed-route transit - Special purpose shuttles (work, training, special education, Headstart, recreation) - Vanpools, ride sharing, car sharing	- Creative fare options for human services agencies - Increased availability of bus passes - Universal pass for services across county - Bus passes available for job search / job training - Special shuttles for predictable patterns for this population - Transit education to case workers - Better feedback to planners - More training for staff - Vanpool creation assistance - Ride sharing connections

Active Transportation: The Butte County Association of Governments identifies the importance of non-motorized transportation to reduce dependence on vehicles, reduce emissions, and increased public health and recreation. Local planning includes a focus on improvements for connectivity and safety for walking or biking to better take advantage of Oroville's relatively flat terrain for active transportation. Roads and crossings in urban areas increasingly have signage and shoulders that encourage walking and bicycling, but less so on rural roads. Oroville plans additional bike-lanes, new bike paths, and major access improvements along State Route 162 through the City.[199]

Public Bus and Rail Services: A full 50 percent of transit riders in Butte County are at or below the poverty line, which illustrates the importance of public transit for low-income residents.[200] Despite AllTransit's low ranking of Oroville for access to high-frequency transit, based on other measures Oroville and the county's other population centers are relatively well served by the Butte Regional Transit (B-Line) bus system and

197 BCAG, 2016a
198 BCAG, 2016a
199 BCAG, 2016b
200 Butte County, 2015

Paratransit/Dial-a-Ride services. B-Line consistently exceeds Transit Development Act fare box recovery ratio requirements for its urban and rural routes, and ridership increased six percent from Fiscal Year 2008/09 through 2012/13. Paratransit use increased by 40 percent over that time. B-Line buses have bike racks, and the B-Line Tracker app provides real-time bus arrival texts. However, the current B-Line bus fleet is a mix of natural gas and diesel powered buses with no advanced clean technology buses.

Ride Sharing: Ride sharing in the county's urban areas consists of Uber, and B-Line's Paratransit and Dial-a-Ride services.

Clean Vehicle Incentives: In Oroville zip codes 95040, 95965, 95966, and 95968, 13 clean vehicle rebates were issued under the State's Clean Vehicle Rebate Project, (7 plug-in hybrid electric vehicles and 7 battery electric vehicles), for a combined total of $28,500.[201] As of October 2017, no voucher incentives had been issued under the State's Hybrid and Zero Emission Truck and Bus Voucher Incentive Project.[202] The county currently has 14 electric vehicle charging stations that include one Level I, 25 Level II, and four DC fast chargers. Of those, eight Level II chargers located at Butte College in Oroville. In the 2015 Butte County Action Plan, the County supports increasing the number of charging stations to 40 by 2030.[203]

Proposition 1B funding, approved by voters in 2006, funded 12 replacement school buses and 54 diesel particulate filters in 2011 and 2012 in an effort to further reduce Butte County school children's exposure to cancer-causing and smog-forming pollution.

Transportation Barriers and Opportunities

Active Transportation: Many roads in Oroville and Butte County, especially in rural areas, lack improvements that make active transportation safe and attractive options. The County's limited resources necessitate a primary focus on increasing access and vehicular traffic in road planning. The County's 2015 Transit and Non-motorized Plan[204] provides opportunities for policies and plans to address barriers residents who walk or bike experience.

Public Bus and Rail Services: In rural Butte County, more routes help would reduce access barriers to public transit. In urban areas such as Oroville that are comparatively well-served, barriers and opportunities primarily involve improving affordability, more service during off-peak hours and weekends, and increasing schedules to present

201 CSE, 2017

202 Information provided by Ryan Murano, CARB Project Lead for HVIP, October 2017

203 Butte County Action Plan, 2015: https://www.buttecounty.net/Portals/28/6a_ActionPlan2015.pdf

204 Butte County, 2015

attractive and appropriate trip times. Opportunities exist to green the bus fleet by converting buses to hybrid-electric, battery-electric, or fuel-cell battery electric buses.

Clean Vehicle Incentives: Butte County's rural nature ensures that vehicle travel is the dominant mode transportation. Barriers to accessing advanced clean technology vehicles include lack of uptake for incentives and insufficient public charging stations. Opportunities include increasing outreach and education efforts to the public to increase awareness and acceptance of advanced technology vehicles, with a focus on informing low-income residents. Low-income residents may also be better served by introducing new strategies such as financing assistance to help with purchases of used or new clean vehicles or scrap and replace programs such as employed in the San Joaquin Valley and South Coast air basin to assist acquisition of new or used clean vehicles. Creating new vanpools using advanced technology vans and encouraging car sharing and ride sharing using clean vehicles also represent opportunities.

<u>Recommendations to Increase Clean Transportation Access</u>

- The active transportation policies and improvement projects envisioned by the County's Bicycle Plan, the Regional Transportation Plan/Sustainable Communities Plan, the Transit and Non-Motorized Plan, and the Unmet Transit Needs Assessment should be fully implemented.
- Butte County should follow the Regional Transportation Plan's guidance for increasing services to low-Income and minority communities, including increasing service to rural areas of the county, providing more off peak and weekends service, and introducing new advanced clean technology vanpools.
- B-Line should begin to transform its fleet to advanced clean technology buses.
- Incentive programs for advanced clean technology should provide more outreach and education to residents of areas like Oroville and Butte County that have shown low uptake, and pilot projects should look to expand services into these areas.
- To better support residents that choose clean vehicles, the region's plans for installing public electric vehicle charging stations, especially for multifamily housing, need strengthening.

The recommendations below, (as provided in Chapter 4), are some examples of those intended to address barriers to clean transportation access in McFarland:

- *Table 1, recommendation 1f.* Develop and provide a template of needs assessment activities for potential inclusion in the 2018 Regional Transportation Plan update.
- *Table 1, recommendation 4a.* Develop guiding principles for State and local agencies to incorporate into designing competitive solicitations and promote inclusive and equitable competition for clean transportation and energy investments. Streamline and simplify grant and incentive application process. Ensure rural and tribal communities along with small businesses, governments, and organizations can better compete for these investments, and that there is increased access to funds for low-income and disadvantaged communities.

- *Table 2, recommendation a*: Expand, develop, and implement used and new light-duty vehicles ownership programs, including creative financing mechanisms, such as point-of-sale incentives and low-cost loans, available to low-income consumers, and make modifications as necessary to improve access.
- *Table 2, recommendation d.* Support charging infrastructure installation in public and right of way locations (e.g. rest stops, Park and Rides) and private locations (e.g. places of employment, grocery stores, and hospitals) to increase access for low-income residents and disadvantaged communities across the State.

Tipton and Woodville

Tipton and Woodville are low-income census-designated places in Tulare County, located in the southern San Joaquin Valley. These communities were selected for review because a disproportionately high percentage of residents live in poverty, and the communities rank among the highest statewide for environmental burden. Residents here have a higher need for transportation services due to age, disability, and income status, yet many live outside of the incorporated cities in areas of limited services.[205]

Regional Setting

Tulare County encompasses 4,863 square miles in the southern portion of the San Joaquin Valley. The eastern half of the Tulare County is mountainous and unpopulated, while the fertile western half supports the majority of the 442,179 residents dispersed among small to medium-sized communities, separated by large expanses of cultivated lands. The population density averages 95 people per square mile, (compared to a statewide average of 234 people per square mile), and 23 percent of the county's land area is dedicated to agriculture.[206] The densest populations are concentrated east of State Route 99 to the Sierra Nevada foothills. The climate is dry with an average of 10 inches of rain and 265 days of sun per year. In summer, temperatures run in the upper nineties, with winter lows in the mid-thirties.

Tulare County contains 11 percent of the San Joaquin Valley's population, however, it has 18 percent of the valley's disadvantaged unincorporated communities.[207] Over 30 percent of the county's population is considered low-income, and eight percent of households are without a vehicle.

Community Characteristics

Tipton and Woodville are within Census Tract 32.[208] Tipton is bisected by California State Route 99 running north and south. Woodville is 9 miles to the east of Tipton. Tipton covers a one square mile land area (Zip Code 93272; Census Block Groups

205 TCAG, 2015a
206 U.S. Census Bureau, 2010
207 Policy Link, 2013
208 Policy Link, 2013

.001, .002, .003). Woodville is a CDP approximately 9 miles to the east of Tipton and covers a 4.3 square mile land area (Zip Code 93257; BG .003, .004, .005). The closest large towns are Porterville and Tulare. Populations for Tipton and Woodville were 2,543 and 1,740, respectively, as of the 2010 census, and the population for the entire census tract was 6,446.

Residents are predominantly Latino or Hispanic (>80 percent), with agriculture the prevailing industry (>60 percent). Disproportionately high percentages of residents live in poverty; the poverty rate in Tipton is 15 percent, while in Woodville it is considerably higher at 46 percent. Median household income is about $32,000 per year, and per capita income ranges between $9,400 and $11,000. These communities also rank among the top 85 percent statewide for pollution burden based on CalEnviroScreen 3.0.[209]

The median age of residents is 24 years for Tipton and 28 years for Woodville, which is younger than the California average of 37 years. The average family size is four.[210] Both census designated places have high percentages of youth, (between 35 and 40 percent of their populations are under 18), and Census Tract 32 ranks in the top ten of 78 census tracts in Tulare County for its percentage of youth, (40 percent compared to 24 percent statewide).[211]

Transportation Profiles

Transportation costs average about 40 percent of the household income in Tipton and Woodville. Online transportation indices such as AllTransit and the Regional Opportunity Index report that Tipton and Woodville have limited transportation access, connectivity, and walkability.[212] Driving alone is the top mode of commute travel, (86 percent of Tipton residents and 58 percent of Woodville residents commute alone), followed by car or vanpooling, (12 to 30 percent). Public transportation is used less than two percent, and bicycling and walking are uncommon (less than two percent).

Active Transportation: The lack of bikeways and bike connectivity has been recognized as a concern in these communities. The May 2016 Regional Active Transportation Plan for Tulare County includes a new, proposed Class I bike project near Tipton, and Class II project along Avenue 152 from Tipton to Poplar Center, leading becoming a proposed Class I bike lane.

Public Bus and Rail Services: Transit Connectivity, a measured of the number of bus routes and train stations within walking distance for houses in a block group scaled by the frequency of service, is rated extremely low for these communities (a rating of 3 for

209 OEHHA, 2017

210 U.S. Census Bureau, 2010

211 TCAG, 2016

212 CNT, *H+T Index*, 2016; CNT, *AllTrans*it, 2016, U.C. Davis, 2014; TCAG, 2015a, 2015b

Tipton and 0.9 for Woodville, on a scale from 1 to 100). Fixed-route inter-city bus service is provided through Tulare County Area Transit (TCaT), while Porterville City Operated Local Transit (COLT) provides local circulators. Tipton is served by TCaT South County Route 20 (Monday through Sunday), while Woodville residents can access COLT lines #60 and #90. Porterville transit center links circulator routes and regional route 40. TCaT operates 13 compressed natural gas buses and six compressed natural gas shuttles, and COLT has a mix of diesel, compressed natural gas and gasoline buses and vans. TCaT offers a T-Pass for $50 a month, which is a County-wide pass accepted on all fixed route transit services in the county (excluding Dial-A-Ride). A "Try-TCaT New Rider Discount Program" for unincorporated areas of Tulare County is also available.

Demand-response service is provided through both public and private providers (e.g., COLT and Porterville Sheltered Workshop), and also by private purchasers (Tulare County Health and Human Services Agency, Kings/Tulare Area Agency on Aging, Tulare Department of Mental Health). In several cases, eligibility is restricted to senior or disabled residents, or for specific travel to health services or schools. Tulare WORKS offers transportation services for CalWORKS participants.

Ride Sharing: California Vanpool Authority operates across multiple counties. In Tulare, the majority of vans run from Visalia, and 70 percent of the vans currently serve employees working at correctional institutions. Tulare County partnered with Fresno County to create the carpooling website "ValleyRides", (www.valleyrides.com), which allows residents to find carpool partners and incentivizes carpooling and vanpooling ($600 per month for eligible vanpool, and monthly cash prizes for carpool).

Clean Vehicle Incentives: As of October 2017, within the Woodville zip codes of 93257 and 93274, 94 rebates for new clean vehicle purchases were issued, (72 in zip code 93274 and 22 in zip code 93257). Of those rebates, 16 were for plug-in hybrid electric vehicles and 76 rebates were for battery electric vehicles. No rebates have been issued for the Tipton zip code 93272.[213] As of June 2017, two residents in the Tipton zip code have received vehicle incentives under EFMP Plus-Up, for a combined total of $13,500. Woodville, zip code 93257 shows four participants, (totaling $30,000), while zip code 93274 shows 11 participants, (totaling $67,500).[214] As of October 2017, the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project shows one participants in Woodville zip code 93257, and no participants from zip codes 93274 or 93272.[215]

Two participants within the Tipton zip code are reported under the State's EFMP program, and 7 were issued to Woodville residents, of which 6 received additional incentive to replace scrapped vehicle with a cleaner model. One voucher was issued to

213 CSE, 2017

214 Information provided by Nicholas Nairn-Birch, CARB Project Lead for EFMP, 27 October 2017

215 Information provided by Ryan Murano, CARB Project Lead for HVIP. 30 October 2017

a Woodville resident under the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project for $23,000.

Transportation Barriers and Opportunities

The Tulare County Association of Governments completed a needs assessment of transit resources, using input from residents and public and private transit providers to evaluate the existing system and develop a coordinated transportation plan.[216] The transportation needs of residents with disabilities, older adults, and persons of low-income were prioritized because of their transit dependence. Many of the residents in Tipton and Woodville fall into one or more of these groups. Areas in Tulare County with noted transportation gaps included Tipton and Woodville.[217] Transportation needs, including active transportation, related to spatial and temporal gaps, transportation costs, and service awareness. Primary barriers include:

- Lack of commuter-oriented transportation service to and from outlying county areas into the four largest cities (Dinuba, Porterville, Tulare, and Visalia). This was the top need expressed by stakeholders.
- Lack of alternatives to transit service, such as ride-sharing or volunteer-driver programs for residents wanting to live independently but not qualifying for or suited to use existing dial-a-ride services.
- Lack of safety, connectivity, and access to biking and walking routes. Residents want safe routes for walking and biking. Fast traffic, lack of crosswalks and bike lanes, and lack of traffic signals are barriers, as is a lack of secure bicycle infrastructure.

Recommendations to Increase Clean Transportation Access

- Clean transportation access goals for the SB 350 effort should maintain compatibility with, and support where appropriate, the existing strategies adopted in Tulare County's regional transportation plans related to improving active transportation through on-street and off-street infrastructure investments.[218]
- Support long-range fixed route and demand-response service enhancements, while also promoting the use of clean technology vehicles. Increase access and availability of State incentive funding for regional and local transit providers serving low-income and disadvantaged communities for the purchase of new, clean technology shuttles, vans and buses in public fleets. A recent example of State support is the $9,516,422 grant awarded to Porterville Transit through State Low Carbon Transportation funding. The grant helps fund transit electrification for 10 Greenpower battery electric buses and a solar depot charging station.

216 TCAG, 2015a, 2015b
217 TCAG, 2015b
218 TCAG, 2015b; TCAG, 2016

- Provide funding for and formalize vanpooling to make it more broadly available to residents.
- Continue incentive funding and low-interest financing for new and pre-owned light-duty clean vehicles incentive targeted to low-income residents. Single occupancy vehicles are shown to be the most common mode of commuting in Tipton and Woodville. For low-income residents with relatively short commutes or, less commonly, access to workplace charging, zero-emission vehicles may be an attractive, cost-effective option. Tipton and Woodville residents are eligible for both State and local incentives for the purchase of advanced technology vehicles (for example, a battery electric vehicle has up to a $3,000 local rebate incentives, a $2,500 State incentive, plus an additional $1,500 for low-income household, and carpool lane access). Based on a resident's income qualifications, other incentives for vehicle and or equipment purchase, repair or installation may apply.
- Outreach on clean transportation rebates and incentive programs should be community-based, interactive, and inclusive on all aspects of clean vehicle ownership.

The recommendations below, (as provided in Chapter 4), are some examples of those intended to address barriers to clean transportation access in Tipton and Woodville:

- *Table 1, recommendation 1b.* Broadly engage community-based organizations, low-income residents, and affordable housing groups as part of clean transportation access community needs assessments, outreach, and regional one-stop-shops. Provide communities with clean transportation and mobility option outreach and educational materials and receive feedback on additional needs.
- *Table 2, recommendation a*: Expand, develop, and implement used and new light-duty vehicles ownership programs, including creative financing mechanisms, such as point-of-sale incentives and low-cost loans, available to low-income consumers, and make modifications as necessary to improve access.
- *Table 2, recommendation* j: Fund programs that create or expand transformative clean transportation car sharing, ride sharing, bike sharing, vanpooling, micro-transit, and other mobility options.
- *Table 2, recommendation k*: Pay for programs that direct funding toward increased availability of discounted or free transportation passes for public transportation, car sharing, bike sharing, micro-transit, and other transformative clean transportation and mobility options.

Appendix C: Research Projects

The supplemental information presented below supports Chapter 3. Within and external to CARB, many current and ongoing activities in research, commercial deployments, and vehicle demonstrations provide critical information used to guide investments in order to meet SB 350 goals and priorities. Inversely, the SB 350 study effort is providing CARB and others with insights that will improve and expand existing clean transportation programs and activities for the benefit of low-income residents, and help target those factors necessary to improve access to clean transportation. The CARB-sponsored research projects described below have direct application to SB 350 goals. The information gained from completion of these research efforts will help to inform ongoing efforts on clean transportation programs.

New Car Buyers' Valuation of Zero-Emission Vehicles: California
Research Contractor: University of California, Davis
Research Timeline: Contract completed and final report published in April 2016

This study collected information on the decision-making process and factors influencing California consumer buying preferences of new, light-duty vehicles, focusing on the barriers and motivations for purchase of near-zero and zero emission vehicles. Overall, awareness of conventional hybrid vehicles, PEVs, and fuel cell electric vehicles (FCEVs) was extremely low. Almost half (49 percent) of the California new car buyers surveyed were aware of ZEV and plug-in hybrid electric vehicle (PHEV) purchase incentives from the federal government, while only one-third reported they were aware that California offers ZEV and PHEV purchase incentives. More than five years after PEV marketing started in California, two-thirds of respondents, (who as new car buyers searched for information about cars and had been on new car lots, and purchased a vehicle during this period), could not name a specific battery electric vehicle model for sale in the U.S. Most survey respondents were not interested in PEVs or FCEVs. The top self-reported reasons for negatively valuing a PEV or FCEV were: 1) Limited access to vehicle charging facilities; 2) vehicle purchase price; 3) vehicle range; and 4) lack of familiarity with vehicle technologies. Respondents' selection against a ZEV were connected to the newness of the technology, and may decrease over time with market grows and infrastructure deployments, and with continued accumulation of experience and information by consumers.

The final report for this research project is available at:
https://www.arb.ca.gov/research/apr/past/12-332.pdf

The research proposal summary is available at:
https://arb.ca.gov/board/res/2012/res12-46.pdf

Examining Factors that Influence ZEV Sales in California
Research Contractor: University of California, Los Angeles
Research Timeline: Contract completed and final report published in May 2017

The objective of this study was to understand the emerging ZEV market in California by merging monthly ZEV registration data with census tract-level data and using econometric methods to correlate spatial and temporal factors with vehicle sales. Results of this study suggest that California PEV purchases are positively associated with the price of gasoline. A county-scale analysis found that a $1 increase in gasoline price (from $3 to $4), is associated with a more than 200 percent increase in average monthly PEV sales, but stopped short of attributing any causal impact to gasoline price changes. The analysis also indicates that the association between gas prices and PEV sales is stronger in the less wealthy inland areas of the State. This study also explored PEV incentive policy design variations in order to estimate how vehicle technology preferences, combined with consumer income and incentive levels, could impact incentive program outcomes such as cost-effectiveness, allocative equity and total program cost.

The final report for this research project is available at:
https://www.arb.ca.gov/research/apr/past/13-303.pdf

The research proposal summary is available at:
https://www.arb.ca.gov/research/apr/plan/fy13-14/reso_13-18.pdf

Developing a New Methodology for Analyzing Potential Displacement
Research Contractor: University of California, Berkeley
Research Timeline: Contract completed and final report published in March 2017

The objective of this study was to understand the relationship between transit-oriented development, the potential for displacement in California, and the travel behavior consequences of displacement. A goal of this study was to advance how displacement is assessed in transportation and land use planning processes. The study evolved through concerns that transit-oriented development investments encouraged by SB 375 may result in increased housing costs and neighborhood changes that make transit-oriented communities unaffordable or unsuitable for certain households or groups. Researchers identified and analyzed the effectiveness of anti-displacement strategies, and modeled patterns of neighborhood change in relation to transit-oriented development. Study results showed that transit-oriented development is associated with changes in the stability of the surrounding neighborhood, such as increases in housing costs and the loss of low-income households. The research found mixed evidence as to whether gentrification and displacement in rail station areas would cause an increase in auto usage and vehicle miles traveled. Results support the consideration of displacement in the development of Sustainable Community Strategies. Additionally, the study included testing the use of displacement in travel demand models used by the Los Angeles and San Francisco Metropolitan Planning Organizations, and developing a

new tool for using independent of travel demand models in instances where the models are not equipped to analyze potential displacement.

Further information on this research is available at:
https://www.arb.ca.gov/research/single-project.php?row_id=65188

The technical proposal is available at:
http://iurd.berkeley.edu/research/ARB2765-276-social-equity-and-TOD.pdf

Assessing the Travel Demand and Co-Benefit Impacts of Affordable Transit-Oriented Developments
Research Contractor: University of California, Berkeley
Research Timeline: Contract executed in 2016; final results expected early in 2019

The objective of this research is to investigate the travel demand impacts and potential co-benefits of siting and preserving affordable housing in or near transit-oriented developments. The study will advance our understanding of how travel behavior differs for residents of affordable housing that is located near transit versus this kind of housing located away from transit. Additionally, the research will assess the economic, health, and well-being impacts on the associated residents.

Further information on this research is available at:
https://www.arb.ca.gov/research/single-project.php?row_id=65273

The research proposal summary is available at:
https://www.arb.ca.gov/board/books/2015/072315/prores1528.pdf

Designing Light-Duty Vehicle Incentives for Low- and Moderate-Income Households

Research Contractor: University of California, Los Angeles
Research Timeline: Case study published in 2017; final results expected by fall 2018

Advanced, clean vehicle pricing continues on a trend toward greater affordability. However, the upfront cost associated with clean vehicle purchase continues to present a barrier to clean transportation access for low-income residents. To meet air quality and climate change goals in California, transformation of the light-duty vehicle fleet is necessary. Clean vehicle incentives play an important role by accelerating the retirement and replacement of older, high-polluting vehicles, and by motivating consumers to purchase advanced clean vehicles that may otherwise not be considered. The objective of this project is to gain insight into vehicle retirement and replacement motivations and patterns specific to low- and moderate-income households. The project will include assessing the effectiveness and cost-effectiveness of different policies and financial incentive program structures for optimizing adoption of advanced technology vehicles or other travel options, (e.g., fixed-route transit, car- or ride-sharing), particularly among low- and moderate-income households. Research results will be used to evaluate the light-duty vehicle market and inform CARB decision makers about

the potential options for modifying CARB's vehicle incentive programs to ensure they maximize limited State resources and benefit currently underserved populations and disadvantaged communities.

Further information on this research is available at:
https://www.arb.ca.gov/research/single-project.php?row_id=65259

The research proposal summary is available at:
https://www.arb.ca.gov/board/books/2015/072315/prores1526.pdf

The case study is available at:
http://innovation.luskin.ucla.edu/content/design-and-implementation-enhanced-fleet-modernization-plus-pilot-program

The Dynamics of Plug-in Electric Vehicles in the Secondary Market and Their Implications for Vehicle Demand, Durability, and Emissions

Research Contractor: University of California, Davis
Research Timeline: Early results available in January 2017; final results expected by spring 2018

This project characterizes the health of the secondary market for PEVs in California, resulting in improved estimates of the emission benefits of PEVs, and projections of total emissions from the light-duty fleet. Researchers will employ surveys and use an economic model to evaluate the impact of factors such as battery life, energy prices, infrastructure availability, vehicle attributes, prices of new vehicle offerings, and economic conditions, on the demand and prices of used PEVs and on their usage. Researchers will also evaluate whether the used PEV market is expanding access to a wider array of consumers. Results will inform future decisions by policymakers on CARB's programs related to PEVs, such as incentives, durability requirements, or vehicle crediting.

Preliminary results show that used PEV prices correlated positively with the original purchase price and negatively with vehicle age and mileage. Used PHEVs maintained an average residual value 10 percent higher than used BEVs. Most of the used PEVs were purchased following 2 to 3 years of use by the original owner. The self-reported odometer reading at the time of purchase of the used PEVs was 23,400 miles on average. Nearly half of the respondents have previously purchased only used vehicles for their household. In addition to one used PEV, most respondents also have one or two internal combustion engine vehicles in their households, (39 percent had one, and 41 percent had two). Yet, 12 percent of the used PEV respondents belong to a single PEV household, another 4 percent are from a two-PEV household, and a further 4 percent have two PEVs plus at least one ICE vehicle. Households with used PEVs have relatively high incomes compared to conventional vehicle consumers, but lower-incomes than new PEV-owning households. The average household income reported by used PEV owners is $173,400 versus an average of $227,000 as reported by new PEV owners in a 2015 survey. For comparison, the average household income

from the 2012 California Household Travel Survey was $89,800 for households with older vehicles versus $119,400 for households with new vehicles.

Further information on this research is available at:
https://www.arb.ca.gov/research/single-project.php?row_id=65236

The research proposal summary is available at:
https://arb.ca.gov/board/res/2015/res15-26.pdf

A working paper with interim results is available at:
https://itspubs.ucdavis.edu/wp-content/themes/ucdavis/pubs/download_pdf.php?id=2693

Vehicle Miles Traveled, Household Vehicle Ownership, Greenhouse Gas, and Policy Implications of Ridesourcing, Ridesharing, and Connected and Autonomous Vehicles; Developing and Quantifying Successful Sustainable Communities Strategies
Research Contractor: University of California, Berkeley
Research Timeline: Contract executed on July 2017; final report expected in summer 2019.

The objective of this research project is to help metropolitan planning organizations and local agencies develop successful Sustainable Communities Strategies, (per SB 375), related to ridesourcing, ridesharing, and connected and autonomous vehicles, and to quantify the vehicle miles traveled, household vehicle ownership, and GHG emissions implications of those policies. Tasks include summarizing existing research, modeling, and identifying data gaps. The project will result in a quantification methodology for metropolitan planning organizations and local jurisdictions to measure impacts of these innovative strategies. Researchers will also develop policy recommendations for local, regional, and State consideration related to ridesourcing, ridesharing, and connected and automated vehicles to maximize reductions in vehicle miles traveled, and improve economic prosperity, livability, and equity in communities.

Relevant Research Sponsored by Other Entities:

The Potential for Shared Use Mobility in Affordable Housing Complexes in Rural California
Research Entity: University of California, Davis, Institute of Transportation Studies with collaborative support from Self-Help Enterprises
Research Timeline: Early results available in summer of 2017; final results expected by the end of 2017

This survey of low-income residents at affordable housing complexes in the San Joaquin Valley assessed unmet transportation needs, willingness to use shared use mobility services, the potential for such services to reduce household vehicles and parking spaces, and awareness of public financial incentive programs to reduce vehicle

emissions in the valley. The study conclusions indicated that respondents are able to conduct essential activities to the current or future economic well-being of their households (such as work and school); however, these resources are not sufficient for travel associated with maintaining physical and emotional health (such as medical attention, visiting friends and family, etc.). Respondents' willingness to use ridesourcing and carsharing services suggests strong potential to reduce parking. Demand for these services is primarily for shopping, health care travel and household errands. Barriers to use include lack of credit cards and bank accounts and linguistic isolation. Respondents lack knowledge about public incentive programs aimed at reducing vehicle emissions in the San Joaquin Valley. Study recommendations include expanded outreach and education to inform low-income communities about incentive programs.

Future Mobility Research Program
Research Entity: Metropolitan Transportation Commission
Timeline: Initiated in FY 2015-16; future funding is dependent on partner agency budgets and grants.

The MTC is a public agency responsible for leading the Bay Area's transportation future. MTC has partnered with the Sacramento Area Council of Governments, San Diego Association of Governments, and Southern California Association of Governments in a joint procurement for this research. The primary tasks include identifying appropriate roles for the State's largest metropolitan planning organizations, and examining key policy issues in which transportation/mobility option companies and trends may be present, assessing the potential impacts of their activities. Agencies are beginning to collaborate on applied Smart Cities research concerning social mobility and autonomous and connected vehicles. An outcome from these efforts may be joint-advocacy efforts for statewide policy initiatives and collaborations on pilot projects. Emerging technologies will affect every transportation mode, prompting public policy development and the creation of more sophisticated tools for planning and analysis.

Further information is available at:
http://bids.mtc.ca.gov/procurements/226

2016 California Vehicle Survey
Research Entity: RSC, Inc.
Sponsored by: California Energy Commission
Timeline: Final report expected in fall 2018

This study analyzes data collected through a statewide resident and commercial fleet survey on vehicle preferences and likely future vehicle purchases. The survey was administered in English and Spanish. The study reaches out to state residents and commercial decision-makers to understand how people drive around the state, the drivers of vehicle purchase decisions, and expectations around future driving and vehicle purchases.

Further information is available at:
http://www.energy.ca.gov/assessments/vehiclesurvey/

California Household Travel Survey
Research Entity: NuStats
Sponsored by: Caltrans
Timeline: Every 10 years; a 2012-2013 study was completed in June 2013

The California Household Travel Survey is conducted every ten years to obtain detailed information about the socioeconomic characteristics and travel behavior of households statewide, both with local trips as well as with inter-regional long-distance trips. The data is used as a base to forecast future travel behavior and transportation system needs and calibrate regional travel demand models to forecast the 2020, 2035 and 2040 Greenhouse Gas emissions.

Final report available at:
http://www.dot.ca.gov/hq/tpp/offices/omsp/statewide_travel_analysis/files/CHTS_Final_Report_June_2013.pdf

Equity Impacts of Fee Systems to Support Zero Emission Vehicle Sales in California
Research Entity: University of California, Davis
Timeline: Project completed in June 2016

This study explored the equity implications of various vehicle sales fee structures that could fund CVRP at $200 million per year. These structures are based on vehicle carbon dioxide emissions, household income, and/or vehicle price. The average vehicle fee for the structures explored was about $150. Exempting households earning $75,000 or low-priced vehicles can increase equity, but can result in exemptions for some high carbon dioxide emitting vehicles. Therefore, exempting only low-carbon dioxide vehicles for low-priced vehicles may be the best compromise.
Final report available at:
http://ncst.ucdavis.edu/wp-content/uploads/2014/08/06-17-2016-NCST-ZEV-Fee-Systems_FultonSchiffmanTal_16June_FINAL.pdf

Environmental Justice and Barriers to Low-Income Electric Vehicle Adoption
Research Entity: University of California, Davis
Sponsored by: Caltrans
Timeline: Final report expected in fall 2017

The goal of this study is to examine whether price discrimination and limited selection of electric vehicles close to disadvantaged and low-income communities are barriers to EV adoption in these communities. Researchers are using California vehicle purchase data from 2011 through 2015 for this analysis.

Alternatives for Meeting Transit Needs in Rural San Joaquin Valley
Research Entity: University of California, Davis and Sigala, Inc.
Sponsored by: Caltrans
Timeline: Expected project completion by summer 2018

This study is exploring opportunities for leveraging new technology driven shared access services (such as ridesharing, carsharing, and bikesharing) to enhance, compliment, and/or replace traditional fixed-route transit serving rural communities. First, interviews and focus groups will be conducted focusing on travel needs of rural, disadvantaged communities in the San Joaquin Valley. Then, technology-driven shared access pilot projects will be developed to address the identified needs of a specific community.

Further information available at:
https://ncst.ucdavis.edu/project/alternatives-for-meeting-transit-needs-in-rural-san-joaquin-valley/

High Impact Prioritization of Bike Share Program Investment to Improve Underserved Communities' Access to Jobs and Essential Services
Research Entity: University of California, Davis
Sponsored by: U.S. Department of Transportation

This study focuses on developing design principles for bike share systems in order to maximize benefits to residents living in underserved communities. Study components include identifying priority areas for bike share investment based on the state of bicycling infrastructure, and an estimate of the potential for improved job or social services access using bike-to-transit. Study results will inform the siting of bike share stations and investment in bike infrastructure for underserved communities.

Further information available at:
https://ncst.ucdavis.edu/project/high-impact-prioritization-of-bike-share-program-investment-to-improve-underserved-communities-access-to-jobs-and-essential-services/

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