THE GREENLINING INSTITUTE

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MOBILITY EQUITY FRAMEWORK

HOW TO MAKE TRANSPORTATION WORK FOR PEOPLE

Authors

Hana Creger *Environmental Equity Coordinator*

Joel Espino *Environmental Equity Legal Counsel*

Alvaro S. Sanchez *Environmental Equity Director*

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About the Greenlining Institute

Founded in 1993, The Greenlining Institute envisions a nation where communities of color thrive and race is never a barrier to economic opportunity. Because people of color will be the majority of our population by 2044, America will prosper only if communities of color prosper. Greenlining advances economic opportunity and empowerment for people of color through advocacy, community and coalition building, research, and leadership development. We work on a variety of major policy issues, from the economy to environmental policy, civic engagement and many others, because economic opportunity doesn't operate in a vacuum. Rather than seeing these issues as being in separate silos, Greenlining views them as interconnected threads in a web of opportunity.

The Greenlining Institute's Environmental Equity Program focuses on the emerging green economy in order to make sure that communities of color not only have a clean environment, but also benefit from the economic opportunities made possible by environmental efforts.

Author Biographies

Hana Creger *Environmental Equity Coordinator*
As Environmental Equity Coordinator, Hana works on the development and implementation of policies leading to transportation investments that will benefit low-income communities of color in California. She graduated magna cum laude from San Diego State University with a degree in Sustainability, and has a particular interest in environmental justice and equity. Hana has worked as a community organizer, advocating for climate change action and public transit policies in San Diego. She was a Climate Corps Fellow, a leadership development program that partners fellows with local organizations developing and implementing projects addressing climate change resiliency. Prior to Greenlining, Hana implemented innovative campaigns for Alameda County's Clean Commute Program, to promote long-term sustainable behavior changes.

Joel Espino *Environmental Equity Legal Counsel*
Joel works to reduce poverty and pollution in communities of color by advocating for accessible, affordable, and clean transportation choices and a diverse clean energy economy. He leads Greenlining's transportation equity work advocating to increase racial equity in transportation planning and investments; implementing the Charge Ahead California Initiative–a law that works to make electric vehicles (EV) accessible to low- and moderate-income Californians; and advocating for equitable EV charging infrastructure investments at the California Public Utilities Commission, the California Energy Commission, and within the Volkswagen Diesel Settlement. He is author of "Electric Vehicles for All: An Equity Toolkit"; lead author of "Electric Carsharing in Underserved Communities: Considerations for Program Success"; and co-author of "Delivering Opportunity: How Electric Buses and Trucks Can Create Jobs and Improve Public Health in California." Joel is always thinking of ways to make new mobility services and transportation investments more equitable and sustainable.

Alvaro S. Sanchez *Environmental Equity Director*
Alvaro is an urban planner with extensive experience crafting, implementing, and evaluating strategies that leverage private and public investments to deliver community benefits to impacted communities. Alvaro leads our work on SB 535 (de León) which directs at least one quarter of California's Greenhouse Gas Reduction Fund to disadvantaged communities. He also leads our neighborhood-scale sustainability initiative, a comprehensive and scalable approach to greenhouse gas reduction that leverages private and public investment while improving underserved communities throughout California.

Prior to joining Greenlining, Alvaro led Green For All's stormwater infrastructure strategy. As a member of the State and Local Initiatives team, he led the organization's strategies for connecting impacted

communities to economic opportunity related to national stormwater infrastructure investments. He wrote several reports detailing the untapped opportunity of using green infrastructure as a cost-effective stormwater management tool that creates job and business opportunities for underserved communities. Several leading water and stormwater utilities throughout the country have used the framework he presented to deliver triple-bottom-line benefits.

Alvaro has over nine years of experience working on economic development and land use issues throughout California and nationally. In 2011 he received a Master of Planning degree from the University of Southern California, where he focused on affordable housing and economic development. He is the President of the Board of Directors at Dolores Street Community Services, an immigration and community development organization in San Francisco. He also created the Triple Bottom Line Hub, a social media platform that celebrates projects that deliver triple-bottom-line benefits.

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Jamie Dean *Program Director at the 11th Hour Project*
Erika Rincón Whitcomb *Senior Associate at PolicyLink*
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Gil Tal *Research Director at UC Davis Institute of Transportation Studies, PH&EV Center*
Leslie Graham *Director of Grants & Partnerships at Green Commuter*

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The opinions expressed herein do not necessarily reflect those of the organization that funded the work or the individuals who reviewed it. The Greenlining Institute bears sole responsibility for the report's contents.

EXECUTIVE SUMMARY

Decades of local, regional, and state transportation plans and investments in California have not adequately responded to the mobility needs of low-income communities of color, reinforcing unequal land-use patterns and contributing to disproportionate health and economic impacts. Today, technological advancements are making it easier to address community-identified mobility needs with a multitude of clean transportation options. However, we lack the planning, policy, and decision-making structures that will equitably deliver mobility benefits to low-income communities of color.

Purpose

To establish a transportation system that benefits all people, California must embrace an equitable deployment of investments and policy interventions to prioritize the mobility needs of low-income individuals of color and address the historical neglect they have experienced. This type of reform must center social equity and community power as primary values in all transportation planning and decision-making. To get there, this paper proposes a framework designed to elevate these values and address structural inequities through an adaptable, customizable process for community, advocates, and transportation decision-makers.

Mobility Equity Definitions and Principles

Mobility Equity: a transportation system that increases access to high quality mobility options, reduces air pollution, and enhances economic opportunity in low-income communities of color.

To achieve mobility equity in transportation planning and investments, we must prioritize:

1. Social equity: The fair and just distribution of societal benefits and burdens.

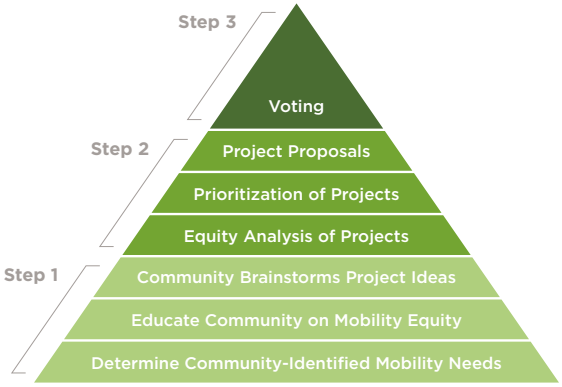
2. Community power: The ability of marginalized communities to influence decisions in a way that addresses their needs and concerns.

Mobility Equity Framework

- Step One: Identify the mobility needs of a specific low-income community of color.

- Step Two: Conduct the mobility equity analysis to prioritize transportation modes that best meet those needs while maximizing benefits and minimizing burdens.

- Step Three: Place decision-making power in the hands of the local community.



12 Mobility Equity Indicators

Step Two of the framework provides practitioners with 12 mobility equity indicators to weigh benefits and burdens of transportation modes, plans, and projects in an equity analysis. The indicators advance three overarching goals specific to low-income communities of color.

Goal #1
Increase Access to Mobility

1. Affordability
2. Accessibility
3. Efficiency
4. Reliability
5. Safety

Goal #2
Reduce Air Pollution

6. Clean Air and Positive Health Benefits
7. Reduction in Greenhouse Gases
8. Reduction in Vehicle Miles Traveled

Goal #3
Enhance Economic Opportunity

9. Connectivity to Places of Employment, Education, Services, & Recreation
10. Fair Labor Practices
11. Transportation-Related Employment Opportunities
12. Inclusive Local Business & Economic Activity

Addressing the needs of communities of color with clean, sustainable mobility options provides innumerable societal benefits, including positive health impacts, increased quality of life, and greater employment and education opportunities.[1] When low-income communities of color prosper, this benefits our entire economy.[2]

Application of the Mobility Equity Framework

This paper introduces a three-step framework to center equity and community power. Applying the entire three-step process will yield the most equitable results. While introducing any element within these steps could move transportation planning and decision-making in a more equitable direction, the synergy of these three steps is crucial. This framework is intended to be implemented at a community level, meaning that community, community leaders, and community-based organizations play a significant role. Additionally, the three-step process should be adopted and incorporated into transit agency plans, guidelines, processes, and other relevant state and local government processes. Implementing entities may include state or local governments, Metropolitan Planning Organizations, Caltrans districts, Regional Transit Districts, or other entities. Communities may also reference and use this framework to bolster their advocacy. The three-step process serves not only as a guide to elevate community engagement in transportation planning and decision-making, but also provides a mechanism to evaluate the equity outcomes of transportation modes.

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INTRODUCTION

California is widely regarded as an innovator in clean transportation. Yet, historically, transportation investments and plans in California have done a poor job of meeting the needs of low-income communities of color, resulting in racial disparities in transportation-related burdens and benefits. This in turn often exacerbates social inequities in other areas like health and wealth.

People of color breathe disproportionate levels of toxic smog from transportation-related emissions, which contributes to higher rates of asthma, cancer, and other illnesses than their white counterparts.[3] In addition, low-income people—who are disproportionately people of color—spend a greater proportion of their income on transportation costs compared to wealthier people.[4] The poorest 20 percent of Americans spend 40.2 percent of their take home pay on transportation (mostly for private vehicle expenses), while those who make $71,898 and greater only spend 13.1 percent.[5]

In too many cases, transportation decisions also contribute to the displacement of people of color, who are more likely to live farther from where they work, subjecting them to longer and more unreliable commutes, impacting their economic opportunity and quality of life.[6] Low-income communities and communities of color are less likely to own cars, and therefore rely more on public transit, which can limit their mobility and economic opportunities.[7]

Too often, transportation decisions do not meaningfully address these racial inequities, and may reinforce racially segregated geographies and spatial inequality, which stem from a long history of discriminatory policies like redlining, racial covenants, and housing policies that specifically excluded communities of color from economic opportunities.[8] These inequities persist when policymakers fail to understand the mobility needs of low-income people of color, fail to include them at the decision-making table, fail to determine who benefits or suffers from transportation decisions, and fail to track and measure success from an equity perspective. To remedy this, our proposed solution prioritizes equity and community decision-making power in transportation planning and investments.

However, addressing structural inequities in transportation is not the only challenge California faces in building a 21st century transportation system. Technology and innovation are disrupting the status quo—changing how Californians move, how transportation planners make decisions, and how California meets its air quality, climate, and social equity goals. We already see this wave of new transportation technologies and mobility services falling into old patterns of disinvestment in low-income communities of color and exacerbating inequities.[9] Ride-hailing companies such as Uber and Lyft compete with public transit for ridership, even in New York City, a city with robust public transit infrastructure.[10] A reduction in ridership may be used to justify cutting service, which will hurt transit-dependent low-income individuals the most.[11]Additionally, "gig economy" companies like Lyft and Uber contribute to growing economic inequality due to exploitative business models that shift risks onto their independent contractor[12] drivers, who lack the stability and benefits of employees—while paying them, in many cases, minimum wage after accounting for taxes and costs.[13] Meanwhile, Uber, Lyft and other companies continue to invest heavily in self-driving, autonomous cars, which will significantly reduce their costs by eliminating driver jobs.

There are 5 million driving jobs in the U.S.,[14] and many African Americans, Latinos, and Native Americans rely on them for wages.[15] These driving jobs include Uber/Lyft and taxi drivers, transit operators, and delivery services drivers. One estimate found that 4.23 percent of the African-American workforce would be negatively affected if their driving jobs were lost to automation.[16]

Fairness and equity require California to reform its transportation policies and practices to address the needs of low-income individuals first and most. The Mobility Equity Framework addresses two problems with transportation planning that exacerbate existing inequities and provides recommendations to address these issues.

- **Problem 1: How can we elevate community needs and power in transportation planning, decisions, and funding?**

  Solution: We recommend a robust assessment of the immediate mobility needs of the target community. A participatory budgeting process is the most equitable approach to engage communities and ensures democratic decision-making on transportation issues. This participatory approach should be used to the maximum extent possible.

- **Problem 2: How can we compare transportation modes that maximize equity outcomes while addressing community-identified mobility needs?**

  Solution: The Mobility Equity Framework gives communities and advocates a tool to analyze, evaluate, and compare different transportation modes based on their ability to enhance mobility, improve health, and increase economic opportunities for low-income communities of color.

METHODOLOGY

To collect the information necessary to develop the framework, The Greenlining Institute conducted a literature review, developed surveys, and engaged in expert interviews with relevant stakeholders to gain a robust understanding of existing decision-making frameworks, transportation inequities, common equity indicators, and the economic opportunities of clean transportation. The literature review included over 150 reports, and we conducted 17 expert interviews.

We also convened an eight-member Technical Advisory Committee, comprised of transportation experts in government, academia, philanthropy, community-based organizations, advocacy groups, and industry. Their critical input and feedback guided the development of our framework, and was collected across three convenings, as well as surveys, and reviews of drafts. The committee members include:

Richard Marcantonio *Managing Attorney at Public Advocates Inc.*
Randall Winston *Executive Director of California's Strategic Growth Council*
Clarrissa Cabansagan *Senior Community Planner at TransForm*
Jamie Dean *Program Director at the 11th Hour Project*
Erika Rincón Whitcomb *Senior Associate at PolicyLink*
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Leslie Graham *Director of Grants & Partnerships at Green Commuter*

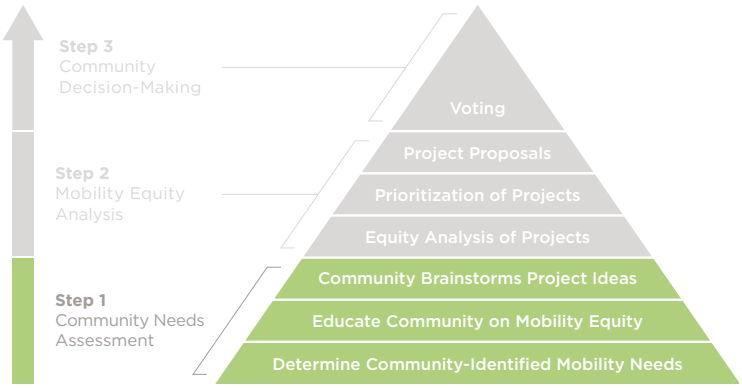
OVERVIEW

Research shows a strong link between transportation and the ability of individuals to increase their economic well-being. In fact, a Harvard study found that a person's commute time is the most significant factor in their chances of escaping poverty.[17] A lack of access to reliable and efficient transportation options, on the other hand, severely reduces access to jobs, schools, health care and services, further exacerbating structural inequities in health and wealth in low-income communities of color. This inequitable access to transportation options results from a legacy of discriminatory housing, land-use, and transportation policies.

But when transportation investments meet the mobility needs of low-income residents by connecting them to employment centers, education and recreation, all communities prosper and thrive. Because the upward mobility of low-income residents benefits the growth of the entire economy,[18] their mobility needs should be treated as a priority in transportation planning and investments. Research from PolicyLink found that the American economy would gain $2.1 trillion in GDP every year by closing its racial gaps in income, a 14 percent increase.[19] Prioritizing clean, high-occupancy forms of transportation in low-income communities of color produces additional co-benefits in job opportunities, cost savings, improved air quality, and enhanced quality of life.

MOBILITY EQUITY FRAMEWORK

Step One: Community Needs Assessment



By and large, transportation planning has been out of touch with meeting the mobility needs of communities for far too long. Often, working people lack the time or means to attend public meetings, and as a result their feedback and mobility priorities are not accurately represented. In addition, current long-range transportation plans do not account for current inequalities, changing mobility needs, and future displacement and technologies.[20] According to transportation justice researchers, equitable planning should begin by asking, "What are the most pressing unmet needs of particular underserved communities?"[21] This question can reveal how well a proposed project or investment will address those needs, whether the benefits are significant, whether the benefits target low-income residents, and whether the proposal avoids harms to the community.[22] By focusing on immediate needs, marginalized populations can identify more tangible benefits, which increases the likelihood of community participation in a needs assessment. Genuinely identifying community mobility needs must always be the first step in the transportation planning process in order to guarantee that the proposed projects will provide benefits and reduce harms.

Research and existing transportation justice efforts in California find that a participatory budgeting process represents the most comprehensive and equitable approach to identifying community mobility needs and potential solutions. In participatory budgeting, community members democratically decide how to spend part of a public budget. Because the process facilitates residents brainstorming project ideas to address their needs, this is generally more robust than other community needs assessments. Various stages of the participatory budgeting process are infused into our sub-components of Step One: (1) identifying community mobility needs, (2) educating the community on mobility equity, and (3) facilitating residents brainstorming project ideas.

Identify Community Mobility Needs

Outreach must always be the first step in transportation planning to identify community mobility needs. The Participatory Budgeting Project is a nonprofit that assists governments, public institutions, or other organizations in implementing participatory budgeting process. Following the recommendations of their Participatory Budgeting Outreach Toolkit,[23] outreach should be targeted in underserved neighborhoods to reach underrepresented populations, and decision-makers should foster relationships with community

leaders and grassroots organizations to build trust. To allow for flexibility, the mobility needs assessment and subsequent idea brainstorm collection can take many different forms, such as community meetings, surveys or online forums—a wealth of guides and toolkits can be found in the Participatory Budgeting Project's Resource Center.[24] In combination with a needs assessment, it may be useful to include an educational component on mobility equity.

Educate the Community on Mobility Equity

In tandem with the identification of mobility needs, we recommend educating the community on the basic principles of mobility equity and transportation burdens and benefits. This educational component informs community members about the costs and benefits of various transportation modes, including new forms of mobility such as bikeshare, carshare, ride-hailing, and microtransit. In addition, this informs community members about which types of transportation modes may best meet their needs, while providing information on cost-savings and health benefits. To promote informed community decision-making and produce the most equitable outcomes, this educational aspect will be valuable throughout the three-step process.

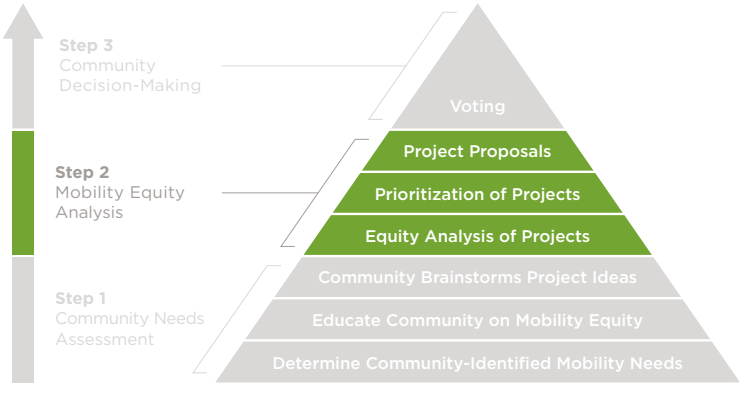
The Community Brainstorms Project Ideas

The framework's concepts, such as the equity indicators and examples discussed in the following section, should also be available for residents' reference during the project brainstorm. These resources can serve as guides as community members brainstorm transportation project ideas to meet their mobility needs. Once residents' project ideas have been collected, their ideas can be assessed in Step Two, the equity analysis.

Participatory budgeting is just one example of a strategy to engage communities in determining their needs and priorities and does require significant time and resources. Not every community will have the capacity to complete the three sub-components of Step One, such as community education and brainstorming project ideas. However, it remains critical that funds be allocated towards addressing community mobility needs that the community itself has identified as priorities. California makes funding for participatory budgeting processes available to local communities;[25] however to the extent that implementing a complete Step One process is not feasible, advocates and decision-makers should explore other community-based approaches to determining community mobility needs and collecting residents' project ideas. Traditional approaches may include conducting surveys or partnering with CBOs to identify specific community mobility needs. Today, online data tools make it easier for communities to identify their needs, share these with decision-makers, and track progress. For example, Streetwyze's mobile mapping platform allows residents to contribute their local knowledge, experiences, and opportunities within their communities and share it with government in order to implement responsive policies and track equity indicators.[26] New technologies such as online data tools create exciting opportunities for more widespread public participation in transportation planning.

Step Two: Mobility Equity Analysis

Decades of unsustainable transportation planning that prioritized single-occupancy vehicles and freeway expansion resulted in congestion, pollution, and the displacement of communities of color. Communities currently have limited decision-making tools to reflect the unsustainable and inequitable impacts of single-occupancy vehicles, which is the gap that this tool seeks to fill. Looking forward, such a tool is critical as new transportation technologies are evolving rapidly, and the equity outcomes of different transportation



modes vary greatly. Auto-based transportation modes such as electric vehicles, ride-hailing (Uber, Lyft), and carsharing are growing in popularity but still perpetuate automobile dependency and continue to provide limited benefits to low-income communities.

On the other hand, transportation modes such as walking, biking, and clean-powered public transit provide the most equitable access to all people and offer innumerable health benefits and cost savings.[27] Research found that compact land use and sustainable urban mobility could save cities worldwide more than $100 trillion due to less infrastructure and lower vehicle and fuel costs.[28] Too often, walking, biking, and public transit are afterthoughts in transportation planning and investments. These modes coexist in direct conflict with our pervasive car-centric culture, reinforced by infrastructure built to accommodate vehicles, which sit unused for 95 percent of the time.[29] In addition, low-income communities of color face barriers to accessing biking and walking due to unsafe infrastructure, poorly designed streets[30] and other safety concerns such as harassment and violence in their neighborhoods.

We need transportation planning tools that promote the most equitable and environmentally sustainable transportation modes and address community-identified needs. As a response, we identified a set of equity indicators intended to increase access to high quality mobility options, reduce air pollution, and increase economic opportunities. Using these indicators to perform a multi-criteria analysis produces a hierarchical list of transportation modes with the cleanest and most equitable options at the top. Not only has a diverse array of clean transportation options been shown to reduce health impacts[31] and costs,[32] but a study found that even income inequality declines when more commuters use alternative transportation modes instead of single occupancy vehicles.[33] Prioritizing these cleaner options, to discourage costly car ownership and instead prioritize walking, biking, public transit, and shared mobility in low-income communities, produces multiple benefits.

Embedding this equity analysis into a participatory budgeting process establishes a unique mechanism for communities to directly engage in decision-making around which transportation options meet their mobility needs. In this section, we analyze the equity performance of various transportation modes using 12 equity indicators. Based on their performance, we developed examples that rank the most sustainable and equitable transportation options across three geographic contexts. Lastly, this section explains how residents, advocates, and decision-makers can use these equity indicators and examples to address community-identified mobility needs.

Equity Indicators

To effectively embed equity in transportation planning and investments requires equity indicators and metrics to evaluate current conditions and track progress towards goals. While Metropolitan Planning Organizations are federally required to conduct an equity analysis in their long-range transportation plans, their flawed methodology routinely fails to produce equitable outcomes.[34] Transportation justice researchers have concluded that the ineffectiveness of traditional equity analyses stems from a failure to account for future displacement and current inequalities (e.g. segregation, lack of opportunity) and the fact that the 20-year forecasting models become quickly outdated with the new transportation plans every four years.[35] Consequently, they argue that equity must be addressed in the near-term, and that projects and plans must meet community-identified needs that benefit low-income residents.[36] For this reason, we developed 12 equity indicators that specifically measure impacts on low-income residents and communities of color. We drew inspiration for our equity indicators from various mobility indicators,[37] but expanded and reframed them with an equity-specific lens. Decision-makers and communities can use these indicators and their metrics to assess the equity outcomes of individual transportation projects or entire transportation modes or plans.

The 12 equity indicators of this framework were chosen and categorized based on their ability to measure and advance the three goals: (1) increasing access to high quality mobility options, (2) reducing air pollution, and (3) increasing access to economic opportunities in low-income communities of color. Based on their local conditions, communities may choose to assess which equity indicators are most relevant to their specific mobility needs. The chart below organizes the equity indicators by their goals and recommends sample metrics.

	Equity Indicators	Recommended Metrics
Goal #1: Increase Access to Mobility	1. Affordability	This metric will vary by transportation mode and location, and therefore should be set by the community; a recommended default is that households should spend no more than 20% of budgets on transportation costs[28]
	2. Accessibility	Transportation mode is physically accessible (available in neighborhood), accessible to disabled people, accessible to people with various cultures/languages, accessible without the need for banking or a smartphone
	3. Efficiency	Frequency of transit, travel times, time spent in traffic, optimal availability of parking, etc.
	4. Reliability	Consistency and variability of travel times, predictability of travel times
	5. Safety	Collision rate and severity;[39] personal safety issues (harassment, profiling, etc.)
Goal #2: Reduce Air Pollution	6. Clean Air and Positive Health Benefits	Quantities of air pollutants (PM, NOx) reduction,[40] level of physical activity, etc.
	7. Reduction in Greenhouse Gases	Quantities of greenhouse gas reduction[41]
	8. Reduction in Vehicle Miles Traveled	Compact development and greater clustering of destinations, VMT per capita

Goal #3: Enhance Economic Opportunity

9. Connectivity to Places of Employment, Education, Services, & Recreation	Number of households by income within walking distance to schools and services. Number of households within 30-minute transit ride or 20-minute auto ride ofemployment center, etc[42] Number of transit transfers needed, time spent in transit.
10. Fair Labor Practices	Fair wages, basic employment benefits and protections throughout construction, operation, and maintenance
11. Transportation-Related Employment Opportunities	Direct and indirect employment throughout construction, operation, and maintenance
12. Inclusive Local Business & Economic Activity	Local hire agreements, increased foot traffic to local businesses, new businesses created, increased property values, benefiting the local community without displacing residents, etc.

We selected these 12 equity indicators because they comprehensively measure various transportation projects or modes across their impacts on mobility, air pollution, and economic opportunity in low-income communities of color. Comparing the equity performance of projects and modes in targeted communities lays the groundwork for prioritizing the most equitable projects and modes.

As previously mentioned, these equity indicators should be referenced throughout the three-step process. In Step One, it may be helpful to refer to these indicators to educate residents about how equity is reflected in transportation projects and how decisions at hand are relevant to their lives. In addition to utilizing these indicators in Step Two of the equity analysis, it may also help to reference these equity indicators in the community decision-making of Step Three.

Communities have flexibility in determining the purpose of conducting this equity analysis and can choose the equity indicators that are most relevant to their mobility needs. Residents may want to augment and customize this list based on their specific demographics, geographic context, or other factors. We also recommend that equity indicator definitions and metrics be modified if they are not relevant to the target community. This equity analysis should make clear which transportation projects or modes perform well across the equity indicators, enabling communities to decide which should be prioritized. Involving communities in the selection of equity indicators, metrics, and modes will ensure that implementing the high performing projects or modes will meet the community's mobility needs.

Transportation Mode Breakdown

This mode breakdown covers the most common transportation modes generally available today, although the list inevitably will expand as transportation technologies evolve. Because of the rapid expansion of new transportation modes, communities may need education about the varying attributes of each. Some modes may have cost, health, and economic benefits, while others, like gas-powered vehicles, may impose burdens. The equity indicators can be used to assess and compare the benefits or burdens of different transportation modes in order to identify and promote the most equitable and sustainable modes. Importantly, the results of the equity analysis can vary depending on community mobility needs and the transportation modes that best meet their needs. For that reason, community engagement, education, and decision-making should inform every step of this process, and success in terms of equity outcomes will depend on the level of community engagement across the three steps of this framework.

This transportation mode breakdown seeks to illustrate the most commonly available modes today, but that landscape is constantly evolving. For example, soon advocates will need to include autonomous vehicles in the equity analysis. Additionally, a community's preferences may vary or could be further subdivided, such as differentiating public transit into subcategories like bus rapid transit, subway, or a local bus route. The nature of ride-hailing has also been evolving, and it may be more accurate to distinguish solo ride-hailing from pooled ride-hailing to allow for a more accurate comparison of the modes' performance on the equity indicators. Communities can determine and sub-categorize which transportation modes will be assessed in the equity analysis.

The physical, financial, and cultural barriers to accessing each of these modes vary based on location and many other factors. While some communities may prefer to compare the equity outcomes of all modes, others may only focus on those most relevant to their needs. The demographics of residents (e.g. families, seniors, university students) or the most common trip types (e.g. commuting, leisure, school) will also be important factors.

Active Transportation (Bike/Walk)

Electric Public Transit

Conventional Public Transit

Rideshare (Car/Vanpool, Microtransit)

Bikeshare

Carshare (Zipcar)

Taxis

Ride-hailing (Uber, Lyft)

Personal Electric Vehicles

Personal Gas Vehicles

For this community decision-making power to be effective, communities should be well-informed about the advantages and disadvantages of all transportation modes—especially concerning new forms of shared mobility such a bikeshare, carshare, and ride-hailing.[43] This is particularly important in low-income communities of color, because many physical, logistical, financial, technological, and cultural barriers may reduce access to shared mobility.[44] Resources that clearly define the variety of transportation modes and their impacts should be made readily available during the community's project brainstorm, equity analysis, and decision-making. Everything about this process, including the examples below, should be treated as flexible and adaptable to varying communities and their conditions.

Examples

Decades of prioritizing auto-centric transportation investments have enabled the U.S.'s automobile addiction, leading to a nation in which 75 percent of Americans drive alone to work.[45] This high proportion of drivers stems not only from personal preference but also represents a dependency created by a lack of alternative transportation options. Today, new forms of mobility such as Uber and Lyft are widespread across cities, competing with public transit for ridership— even in New York City.[46] Lyft Shuttle, which offers a fixed-route, fixed-price pooled service that replicates public transit routes, markets itself as a complement to transit but actually competes with transit for riders.[47] Our framework demonstrates that auto-based modes are not affordable or accessible to all and cause negative health impacts to low-income communities of color. In addition, because ride-hailing companies classify their drivers as independent contractors, they do not provide the same employment benefits as other transportation modes, such as unionized public transit jobs. Looking at the negative impacts of our pervasive car culture in combination with the multitude of new mobility options highlights the need to assess and compare the equity outcomes of different transportation modes.

In this section we present three examples evaluating modes of transportation in urban, suburban, and rural areas. These are not intended to serve as one-size-fits-all solutions to every community, but can provide a starting point for discussions of equitable mobility options in three common geographic contexts–circumstances that of course will vary in different communities. For purposes of illustration, these examples assume that all the equity indicators were weighted equally, and that all modes are available in the geographic context. These examples illustrate the order that should be given in various transportation modes based on their ability to increase access to high quality mobility options, health, and economic outcomes.

The definitions below for urban, suburban, and rural areas are based on the geographic place types identified in Caltrans' Smart Mobility Framework.[48] Many more transitional geographic types exist in between these urban, suburban, and rural categories, and for a more detailed list of geographic definitions and recommendations, refer to the Smart Mobility Framework.[49] However, for the purpose of providing illustrative examples, we narrowed our focus to urban, suburban, and rural areas within California.

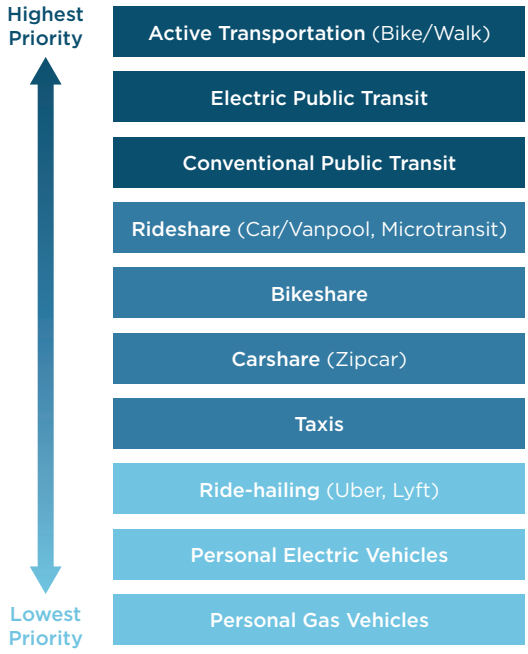
Urban Areas: Areas of mixed-use development, high density, and connectedness of destinations.[50]

Caltrans' Smart Mobility Framework recommends prioritization of transportation projects and programs that:

- Improve the connectivity of employment and transportation hubs
- Allocate street space to benefit high-occupancy and non-motorized modes
- Promote complete streets (streets designed to enable safety for all users, including pedestrians, bicyclists, motorists, and transit riders or all ages and abilities)[51]

Examples may include: walking, biking, high-capacity clean transit, bikeshare and carshare programs.

- Consistent with the recommendations of Caltrans and other transportation experts, the urban area example prioritizes clean modes such as walking and biking based on the equity indicators.
- Electric public transit and conventional public transit scored high because of their high-occupancy ability and the associated economic opportunities in construction, operation, and maintenance.
- Ride-hailing, carshare, bikeshare scored in the middle due to their lack of accessibility and affordability in low-income communities of color.
- Gas-powered and single occupancy modes receive the lowest priority because of their low scores for reducing air pollution.
- Ride-hailing scored lower than taxis due to unfair labor practices and lack of access and affordability in low-income communities of color. This poor equity performance is based on current business models of Uber and Lyft; other models of ride-hailing that may be cooperatively owned or electric-powered would likely score higher.



*Illustrative example when all 12 equity indicators are weighted equally

*Assuming that all transportation modes are available in urban areas

Suburban Areas: Lower-density residential area or mixed-use development, outside of a larger city.[52]

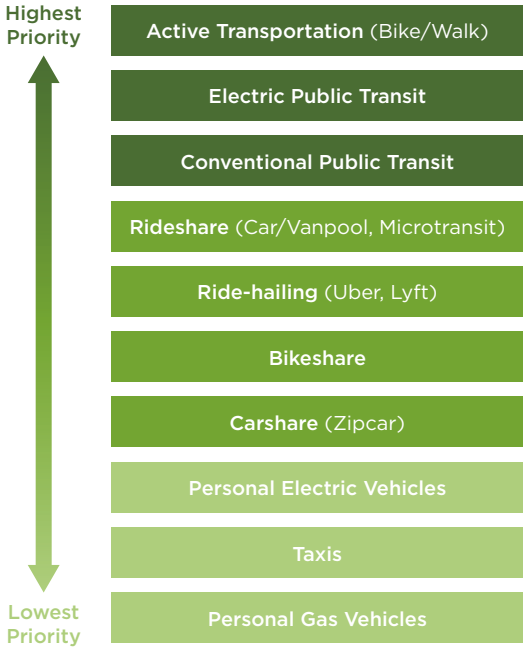
Caltrans' Smart Mobility Framework recommends prioritization of transportation projects and programs that:

- Invest in complete streets and safer walking and biking conditions

- Increase commute transit service and ridesharing
- Improve connectivity to reduce trip lengths and increase non-auto trips

Examples may include: complete streets for biking and walking, high-capacity transit to job centers, and carshare and bikeshare programs.

- Walking and biking, ride-share, ride-hailing, and bikeshare should be prioritized because they serve as first and last mile connectors to public transit.
- While equity in a suburban context prioritizes high-occupancy modes such as public transit, transit should be right-sized based on ridership rates (e.g. microtransit) to reduce inefficient service.
- While many labor, congestion, and environmental issues surround the current business model of ride-hailing, this mode can still serve as gateway for changing car ownership behavior and may eventually lead to more sustainable options such as vanpooling. It may be helpful to distinguish between solo ride-hailing and pooled ride-hailing because their performance on the equity indicators will differ.
- Bikesharing has a moderate priority compared to regular biking because the current bikeshare business model has limited accessibility in the suburbs. Also, not all populations can easily use it (e.g. disabled people and families).
- Despite the better labor conditions of taxis than ride-hailing companies, taxis receive a low priority in planning and investments due to accessibility and feasibility in a suburban setting.



*Illustrative example when all 12 equity indicators are weighted equally

*Assuming that all transportation modes are available in suburban areas

Rural Areas: Very low population density and highly dispersed destinations.[53]

Caltrans' Smart Mobility Framework recommends prioritization of transportation projects and programs that:

- Create and maintain walkable rural towns and safety improvements on rural roads
- Connect networks of schools, services, and employment destinations

Examples may include: demand-responsive transit and inter-city transit, park and ride lots, and safe bike and walk infrastructure.

- Because flexible, high-occupancy modes best suit the needs of a rural community, rideshare receives high priority. Rideshare and microtransit can be easily adapted for the appropriate scale, and can increase connectivity to schools, services, and employment destinations.

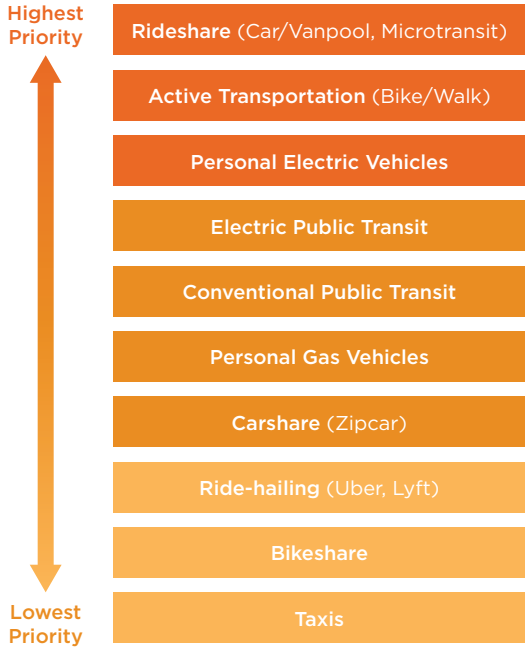
- Where practical, active transportation ranks as a high priority due to the need for safe biking and walking infrastructure in town centers and on rural roads.

- Personal electric vehicles receive high priority, due to dispersed housing and destinations.

- Both electric and conventional public transit have a medium priority, due to efficiency. Yet this could vary depending on the need for public transit between rural towns or to connect to cities.

- Carshare, ride-hailing, bikeshare and taxis are ranked low, mostly due to lack of accessibility and feasibility.

These three examples provide default lists of priority transportation modes based on general differences in density and mobility needs among different geographies. In practice, priorities will vary based on the community's mobility needs and the selected indicators and modes.



*Illustrative example when all 12 equity indicators are weighted equally

*Assuming that all transportation modes are available in rural areas

Implementing the Mobility Equity Analysis

How the equity analysis is applied will ultimately depend on who conducts the analysis – community members, advocates or decision-makers. The equity indicators are intended to be flexible in use, whether to assess the equity outcomes of a specific transportation project or plan or to illustrate a broad view in order to prioritize ideal transportation modes.

Mobility Equity Analysis

1. **Equity Analysis of Project Ideas:** The relevant equity indicators are used to assess the equity outcomes of residents' project brainstorm ideas collected in Step One.

2. **Project/Mode Prioritization:** Based on the projects' equity performance and ability to meet community mobility needs, this prioritizes the most equitable modes or projects, as in the examples above

3. **Completion of Project Proposals:** Next, volunteer budget delegates, with the technical assistance of experts, transform the top-performing project ideas into complete project proposals that include their estimated budgets.[54] These project proposals will later be voted on by residents in Step Three.

Integrating an equity analysis into a participatory budgeting process would likely produce the most equitable results and the most robust community engagement. Yet without funding (as California makes available for participatory budgeting in transportation planning), communities may lack the needed capacity and technical assistance, and thus may need to use other, less resource-intensive techniques.

In place of a participatory budgeting process integrated into an equity analysis, decision-makers may use a scorecard tool to assess the transportation projects' or modes' performance based on the mobility equity indicators. This can guide the process of setting priorities. Users may refer to the list of scorecard recommendations in the Appendix, some of which specifically focus on equity or smart growth. Other scorecard variations exist, with some intended for community members and advocates while others are more complex and may require technical assistance to execute. However, assessing transportation priorities using a scorecard, while better than no equity analysis at all, lacks meaningful community engagement in

the process. In this case, we recommend that in combination with an equity scorecard, decision-makers also refer to the Disadvantaged Community Benefits tool, which introduces a four-step process for assessing whether a project benefits a disadvantaged community.[55] The framework asks four questions:

1. Will the investment meet an important community need?

2. Are the benefits significant?

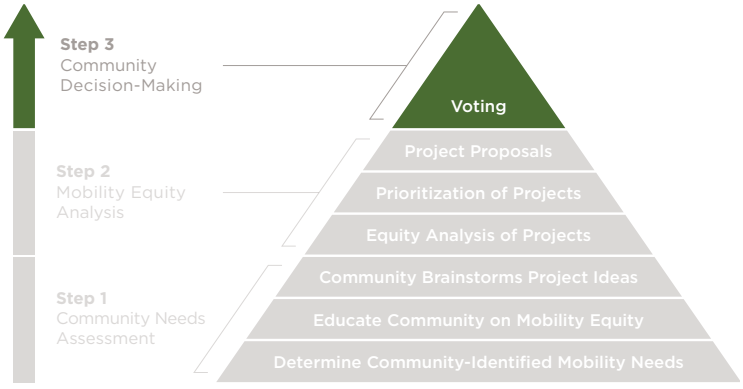
3. Are low-income residents or households the primary beneficiaries?

4. Does the investment avoid substantial burdens?

This Disadvantaged Community Benefits tool can be easily answered both by residents or decision-makers and would strengthen the equity analysis, if a more robust participatory budgeting process is not feasible. While a scorecard can be used to set priorities, remember that the end goal is to have transportation decisions meet community needs, which will require simultaneous implementation actions such as legislative funding and cooperation by implementing agencies. While this white paper does not explicitly address these implementation issues listed, they cannot be forgotten.

Step Three: Community Decision-Making Power

Low-income communities and communities of color suffer the most from transportation-related pollution, high transportation costs, and a lack of access to safe, reliable transportation options. These disproportionate burdens and benefits stem in part from these communities' lack of representation at the decision-making table. Regional Metropolitan Planning Organizations (MPOs) control the allocation of billions of dollars to long-range transportation plans, and their decision-making has enduring impacts on communities across the country. Unfortunately, the voting members of MPO boards often do not reflect their region's demographic diversity—often underrepresenting low-income communities, women and people of color.[56] In addition, the voting structure of MPO boards is usually not proportional to population size, meaning that a suburban community of 30,000 could have the same voting power in regional transportation planning as an urban community of 500,000.[57] This overrepresentation of suburban areas can result in transportation decisions that fail to benefit urban areas and limit the participation and engagement of urban, low-income communities of color.[58] The strategies in this section aim to shift the rightful power of decision-making to underrepresented communities, who have historically been excluded from such processes.



To disrupt the existing paradigm, low-income communities of color need greater decision-making power in MPO boardrooms, within transportation planning staff, and directly in their communities. Furthermore, transportation planners must reflect the diversity of the communities they plan for, as they often influence the projects that other transportation decision-makers vote on. Reforming MPO's voting structures to redistribute power to urban residents can play a major role—such as San Diego's new reform requirement to have a more proportional representation of urban residents in its transportation planning agency.[59] Another strategy would be to inform people that voting for their mayor or councilmember may also be a vote for their MPO representative.

However the decision-making body is constituted, this third step focuses on strategies that elevate equity and community decision-making power, including an adapted participatory budgeting process and a racial equity toolkit. Without this final step, the previous steps cannot effectively produce equitable outcomes. The real power lies in the decision-making around which types of transportation projects go forth and which communities will benefit, and that requires community involvement.

Strategies to Elevate Community Decision-Making Power

Participatory Budgeting in Community Decision-Making

We have embedded various stages of the participatory budgeting process throughout our three-step process, which provides an ideal opportunity to promote informed decision-making and voting. In Step Three, residents vote on the project proposals identified in the earlier stages that best meet their mobility needs and priorities. Public participation throughout the needs identification, project brainstorm, and voting can take place in the form of town halls, community meetings, mail-in ballots, or other formats best suited to the community. Online voting is becoming a more common form of public participation in this process, because it expands access and inclusion, as seen in San Francisco's online voting platform to determine how to spend the City's transportation dollars.[60] Participatory budgeting has a strong equity emphasis on empowering underrepresented populations and thus can further maximize equity outcomes. Through participatory budgeting low-income communities of color, along with other community members, can democratically decide which transportation projects or modes best meet their mobility needs.

Implementing the Mobility Equity Framework with an adapted participatory budgeting process will require significant time and resources and doing this effectively requires dedicated funding, as California has provided. This process can be funded with a portion of an existing budget or a new funding source can be identified. Even jurisdictions with limited financial assets such as Vallejo, California, have had successful results through a half-cent sales tax that has served as a long-term sustainable funding source for participatory budgeting. According to researchers, a large range of potential funding sources includes: Congestion Mitigation and Air Quality Improvement program, a set-aside through legislation or a state Department of Transportation decision, or a local transportation sales tax measure.[61] The San Francisco Bay Area's Metropolitan Transportation Commission just became the first transportation funding agency to utilize participatory budgeting, and will now fund pilot projects in disadvantaged communities.[62] Examples and information about identifying funding sources, adaptable to a variety of jurisdictions and institutions, can be found in the PB Scoping Toolkit.[63]

Despite the initial upfront costs, participatory budgeting catalyzes citizen participation, political support, public education, the equitable distribution of funds, and improved government transparency.[64] The California Department of Transportation has incorporated participatory budgeting into its Sustainable Communities Planning Grants,[65] which presents opportunities for communities to implement this process. While this approach provides the most equitable and democratic form of community decision-making, communities still unable to execute a participatory budgeting process can utilize other strategies that promote equity and community engagement in transportation decision-making:

Racial Equity Toolkit

Both The Greenlining Institute's Racial Equity Toolkit[66] and The Government Alliance of Race and Equity's Racial Equity Toolkit outline a process to integrate racial equity in decisions, policies, programs, and budgets.[67] Racial equity toolkits identify goals and measurable outcomes, engage communities in decision-making processes, determine who benefits and who is burdened by decisions, create strategies to advance racial equity, and establish processes to implement and assess outcomes.[68] While some decision-makers may contend that this degree of emphasis on racial equity is overly burdensome, cities such as Portland and Seattle have embraced this strategy in their models of decision-making.

The City of Seattle's Racial Equity Toolkit helps to analyze the race and social justice impacts of the city's decisions. Every department is required to use this toolkit to analyze every budget proposal and must report

on their annual Race and Social Justice Initiative work plans.[69] Some examples of the impact of Seattle's racial equity work in transportation include: 1) the Seattle Department of Transportation collaborated with the Neighborhood District Councils to reach underrepresented communities in the City's Neighborhood Projects Fund process, and 2) Seattle Department of Transportation established social equity criteria to assist in the prioritization of transportation improvements.[70]

While alternative models such as the Racial Equity Toolkit and the Disadvantaged Community Benefits tool do not go quite so far as participatory budgeting, they do prioritize equity and community engagement in decision-making.

CONCLUSION

This framework provides tools to assess and maximize equity in transportation planning and decision-making to address community-identified mobility needs. By referencing the 12 equity indicators and the examples provided, low-income communities and communities of color can identify and prioritize transportation modes or projects that best provide positive health and economic benefits. We have designed this framework to be flexible and adaptable across varying geographic contexts, and the entire three-step process can be best utilized at a local community scale. While the implementation of the entire three-step is preferred, even utilizing parts of the process could enhance equity in transportation planning and decision-making. This framework could also be adopted by government or referenced in agency guidelines; for instance, the California Department of Transportation has incorporated participatory budgeting into its Sustainable Communities Planning Grants.[71] Maximizing beneficial outcomes from this framework will require regulations to ensure prioritization of equity and true community engagement in transportation planning and investments.

Advocates have long called for identifying community mobility needs to be the first step in any transportation planning process.[72] Prioritizing transportation modes based on their performance across equity indicators can unravel the disparities in transportation burdens and benefits. While more research is still needed, The Greenlining Institute will pursue opportunities to codify the elements of this framework into California transportation decision-making.

APPENDIX

Transportation Justice

- **Transportation Justice in the California Legislature**
  Background on Transportation Justice in CA
  https://d3n8a8pro7vhmx.cloudfront.net/californiadreamride/pages/1238/attachments/original/1491777563/TransporJusticeStatementJustification.pdf?1491777563

- **6 Wins for Social Equity**
  Collaborative regional coalition working to ensure transportation justice in the Bay Area
  http://www.sixwins.org/p/whats-at-stake.html

Identifying Community Needs

- **Conducting Needs Assessments**
  Detailed toolkit with information detailing how to conduct a needs assessment.
  http://ctb.ku.edu/en/table-of-contents/assessment/assessing-community-needs-and-resources/conducting-needs-assessment-surveys/main

Comparing Transportation Modes

- **Transportation Cost Benefit Analysis**
  How to quantify the costs and benefits of different transportation modes and apply information in planning.
  http://www.vtpi.org/tca/tca01.pdf

Shared Mobility

- **Connecting Low-Income People to Opportunity with Shared Mobility**
  https://www.itdp.org/wp-content/uploads/2014/10/Shared-Mobility_Full-Report.pdf

- **Shared-Use Mobility Reference Guide**
  Defines various shared mobility modes and their benefits.
  http://sharedusemobilitycenter.org/wp-content/uploads/2015/09/SharedUseMobility_ReferenceGuide_09.25.2015.pdf

- **A Framework for Equity in New Mobility**
  Evaluates the equity impacts of new mobility projects and offers recommendation.
  http://www.transformca.org/sites/default/files/A%20Framework%20for%20Equity%20in%20New%20Mobility_FINAL.pdf

- **Electric Carsharing in Underserved Communities**
  Describes components to ensure successful carsharing programs in underserved communities.
  http://greenlining.org/wp-content/uploads/2015/01/Electric-Carsharing-in-Underserved-Communities-spreads.pdf

Measuring Indicators and Performance Measures

- **Equity Analysis: Examining Distributional Impacts of Transportation Improvements**
  How to select equity indicators, calculate indicators, compare changes in indicators across groups, and rank scenarios using equity criteria.
  http://www.joanwalker.com/uploads/3/6/9/5/3695513/bills_distributions_2016.pdf

- **Guide to Sustainable Transportation Performance Measures from the EPA**
  Describes opportunities to incorporate environmental, economic, and social sustainability into transportation decision-making with example performance measures.
  https://www.epa.gov/sites/production/files/2014-01/documents/sustainable_transpo_performance.pdf

- **Smart Mobility Framework**
  Planning guide that includes indicators and metrics to measure smart growth concepts.
  http://www.dot.ca.gov/hq/tpp/offices/ocp/documents/smf_files/SMF_handbook_062210.pdf

Scorecard Tools

- **Equitable Development Principles & Scorecard: A Tool for Communities and Planners**
  Simple Scorecard used to assess projects by equity criteria.
  https://www.metrotransit.org/Data/Sites/1/media/equity/equitable-development-scorecard.pdf

- **Smart Growth Project Scorecard**
  Tools to assess how proposed projects reflects your community's vision for smart growth.
  https://www.smartgrowthamerica.org/app/legacy/documents/scorecard.pdf

Decision-Making Frameworks

- **Participatory Budgeting**
  Toolkits and guides available to assess readiness and to provide information on outreach and implementation.
  www.participatorybudgeting.org

- **Racial Equity Toolkit**
  This toolkit is published by the Government Alliance on Race and Equity, a national network of government working to achieve racial equity and advance opportunities for all.
  https://www.racialequityalliance.org/wp-content/uploads/2015/10/GARE-Racial_Equity_Toolkit.pdf

- **Racial Equity Toolkit**
  This toolkit published by The Greenlining Institute is intended to provide policymakers, advocates, and others with an easy-to-follow guide to apply a racial equity lens to any policy issue.
  http://greenlining.org/wp-content/uploads/2013/07/GLI-REF-Toolkit.pdf

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