



Sharing in Action

Micromobility in Local Climate Strategies

October 2022



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Acknowledgments

OCTOBER 2022

This report was produced by the Shared-Use Mobility Center (SUMC). Nate Seeskin was the lead writer and analyst, with editorial oversight from Colin Murphy and research and mapping support from Hugo Coronado and Alex Rosander. The report was designed by Kathrine Nichols.

SUMC is grateful to Lyft, who made the creation of this report possible, and particularly for the guidance and input of Debs Schrimmer and Tejus Shankar. All images were supplied by Lyft.

The written content and conclusions of this report are solely those of SUMC.

The Shared-Use Mobility Center (SUMC) is a public-interest organization working to replace car-centric transportation with people-focused shared mobility to fight climate change, promote equity, and strengthen community. By connecting the public and private sectors, piloting programs, conducting new research, and providing policy and technical expertise to cities and regions, SUMC seeks to extend the benefits of shared mobility for all.

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Introduction

The advent of shared micromobility—bikes, scooters, and e-bikes deployed in public fleets—is a key part of the increasing diversity of transportation choices available in U.S. cities. It also provides communities with a tool to address the negative effects of climate change. Shared micromobility comes in increasing variety: docked and dockless, human-powered and electric, seated and standing, with cargo and utility models finding a foothold even in shared fleets.

Many local policymakers have begun to see micromobility as integral to their larger transportation and climate action efforts, especially since the impact to municipal budgets is relatively low compared to even modest road or transit investments. At least 298 jurisdictions had a shared-scooter or bikeshare program in 2021.¹ Across North America, some 232,000 vehicles made 128 million trips in 2021. About one in five of these trips connected to public transit.²

Beyond their value in increasing mobility and extending the reach of public transit, shared bikes and scooters can benefit communities by substituting for car use, reducing vehicle miles traveled (VMT), and reducing greenhouse gas (GHG) emissions even for trips of the same distance. A growing body of evidence underscores micromobility's climate benefits:

- In 2021, 37% of North American micromobility trips replaced car trips.³
- That same year, shared bike and scooter trips offset about 54 million pounds of carbon dioxide emissions from forgone car trips.⁴



- Micromobility could replace up to 18% of short car trips in North American metros, significantly reducing emissions and congestion.⁵
- With improving technologies, longer life spans, and efficient operations, micromobility vehicles have a significantly lower environmental impact over their life cycles compared to cars—regardless of fuel source. A life-cycle assessment of transport modes in European cities found that over their lifetimes (including manufacture, transport, deployment and use, and disposal), shared e-scooters with swappable batteries emit between one-tenth and one-third as much per passenger mile as gas-fueled cars, and between one-eighth and three-quarters as much as battery electric cars.⁶ Shared bikes and e-bikes have an even lower footprint.⁷

Over the last two decades, an increasing number of U.S. cities have developed climate action plans that outline strategies for reducing climate impacts from development, industry, and transportation. Changes to the transportation sector are especially salient: transportation has become the largest contributor of GHG emissions in the U.S., accounting for 27% of total emissions in 2020; within the transportation sector, passenger cars and trucks contributed 57% of those emissions.⁸

In the face of this growing impact, it's important for cities to use all the tools at their disposal for reducing the carbon intensity of getting around. Some climate action plans acknowledge micromobility as one tool among many policy approaches related to transportation and other areas of decarbonization. Unfortunately, policy language in strategic plans around micromobility is often minimal and lacks the detail needed to put it into meaningful practice. When it does exist, many climate plans' consideration of shared micromobility is often of a patchwork nature and doesn't show a full understanding of the modes' potential impact.



New Opportunities at the Federal Level

As the climate and equity priorities of the current administration are increasingly expressed in regulation and law, this is emerging as an opportune moment for investing in micromobility as part of broader transportation and climate strategies, particularly through the key legislative vehicles of the 2021 Infrastructure Investment and Jobs Act (IIJA) and the 2022 Inflation Reduction Act (IRA).

The IIJA authorized more than half a trillion in new funding to invest in transit, bike, pedestrian, and road improvements, vehicle charging and grid improvements, and other infrastructure. For the first time, shared micromobility was explicitly made an eligible expense for federal funding under several programs, including Congestion Mitigation and Air Quality Improvement (CMAQ) and Surface Transportation Block Grants (STBG) for bicycle and pedestrian projects. Multimodal integration and shared-use mobility generally were also added to the goals and permitted uses of some highway funds.⁹ The law also created the Carbon Reduction Program (CRP), which provides some \$6.4 billion in new formula funding to states, regions and local governments for reducing transportation emissions and increasing safety for all road users. Mode shift projects, including “micromobility and electric bike projects [and] charging infrastructure,” and safe bicycle/pedestrian infrastructure are among the eligible expenses under CRP.¹⁰ Other IIJA provisions support the creation of more safe infrastructure, increasing local control over the design of bike/ped facilities, and funding the development of regional active transportation, transit access, and complete streets policies.¹¹

While the IIJA focuses on physical infrastructure, the IRA provides important policy frameworks that tie together emissions reductions, equity and access, and safety improvements as essential components of a transportation system that decenters the gas-powered automobile. It pushes state and local governments to set emissions goals and measure progress towards them, supports safe and walkable communities for everyone, and encourages a shift toward lower-emitting vehicles when cars and trucks are still a necessity.¹²

As local policymakers explore these new opportunities, shared micromobility can be an important tool in setting and reaching new goals in equitably decarbonizing transportation.



How to Use This Report

This paper provides an overview of how policymakers and planners are already framing micromobility as a tool to address climate change. The researchers reviewed the plans of more than 30 cities, highlighting language and policy approaches that address micromobility. After assessing the plans and their possible impact, we've pulled out exemplary language and approaches and divided them into four key areas of policy focus: **modal shift, equity, infrastructure investments, and policy supports and incentives**. Within these broad groupings, we have identified several specific actions that climate plans use to support micromobility as a climate tool: creating quantifiable goals, centering equity, diverting away from car trips, increasing access to micromobility, creating infrastructure for vehicle parking and charging, incorporating micromobility into transportation demand management initiatives, and outlining potential funding structures that support micromobility programs.

We encourage readers to adapt this language and the underlying approaches for their own policy frameworks for addressing the transportation components of climate change.



Areas of Micromobility Policy Focus in Climate Plans

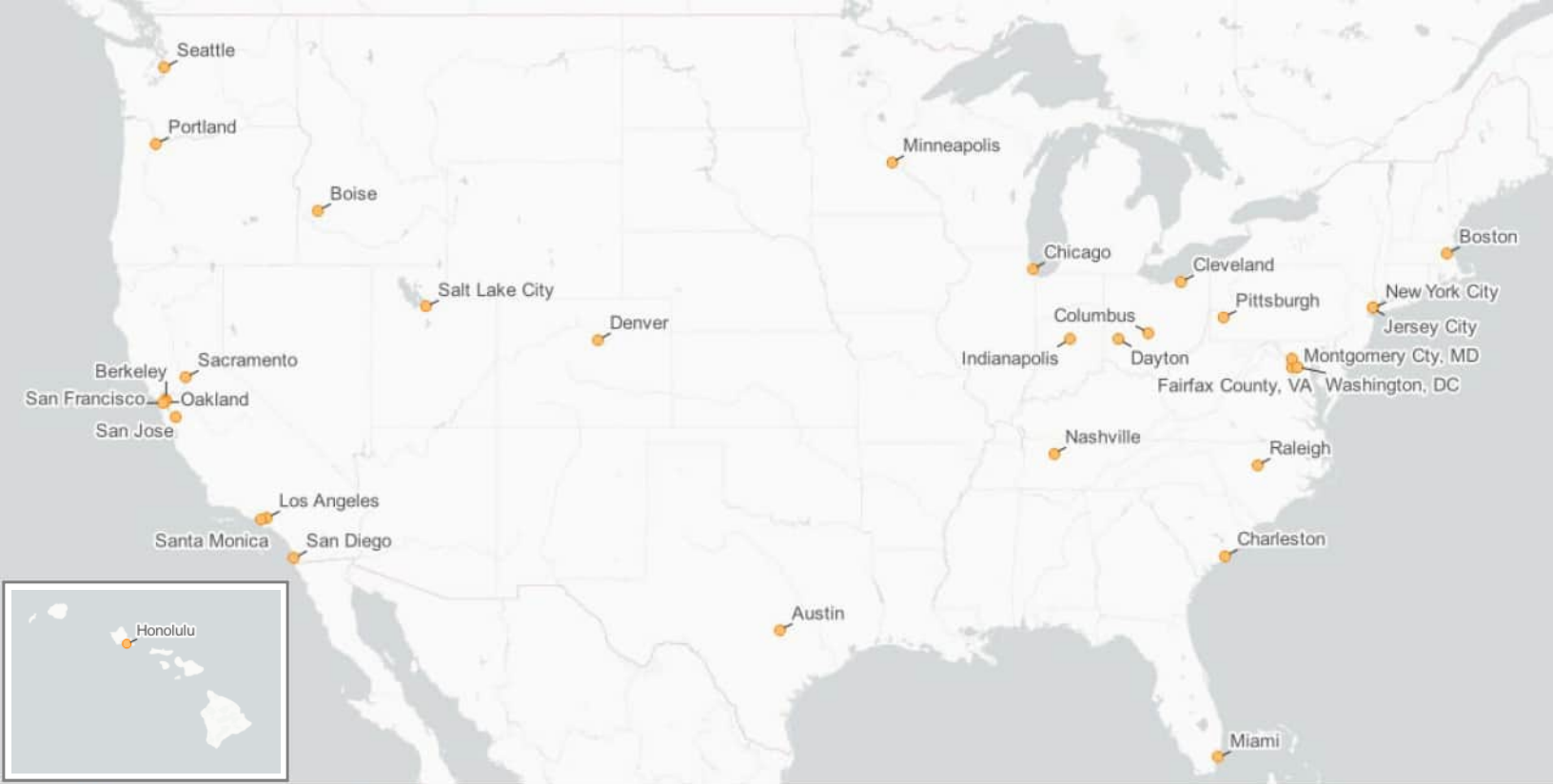
Local climate action plans can use specific language that addresses a variety of concerns and policy levers when referencing micromobility. In a review of more than 30 local climate action plans, researchers identified themes under four broad topic areas: modal shift, equity, infrastructure, and policy supports and incentives.

Modal Shift:

1. Quantifiable goals: Does the plan outline a quantifiable goal for expanding micromobility? Quantifiable goals can include bikeshare and shared scooter fleets, use of micromobility by trips or users, and even the number of micromobility trips that reduce car trips.
2. Diversion of car trips: Does the plan acknowledge a need to shift away from autocentric transportation for as many trips as possible? Shifting a community's transportation modal split away from cars toward shared modes is essential for addressing the effects of climate change.

Equity:

1. Equity: Does the plan mention how micromobility programs should serve lower-income communities and other historically underserved groups? Examples include requirements for discounts or fare-free access to certain populations or by stating that a certain proportion of micromobility vehicles and stations be sited in low-income areas and/or communities of color.
2. Access to micromobility: Does the climate action plan acknowledge that expanding access to micromobility (both by geography and by social/demographic factors) is an important strategy? Increased access to micromobility can encourage a broader range of people to use these modes.



The 31 local action plans reviewed for this paper.

Infrastructure:

1. **Parking/Mobility Hubs:** Does the plan specify that parking for shared bicycles and scooters should be coupled with easy access to micromobility vehicles? Does this plan acknowledge the need for mobility hubs? Parking specifically designated for shared scooters and bicycles, including docking stations, can improve people's experiences using micromobility and address curb management concerns.
2. **Charging:** Do plans include accommodation for field-based charging of micromobility vehicles? Charging infrastructure, such as at docked micromobility stations, can reduce the distance traveled by micromobility providers for operational and maintenance purposes, limiting the congestion and emissions that might offset micromobility's positive impacts.

Policy:

1. **Transportation demand management/mobility management:** Do climate plans assert a role for micromobility in transportation demand management (TDM) efforts, especially in commutes? Do plans recommend employer-provided benefits such as bikeshare/transit memberships or discounts, or building amenities like showers and changing areas? Workplace incentives can nudge commuters and others to more routinely choose micromobility over driving.
2. **Funding:** Does the plan identify sources of revenue or additional funding to support micromobility infrastructure and operations? More predictable funding streams can ensure that micromobility systems are sustainable and are here to stay for the long term.



Review of Language from Recent Climate Action Plans

Below are examples of language from adopted climate action plans addressing each of the criteria described above.

Modal Shift: Quantifiable Goals

Many plans call for more trips to be completed by foot or bicycle, but do not reference the role of micromobility as integral to this effort. Cities should recognize micromobility's role in assisting this shift to more short-distance trips completed by means other than automobiles. The best plans attach real numbers to what they hope to achieve, providing a way to measure progress toward their goals.

- Los Angeles' Green New Deal Sustainable City pLAN calls for 35% of all trips to be completed by walking, biking and micromobility by 2025. By 2035, 50% of trips are called to be completed by these same modes. Los Angeles based these goals through its baseline of 14% of all trips completed by non-car modes in 2015.¹³ This plan explicitly mentions micromobility alongside walking and biking.
- Chicago's 2022 draft Climate Action Plan outlines a series of goals in shorter and longer terms under Pillar 3: Enable personal mobility and well-being by providing access to clean transport options and a first-class walking and biking network. By 2030, trips on Divvy (the local bikeshare system) and other shared micromobility systems are called on to increase by 30%; this change is estimated to reduce vehicle miles traveled (VMT) by 2.2 million miles per year. By 2040, Chicagoans should be able to complete 45% of their trips through shared micromobility, transit, walking, or biking.¹⁴

Modal Shift: Diversion Away from Solo Car Trips

Most plans acknowledge the need to shift away from low-occupancy car trips, whether in personal

cars, taxis, or ridehail vehicles. This language is widely used across different climate action plans. Micromobility can be mentioned clearly within efforts to bolster pedestrian, bicycle, and transit trips.

- When Berkeley, CA, updated its Climate Action Plan in 2020, its authors highlighted micromobility as a key to reducing single-occupancy car use as part of a broader menu of active transportation options: “Active transportation refers to strategies [to] encourage walking, biking, and public transit over single occupancy vehicles. Strategies [include]: bike share and other shared micromobility options; transit infrastructure investments to increase ridership by reducing transit travel time and delay; safe, abundant pedestrian and bicycle infrastructure; and eliminating severe traffic crashes for all travelers.”¹⁵

Equity: Broad Approaches

Many plans recognize that micromobility systems must be accessible to a diverse range of communities. Often, financial barriers to access micromobility services keep low-income and unbanked individuals from using them—for instance, the up-front cost of a membership to access a lower pricing tier may be too large an increment, or may require a credit or debit card to sign up. Other times, vehicles and docking stations are not deployed to all communities, preventing many of those who could benefit most from using the shared mobility systems.

- Austin’s Climate Equity Plan calls for the creation of both e-bike and car-sharing programs that serve communities of color and low-income communities. The plan suggests that programs should have income thresholds that lower the cost barrier to use these modes



of shared mobility for low-income individuals.¹⁶

- San Diego's Climate Action Plan recommends that charging for electric vehicles, including electric bicycles, be located in communities of concern. The lack of appropriate charging infrastructure is a barrier for many peoples' choices to use electric vehicles.¹⁷
- Washington, DC's Sustainable DC 2.0 Plan recommends an expansion of the Capital Bikeshare program so that 75% of residents can access a bikeshare station within a quarter mile of their home. Specifically, the plan emphasizes focusing these efforts in areas east of the Anacostia River, a lower-income community of color.¹⁸
- Chicago's Climate Action Plan emphasizes concentrating efforts in environmental justice (EJ) areas, including learn-to-ride classes for bicycles and shared micromobility.¹⁹
- San Francisco's Climate Action Plan 2021 addresses disability concerns with micromobility in its Transportation & Land Use section.
 - Goal 2-1 in the plan's Transportation and Land Use section acknowledges a need for new services and rights of way for wheelchair users along with pedestrians, cyclists, and micromobility users.²⁰
 - Goal 6-7 calls for the inclusion of disability justice advocates in transportation policy decisions, projects, and designs.²¹
 - Goal 7-7 in the Transportation and Land Use section states that the City of San Francisco is looking to launch a pilot for accessible bicycles and shared scooters in 2024.²²

Equity: Access to Micromobility

Several plans use language to show what expanding access to micromobility might look like and how micromobility can be beneficial in expanding transportation options for entire trips as well as connections to public transit. Though this is also a key component of cities' equity approach, broad access to micromobility is fundamental to the shared bikes' and scooters' utility as a reliable transportation choice.

- Boise's Climate Action Roadmap mentions that micromobility vehicles should be purposefully located near transit stops to enhance first- and last-mile transportation options.²³
- Santa Monica's Climate Action & Adaptation Plan calls for the expansion of shared mobility services in a section on sustainable mobility. Goal 2 in sustainable mobility expresses that its bikeshare system should expand to include electric bicycles and dockless devices.²⁴

Infrastructure: Parking and Mobility Hubs

Whether or not they directly provide micromobility services, cities can provide infrastructure that supports these vehicles to encourage their safe use and storage. Shared bike and scooter systems need widespread access to parking locations that provide an organizational principle and keep



parked vehicles out of the path of other users of the public way—whether permanent racks and docking stations, or more flexible ones like designated parking zones or corrals. Mobility hubs can enhance the convenience of using micromobility because they “provide physical integration among modes by co-locating carsharing, bikesharing, and other shared-mobility services close to public transit stops and large residential developments.”²⁵

- In the Mobility & Land Use section of San Diego’s Climate Action Plan, locating scooters at mobility and transit hubs is a proposed key action for improving conditions for pedestrians and cyclists.²⁶
- Jersey City’s 2021 Climate and Energy Plan references *Let’s Ride JC: Bicycle Master Plan* from 2019 in its recommendation to improve bicycle connectivity.²⁷ The latter plan’s section on parking calls for both improving bicycle parking for short- and long-term use, including at transit stations.²⁸ The bicycle master plan offers important insight into how cities can offer policy recommendations in their climate action plans. While the plan only briefly mentions the Citi Bike bikeshare system, and hence micromobility more broadly, the language is also broad enough that it can be applied to micromobility as part of the city’s larger policy regarding bicycles.

Climate action plans can reference other plans that address micromobility, such as shared mobility or bicycle plans. As these plans are updated, they can offer updated recommendations that address new developments in micromobility, like mobility hubs. Different plans for cities can be in conversation with one another as they are updated over time.



Infrastructure: Charging

Climate action plans commonly reference charging infrastructure, but generally only for electric vehicles/cars, not shared scooter or e-bike fleets. While field charging of micromobility devices is beginning to take hold (perhaps most notably in Vancouver, BC, Pittsburgh, and Chicago²⁹), it is still far from widespread. The opportunity for its wider deployment should be recognized in discussions about charging buildout, as several forward-looking plans do.

- Chicago's Climate Action Plan recognizes a need to evaluate the effectiveness of e-bike charging stations in the near term.³⁰ This broad language can apply to both shared micromobility systems and individually owned vehicles. In May 2022, Chicago became the first city in the U.S. to provide dock-based charging for e-bikes at five bikeshare stations.³¹
- Santa Monica's Climate Action & Adaptation Plan expresses the intent to create an expansive charging network for shared mobility vehicles. Goal 12 in the sustainable mobility section calls for a network of 1,000 on- and off-street charging ports by 2025, available for both automobiles and "a wide range of vehicle types including bicycles, scooters, and other mobility devices." This policy recommendation also centers equity by prioritizing the installation of on- and off-street charging for renters and low-income households.³²
- San Diego's Climate Action Plan emphasizes that charging networks for electric bicycles and other electric vehicles must be sited in communities of concern.³³

Policy: Transportation Demand Management/Mobility Management

Cities can recognize micromobility as a means to curb low-occupancy car trips and as a viable work commuting option. Several plans clearly include micromobility within transportation demand management (TDM) policy recommendations. Membership-based services like bikeshare may fit more readily into traditional commute-centered TDM frameworks than pay-per-ride models.

- San Francisco's Climate Action Plan 2021 has broad language that can include micromobility in TDM. Goal 2-7 in its Transportation & Land Use section suggests that employers provide incentives for active transportation and e-bikes alongside more traditional benefits for transit, teleworking, and carpooling. This language does not explicitly mention, but can involve, micromobility.³⁴
- Raleigh's Community Climate Action Plan asserts a role for micromobility more clearly. The plan encourages employers to provide bikeshare subsidies in a mix with other measures like bicycle facilities, employee education, and transit subsidies.³⁵
- Like Jersey City, Denver's climate action plan refers to an external plan, called the *Mobility Action Plan*, for transportation policy recommendations. Across two separate recommendations in its TDM section, Denver's *Mobility Action Plan* calls for expanding the role of transportation management associations to shift commuters toward using transit and active transportation and to promote and strengthen bikeshare.

Policy: Funding

Plans can outline how micromobility programs should be funded. Funding sources can include user fees, local, state, and federal dollars, in-kind support from micromobility providers, and philanthropic grants. Climate plans are not clear in expressing how to fund micromobility initiatives. Strategic plans typically do not get too specific with funding and micromobility programs are only one small part of a much larger list to address negative impacts from climate change.

- San Diego's Climate Action Plan suggests implementing in lieu fees as part of the development process to fund active transportation in areas where it will have the greatest impact.³⁶ Active transportation choices can include shared micromobility services.



Emerging Best Practices

While micromobility is seeing tremendous growth as a transportation mode in many communities, the share of trips is still tiny, and its widespread viability is still undermined by auto-centric policies. This is evident in the content of many climate action plans reviewed for this paper: language for micromobility in many plans is short and can appear perfunctory. Understandably for documents with strategic horizons of a decade or more, discussions on micromobility are short in climate action plans because shared bikes and scooters are only a small part of local transportation networks and just one of many tools that communities can employ in combating climate change. This review of plans also shows what language other local jurisdictions can use in developing or revising their own plans and policies.

As a starting point, the transportation section of any climate action plan should discuss micromobility and its role in local mobility systems. More specifically, several valuable lessons emerge on the approaches local communities can take in developing climate action plans:

1. **Jurisdictions can use mechanisms that allow them to update their language on micromobility or other emerging transportation technologies flexibly and frequently, as services, technology, and policy evolve.** Rather than adopting a monolithic and infrequently updated plan that tries to cover everything under a single title, Jersey City's and Denver's climate action plans incorporate by reference external plans on bikeshare, transportation, and other aspects of mobility. Berkeley adopted an *Electric Mobility Roadmap* in July 2020 and frequently updates its 2009 Climate Action Plan with staff reports, the most recent of which were published in 2022 and 2020.^{37, 38, 39} Alongside climate action plans, cities can consider using smaller or more narrowly defined plans to update their policy direction concerning micromobility and other active transportation modes. Doing so helps cities employ policy approaches that stay relevant to fast-evolving technologies and best practices.

2. **Communities should expand their definition of active transportation to include shared micromobility.** Many plans discussed expanding their active transportation and/or bicycle networks. “Active transportation” should explicitly include shared bikes and scooters. Moreover, shared micromobility can encourage people to use active transportation who do not own personal bicycles or scooters. This also expands the constituency with a stake in supporting safe streets and sidewalks.
3. **Many, but not all, of the more detailed plans for shared micromobility are from cities known for tech-based economies or innovation-focused political cultures, which may be leaders in adopting new technologies. But the lessons they’re learning can be adapted to markets across the country.** Communities of all sizes and economic circumstances can benefit from incorporating micromobility into their transportation strategies. While in many parts of the country, micromobility programs are small in comparison to other transportation and environmental efforts, many smaller cities have flexibly crafted shared micromobility programs according to their local needs, often tying them to local institutions, transit systems, and other trusted community partners. Climate action plans and other strategic documents can help lay the groundwork of justifying shared micromobility adoption, clearly connecting the work of implementation to shared community goals.
4. **Climate and transportation plans should specify clear goals for shared micromobility alongside using flexible language.** As visionary documents, climate plans provide local governments with the opportunity to be expansive in imagining how shared micromobility could function in their communities. As of now, most plans use language for micromobility that appears perfunctory in relation to other policy proposals.
5. **Cities should recognize that micromobility technologies are rapidly evolving in a manner that can address climate and transportation goals.** For example, on-street charging for micromobility vehicles is a newly available technology being tested in some communities. On-street charging can reduce vehicle miles traveled for maintenance fleets and can also extend the period of time that vehicles are in service for customers. Language in climate action plans can acknowledge and call for the rapidly evolving nature of micromobility services to be more rider friendly and environmentally efficient.



6. **As discussed above, new local and regional climate and transportation plans should consider several key policy areas when addressing micromobility:**
- **Quantifiable goals:** How large of a micromobility fleet should a community have? How many people should be using micromobility, and for what kinds of trips?
 - **Equity:** Can low-income communities, communities of color, and other historically marginalized groups readily access micromobility? Does the plan address concerns such as incorporating financial support, geographic distribution, language access, or context-sensitive outreach and evaluation?
 - **Diversion of car trips:** Does the plan acknowledge a need to reduce a community's dependence on car-oriented transportation?
 - **Access:** Does the plan acknowledge that micromobility has a role in shifting people away from using cars, especially for short trips? Does the plan assert that access to shared micromobility should expand?
 - **People with disabilities:** Does the plan call for providing accessible micromobility vehicles, or viable alternatives, for people with disabilities?
 - **Parking:** Does the plan discuss how to provide parking specifically for micromobility vehicles, like expanded bike rack systems, mobility hubs, or virtual corrals?
 - **Charging:** Does the plan recognize micromobility in plans for EV charging expansion? Does the plan acknowledge a need for charging technologies separate from, but perhaps or co-located with, those for electric cars?
 - **TDM/mobility management:** Does the plan incorporate discussions of micromobility with transportation demand management? Does it suggest that workplaces provide benefits or subsidies to their employees that can apply to shared bikes or scooters? Does the plan acknowledge that micromobility can be a practical commuting solution alongside other well-established TDM measures?
 - **Funding:** Does the plan suggest how to financially support micromobility through either public or private sources? Does the plan recognize a need to create reliable funding streams to support micromobility systems over the longer term?
7. **In order to fully understand and quantify the climate and transportation benefits of micromobility, cities should stipulate that the performance data provided by micromobility operators include data on the operations needed to support them (which are currently mostly automobile based). This should be accompanied by incentives for operators to decarbonize their operations through maintenance-fleet electrification and use of cargo bikes.** While shared scooters and bicycles are inherently cleaner forms of transportation, they still result in greenhouse gas emissions and VMT through their operations and maintenance fleets. Many providers are already making concrete moves in this direction, but may not be actively tracking the impacts. Rewarding operators who clean up their operations, while also measuring and reporting on these changes, will help increase the pace of the industry's decarbonization.

A person wearing a red bucket hat, a yellow sleeveless shirt, and light green shorts is riding a blue shared bicycle. The bicycle has a black frame with 'BIY' written on it. The person is riding on a sidewalk next to a grey tiled wall. A red fire hydrant is visible on the left side of the image. The word 'Conclusion' is overlaid in large white text on the right side of the image.

Conclusion

Shared micromobility is an evolving tool that can add new options to transportation systems and lower greenhouse gas emissions. Local governments should use climate action plans to bolster shared micromobility as one of several components to reduce transportation's carbon burden and mitigate the impacts of climate change. Referencing existing climate action plans can serve as a starting point for communities when exploring the implementation of micromobility policies and initiatives.

Plans should be seen as visionary documents that outline clear and bold goals for what cities build around transit and what other clean, efficient mobility can look like. Shared bicycles and scooters can no longer be considered “play” modes for which planners and policymakers use a wait-and-see approach. Instead of simply mentioning micromobility perfunctorily, policymakers should recognize that adopting micromobility is an opportunity to introduce new forms of hard and soft infrastructure, like mobility hubs, charging ports, and TDM/commuting benefits, into their transportation system and to address the effects of climate change. Micromobility represents an important tool for communities working to shift away from carbon-intensive, car-centric transportation. SUMC hopes that policymakers will use this paper for inspiration as well as for useful and specific recommendations on how micromobility fits into the crucial effort to decarbonize how we get around our cities.



Appendices

Appendix A: Methodology

SUMC performed different stages of qualitative analysis to evaluate how climate action plans addressed micromobility. Researchers initially investigated a list of 60 local plans (both municipalities and counties) and began paring down analysis, first based on the existence and age of climate action plans, and then on their actual content. These cities are diverse in geography, size, and culture, so as to explore a broad range of policies and attitudes. Some of these cities do not have climate action plans and others had their most recent climate action plans published before micromobility was widely adopted. The researchers did remove some of the cities with recent climate action plans with the interest for reasons like geography or having a less detailed mention of micromobility, shared scooters, or bikeshare. For example, Atlanta published its most recent climate action plan in 2015 and Hoboken’s 2019 climate action plan only mentions bikeshare twice across the entire document.^{40,41} From this initial scan, the researchers identified 32 plans for more extensive analysis.

While all 32 cities examined in the narrower group have up-to-date climate action plans, they range in the level and breadth of detail they offer about micromobility. Some of these plans only mention micromobility briefly, while others provide more details. Researchers evaluated and scored these plans based on whether or not they addressed different topic areas related to micromobility. These topics, which translate into scoring criteria (color-coded according to their grouping in the scoring table below), include:

- General mentions of “micromobility” ([Plan: Any micromobility](#)): Does the climate action plan use the term *micromobility* at all?
- General mentions of bikeshare ([Plan: Bikeshare](#)): Does the climate action plan mention bikeshare as a transportation solution?



- General mentions of electric bikeshare ([Plan: E-Bikeshare](#)): Does the climate action plan mention e-bikeshare as a transportation solution?
- General mentions of shared scooters ([Plan: Scooters](#)): Does the climate action plan mention shared scooters as a transportation solution?
- Quantifiable goals (**QUANTIFY**): Does the plan outline quantifiable goals toward adopting more micromobility?
- Diversion from automobile use (**DIVERT**): Does the plan acknowledge a need to shift trips away from a car-centric transportation system?
- Equity (**EQUITY**): Does the plan address equity concerns for micromobility? These equity concerns can include discounted fare structures for low-income individuals and the placement of vehicles in low-income neighborhoods or communities of color.
- General access to micromobility (**ACCESS**): Coupled with shifting away from a car-centric transportation system, does the plan acknowledge a need to expand access to micromobility?
- Parking for micromobility (**PARKING**): Does the plan address parking needs or solutions for micromobility? Climate action plans can address this concern by calling for mobility hubs, for example.
- Charging for micromobility vehicles (**CHARGING**): Does the plan call for any type of charging facilities specifically for micromobility vehicles? Many plans do call for charging for electric vehicles, but not specifically for e-scooters, e-bikes, and other forms of micromobility.
- Transportation demand management/mobility management (**TDM**): Does the plan incorporate any mention of micromobility in its discussion of transportation demand management? Plans can address this by suggesting that employers provide bikeshare subsidies to their employees.

- Funding for micromobility (**FUNDING**): Does the plan suggest how micromobility operations can be financially supported? Funding sources can include philanthropic, federal, state, or local dollars, in-kind support from micromobility providers, and user fees.

Across all criteria, researchers assigned a score of 1 if the answer to each of the above questions was 1 and 0 if not. No variable received higher levels of weight than others (ie. higher possible scores than 1) based on their importance; readers can choose to examine topic areas based on what they interpret as most important or not. The points were then tallied up across criteria to reach an aggregated score. Higher aggregated scores indicate that a climate action plan uses broader or well-rounded language on addressing micromobility as a solution for addressing climate change; lower scores indicate that language in a climate action plan is minimal or scarce. A perfect score in this case is 13. Scores across the 31 city climate action plans range from 2 to 10. Among the higher-scoring plans under this measure are those from Berkeley, Chicago, Denver, Los Angeles, Santa Monica, Jersey City, and San Diego. At the other end, the lower-scoring climate plans in regards to micromobility are from cities including Austin, Dayton, Indianapolis, Raleigh, and Sacramento. These lowest scores range from 2 to 4 and lack language surrounding important aspects of implementing micromobility. Beyond their narrowness, none of these plans outlined quantifiable goals or funding strategies for micromobility projects. On the other hand, higher-scoring plans tended to account for key details that will make a difference in the success of micromobility as a useful and accessible option for everyday transportation: the plans for Berkeley, Santa Monica, and San Diego are the only ones to address charging infrastructure for micromobility vehicles, and San Francisco's plan is the only one that properly addresses disability access for micromobility users.

The researchers also scored two additional variables that are not aggregated into the total. These scores can be found alongside the scores for all other variables in the appendix and are coded in the same way (0 for no and 1 for yes). These variables include:

- Operating Bikeshare: Whether bikeshare operates in the jurisdiction, including both electric and human-powered, and whether on a full-year, pilot, or seasonal basis.
- Operating Scooters: Whether shared scooter fleets operate in the jurisdiction, whether operate on a full-year, pilot or seasonal basis.

These variables, which do not evaluate the content of a local climate action plan, can still be useful for illustrating the micromobility landscape in an area.

Appendix B: Climate Action Scorecard

City/County	Operating Bikeshare	Operating Scooters	Plan: Any micromobility	Plan: Bikeshare	Plan: E-Bikeshare	Plan: Scooters	Modal Shift QUANTIFY	Modal Shift DIVERT	Equity EQUITY	Equity ACCESS	Infrastructure PARKING	Infrastructure CHARGING	Policy TDM	Policy FUNDING	Score
Austin, TX	1	1	1	0	1	0	0	1	0	1	0	0	0	0	4
Berkeley, CA	1	1	1	1	1	1	0	1	1	1	0	1	0	1	9
Boise, ID	1	1	1	1	1	1	0	1	0	1	1	0	1	0	8
Boston, MA	1	1	1	1	0	0	1	1	1	1	0	0	0	0	6
Charleston, SC	1	0	1	1	0	0	0	1	0	1	1	0	1	0	6
Chicago, IL	1	1	1	1	1	0	1	1	1	1	0	1	0	1	9
Cleveland, OH	1	1	1	1	1	0	0	1	1	1	0	0	1	0	7
Columbus, OH	1	1	1	0	0	0	1	1	1	1	1	0	0	0	6
Dayton, OH	1	1	1	0	0	1	0	0	0	1	1	0	0	0	4
Denver, CO	1	1	1	1	0	0	1	1	1	1	1	0	1	1	9
Fairfax County, VA	1	1	1	0	0	0	0	1	0	1	1	0	1	1	6
Honolulu, HI	1	1	1	0	0	0	0	1	0	1	0	0	0	0	3
Indianapolis, IN	1	1	1	0	0	0	0	1	0	0	0	0	1	0	3
Jersey City, NJ	1	0	1	1	1	1	1	0	1	1	1	0	0	1	9
Los Angeles, CA	1	1	1	1	1	1	1	1	1	1	1	0	0	0	9
Miami, FL	1	1	1	1	0	1	1	1	1	1	1	0	0	0	8
Minneapolis, MN	1	1	1	1	0	0	0	1	1	1	1	0	1	0	7
Montgomery County, MD	1	1	1	1	0	0	1	1	1	1	0	0	0	1	7
Nashville, TN	1	1	1	1	1	1	1	1	1	0	0	0	0	0	7
New York, NY	1	1	1	1	1	0	1	1	0	1	0	0	0	1	7
Oakland, CA	1	1	1	0	0	0	0	1	1	1	1	0	1	1	7
Pittsburgh, PA	1	1	1	1	0	0	1	1	0	1	1	0	1	0	7
Portland, OR	1	1	1	1	0	0	0	1	1	0	1	0	1	1	7
Raleigh, NC	1	1	1	0	0	0	0	1	0	1	0	0	1	0	4
Sacramento, CA	1	1	1	0	0	0	0	1	0	0	0	0	0	0	2
Salt Lake City, UT	1	1	1	1	1	1	0	1	0	1	1	0	0	0	7
San Diego, CA	0	1	1	0	0	1	1	1	1	1	1	1	1	1	10
San Francisco, CA	1	1	1	0	0	0	1	1	1	1	1	1	1	0	8
San Jose, CA	1	1	1	1	0	0	1	1	0	1	1	0	0	1	7
Santa Monica, CA	1	1	1	1	1	0	1	1	1	1	1	1	0	0	9
Seattle, WA	1	1	1	1	0	0	0	1	1	1	1	0	0	0	6
Washington, DC	1	1	1	1	0	0	1	1	1	1	1	0	0	0	7

Appendix C: List of Evaluated Plans

As plans are continually being developed and updated, this study only considered plans available as of the end of June, 2022.

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