Pathways Toward Electric Mobility

Communities LEAP in Hennepin County, Minnesota

May 2024

Shannon Anderson,[1] Kaylyn Bopp,[1] Didier Bolanos Gonzalez,[2] Jasmira Colon,[2] Mauricio Leon Mendez,[2] Cliff Mountjoy-Venning,[2] Tim Pratt,[3] Nicole Rosner, [1] and Jessica Spanswick[2]

1 National Renewable Energy Laboratory
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3 City of Brooklyn Park

*Authors' names are listed in alphabetical order

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List of Acronyms

ACER	African Career Education & Resources
BEV	battery electric vehicle
BIPOC	Black, Indigenous, and people of color
CBO	community-based organization
CV	conventional vehicle
DCFC	direct current fast charge
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
EV	electric vehicle
IAP2	International Association for Public Participation
MCTBI	Metropolitan Council Travel Behavior Inventory
MPGE	miles per gallon equivalent
NREL	National Renewable Energy Laboratory

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Executive Summary

The U.S. Department of Energy's (DOE) first-of-its-kind Communities LEAP (Local Energy Action Program) pilot provides customized technical assistance to 24 community-led clean energy transitions across the United States as they develop strategies for sustained community-wide economic development and environmental improvement. Communities LEAP is specifically for low-income, energy-burdened communities that are experiencing direct environmental justice or economic impacts from a shift away from a historical reliance on fossil fuels. Communities LEAP connects community teams of residents, businesses, nonprofits, and local governments with an extensive technical assistance provider network that provides expertise and support to take advantage of innovative new energy solutions that create safer, healthier, more livable, and more affordable communities with more opportunities for economic success.

Figure ES- 1. U.S. Department of Energy Communities LEAP map

Objective

The purpose of this report is to present the findings from a comprehensive community engagement initiative focused on advancing equitable transportation electrification in Hennepin County. This initiative responds to Hennepin County's critical need for inclusive and sustainable mobility solutions in the face of environmental and financial challenges in its transportation sector. This project has two goals. First, to identify the electric mobility priorities and barriers of climate vulnerable communities in Hennepin County in order to inform transportation plans and projects. Second, to create partnerships between government and community, building pathways for community-guided decision making on future transportation plans.

Challenge and Opportunity

Recent federal and state investments in infrastructure development creates an unparalleled opportunity for climate vulnerable communities, like those within Hennepin County, to work with their local authorities to rectify historic transportation inequities and foster a more affordable and equitable clean transportation future. Key legislative actions, such as the 2021 Infrastructure Investment and Jobs Act (also known as the Bipartisan Infrastructure Law) and the 2022 Inflation Reduction Act, have allocated substantial funds—$1.2 trillion and $47 billion respectively—to revolutionize the transportation and infrastructure landscape (Congress 2021, 2022). These two federal investment laws are the nation's largest ever federal investment in electric mobility (e-mobility) technologies including zero-emission transit buses, electric vehicle (EV) charging stations, clean transportation and electric grid research, manufacturing, community planning, and workforce

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development initiatives.[1] However, this transformative funding brings a critical need for inclusive community engagement. Ensuring that the voices and needs of all communities—particularly those historically marginalized and most vulnerable to climate impacts—are included in guiding these investments is essential for a truly equitable transportation revolution.

Approach

In response to this historic opportunity, a Communities LEAP project team consisting of Hennepin County, Minnesota, the cities of Brooklyn Park and Minneapolis, and the African Career Education and Resource Inc., sought technical assistance from DOE's Communities LEAP pilot to ensure its climate vulnerable communities benefit from these federal investments according to their self-identified needs and aspirations. The project team was paired with the National Renewable Energy Laboratory (NREL) for technical assistance. Together, they partnered with two local technical assistance providers and six community-based organizations (CBOs) to conduct a locally informed e-mobility education and engagement campaign in climate vulnerable communities. Titled, "Let's Talk About Electric Mobility," the campaign included six in-depth workshops and tabling at 39 in-person events where over 500 questionnaire responses were collected and over 700 attendees were engaged between May and September 2023. NREL and Hennepin County performed both qualitative and quantitative analysis on the resulting engagement data to determine local e-mobility priorities, barriers, and community-identified strategies for increasing equitable access to e-mobility benefits. The analysis results are featured in two sets of strategy matrices that present community-guided strategies for advancing equitable access to electric mobility in Hennepin County. The first set of matrices, included in the main body of this report, is designed for institutional actors, such as government agencies, policymakers, and community organizations. These matrices provide detailed information on the proposed strategies, potential actions, and relevant community feedback, enabling these stakeholders to understand the context and rationale behind each recommendation and take informed actions towards implementation. The second set of matrices, presented as a separate handout, is tailored for the public. The handout offers a more concise and accessible overview of the key strategies and benefits, empowering community members to understand and engage with the project's outcomes. By providing these two distinct sets of matrices, the Communities LEAP project aims to effectively communicate its findings and recommendations to different target audiences, ensuring that both institutional actors and the public can meaningfully engage with and contribute to the implementation of these strategies for equitable electric mobility in Hennepin County.

> *Climate Vulnerable Communities*
>
> Communities with increased exposure and sensitivity to the negative impacts of climate change paired with limited adaptive capacity to adjust to these hazards. (National Institute of Environmental Health Sciences 2022)

Key Findings

The findings from the "Let's Talk About Electric Mobility" campaign reveal a strong interest in electric transportation across diverse demographic groups and geographic areas in Hennepin County, spanning various e-mobility options. Notably, personal EVs, electric buses, and electric bikes emerged as the most favored modes, with interest levels exceeding 75% of total questionnaire respondents. However, affordability remains a significant barrier to e-mobility adoption, a challenge that cuts across all demographic and modal categories.

To address these findings and the cost barrier in particular, this report proposes a set of community-identified targeted strategies. These include promoting financial incentives like rebates to enhance e-mobility access, increasing opportunities for residents to explore and learn about e-mobility

[1] See the summaries of EV-related provisions in the 2021 Infrastructure Investment and Jobs Act and the 2022 Inflation Reduction Act:

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options, and ensuring equitable distribution of e-mobility infrastructure across the county. Further, this report emphasizes the importance of transparent communication about public investments in e-mobility and the need for ongoing partnerships with local communities to ensure that the transition to electric transportation is both equitable and responsive to the needs of all Hennepin County residents.

Recommendations

The community-identified priorities provided in the strategy matrices at the end of this report are built out of suggestions provided by community workshop participants, aligned with potential actions that could be taken. Next steps include identifying and coordinating amongst the specific actors who can move these recommended priorities forward. This approach aims to highlight community recommendations for how to continue to build more equitable pathways toward e-mobility in Hennepin County.

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1. Introduction

In the United States, transportation costs are the second largest household expense, and low-income communities use a higher share of their income on transportation than the national average (U.S. Department of Energy 2023; U.S. Department of Transportation 2022). Furthermore, the transportation sector accounts for a third of the domestic greenhouse gas emissions (Davis 2022). These high environmental and financial costs negatively affect the health and well-being of all Americans, but particularly those in climate vulnerable communities. Historical investments in transportation infrastructure have often physically and symbolically divided communities as well as exacerbated racial and economic inequities (Bullard et al. 2004).

There is an unprecedented opportunity for communities to rectify historic transportation inequities through significant recent federal investments aimed at fostering affordable, equitable clean transportation. The 2021 Infrastructure Investment and Jobs Act and 2022 Inflation Reduction Act have allocated substantial funds—$1.2 trillion and $47 billion respectively—towards electric mobility (e-mobility) technologies including zero-emission transit, electric vehicle (EV) charging stations, transportation electrification research, manufacturing, community planning and workforce development. However, this investment brings a need for inclusive community engagement to guide a just transition. Past transportation decisions have exacerbated inequities; this moment allows for a new paradigm centered on procedural justice and community-driven planning.

1.1. The Role of Electric Mobility in Sustainable Transportation

E-mobility is a part of transportation decarbonization and includes all transportation technologies that run on electric motors, including micromobility like bikes and scooters along with EVs like buses, cars, and trucks. E-mobility is a crucial piece of transportation decarbonization since there are zero tailpipe emissions, and the electric grid that powers these vehicles and equipment is becoming increasingly cleaner due to the rise in renewable energy production (U.S. Energy Information Administration 2023).

E-mobility not only contributes directly to reducing greenhouse gas emissions and improving air quality, but also supports the transition to a more energy-efficient, renewable energy-based, and sustainable urban future. The U.S. Department of Transportation (DOT) report “Charging Forward: A Toolkit for Planning and Funding Urban Electric Mobility Infrastructure” further describes benefits specific to increasing transportation options in urban communities, including electric micromobility and electric transit. These benefits include increased access, mobility, and equity; reduction in traffic congestion and infrastructure costs; and beneficial implications for parking, land use, and housing.

At the same time, different e-mobility modes have very different social, economic, energy, and environmental implications. For example, the trend towards larger and heavier motor vehicles has increased pedestrian and vulnerable road-user fatalities, and EVs are heavier than their conventional vehicle (CV) counterparts. Costs to own and operate also vary widely. A typical electric bike (e-bike) can get 2,500 miles per gallon equivalent (mpge) and costs less than $50 a year to charge for daily use (Lent 2019). A typical electric car for sale today only gets about 100 mpge. There is also significant attention to the human rights implications of mining critical minerals for batteries. The benefits of e-mobility are thus impacted by the size and use of different modes.

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1.2 The Roles of Environmental and Procedural Justice in Sustainable Transportation

Energy justice has its origins in the environmental justice movement. In the United States, the environmental justice movement began in the 1970s, "as a response to the unequal distribution of environmental ills – pollution and waste facilities, for example – alongside the risks associated with them, which tended to be inequitably borne by poor black/minority ethnic Americans" (Jenkins 2018). This social movement was concerned with the unequal distribution of environmental harms (hazards, risks), protection from burdens, as well as access to natural resources.

Environmental Justice

The fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (U.S. Department of Energy).

By the 1990s, understanding of environmental justice had moved beyond a singular focus on equitable distribution of environmental benefits and burdens towards incorporating an understanding of the processes and procedures to realize this distribution. The procedural justice dimension of environmental justice considers which communities are most negatively affected by environmental policy and action, who has access and the ability to participate in environmental decision-making, as well as who is in control of decision-making power (Holifield et al. 2009).

In the context of today's sustainable transportation efforts, it is important to ensure that funding and programs are being utilized to prioritize and locate appropriate clean transportation options in areas that local communities identify as beneficial and invest in lowering barriers to access and actual use of these options. This work aligns with the Biden Administration's Justice40 Initiative,[2] which reflects a federal commitment to tackling long-standing environmental justice issues including climate change, clean energy and energy efficiency, clean transit, affordable and sustainable housing, training and workforce development, remediation and reduction of legacy pollution, and development of critical water and wastewater infrastructure. The Justice40 Initiative (**Figure 1**) established the goal of directing 40% of the overall benefits of certain federal investments to disadvantaged communities that are underserved and overburdened by pollution.

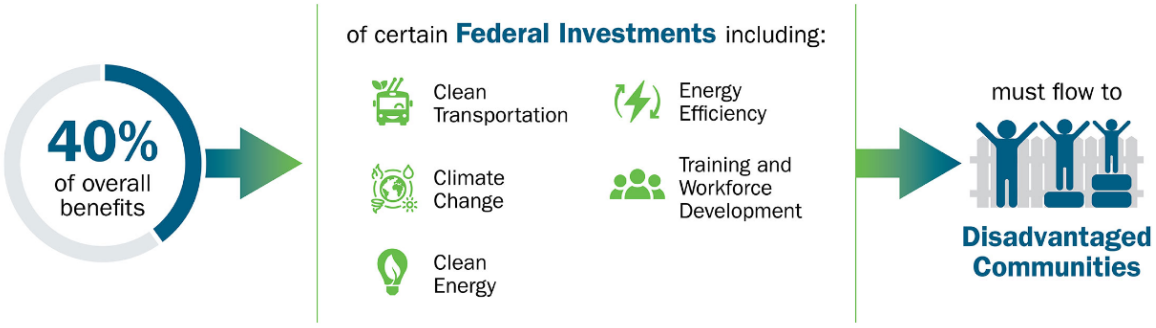

Figure 1. Justice40 Initiative

Figure from Clean Cities and Communities, a U.S. Department of Energy partnership (n.d.)

The need for authentic community engagement has been emphasized by multiple levels of government. For example, the U.S. Department of Transportation's (DOT) Climate Action Plan[3]

[2] See: https://www.whitehouse.gov/environmentaljustice/justice40/
[3] See: https://www.transportation.gov/priorities/climate-and-sustainability/climate-action

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advocates for transparent and inclusive processes, ensuring that adaptation and resilience strategies are informed by meaningful involvement from all societal sectors. The DOT recognizes that effective adaptation is highly dependent on local and regional contexts and requires coordination across different government units and sectors. The plan also underscores the importance of educating vulnerable communities about potential impacts and developing solutions that mitigate transportation-related climate change effects.

1.3. Communities LEAP in Hennepin County

Several regional and state planning documents in Minnesota identify climate goals that can be achieved by deploying e-mobility. These include but are not limited to Hennepin County's 2021 Climate Action Plan, Minneapolis' 2020 Transportation Action Plan, Minnesota Department of Transportation's 2019 Pathways to Decarbonization report, Metropolitan Council's Electric Vehicle Planning Study. A list of recent regional and state planning documents that include e-mobility goals are described in Appendix A. To advance the goals in these plans, Hennepin County wants to understand how climate vulnerable communities identify and prioritize e-mobility benefits while addressing local transportation challenges, barriers, and concerns.

To receive support in its e-mobility transition, a project team consisting of Hennepin County, Minnesota, the cities of Brooklyn Park and Minneapolis[4], and the African Career Education and Resource Inc., joined the DOE's Communities LEAP (Local Energy Action Program) pilot. The Communities LEAP program is designed for low-income, energy-burdened communities in the United States that are experiencing environmental justice impacts or direct economic impacts from a shift away from a historical reliance on fossil fuels. Communities LEAP provides customized technical assistance to help communities develop strategies for sustained economic development and environmental improvement, leveraging connections among teams of residents, businesses, nonprofits, and local governments with an extensive technical assistance provider network.

Through its participation in Communities LEAP, Hennepin County aims to rectify past inequities in its transportation infrastructure and access by actively involving historically marginalized and climate vulnerable communities in the planning and implementation of e-mobility solutions. This inclusive approach makes the benefits of new, cleaner transportation technologies more likely to be equitably distributed, addressing long-standing disparities in transportation access and infrastructure that have disproportionately affected these communities.

Although substantial federal investments in e-mobility exist, the conditions tied to these investments may not effectively address all needs of Hennepin County residents in practice. The Hennepin County Communities LEAP project identifies overlapping opportunities between federal e-mobility investments and Hennepin County's transportation goals. The Communities LEAP engagement process aims to inform other future investments beyond the scope of current federal funds.

1.4. Overview of Strategic Approach and Implementation

The Hennepin County Communities LEAP project team was paired with the National Renewable Energy Laboratory (NREL) to receive Communities LEAP technical assistance on the "Pathways Toward Electric Mobility" project. Together, they partnered with two local technical assistance providers and six community-based organizations (CBOs) to conduct a locally informed e-mobility education and engagement campaign in climate vulnerable communities.

[4] Minneapolis partnered on the original 2022 application for technical assistance through Communities LEAP and participated in early project scoping.

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NREL and Hennepin County performed both qualitative and quantitative analysis on the campaign's resulting engagement data to determine local e-mobility priorities and community-recommended strategies for addressing mobility needs. These community-identified priorities are featured in strategy matrices at the end of this report, where we present nine strategies community members prioritized for increasing e-mobility benefits and access in Hennepin County. The strategy matrices in this report target institutional actors whereas an accompanying handout is designed for the general public.

Table 1. Municipal, Technical, and Community Partners for Hennepin County Communities LEAP Project

Project Team
Hennepin County Brooklyn Park Minneapolis* African Career Education and Resource Center, Inc.**
Lead Technical Assistance Provider
National Renewable Energy Laboratory (NREL)
Local Technical Assistance Providers
Great Plains Institute Minnesota Clean Cities Coalition
Community-Based Organizations
African Career Education and Resource Center, Inc. 1 Day at a Time Community Partnership Collaborative 2.0 Minnesota Institute for Nigerian Development Powderhorn Park Neighborhood Association Whittier Alliance
*Minneapolis partnered on the original 2022 application for technical assistance through Communities LEAP and participated in early project scoping. **African Career Education and Resource Center, Inc. is both a member of the Communities LEAP team and a partner community-based organization.

1.4.1. Detailing the Project's Methodological Approach

The "Pathways Toward Electric Mobility" project employs a comprehensive methodology that combines strategic partnerships with local CBOs in climate vulnerable areas, and an extensive mix of qualitative and quantitative data analysis. This approach, grounded in the principles of energy justice, focuses on capturing and addressing the unique e-mobility needs and priorities of Hennepin County's historically underserved communities.

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Several online mapping tools exist to identify climate vulnerable or environmental justice communities. While the methodologies vary, each combines multiple geographic-based data sets, often at the census tract level, that demonstrate indicators of vulnerability or disadvantage. Example indicators of vulnerability or disadvantage include access to transportation, pollution exposure, health disparities, and poverty. This project used the U.S. Environmental Protection Agency's EJScreen tool, Center for Disease Control's Social Vulnerability Index, and a data from the Minnesota Pollution Control Agency to identify 34 census tracts across the two cities of Brooklyn Park and Minneapolis as climate vulnerable communities. These census tracts became the focus of the Communities LEAP technical assistance. The tools and the analysis conducted to identify communities in Hennepin County for this project are further elaborated on in Appendix B.

Using community engagement to inform municipal decision-making is a well-utilized best practice in Hennepin County and Brooklyn Park. These municipalities are adept at consulting their residents through diverse methods that target different geographic areas, ages, ethnic and racial groups, and languages. However, there was a gap in direct engagement with climate vulnerable communities about what e-mobility technologies they would like to access and use as well as how they would like to benefit from them.

This Communities LEAP project aimed to fill that gap in e-mobility engagement via a collaborative approach that came with its own set of challenges and limitations. Given the wide network of partners built over a period of 18 months, the e-mobility educational campaign and engagement process adapted to obstacles and constraints along the way to maintain consistency and continuity. Challenges included aligning each organization's priorities and approaches to engagement; navigating organizational capacity limitations, staff turnover, and staggered project onboarding; as well as tailoring engagement activities to specific community needs. Since community engagement is an ongoing iterative process, there is no predefined perfect model. However, this Communities LEAP project was guided by an ethics of engagement: rooting engagement in community empowerment, authenticity, transparency, effective and consistent communication, and collaboration with communities, enables building community trust, gaining participation interest, as well as identifying local benefits and burdens.

1.4.2. Aligning Hennepin County's Climate Goals

The "Pathways Toward Electric Mobility" project directly aligns with key goals and strategies outlined in Hennepin County's Climate Action Plan, adopted in 2021. Specifically, the plan calls for efforts to "strengthen individual and community resilience" by communicating climate risks and developing responsive education efforts. This project fulfills this through its extensive community outreach on the topics of transportation electrification and equitable access to emerging technologies. Additionally, the Hennepin County Climate Action Plan advocates for concrete steps to "cut greenhouse gases from transportation" including reductions in vehicle miles traveled, promotion of EV infrastructure, and transit-oriented development. More broadly, the Hennepin Climate Action Plan prioritizes engaging with vulnerable residents to co-develop climate solutions, and this project's focus on climate-vulnerable communities provides key inputs to guide a just transition. By gathering community insights on barriers, priorities, and preferred outcomes related to e-mobility, this project will inform planning and investments to equitably advance climate-friendly transportation in the county. Grounded in environmental justice, this Communities LEAP project advances both the procedural and substantive goals of the county's climate change response.

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1.4.3. Beyond Traditional Community Engagement Models

Traditionally, municipal-led community engagement in the United States is conducted for a specific planning effort or project. However, this linear approach can result in engagement data being siloed to a single organization, or when shared, can be overly specific and not transferrable to other uses. Oftentimes, if agencies conduct overlapping engagement regarding similar topics with the same communities, beyond being inefficient, this approach could cause engagement fatigue for those communities. If there is not clarity on how engagement input will be utilized, this could cause lack of trust rather than its restoration (Clark 2008). Infrequently does a multi-agency group engage the public to inform multiple planning efforts. The complexity of multiple agencies, levels of government, funding sources, planning cycles, and overlapping priorities means that shared community engagement is an uncommon phenomenon.

As recognized in the Metropolitan Council's 2015 Public Engagement Plan, successful community engagement in municipal projects necessitates a coordinated effort among a variety of partners. This collaborative approach not only brings together diverse perspectives and expertise but also strengthens the overall engagement process. It underscores the need for evolving beyond traditional, linear methods to more integrated and holistic strategies that respect and effectively utilize community input.

New methods of engagement are being piloted within Hennepin County. For example, the County is addressing the potential for displacement along Metro Transit's extension of the Blue Line light rail into the communities of North Minneapolis, Robbinsdale, Crystal, and Brooklyn Park (Hennepin County 2024). This proactive and collaborative approach incorporates extensive community engagement, partnerships with various stakeholders, and a specific focus on anti-displacement research. Hennepin's work with the Center for Urban and Regional Affairs (CURA) has developed innovative recommendations and strategies to be implemented before, during, and after construction (Metropolitan Council 2024). This dedication to preventative measures and community-centered solutions demonstrates a commitment to ensuring that the benefits of the project are accessible to the very communities it's meant to serve.

1.4.4. Addressing Community Engagement Challenges

A recent technical assistance pilot in Brooklyn Park led by the U.S. Environmental Protection Agency (EPA) in partnership with the Joint Office of Energy and Transportation, the DOE Vehicle Technologies Office, and Minnesota Clean Cities Coalition identified engagement fatigue among community members as a major challenge to transportation planning, especially when project implementation or direct follow-up actions are not communicated or successful (EPA and Minnesota Clean Cities Coalition 2023). They also highlighted the challenge of multiple planning efforts happening concurrently on related topics, yet with different geographic focus areas. In many cases, these planning efforts also have community engagement components, so coordinating engagement to provide clarity and reduce the chance of engagement fatigue was outlined as an important priority. Met Council's 2017 Transportation Public Participation Plan notes the importance of establishing long-term relationships with ongoing communication "rather than self-contained projects that lack connection to the bigger picture" (Met Council 2017).

1.4.5. Leveraging Opportunities for Transportation Decarbonization

A unique opportunity presented itself when multiple planning efforts over the last decade—through the Minnesota Department of Transportation, Metropolitan Council, Hennepin County, and the cities of Minneapolis and Brooklyn Park—each identified community-informed transportation decarbonization as a high priority strategy that can help achieve climate, infrastructure, and equity goals. Summarized in Appendix A, these planning efforts were well-situated to take advantage of

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recently passed federal legislation such as the 2021 Infrastructure Investment and Jobs Act (which authorizes $1.2 trillion for transportation and infrastructure projects) and the 2022 Inflation Reduction Act (which includes $47 billion to support the widespread adoption of EVs) (Congress 2021, 2022). These two federal investment laws are the nation's largest investment in e-mobility technologies including zero-emission transit buses, EV charging stations, and clean transportation and electric grid research, manufacturing, community planning, and workforce development initiatives. The Hennepin County Communities LEAP team and NREL analyzed these past efforts and opportunities to inform initial project planning and goals.

1.4.6. Project Timeline

This project has two goals. First, to identify the electric mobility priorities and barriers of climate vulnerable communities in Hennepin County in order to inform transportation plans and projects. Second, to create partnerships between government and community, building pathways for community-guided decision making on future transportation plans.

With these goals in mind, the Communities LEAP team and NREL identified activities to execute in three consecutive phases.

- Phase 1 (October 2022–March 2023). In preparation for Communities LEAP engagement, the project team collected and analyzed past local engagement data related to e-mobility to understand what community members have said about this topic in the past and identify existing information and demographic gaps. This analysis informed the design of guiding questions for the summer e-mobility education and engagement campaign.
- Phase 2 (April 2023–September 2023). Community education and engagement was conducted by six partnering CBOs, Hennepin County, and Brooklyn Park. Together, tabling at or hosting 38 events and six, small-group community workshops resulting in over 500 verified questionnaire responses and six anonymized transcripts documenting CBO-led conversations on e-mobility.
- Phase 3 (October 2023–January 2024). Data from questionnaires and transcripts collected over the summer were quantitatively and qualitatively analyzed by the NREL and Hennepin County to determine community-identified e-mobility priorities, barriers, and strategies. The results were documents in the report and handout. The Communities LEAP project team shared the draft report with the partnering CBOs and once published, will reconvene with them in-person in Summer 2024 to continue a feedback loop of information sharing on this project and to co-develop next steps to guide future transportation planning. The results of the questionnaires and community workshops brought both the ranking of primary barriers, priorities, and benefits of e-mobility options to the fore as well as community suggestions on *how* to develop more equitable pathways towards e-mobility for climate vulnerable communities.

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2. Methods

2.1 Framework of Energy Justice

The Communities LEAP project team and NREL utilized three core tenets of energy justice as a framework to collaboratively identify the existing challenges and priorities of climate vulnerable communities regarding e-mobility, along with potential strategies to overcome these barriers and enhance benefits. Energy justice, as defined by Sovacool and Dworkin (2015), served as a tool in the Communities LEAP project, to bridge conceptual understanding, analytical processes, and decision-making. Three core tenets of energy justice (**Figure 2**) grounded the project's design and development: distributional justice, procedural justice, and recognition justice. Each plays a distinct role in guiding the project's approach towards equitable e-mobility. Recognition justice focuses on acknowledging and addressing historical and ongoing energy inequities in local communities. The project began by mapping and examining past and ongoing transportation inequities already identified by prior engagement or research to focus goals on redressing these inequities. Distributional justice ensures that benefits and burdens within the energy system are shared fairly, while procedural justice emphasizes inclusive participation in decision-making processes. Following a procedural justice approach, the Communities LEAP coalition partnered with community-based organizations that serve climate vulnerable communities in Hennepin County to center their needs and priorities in the transition to e-mobility. In turn, this process served as a guide for a more equitable distribution of related benefits and burdens, co-producing community-identified strategies that support distributional justice.

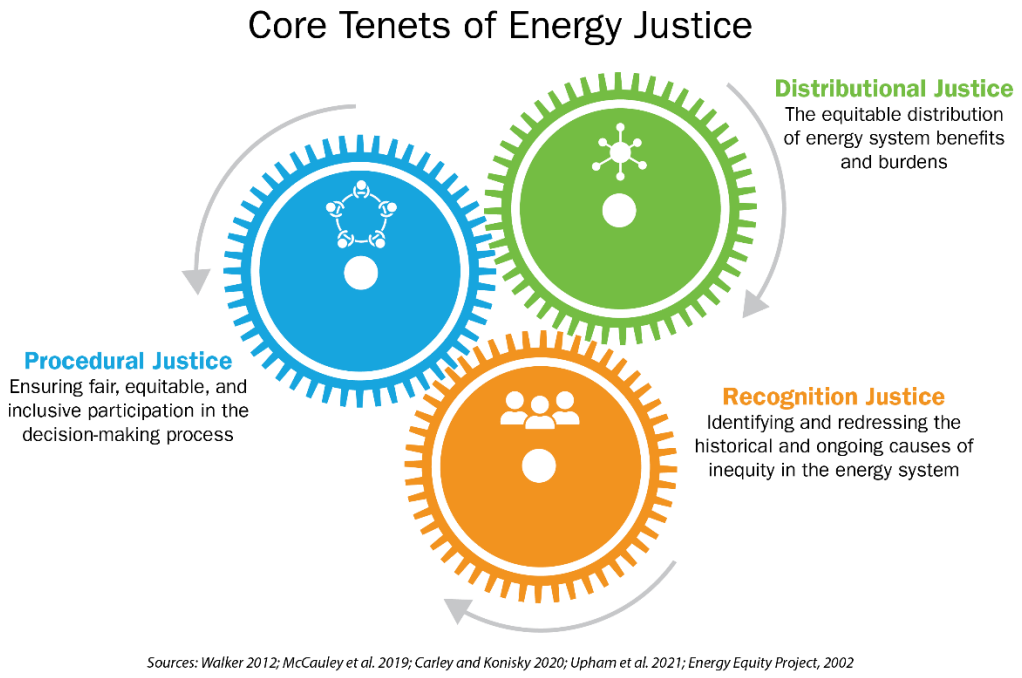

Figure 2. Core tenets of energy justice

Sources: Walker 2012; McCauley et al. 2019; Carley and Konisky 2020; Upham et al. 2021; Energy Equity Project 2022.

Moving beyond traditional energy justice frameworks, the Communities LEAP project also integrates two additional tenets to further enrich its approach (Sovacool and Dworkin 2015; Heffron and McCauley 2017; Hazrati and Heffron 2021). These include restorative justice, which aims to rectify the needs and priorities of those affected by environmental injustices, and cosmopolitan justice, which

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broadens the scope of energy justice to encompass global perspectives, particularly from underrepresented regions. Together, these principles form a comprehensive framework, ensuring that the project not only advances towards "safe, affordable, and sustainable energy" (McCauley et al. 2013) but also remains attuned to the intricate interplay of social and environmental issues. This holistic approach to energy justice fundamentally shapes the Communities LEAP project's commitment to fostering a just and inclusive transition to e-mobility in Hennepin County.

Table 2. Energy Justice Tenets and Definitions

Energy Justice Tenet	Definition
Distributional Justice (core tenet)	The equitable distribution of energy system benefits and burdens. (Romero-Lankao et al. 2023)
Procedural Justice (core tenet)	Ensuring fair, equitable, and inclusive participation in the decision-making process. (Romero-Lankao et al. 2023)
Recognition Justice (core tenet)	Identifying and redressing the historical and ongoing causes of inequity related to the energy system. (Romero-Lankao et al. 2023)
Restorative Justice	Restorative justice centers on redressing the needs and priorities of the victims of environmental or energy injustices. It aims to restore the victims of these injustices to their original positions prior to the harm inflicted. (Hazrati and Heffron 2021)
Cosmopolitan Justice	Cosmopolitan justice highlights the importance of applying energy justice principles to all humans, not just those living in wealthy nations, and recognizing understandings of energy justice from the global South. (McCauley et al. 2019; Romero-Lankao et al. 2023)

2.1.1. Review of Historical Engagement Efforts

Prior to engaging with local communities, Hennepin County conducted a content analysis of past engagement efforts and results that took place in Brooklyn Park, Minneapolis, and Hennepin County over the past 8 years related to transportation and the energy transition. Reviewing the materials listed in Table 3, Hennepin County summarized the engagement methods utilized, what was accomplished, how the engagement was developed and implemented, who was engaged in these activities, when it took place, as well as any key findings and effective strategies relevant to this Communities LEAP project. The results of this analysis were shared with the rest of the Communities LEAP project team, as well as all CBOs involved in Communities LEAP.

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Table 3. Past Engagement Documents Analyzed

Brooklyn Park	Minneapolis	Hennepin County
• 2040 Comprehensive Plan (2018) • Citywide trail wayfinding project (2021) • Park System Plan (2018) • Bike and Pedestrian Plan (2015)	• Minneapolis 2040 Comprehensive Plan (2018) • Transportation Action Plan (2018, 2019, 2020) • Mobility Hub Pilot Report (2020) • EV Scooter/ Bikeshare surveys (2018–2022)	• HC Zero Waste Plan (2022) • METRO Blue Line Reports (2020–2021)

Following a recognition justice approach, analysis of past engagement methods and results informed the communities prioritized in the Communities LEAP project as well as the engagement methods used and primary objectives. Common methods used by the three government bodies in past engagement efforts were surveys, focus groups, in-person events, and contracts with community-based enterprises. Less common engagement methods included door-to-door and online forums as well as weekly church bulletin postings. There are a few alternative methods worth mentioning: the use of non-traditional messaging channels, community listening sessions (a form of focus group), draft plan presentations, and white boards. Appendix C summarizes the analysis of past community engagement methods including findings, goals, and recommendations between Brooklyn Park, Minneapolis, and Hennepin County.

2.1.2. Engagement Model in Hennepin County

Hennepin County and Brooklyn Park both utilize the Public Participation Spectrum developed by the International Association for Public Participation (IAP2) to inform their engagement processes. Hennepin County began utilizing this engagement approach in 2020 to ensure that county staff decide how communities will be included in a project at its onset. The work of Brooklyn Park's Community Engagement division is grounded in the ethics and methods of the IAP2 approach. Levels of inclusion range from **informing** community members about events or projects, **consulting** them, **involving** them in the project, **collaborating** on the project development with shared decision-making power, and **empowering** community members by placing the decision-making power in their hands. (Hennepin 2022) The five levels of public participation in the IAP2 spectrum—Inform, Consult, Involve, Collaborate and Empower—are described in greater detail in **Figure 3** below, where the engagement goal, promise to the public, and examples of engagement methods are outlined for each level. The Communities LEAP project utilized the first four levels of participation, partnering with local CBOs to develop and conduct engagement in their communities. The last section of this report lays out next steps for moving into the fifth level of participation: community-driven decision-making on transportation plans.

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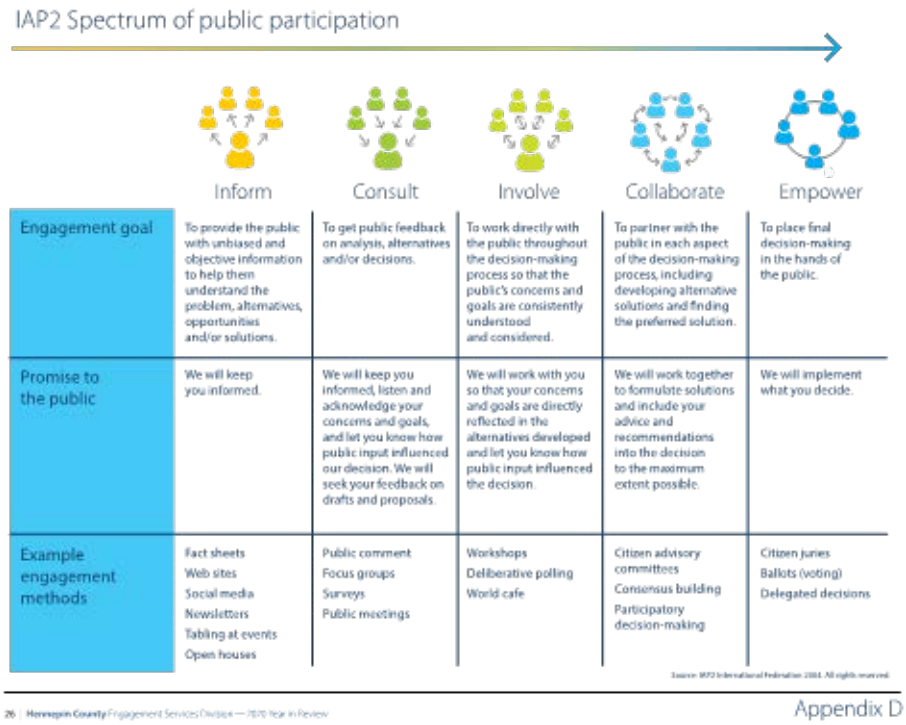

Figure 3. Hennepin County's IAP2 spectrum of public participation

Figure from Hennepin County Engagement Services Division

2.2. Framework for Data Collection

2.2.1. Engagement and Education Strategies with CBOs

Using a procedural justice approach, planning engagement and education for the "Let's Talk About Electric Mobility" campaign consisted of the selection and partnership with CBOs, followed by the development of engagement and education materials as well as a strategy for equitably compensating community participants. CBOs were selected by Brooklyn Park and Hennepin County to conduct education and engagement in climate vulnerable communities. To select CBOs, Brooklyn Park provided notice of the opportunity via their community engagement liaison, held an open house to answer questions about the opportunity, and then reviewed proposals for partnerships before ultimately selecting three organizations (see **Table 3**). For engagement with climate vulnerable communities in Minneapolis, Hennepin County worked with the University of Minnesota's Center for Urban and Regional Affairs, which provided recommendations for CBOs who had experience with transportation community engagement (**Table 3**). In addition to these five CBOs, ACER, Inc.—a CBO and member of the Communities LEAP team—was also selected to conduct education and engagement in Brooklyn Park, neighboring Brooklyn Center, and Minneapolis.

Before committing to the project, each CBO received information about the project, the compensation amount, when and how payment would be provided, activities they were asked to organize or participate in, and time commitment required. As small organizations—the majority with less than 10 staff members—it was critical to not only compensate their time and labor, but to communicate expectations in advance to help inform their decision to participate. The scope of work included staff time for: project training, project administration, subject matter expertise on

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community engagement, review of engagement materials, leading one community workshop, conducting engagement and education for the "Let's Talk About Electric Mobility" campaign, and collection of questionnaire responses. In addition to labor, funding supported event hosting expenses and compensation for all workshop participants and a limited number of questionnaire respondents. Funding was provided by the U.S. Department of Energy's Communities LEAP Pilot as part of the technical assistance support for this project.

2.2.2. Summer Engagement Planning

Once CBOs were selected, the Communities LEAP team and NREL worked with each organization to plan summer engagement. The Communities LEAP team and NREL learned that each organization had different engagement methods and that the campaign would be more successful if each organization could design their own engagement plan. Based on this feedback, they requested that each CBO develop and propose a summer engagement workplan. The workplans detailed each CBO's proposed educational and engagement activities and dates that would take place over the summer of 2023. Those plans were approved or amended via discussion (as needed) prior to proceeding with engagement. Rather than prescriptive engagement activities, this allowed each CBO to educate and engage their community based on their preference, skillset, and community knowledge. Minnesota Clean Cities Coalition and Great Plains Institute were funded as local technical assistance providers to train the CBOs on e-mobility. They hosted an in-person e-mobility training in April 2023 for the CBOs which detailed the different types of e-mobility, charging infrastructure, and local carshare, bikeshare, and scooter companies. Minnesota Clean Cities Coalition created and shared internal resources for the CBOs to reference before and during summer engagement including local shared mobility pricing sheets, e-mobility FAQs, and talking points. Throughout the summer engagement period, Minnesota Clean Cities Coalition was available as an "expert-on-call" to the CBOs and attended and supported events as requested by the CBOs.

The Communities LEAP team, NREL iteratively developed education and engagement materials for the summer "Let's Talk About Electric Mobility" campaign with the CBOs. This included a project webpage (hosted by Brooklyn Park), campaign handout, technology handout, technology posters, questionnaire, and community workshop facilitation guide. To ensure engagement was accessible to non-English speakers--in Hennepin County, 18% of residents speak a language other than English at home (U.S. Census Bureau 2022)—the questionnaire, project handout, and technology handout were translated into Spanish, Hmong, and Somali. These languages were selected to reflect the bilingual assistance programs offered by the City of Minneapolis's Neighborhood and Community Relations Department (Minneapolis 2021). English versions of the "Let's Talk About Electric Mobility" campaign and technology handouts are included as Appendix D. The CBOs were compensated for their time to review these materials and provide feedback, and their input was incorporated into the final versions of the documents. Changes to the materials based on CBO feedback included adding extra emphasis on shared and micromobility, changing "listening sessions" to more interactive "community workshops," and making the language less technical and more accessible across the documents.

Figure 4. Example branding for "Let's Talk About Electric Mobility" campaign

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The guiding questions listed in **Table 4** informed the creation of the workshop facilitation guide and questionnaire. The community workshop facilitation guide included: planning logistics (length, group size, attendee compensation), agenda, attendee demographic forms, verbal attendee participation and recording consent template, e-mobility education presentation, and suggested discussion questions about e-mobility and community engagement. A copy of the community workshop facilitation guide is included as Appendix E. The questionnaire included questions about travel mode, interest in e-mobility, perceived barriers and benefits of e-mobility, perceptions and preferences on community engagement, and demographic information. The questionnaire is included as Appendix F.

Table 4. Guiding Questions

Electric Mobility	
1.	**What are these communities' electric mobility priorities?** Do these priorities change across different sociodemographic groups? If so, how?
2.	**What are the primary electric mobility challenges, limitations, and barriers of these communities?** Do these challenges, limitations, and barriers differ across sociodemographic groups? If, so, how?
3.	**What are the primary electric mobility benefits identified by these communities?** Do the benefits vary across sociodemographic groups? If so, how?
4.	**What resources are needed for residents to gain more access to electric mobility?** Do these resources differ across sociodemographic groups? If so, how?
5.	**What is your current mobility mode and is there a desire for change?** Do modes and aspirations differ across sociodemographic groups? If so, how?
Community Engagement	
6.	**How does the community want their input and feedback to be used in the future?** Does this differ across sociodemographic groups? If so, how?
7.	**How does the community want to be engaged in the future?** Does this differ across sociodemographic groups? If so, how?

2.2.4. Community Workshops, Questionnaires, and Events

An in-person "Let's Talk About Electric Mobility" kick-off meeting was held in May 2023 and attended by the Communities LEAP team, NREL, local technical assistance providers, and CBOs. Between May and September 2023, each organization hosted one, approximately two-hour workshop with six to 23 invited community members to discuss their thoughts on e-mobility. The workshops were structured using the workshop facilitation guide though each CBO had flexibility to adjust the workshop schedule to suit their needs. Each meeting included a note taker to capture participant responses, an audio recording device that was provided to each organization to record the event, and then an audio recording was made that was transcribed and anonymized

Didier Bolanos Gonzalez at Monarch Festival

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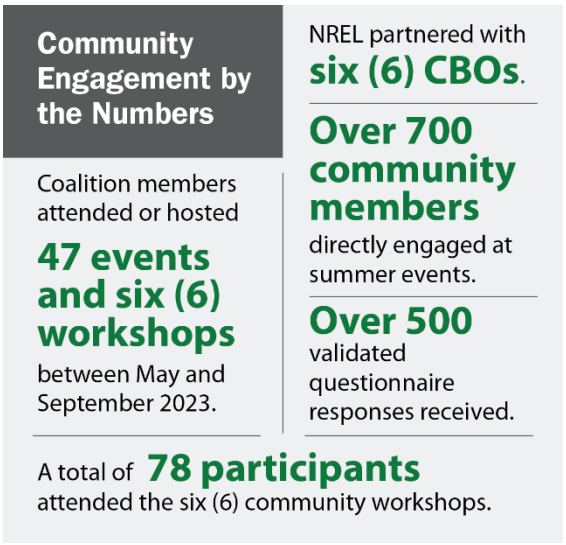
by staff of the Communities LEAP coalition.[5] All anonymized transcriptions were then stored in a secure cloud storage location only accessible to project team members conducting analysis. Prior to recording, verbal consent was received from each participant. In-person translation services were offered to the CBOs during workshop planning, although none ultimately chose to use a service during the workshop. Representatives from Hennepin County and Brooklyn Park also attended the workshops to support the events. After each workshop, each CBO submitted an event report with the event date and location, detailed typed notes that include feedback and responses from attendees, and a summary of the host organization's thoughts on how the session went.

Each organization chose to conduct approximately three to five additional summer educational and engagement activities that included tabling at events, community meetings, email newsletters, social media outreach, etc. Questionnaires were distributed online in social media or emails via hyperlink, and in-person events used a QR code. Each CBO and Minnesota Clean Cities Coalition was provided budget for event hosting expenses and to compensate questionnaire respondents at their discretion. Printed copies of the education and engagement materials and informational posters were provided to each organization to be used at the events. After each event, CBOs completed an event report that included the event date and location, estimated number of total attendees at the event, summary of feedback and conversations, and a summary of thoughts on how the event went.



Beyond events, the campaign also utilized digital promotion through social media, email listservs, and websites. A list of events and workshops attended or hosted by the CBOs and Communities LEAP team members is included in Appendix G.

[5] In two community workshops, technical problems arose in the recordings that limited clear access to the full discussion. In these cases, we relied on notes from CBOs and Communities LEAP team members to fill in gaps in the conversation.

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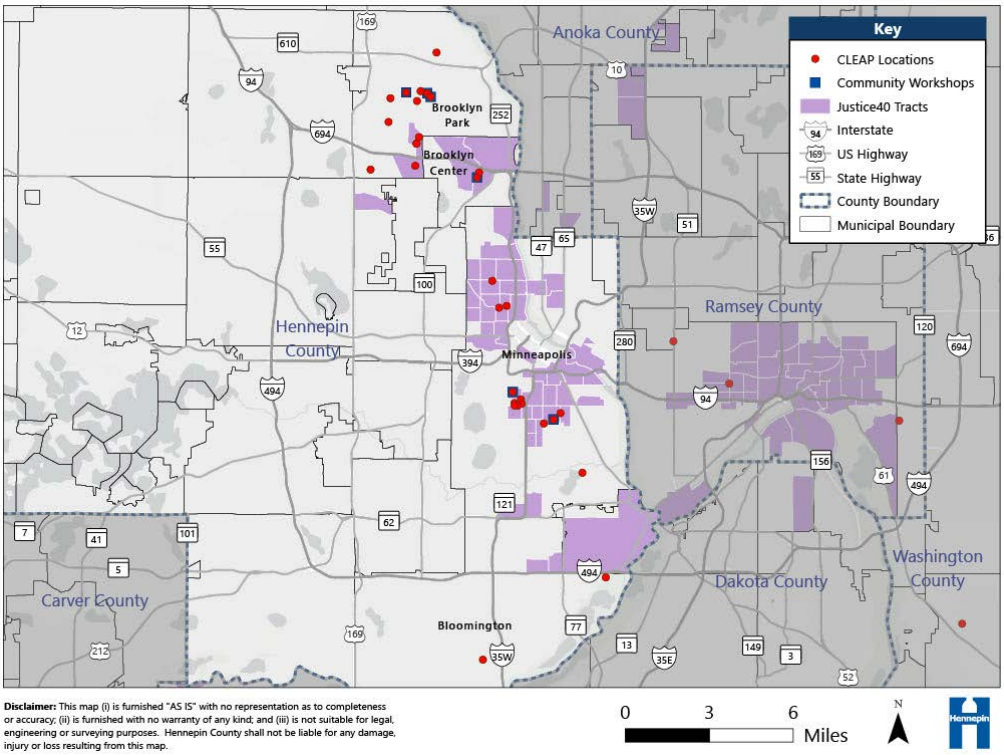

Figure 5. Community LEAP educational and engagement locations and community workshop locations

2.3. Analysis Process

2.3.1. Overview

The Hennepin County Climate & Resiliency Department analyzed both the questionnaire results as well as the anonymized transcripts from the six community workshops. NREL led the process to co-design the analysis approach and completed the second cycle of qualitative coding on the community workshop transcripts to validate and refine codes and categories that identify key transportation and participation barriers, needs, and priorities. Finally, NREL led the write-up of key findings, with support from Hennepin County and Brooklyn Park.

2.3.2. Questionnaire Analysis

A total of 835 questionnaires were received from May 2023 to October 2023. From those 835 questionnaires, Hennepin County analysts filtered and validated the results according to the following criteria: the self-reported zip codes of respondents were from inside Minnesota, questionnaires were filled out sufficiently to provide analyzable input, and open-ended responses did not have suspicious and/or repetitive answers. Out of the 835 questionnaires, 518 were considered valid responses given the stated criteria, and were subsequently used for analysis.

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2.3.3. Community Workshop Analysis Process

A total of six community workshops were conducted in Brooklyn Park, Brooklyn Center, and Minneapolis over the summer of 2023, from June 3 to September 6. Each workshop was recorded, transcribed, anonymized, and hand-coded within Microsoft Word and Excel. The resulting transcripts were then imported into MAXQDA software for a second round of qualitative analysis. Thematic coding was then utilized to systematically analyze the results of the six transcripts into key findings to chart community-guided pathways towards e-mobility. Thematic coding is the process of identifying categories and concepts within the data, linking passages from the transcripts with themes, and labeling those themes with specific codes.[6]

ACER, Inc. Community Workshop

Applying the qualitative data analysis technique of thematic coding, Hennepin and NREL researchers began with a set of preliminary codes or themes based on the guiding questions previously provided in **Table 4**. They then applied these codes to the data and iteratively identified additional themes that emerged during the analysis process. The first cycle of coding was conducted by the Hennepin County Climate & Resiliency Department utilizing word-processing software. The Hennepin County Climate & Resiliency Department developed an initial thematic coding process to analyze the six community workshop transcripts. They utilized Microsoft Word to color-code segments of text and Microsoft Excel to save quotations aligned with codes. They began by dividing their set of preliminary codes (themes) based on the guiding questions into three supra-categories: (1) Mobility and Transportation, (2) Community Engagement, and (3) Demographics. Within the first two categories, Hennepin researchers coded sections that related to (a) barriers, challenges, and concerns, (b) advantages, benefits, and opportunities, (c) questions, (d) suggestions, and (e) other themes.

The second cycle of thematic coding was conducted by NREL utilizing MAXQDA qualitative analysis software. All six anonymized transcriptions were uploaded into MAXQDA, Hennepin County codes were added to each transcription, and a round of qualitative coding was conducted to iterate, validate, and refine codes and categories. Please reference Appendix H for more detail on the thematic coding process and Appendix I for the codebook. Aligning the workshop findings with those of the questionnaires, qualitative analysis of the community workshops was used to add depth, context, and fill in gaps from the higher-level questionnaire findings.

2.3.4. Integrating Questionnaire and Community Workshop Findings

Finally, NREL and Hennepin County worked together to analyze and correlate the high-level findings from the questionnaire with the more granular details provided by the community workshop participants. While the questionnaire reached a larger audience, the community workshops documented specific lived experiences with e-mobility and transportation more generally to

[6] Thematic coding is a method of qualitative data analysis that involves identifying, analyzing, and documenting patterns (also termed "themes") within the data (e.g., interview or focus group transcripts). Unlike other coding methods that develop themes solely based on the new data such as grounded theory coding, thematic coding often relies on pre-existing questions to orient the analysis process such as the guiding questions presented earlier in this report.

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understand community-identified barriers to access, mobility priorities, as well as suggestions for the future.

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3. Results

3.1. Overview of Engagement Outcomes

3.1.1. Overview

This section offers a comprehensive summary of the findings derived from the Communities LEAP team and NREL's detailed analysis of both questionnaires and community workshops carried out during the summer of 2023. The purpose of presenting these results is twofold: first, to maintain continuity and engagement with all stakeholders and partners involved in this project by providing a follow-up on the insights gathered; and second, to pave the way for collaborative strategies and actions in advancing e-mobility planning across Hennepin County. This analysis not only reflects the collective voice and preferences of the community members engaged, but also serves as a critical step in shaping an informed and inclusive future for e-mobility initiatives in the region.

Integrating findings from 518 validated questionnaires and six community workshops, this section presents a well-rounded view of the current landscape. The questionnaire data offers a broad perspective, while the workshops delve into specific, localized experiences and contexts, addressing any gaps left by the questionnaire data. This synthesis sheds light on current transportation habits, identifies priorities for e-mobility, outlines barriers to its access and use, and explores the potential benefits of transitioning to electric options. Far from being a conclusive end, these findings serve as a catalyst to further the dialogue initiated by Communities LEAP with the local communities, focusing on their transportation and e-mobility necessities, goals, and aspirations. Special attention is given to the way structural inequities—influenced by factors like economic status, race/ethnicity, age, geographic location, primary language, and disabilities—affect access to both existing transportation systems and emerging e-mobility solutions. Additionally, this section outlines actionable steps recommended by community members for Hennepin County and its cities to address and overcome these challenges. These engagement results are featured in strategy matrices, where we present nine strategies community members prioritized for increasing e-mobility benefits and access in Hennepin County.

As a community workshop participant emphasized, following up with communities after engagement necessitates Communities LEAP representatives "come together and show us [community members] this was implemented [our suggestions were implemented]. What happened? The stations are here. They put 20 million here. We have this in rebates and then we can get the information out to the community about what happened." By mapping pathways toward e-mobility, this analysis aims to chart how community suggestions are and can become implemented results. Community suggested e-mobility outcomes include:

- Promoting methods (e.g., rebates) to increase access to e-mobility
- Increasing free opportunities for community members to learn about and test e-mobility options
- Providing comprehensive information on accessing and utilizing e-mobility incentives
- Increasing user accessibility and safety of shared e-mobility services
- Siting physical e-mobility infrastructure more equitably across the county
- Providing residents with a transparent accounting of public investments
- Continuing partnership with local community organizations and members to follow-up on practical implications of community suggestions as well as co-design mechanisms for tracking and measuring the social impacts of e-mobility investments across the county.

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Community workshop participants stressed that such outcomes can only be realized by partnering with residents to improve access to existing e-mobility benefits and co-design new transportation solutions.

3.1.2. Current Practices and Priorities

Hennepin County residents who participated in the questionnaire and/or community workshops shared both their current transportation practices as well as their priorities moving forward. Utilizing the questionnaire results, this report summarizes both the key trends in current transportation use of respondents as well as how that is connected to their interest in e-mobility options. The community workshops help to ground these trends in specific contexts and lived conditions that shape participant priorities.

3.1.3. Key Findings in Current Transportation Use [Questionnaire Responses]

The questionnaire findings provide a broad view of current transportation use and priorities across Hennepin County. The questionnaire was deployed by the C LEAP project team and CBO partners at community events, on social media, and via other forms of outreach from May to October 2023. The questionnaire was also offered in 4 languages – English, Hmong, Somali and Spanish – to increase accessibility. Figure 6 below breaks down the demographics of the Communities LEAP questionnaire respondents. Given the Communities LEAP engagement and questionnaire deployment centered on certain areas and communities in Hennepin County that are more climate vulnerable, the questionnaire intentionally has a geographic over-representation of respondents from Brooklyn Park, Brooklyn Center, and South Minneapolis. In terms of race and ethnicity, there is also an intentional over-representation of residents who have historically been underrepresented in transportation and energy planning – such as African, African-American, and Latino residents. In terms of economic status, there was strong representation from low to middle income residents, the residents often most negatively burdened by climate impacts. In terms of age, there was a relatively even distribution, with slightly more representation from ages 21-39.

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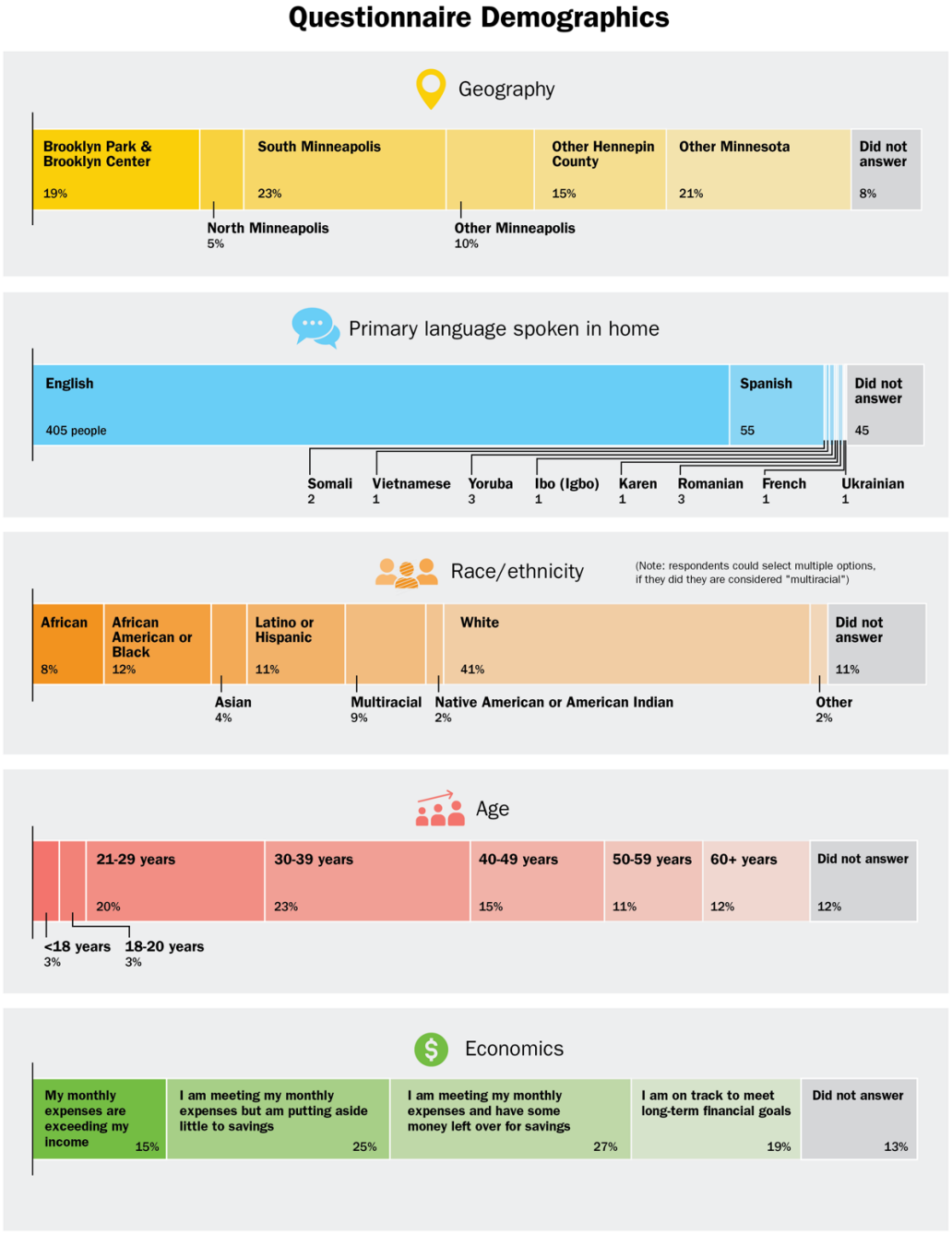

Figure 6. Demographics of Communities LEAP questionnaire respondents

The bullets below connect the demographic breakdown of Communities LEAP questionnaire respondents represented in **Figure 6** to their preferred mores of transportation. Each bullet then compares these findings to the Hennepin County respondents of the Metropolitan Council Travel Behavior Inventory (MCTBI). Generally, the Communities LEAP questionnaire respondents have similar travel behavior to Hennepin County as a whole when referencing MCTBI.[7]

[7] Metropolitan Council's Travel Behavior Inventory includes data from a biennial household travel survey, once-in-five-years survey of on-board transit riders, and other travel behavior data collection.

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- **A significant percentage of questionnaire respondents are not regular personal car users**, including 14% who "Never use a personal car" but most respondents (72%) are regular personal car users. According to MCTBI, 74% of Hennepin County household trips are conducted using a household vehicle and 79% of households in Hennepin County commute to work by driving alone.
- **25% of the questionnaire respondents ride the bus regularly and 25% ride occasionally.** According to MCTBI, countywide, 22% of respondents ride the bus at least once per month.
- **32% of the respondents ride a bike regularly and 35% occasionally.** According to MCTBI, countywide, only 26% of respondents ride a bike at least once per month.
- **Not many respondents currently use carshare** (73% never use) or scooters (75% never use). According to MCTBI, countywide, 99% never use carshare and 96% never use bikeshare.

As the Communities LEAP questionnaire respondents consider a transition to e-mobility, we find two groups of transportation users emerging: (1) the **personal ownership** group, with respondents who prefer their own personal vehicle indicating that they would prefer to utilize a personal EV, and (2) the **shared usage** group, with respondents who currently utilize shared transportation modes—e.g., buses, light rail, rideshare, shared bikes—indicating interest in all other e-mobility modes, supporting a multimodal transportation system more broadly.

The following trends were identified among these two groups:

- **The shared usage group could contain e-mobility adopters**. Considering 50% of respondents utilize the bus and 67% bike at least occasionally, providing accessible shared e-mobility options for those users such as electric buses (e-buses) and shared e-bikes could be a widely impactful yet more easily attainable e-mobility goal. As one community workshop participant recommended, e-buses are "low-hanging fruit" for affordable e-mobility adoption "because it's all just part of the same infrastructure and stuff that everybody already knows about that's…very easily accessible." Providing more electric options to existing shared mobility users is an easily accessible method of transitioning to e-mobility.
- **The more a respondent uses a transportation mode, the more they are interested in electrifying that particular mode**. For example, there is a strong positive trend between interest in e-bikes (personal and shared) and current use of biking for travel, as well as between interest in e-buses and current bus use.
- The more a respondent uses a particular mode that is not a personal vehicle, the more they are interested in any kind of e-mobility. In the case of buses, respondents who are frequent bus users are more interested in e-buses, but they are also more interested in car share and shared e-bikes/scooters compared to those who never ride the bus (e.g., people who use personal vehicles or micro-mobility). People who bike more are also more interested in e-buses, carshare, and scooter share.
- **Frequency of personal car usage influences interest in e-mobility**. Regular personal car users are more interested in personal EVs than respondents who never drive their own car, and respondents who never drive are more interested in all other types of e-mobility than regular drivers. These findings suggest that respondents who drive every day or multiple times a week probably tend to rely mainly on their own vehicle for transportation, whereas those who use other modes tend to be more multimodal rather than only using a single non-car mode for their transportation needs.

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The demographics of personal ownership versus shared usage in the questionnaire data is also worth noting.[8] Some key takeaways from the Communities LEAP questionnaire are included below and supported by data from MCTBI.

- **Car-only people are doing better economically than people whose only regular mode was not a car;** The median household income for Hennepin County is $92,595 (U.S. Census Bureau 2022). According to MCTBI, 78% of trips taken by households earning greater than $100,000 a year are completed using a household vehicle. This compares to 60% of trips taken by household vehicle for households earning less than $50,000 a year.
- **Car-only people skew older, non-car skew younger, and car-and-other-mode people are in between.** According to MCTBI, 79% of household trips for those 55 and older were completed by a household vehicle compared to 58% for 18–24-year-olds.
- **Mode use varied geographically.** More respondents from Brooklyn Center, Brooklyn Park, and the rest of Hennepin County were car-only people, compared to Minneapolis.
- **Mode use varied across racial and ethnic groups**. Self-identified "Native American" (small sample size) and "Black" or "African-American" respondents are most likely to not regularly use a personal car, "African" and "Asian" respondents are most likely to be car-only, and "White" and "Multiracial" respondents are most likely to regularly use car and other mode.[9]

The distinction between shared and personal transportation also surfaced during the community workshops. Given the format of the community workshops were only semi-structured-- facilitators utilized prepared questions--the more flexible conversation structure allowed space to spend time on topics that resonated with participants' lived experiences. While roughly half of all workshop participants identified as being conventional car owners, shared usage consistently took over more conversation time than personal ownership. In fact, across the six community workshops, 74% of all discussion of transportation modes related to "shared usage" and only 26% referred to "personal ownership." This workshop finding reveals a prioritization in discussing and understanding shared usage mobility as opposed to personal ownership that aligns with the questionnaire findings above.

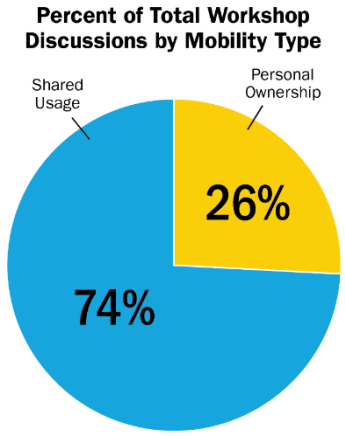

Figure 7. Workshop discussions by mobility type

The community workshops revealed how this focus and interest in shared usage is also entangled in the barriers to entry for personal ownership such as cost. Shared transportation including buses, the light rail, and shared bikes offer more affordable mobility options than purchasing your own vehicle, particularly your own EV. Furthermore, participants mentioned utilizing those options to offset their car usage.

[8] When asking about current mode use, the Communities LEAP questionnaire only distinguished between personal and shared for cars, but not for bikes or scooters. Therefore, our analysis broke respondents down into four groups: (1) people whose only regular mode was car, (2) people who regularly used a car and something else, (3) people whose only regular mode was not a car, and (4) people who did not report regularly using any mode.

[9] The Communities LEAP questionnaire incorporated racial and ethnic categories commonly used in other local engagement efforts.

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3.1.4. Key Findings Related to E-Mobility [workshops]

The workshop findings added greater depth, rationale, and local context to the questionnaire results. Because each partner CBO represented specific climate-vulnerable communities in Hennepin County and the workshop participants were recruited by each CBO, the discussions localized wider barriers experienced by Hennepin County residents and revealed local concerns and priorities. While these findings are not representative of Hennepin County as a whole, they purposely center on key climate-vulnerable communities to gain a deeper understanding of these residents' mobility needs, challenges, and aspirations.

Each CBO was provided with a workshop facilitation guide (included as Appendix E), which included a demographics form to be completed by the workshop participants. The workshop facilitation guide was provided as general guidance and, as such, each CBO made adjustments to suit their needs. Some CBOs chose to complete this activity and others chose not to. For this reason, the project has limited demographic information from the workshop participants. However, we were able to gather the demographic information discussed in **Figure 8**.

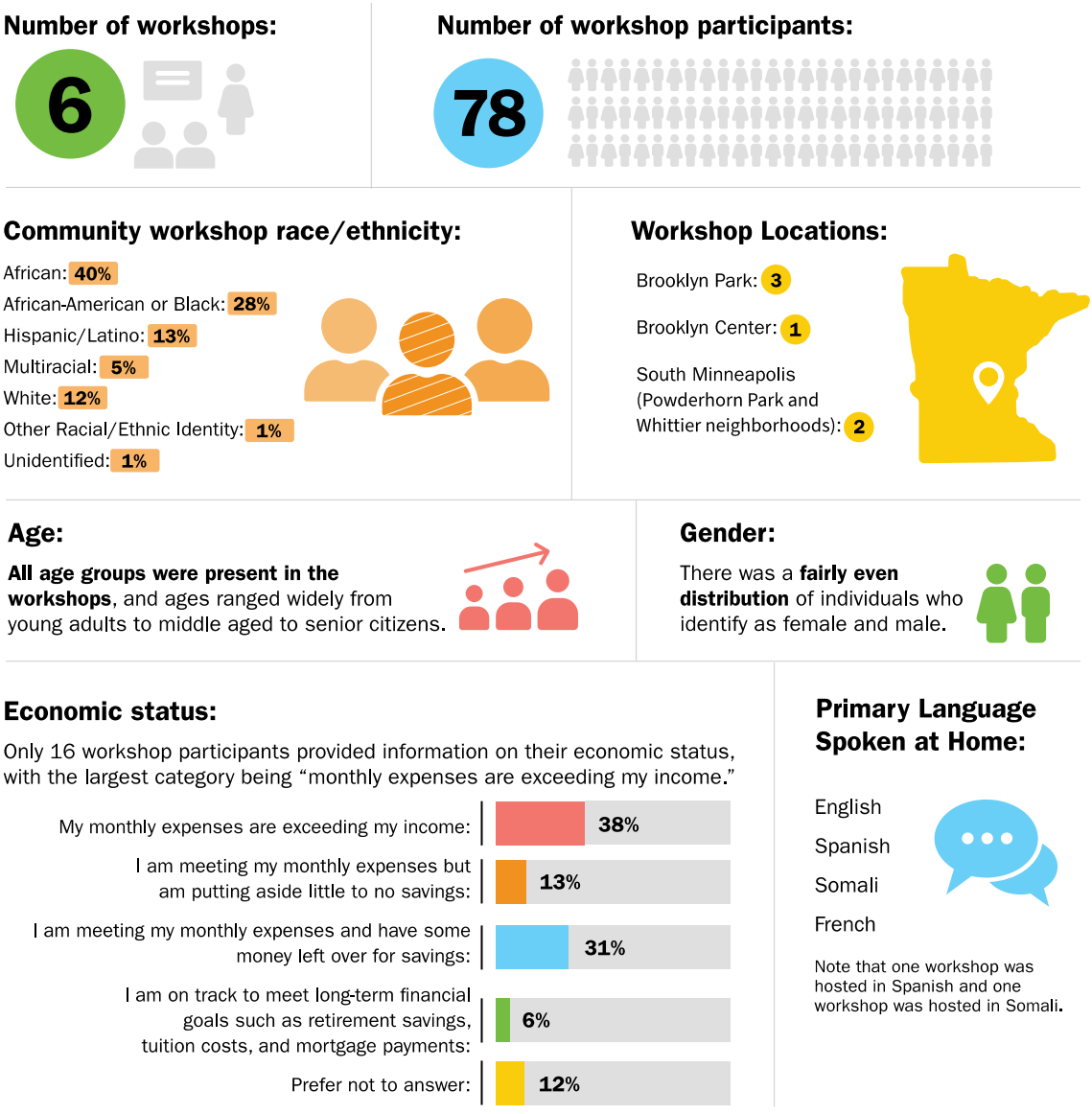

Figure 8. Demographics of community workshop participants

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Accessibility, safety concerns, and risk tolerance impacted workshop participants' interest in new transportation modes. The inter-generational workshop participation revealed differences in access and use across age groups. Younger participants and the children or grandchildren of older participants were familiar with shared bikes, e-bikes, and electric scooters (e-scooters) as easily accessible forms of transportation. As one young participant stated, "If you're under the age of 18 and can't drive? For us, the easy way to get around is like a scooter or the bikes." Apart from the ease of access that e-scooters provide younger users, participants also noted the ease of use:

> "You don't have to put it in a certain area, especially the scooters. You don't have to like to leave it where you found it, you can leave it wherever and someone can just pick it up and go with it. Wherever you go you see them laying on the side of the road or something and you just pick it up and go."

This ease of accessibility was paired with support for the environmental benefits. One participant supported increased use by stating, "It's a good idea to have more bikes and scooters, because it can help reduce the pollution." Thus, the lower barriers for use provided to age groups that have less access to personally owned transportation options, the ease of access for first- and last-mile connections[10], as well as the relatively lower threshold for reducing air pollution were all reasons participants noted for utilizing shared micro-mobility.

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On the other hand, concerns about safety issues related to shared electric micro-mobility were mentioned 27 times by workshop participants—primarily related to the physical well-being of both the user and those surrounding them. One participant warned that the "cars don't really pay attention to the bike lanes…so the potential of you getting hit and not having a helmet on is super high," and others widened that lens from a lack of protective accessories (e.g., helmets) to a lack of infrastructure and norms to maintain multimodal traffic safety. Concerned with the impacts on pedestrians and the e-scooter users themselves, another participant called attention to the "people [on e-scooters] zipping by on the sidewalks or in the streets. They don't abide by the safety laws. They don't stop at the lights they just keep zipping on by." Thus, both users and non-users of bikes, e-bikes and e-scooters recommended including more safety measures from personal protection such as helmets to infrastructure changes to provide safe dedicated lanes for users of different transportation modes.

Finally, the question of risk and uncertainty surfaced as a factor limiting adoption of new transportation modes. Given the relative novelty and unfamiliarity of these new e-mobility options, particularly EVs, various participants echoed the sentiment of this participant: "I'm kind of interested in it [EVs], but I'm not like the first person to go and get it. So, I'm kind of just sitting back and saying, OK, let's see how this is going to pan out." Others emphasized that when individuals and families are cost-burdened, the decision to take the financial risk on a new technology becomes even more difficult and potentially destabilizing.

[10] First- and last-mile connections refers to the critical links between a traveler's origin (first mile) or destination (last mile) and the main transportation network, where efficient and accessible solutions are needed to help integrate multi-modal travel. For example, a traveler might take an e-scooter from their home to the bus stop that sits a mile away, and then take the bus to their workplace.

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3.2. Detailed Analysis of Engagement Findings

3.2.1. High Interest in E-Mobility

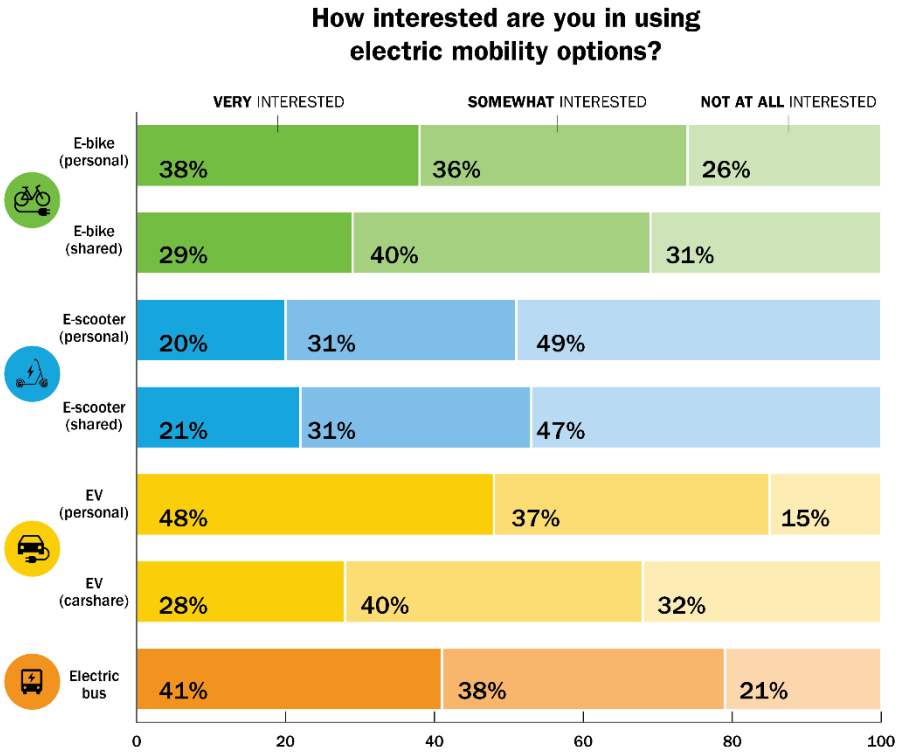

Figure 9. Ranked interest in e-mobility options

Findings from the questionnaire results reveal that there is high interest in electric transportation across all demographic groups, geographic areas of Hennepin County, and e-mobility modal categories. The questionnaire provided seven options of e-mobility categories: e-buses, personal e-bikes, personal e-scooters, shared e-bikes, shared e-scooters, personal EVs and EV carshares. For every mode of e- mobility,[11] at least 50% of respondents reported that they were *Somewhat* or *Very Interested* in using that option. Scooters had the least amount of interest (~50%), personal EVs and e-buses had the most (>75%), and there was also high interest for e-bikes (personal and shared) as well as electric carsharing.

The degree of interest varies most notably by age and economic status in the questionnaire results with some variability in geographic location. In terms of economic disparities, there was a positive trend in interest in e-bikes and personal EVs as the financial stability of the respondent increased; scooters, on the other hand, were more of interest to lower-income respondents and EV carshares maintained a stable level of interest across all economic groups. In terms of age, older respondents were less interested in all modes of e-mobility. Nevertheless, the majority of respondents across all age groups were at least "Somewhat interested" in every e-mobility mode with the exception of scooters and EV carshare among respondents aged 60 and older. In terms of geographic location,

[11] For this report, the questionnaire analysis did not combine shared and non-shared options when looking at interest by mode. Thus, personal versus shared use of the same type of vehicle are considered separate "modes" in this report.

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the highest interest in personal e-bikes was from respondents in South Minneapolis, which has the most bike infrastructure in the region. There was notably lower interest in e-buses as well as e-bikes in Brooklyn Park and Brooklyn Center, which has lower transit access than Minneapolis.

The community workshops revealed support for e-buses from both Brooklyn Park and Minneapolis participants. Unlike any other modes, there were no barriers associated with accessing e-buses in any of the six workshops, and a general interest in that e-mobility option. A Minneapolis participant pointed to the ease of adoption, where "electric buses and electric school buses…there's like no change to the end user right…as far as everyone else is concerned its exactly the same as it was before but this bus doesn't stink, right, at least not on the outside." Here, the benefits of lower air pollution are associated with enhancing the user experience of riding the vehicle. One Brooklyn Park participant noted another benefit of the existing e-buses in her area, that "have outlets [to charge your phone], so you don't have to worry about that as much. You're already on there for 45 minutes which is enough to get you enough battery to make it to your destination." This smooth transition from gas to electric within an existing mode of public transportation that is easily available allows users to identify and place value on specific benefits of e-mobility that extend beyond that mode.

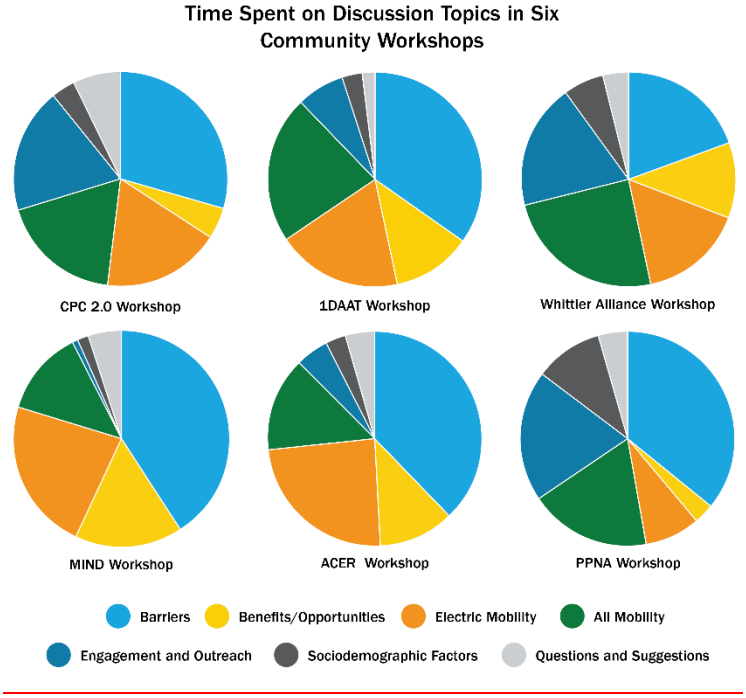

Figure 10. Profiles of primary topics discussed in each community workshop

3.2.2. Barriers

In this report, "barriers" are the causal factors that prevent or inhibit Hennepin County transportation users from accessing and using e-mobility. Across the community workshops, barriers to e-mobility access and use took up the largest amount of time in five of the six workshops (See **Figure 10** above). Following how workshop participants described their transportation accessibility barriers, we distinguish between barriers to *accessing* transportation modes—such as insufficient supply of shared e-mobility in their neighborhood— from barriers to *utilizing* that mode once accessed—such as lack of community-tailored information and marketing necessary for residents to understand how to *use* EV carshares located in their neighborhoods. While the questionnaire asked respondents to rank barriers by transportation mode, the workshops provided the space for participants to connect various barriers preventing them from utilizing existing modes of transportation. This sub-section provides the barrier ranking from the questionnaires according to e-mobility mode but leans heavily

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on the intersecting and intersectional factors inhibiting workshop participants from accessing and utilizing e-mobility options more equitably.

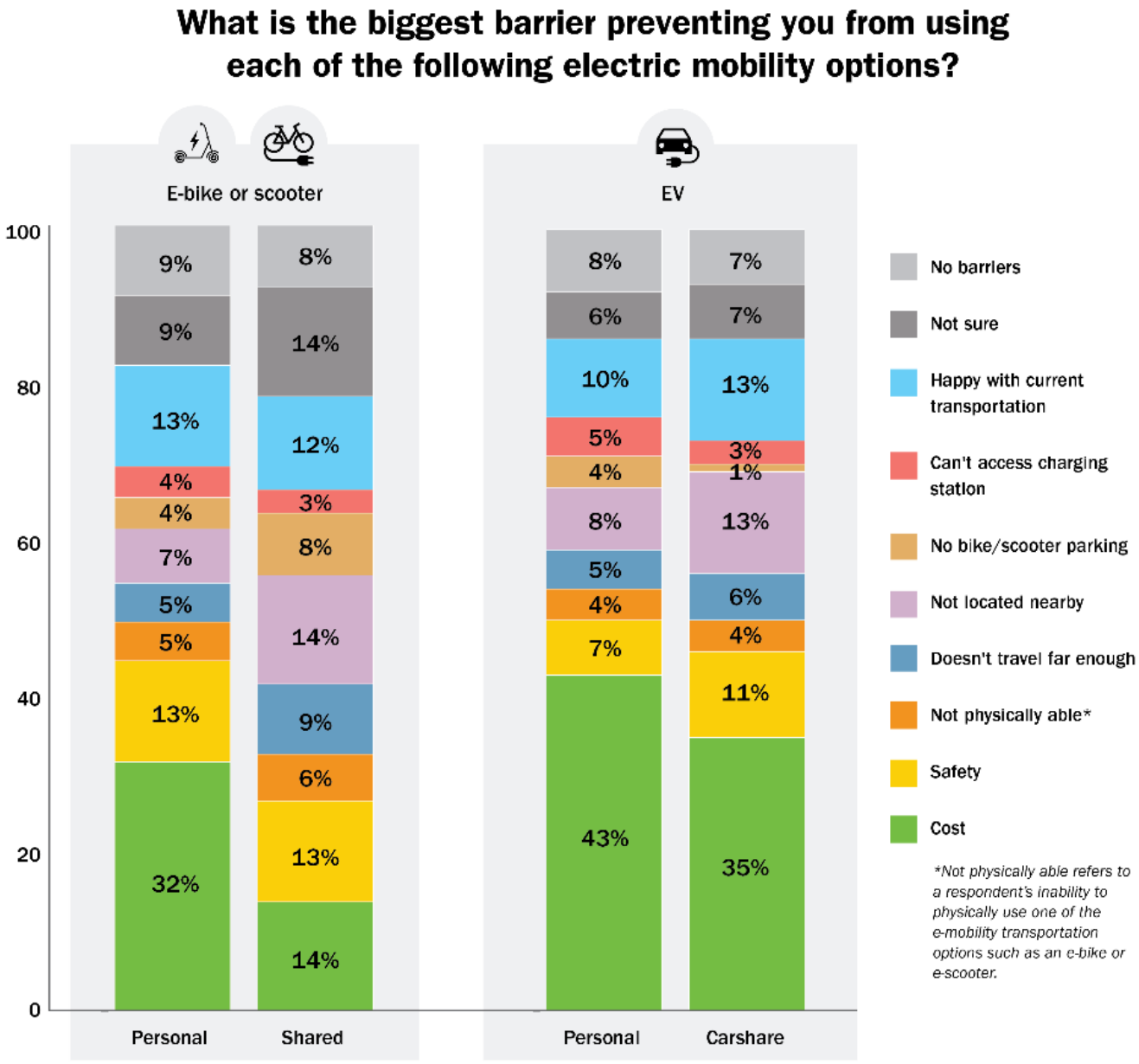

Figure 11. Key barriers inhibiting e-mobility access and use

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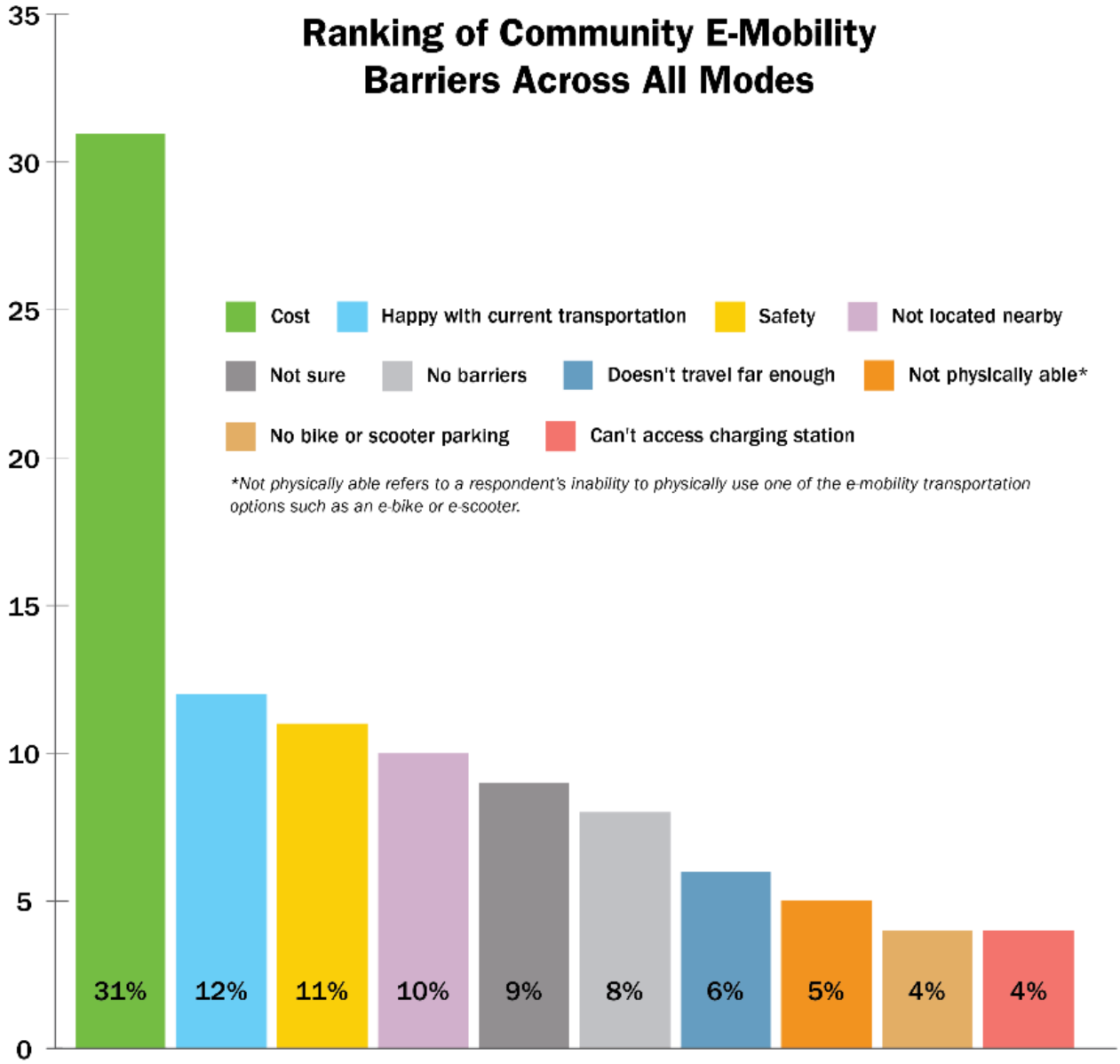

Figure 12. Ranking of e-mobility barriers across all modes[12]

3.2.2.1. COST AS A PRIMARY BARRIER TO E-MOBILITY

Cost has been identified as a primary barrier to the adoption of e-mobility options in Hennepin County, both in the questionnaire responses and community workshops. Over 40% of questionnaire respondents cited cost as the main obstacle in purchasing personal EVs, while more than 30% viewed it as a significant barrier to acquiring personal e-bikes/scooters and using EV carshares. This data points to a widespread perception of e-mobility as financially out of reach for a significant portion of the population.

[12] The barrier "doesn't travel far enough" refers to the limited range of the e-mobility mode.

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Delving into the questionnaire results, it is evident that perceptions of cost barriers vary across different demographic groups and modes of e-mobility. While high-income respondents primarily saw cost as a barrier to personal EV ownership, they expressed general satisfaction with their current modes of transportation, showing less interest in shared e-mobility options. In contrast, for shared e-bikes and e-scooters, cost was not the predominant barrier across income groups. Safety concerns, uncertainty, and proximity issues ("not located nearby") were more significant barriers for these modes. Similarly, age and geographic location also influenced the perception of cost barriers, with younger and older age groups, as well as residents of certain areas like North Minneapolis, expressing distinct concerns.

The community workshops provided a richer, more nuanced understanding of the cost barriers, linking them to broader societal and infrastructural issues. Participants discussed the intersection of cost with other factors like time constraints, technology access, and the inequitable distribution of shared e-mobility options. These discussions highlighted that the barrier of cost is not just about the upfront financial outlay but is also entwined with broader socio-economic conditions and systemic inequities. This broader view of cost includes hidden financial burdens and the lack of community-tailored information that disproportionately affects low-income and minority communities.

- *Time:* Workshop participants expressed concerns about the time required for activities like charging EVs, which adds to the overall 'cost' of adopting these technologies.
- *Technology Access:* Access to technology like smartphones, which is essential for using shared e-mobility options, was noted as a hidden cost and a barrier for some community members.
- *Weather:* Participants pointed out that the effectiveness and practicality of e-mobility options are affected by weather conditions in Minnesota, impacting their overall cost and usability.
- *Home Charging and Charging Stations:* The availability and cost of charging infrastructure at home and in public spaces emerged as a significant concern, particularly in areas with fewer charging stations.
- *Lack of Community-Tailored Information and Inequitable Distribution:* There is a lack of accessible, relevant information about e-mobility options for diverse communities, coupled with an uneven distribution of shared e-mobility resources across the county.

This section has outlined how the perception and reality of cost as a barrier to e-mobility in Hennepin County are multidimensional and intersect with various socio-economic and demographic factors. Addressing these barriers requires a holistic approach that goes beyond merely reducing the financial cost of e-mobility options and involves tackling the underlying systemic issues.

3.2.2.2. TIME

The community workshops gave more insight into the relationship between intersecting barriers such as time and cost. For instance, one participant identified having to spend time charging an EV as a cost that they were unable to justify.

> "The amount of time that it takes to charge a car? A lot of people don't have time. A lot of people from my community don't have any time. Like, they don't even have an extra hour cause I gotta go to the laundromat, and then I gotta go get groceries, and then I have to go home and cook dinner for my kids, and then I have to go. And so, sitting at the grocery store for an extra, like, 30 minutes might not be doable."

This participant emphasizes that in their community, time is a scarce resource just like money. The financial burdens of everyday life (e.g., inability to purchase a home washing machine due to rental conditions and/or cost) create and exacerbate time burdens in daily routines that constrain any changes to a tight schedule. Across the six workshops, time constraints were mentioned 20 times in

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relation to charging EVs. Time constraints also surfaced in relation to how long it takes to utilize different shared e-mobility modes and the length of time it takes to use public transportation such as buses when you're traveling long distances or waiting at a bus stop.

3.2.2.3. HOME CHARGING

The cost of home charging was also perceived as a barrier in community workshops. Without sufficient information or lived experience with EV charging, both the cost of installing EV charging infrastructure—such as adding an exterior outlet or a 240-volt outlet for a level 2 charger—as well as the cost of charging an EV were concerns to participants. While costs typically associated with purchasing gas for a conventional internal combustion engine vehicle do fluctuate, they are known to participants and can be factored into their budget. However, the cost of charging an EV at home and adding that expense to one's electric bill is an unknown amount that cannot be budgeted. One participant asked, "What is it going to cost me for 8 hours to charge my battery at home? So, I'm no longer buying gas but I'm transferring the cost now to my electricity bill, right?" Here, a lack of sufficient information and experience becomes a deterrent, limiting this participant's ability to calculate the full cost of owning and using an EV. Participants are understandably weary of investing in a technology they may not be able to afford.

3.2.2.4. CHARGING STATIONS

Charging stations outside the home often overlapped with other categories of barriers to e-mobility, revealing clear challenges that were consistently identified by workshop participants. Two large overlaps were *access* to charging stations and *time* spent at charging stations, as described above. Here we are referring to "access" as ability to locate and utilize available charging infrastructure. Participants mentioned a lack of sufficient charging infrastructure in the county, stating that they "don't have enough charging stations." They also stated that the stations that do exist "are so few and far between." Inequitable distribution of charging infrastructure was also brought up as participants pointed to specific locations that had varying levels of access. For example, one participant noted:

> "I have noticed that there is more of these located in North Minneapolis than I have seen anywhere else. I'm not sure if there's a particular rhyme or reason to that, but I have noticed…between Brooklyn and Bloomington…but I've always noticed that there's a lot more of them in North Minneapolis than I've seen anywhere else, that includes downtown, South Minneapolis, as well as in Brooklyn. I've actually never seen an actual charging station, nor have I seen anyone myself, whether it was the bike or the scooter in Brooklyn."

This geographic disparity in public charging stations, with few options identified in Brooklyn Park and South Minneapolis, points to the increased financial burden on residents who would need to install such infrastructure in their own homes in order to increase reliable access to charging.

3.2.2.5. TECHNOLOGY ACCESS

For shared transportation, there are unique hidden costs, such as access to a cell phone, access to cellular data, and access to an internet compatible payment method, all of which are pre-requisites to accessing and using the shared transportation mode. These hidden costs were more prevalent in conversation than the cost to rent or ride shared transportation. As one participant explained:

> "I used to teach a teen class at Pillsbury house and I'm like a lot of the kids, like, they maybe had phones, but they didn't have service. Like, they could get

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> like a hand-me-down phone, but they couldn't pay for service, so that's not very useful for a vehicle, but you know you have to be online the whole time."

This participant points to the hidden barrier of needing to have a cell phone *and* pay for cellphone service to sign up, register, and utilize most shared e-mobility modes. These potential users may have physical access to shared e-scooters and e-bikes, but without a means and method of paying for using that mode, they are unable to fully access and utilize the service.

3.2.2.6. WEATHER

Weather conditions were an additional barrier that participants brought up consistently, at times as an overlapping concern with cost. If Hennepin County residents invest in a particular mode of transportation, they want that mode to be reliable throughout the year, even in the cold winter months. As one participant stated, "All the bad things that gas vehicles give out destroying the ozone layer, so it'll be nicer to have more electric vehicles. But they've been in production for how long and it's not accessible for people that live in brown communities, because they're not—people can't afford it. They can't afford to buy a Tesla of our own. Not even a Tesla, just a scooter. It's $4,000 for an e-bike. We live in Minnesota, so who's going to be riding bikes in 20 below zero? So, they have to figure out a different way." This resident clearly values the environmental benefits of transitioning to e-mobility; however, they emphasize the need to address the existing racial disparity in access to affordable e-mobility options that are usable throughout the year. Regardless of cost, many participants are hesitant to utilize e-mobility options due to the Minnesota winter that negatively affects the use of all e-mobility modes—from increased depletion of EV batteries and their range in cold conditions, to impeding the use of e-scooters and e-bikes due to snow conditions.

3.2.2.7. LACK OF COMMUNITY-TAILORED INFORMATION

Furthermore, moving from personal ownership to shared options, other confounding factors were identified related to access to information and infrastructure. While upfront costs such as membership and use fees for shared e-bikes, shared e-scooters, and EV carshares may be a barrier for many cost-burdened community members, there is also a significant lack of information related to the use of these shared modes that is exacerbated by an inequitable design and distribution of outreach and informational materials. As one workshop participant stated:

> "Discussions like this [about e-mobility]…typically are going to kind of white yuppies and I don't feel like communities of color, maybe low-income communities, really kind of get any information, and *information in a way that matters to them*. Sometimes you can get information but it's not information that matters. You know, you are kind of getting it filtered maybe through a white middle-class lens and you're like, OK this is really costly. But then if you're explaining to people, hey, you know, there are some other programs that makes it affordable, and it's like 'Oh, there are?' So, then you can see an avenue potentially for yourself. So, I think, you know, these discussions need to kind of reach deeper into those communities."

Without designing e-mobility information "in a way that matters" to communities of color and low-income communities, existing e-mobility options will effectively remain inaccessible to these residents. Even if affordable avenues for access *do* exist, these residents will not be able to utilize them if they remain unknown and unrelatable to their communities. Thus, while existing financial burdens are a clear barrier for these residents, the lack of accessible community-tailored information on affordable e-mobility options exacerbates the barriers to equitably accessing e-mobility.

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3.2.2.8. INEQUITABLE DISTRIBUTION OF SHARED E-MOBILITY OPTIONS

Beyond a lack of information in their communities, workshop participants also noted the uneven distribution of shared mobility options. Many pointed out that shared e-mobility options were only readily available in downtown Minneapolis, with some mention of brief access in parts of South and North Minneapolis. Identifying the inequitable distribution of these resources, others emphasized that e-mobility options are "not even accessible in our community." Unreliable and insufficient supply in participants neighborhoods was a clear impediment to use of shared e-mobility options.

However, participants noted that this was not always the case with shared mobility systems. Several participants from two listening sessions recalled Nice Ride, the seasonal nonprofit bicycle sharing system that operated in Minneapolis and St. Paul, Minnesota. The system operated from 2010 to 2022, when Blue Cross Blue Shield did not renew their sponsorship (MPR News 2023). These participants lamented the closure of this public bike share option. Their disappointment suggests that Nice Ride was well used by residents, but its loss also induced a lack of trust in both the dependency of this mode of transportation as well as local government decision-making processes. As one participant noted, "The consistency of it as well like they took the bikes away. That is something we accessed all the time. You could get to work, leisure, exercise, you can use that for everything, but then you guys just decided to take it away without our input on that."

Participants suggested that this type of neighborhood disinvestment in affordable mobility options that increases community mistrust can only be resolved by partnering with local communities and increasing investment. As one participant explained, "In our communities, in our society we see the outcomes of what I would call marginal investment in the solution and then question why can't we make more progress? Well, you ain't got no helmets, you don't have enough charging stations." Co-designing solutions to the barriers participants articulate also necessitates understanding what the underlying concerns such as "safety" and "reliability" mean to these community members.

3.2.2.9. SAFETY

Safety was the second highest barrier in the questionnaire results, and one of the primary concerns that surfaced in the community workshops. References to "safety" as a barrier to e-mobility were coded 56 times over the course of the six workshops. Safety took on various meanings depending on the context and transportation mode. Lack of accessories such as helmets that ensure the physical well-being of the rider on shared e-bikes and e-scooters was a common concern among participants. This is inherently tied to the lack of protected travel routes (e.g., lanes, paths, trails) and intersection crossings for lower speed modes like bikes and scooters.

As mentioned in the previous section, e-scooters were the mode that incited the most concerns for physical well-being. Safety was mentioned as a barrier 20 times in relation to e-scooters, 8 times in relation to EVs, and 7 times in relation to e-bikes. The concern in relation to e-scooters and e-bikes centered on a risk to physical well-being while using the vehicle due to the lack of protective infrastructure (dedicated and protected bike lanes) and lack of safety accessories (helmet, baby seat). Safety concerns related to EVs centered on the novelty of this technology in everyday environments—from confusion on how to open the door of a Tesla to fear that noise-less EVs will sneak up on pedestrians. As one participant noted, EVs are "very quiet, which is maybe good. But also, an issue in terms of, like, traffic safety." This disorientation in relation to how new mobility technologies integrate into existing environments becomes a multimodal safety concern, potentially affecting other vehicle drivers, micro-mobility users, and pedestrians.

While the impact of each of these intersecting barriers may vary across e-mobility modes, they have a cumulative effect of limiting transportation access. Please see Appendix J for more information on overlapping barriers and opportunities by mode. The next section follows the strategies that

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workshop participants suggested to prevent and/or mitigate the intersecting e-mobility barriers and concerns they identified.

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4. Recommendations and Conclusion

This final section provides community-guided recommendations for Hennepin County's Communities LEAP project as they move into future transportation planning and deployment. As a form of accountability, the strategies, pathways, and potential actions suggested in this section aim to center the priorities and recommendations of Communities LEAP participants to build a community-guided approach toward their e-mobility future.

4.1. Community Strategies

This sub-section maps the community-identified benefits of e-mobility and 9 community-identified strategies for increasing e-mobility access and distributional justice. These strategies range from how to maximize equitable access to e-mobility options to how to ensure local communities are guiding the engagement, ideation, and implementation process. We begin by identifying potential e-mobility benefits and then move into the strategies to equitably realize those benefits.

4.1.1 Potential E-Mobility Benefits Identified by Questionnaire Respondents

The questionnaire results provide a high-level ranking of potential e-mobility benefits identified by community respondents. When asked about perceived benefits of e-mobility, the highest ranked benefit amongst questionnaire respondents was "Improved air quality and public health" followed by "Reduced maintenance and fuel costs." These types of environmental benefits of transitioning to e-mobility were also mentioned in the community workshops.

Conversely, in the community workshops, participants noted a concern about maintenance and energy costs related to personal EVs that was linked to a lack of sufficient information on the upfront and operational costs of EVs. Thus, participants pointed to the opportunity that increased information on e-mobility could provide themselves and their neighbors with the necessary knowledge to inform their decision-making.

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4.1.2 Nine Community-Identified Strategies for Increasing Equitable Access to E-Mobility Benefits

The following nine strategies were built out of suggestions provided by community workshop participants and aligned with potential actions that could be taken to move these recommendations forward. Each strategy below provides quotes from community workshop participants with specific e-mobility suggestions as well as potential actions that can be taken to realize those recommendations. These strategies aim to center community-guided next steps on how to collectively build more equitable pathways toward e-mobility in Hennepin County. **These strategies are not ranked or presented in any prioritized order**.

STRATEGY 1: Lower Cost Barrier for Personal EVs Via Rebates and Incentives

Workshop participants recommended increasing access to information about existing e-mobility rebates and how those rebates could lower upfront costs for potential buyers. One method suggested to lower the existing cost barrier to purchasing a personal EV was providing an option to apply the state and federal EV tax credit upfront at the dealership instead of receiving the money back when tax returns are filed. Another participant suggested aligning EV rebates with other incentives that residents are familiar with such as the Housing Choice Voucher Program Section 8, where the tax credit is applied upfront so that the cost burden is not held by the program user until taxes are filed. In May 2023, the Minnesota legislature approved an energy policy omnibus bill (HF2310) with EV rebates ranging from $600 for a used EV to $2,500 for a new EV. Recent state legislation now allow state EV rebates to be applied at point of sale or lease similar to current federal EV rebates. The state rebate program is administered through the Minnesota Department of Commerce and the program launched in February 2024 (Minnesota Legislature 2023). These community members also suggested higher rebates (e.g., $20,000) to lower the cost barriers of purchasing an EV for lower-income residents. This would allow for upscale EVs, such as Teslas, to be more accessible to lower-income buyers. There is some precedent for this suggestion. In 2024, Colorado residents will be eligible for up to $15,000 in combined state and federal tax credits for purchasing an EV under $35,000. These community suggestions aim to lower the cost barrier to accessing personal EVs by extending the use of existing rebates, increasing their level of support, and expanding their impact, particularly for lower income communities.

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Table 5. Strategy 1 Suggestions and Potential Actions

Strategy 1: Lower Cost Barrier for Personal EVs via Rebates and Incentives	
Community Workshop Suggestions	**Potential Actions**
"And then two, they need to give us a check. So, if she wants to go by an electric vehicle she can go into Tesla and say hey I got a voucher for $20,000. 'Cause I don't know how much, the lady did tell us though, remember the one, the one Asian woman did tell us that her Tesla was on sale. It was, they had a sale at Tesla, and they were like all the Teslas were $50,000. So, if the government gave her a $20,000 voucher, she can go into the car place and say here's my voucher. Then the car will be $30,000."	**Rebates/Incentives Suggestion:** Increase amount of e-mobility rebates that lower upfront costs and increase access to existing rebates. For example, federal and state tax credits are now applied at the point of sale, providing an option to benefit from both of these EV tax credits when purchasing the vehicle rather than waiting until tax returns are filed. These community members also suggested higher rebates (e.g., $20,000) to lower the cost barriers of purchasing an EV for lower-income residents. This would allow for upscale EVs such as Teslas to be more accessible to lower-income buyers. There is some precedent for this suggestion. In 2024, Colorado residents will be eligible for up to $15,000 in state and federal tax credits for purchasing an EV under $35,000.
"Like Section 8 [for housing], the car company knows what it [the existing tax credit] is. You come in there and now the car is $50K and then got down to 30K [with tax credits included], but really no, if [tax credits aren't included at point of sale, then] you're paying for it."	**Rebates/Incentives Suggestion**: Provide an option to apply the state and federal EV tax credit upfront at the dealership instead of getting the money back when they file their tax returns. This participant compares such an incentive to Housing Choice Voucher Program Section 8.

STRATEGY 2: Increase Access to E-Mobility Information, Knowledge, and Testing Opportunities

> "For me, I have to see it being done and then I'll feel more comfortable, more apt to try it."
>
> *Quote from Workshop Participant*

Throughout the community workshops, participants identified the need for access to free opportunities to test e-mobility options so that Hennepin County residents could make informed decisions about their transportation use and investments. This request came up without facilitators prompting this question. As one participant explained:

> "It's going to be cool…actually having an EV vehicle where people can for free try it out! Because it still just kind of seems a bit more conceptual. I know I've been accosting people in the parking lot like 'How do you like it? What's it feels like?' And it would be nice actually, you know, have one of these programs say, hey, you know, we're doing some demonstrations, you can test them out, you know, drive it around for 30 minutes, take it on some errands, because then I think that makes it real."

Moving from theoretical concept to lived reality is critical to informing users' decision-making processes, but the way in which that is done is equally important. This participant suggested making those demonstrations "free" and removing the cost barrier. Other participants suggested tailoring and increasing marketing in low-income communities of color, the communities that have been most negatively affected by the current transportation system and have received the least benefits from

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the transition to e-mobility. A local option to increase familiarity and exposure to EVs is HOURCAR's Evie, a floating EV carshare program recognized by community workshop participants.[13] Of note, the Access Plus rate plan establishes a significantly discounted membership rate for income-qualified users with a household income of 50% or less of the Area Median Income (HOURCAR 2023a). HOURCAR also runs a program called the Multifamily Electric Vehicle Carshare Pilot Project to install charging hubs and provide carshare services for qualified low-income multifamily housing units (HOURCAR 2023b). A few workshop participants suggested bolstering investment to expand this program, particularly focusing on increasing its accessibility, familiarity, and reach within climate vulnerable communities.

Workshop participants who had previous experience with e-mobility explained that they were able to make more informed judgments about their ability and desire to use such modes. One participant recalled an Uber ride she hailed that became an e-mobility learning experience. She noted, "I got on an Uber Tesla one time…at first, I didn't know how to open it and we had to go down… This is where you click 'cause I was wrestling with it the whole time just like 'Where is the handle?' and he was 'Click it.' and I'm like 'I'm clicking it, I'm clicking it, it's not working.' So, like, like this one other time when I was like in a Tesla, he came around, he opened the door." These types of experiences help e-mobility technology become less strange and more familiar. Sharing this type of experience among peers helps to normalize the unfamiliarity of using this technology within the workshop group. As peers shared what they learned, this sharing within the workshops garnered much interest from the rest of the participants and suggests an opportunity to provide spaces for peer exchange as well as demonstrations.

Table 6. Strategy 2 Suggestions and Potential Actions

Strategy 2: Increase Access to E-Mobility Information, Knowledge, and Testing Opportunities	
Community Workshop Suggestions	**Potential Actions**
"And so, you know, I think there does need to be some investment in doing more critical information sessions where people can ask those questions."	**Information Access Suggestion:** Invest in more critical information sessions on e-mobility options for community members across Hennepin County to ask questions and learn more about their options.
"Have one of these programs say, hey, you know, we're doing some demonstrations [of e-mobility options], you can test them out, you know, drive it around for 30 minutes, take it on some errands, because then I think that makes it real."	**Increase E-Mobility Testing Suggestion:** Provide more free e-mobility demonstrations such as ride and drives that allow community members to take the EVs out for a ride (e.g., a 30-minute ride) to gain lived experience.

[13] The cities of St. Paul and Minneapolis have owned a floating EV carshare program, Evie Carshare, since February 2022. The service is operated by HOURCAR, and vehicles can be driven without restriction if they are returned to a parking space inside the 35-square-mile home zone (HOURCAR 2023a). The vehicle fleet comprises 150 Chevrolet Bolt and Nissan Leaf BEVs and can charge at Evie-branded stations, which can also be used by the public to charge personal EVs. The Evie-branded charging stations, Evie Carsharing Service, and the Multifamily EV Carshare Pilot were funded, in part, by the Department of Energy's Vehicle Technologies Office through the FY 2020 competitive Funding Opportunity Announcement (DOE 2022).

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Strategy 2: Increase Access to E-Mobility Information, Knowledge, and Testing Opportunities	
Community Workshop Suggestions	**Potential Actions**
"Yeah, I would just go back to having demonstration, you know actually having demonstrations where people can get in, try these vehicles, you know, I think it really adds more excitement, it makes it real and you know people can have the experience. So, I think that really people need to look at that as an option."	
"[...] if you know you could sign up for it [shared e-scooters] and like the first month, however many rides you do it free or whatever the week or whatever, right?"	**Free Trials for Shared E-Mobility Suggestion:** Providing free trials for users new to the technology to test it out and decide if they want to utilize it longer-term.
"I don't have to pay to get the Uber to the other side of town or whatever, right? Like you're like, well, I could just hop on the scooter. They said it was free, so we'll try that out today, right? But it's ideas."	**Free Trials for Shared E-Mobility Suggestion:** Providing free e-scooter trials could help incentivize more new users to try out the technology because it's cheaper than other modes of transportation for that trial period.

STRATEGY 3: Increase User Accessibility of Shared E-Mobility Instructions

Community workshop participants identified that a key barrier to shared e-mobility use was user accessibility, user-friendliness, and a lack of investment in localized marketing and distribution. Shared e-bikes, e-scooters, and EVs are not evenly and widely distributed across all neighborhoods in Hennepin County and their instructions for use are not easily intelligible to all users. Thus, participants recommended providing more accessible instructions on how to use EV Carshares, as well as other shared e-mobility systems, with information placed on the vehicles, perhaps including a QR code on EV Carshares, and investing in a wider distribution of the vehicles across all neighborhoods. By investing in making shared mobility options more physically accessible and user-friendly to all communities, this strategy could increase actual use of these services.

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Table 7. Strategy 3 Suggestions and Potential Actions

Strategy 3: Increase User Accessibility of Shared E-Mobility Instructions	
Community Workshop Suggestions	**Potential Actions**
"Maybe if the car was sitting there and there was all these instructions I would. I am not the kind I am not a [inserts man 1 name] so I'm not gonna like to google how to figure out how to do an Evie [EV Carshare] but if its right there I'm gonna read it."	**User Accessibility Suggestion:** Provide more accessible instructions on how to use EV Carshares (or other shared e-mobility systems) on the vehicles and distribute the vehicles widely across all neighborhoods.
"You can probably toss like a QR code on it though that's like sign up today."	**User Accessibility Suggestion:** Provide a QR Code on EV Carshares (or other shared e-mobility systems) that instructs passersby on how to access and utilize this service.

STRATEGY 4: Centralize Methods of Utilizing Shared E-Mobility Options

Community workshop participants identified that another key barrier to shared e-mobility use was a lack of centralized methods for utilizing these services. They suggested connecting methods of mobility access across various shared transportation services, from Metro Transit to EV Carshares, shared e-bikes, and shared e-scooters to ease the transition between modes. One option suggested was the development of a centralized phone application for utilizing all shared transportation modes so that users can easily move between modes and service providers. Such an option would provide users with, as one participant emphasized, “some unified way so that you can [decide] like which one should I take now or that one I'll hit the button for that one." This strategy focuses on investing in the centralization of digital tools to facilitate the physical use of all available shared e-mobility options.

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Table 8. Strategy 4 Suggestions and Potential Actions

Strategy 4: Centralize Methods of Utilizing Shared E-Mobility Options	
Community Workshop Suggestions	**Potential Actions**
"I feel like in a perfect world like metro transit would own all of them and you could just use your metro card to get 'em or something."	**Connect Methods of Mobility Access Suggestion**: Link the Metro Transit card to EV Carshares, shared e-bikes and shared e-scooters so that users can easily switch between modes.
"Or at least there'd be like some unified way so that you can like which one should I take now or that one I'll hit the button for that one."	**Centralize Digital Access Suggestion**: Create a centralized phone application for utilizing Metro Transit, EV Carshares, shared e-bikes and shared e-scooters so that users can easily switch between modes.

STRATEGY 5: Transition Bus Fleet to Electric Buses

Transitioning the existing bus fleet to e-buses was identified as an easily achievable method of providing Hennepin County transportation users with an e-mobility option. Community workshop participants noted that electrifying both the school bus and public bus fleets were low-hanging fruit for e-mobility adoption because people are already using the bus. As one participant noted, fleet electrification is "actually very expensive to do but like as far as like adoption goes its super-duper low-hanging fruit." This strategy focuses on investing in a mode of public transportation that over 50% of questionnaire respondents are already utilizing to facilitate access and use of e-mobility options.

Table 9. Strategy 5 Suggestions and Potential Actions

Strategy 5: Transition Bus Fleet to Electric Buses	
Community Workshop Suggestions	**Potential Actions**
"I mean it's [transitioning existing bus fleet to e-buses] not low-hanging fruit cause its actually very expensive to do but like as far as like adoption goes its super-duper low- hanging fruit."	**Increase E-Buses Suggestion**: Providing more e-bus options (public buses and school buses) is low-hanging fruit for e-mobility adoption because people are already using the bus.

STRATEGY 6: Increase Investment in Micro-Mobility Safety

Micro-mobility safety concerns surfaced in both the questionnaires and community workshops. Workshop participants went a step further by providing some suggestions for mitigating these safety risks, including safety accessories for users, babies, and children riding with a parent on shared e-scooters and e-bikes. Common examples given were the provision of helmets as well as child safety seats attached to e-scooters and e-bikes. This strategy focuses on increasing safety accessories for

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existing electric micro-mobility services to protect users and lower concerns about the risk of physical danger while riding.

Table 10. Strategy 6 Suggestions and Potential Actions

Strategy 6: Increase Investment in Micro-Mobility Safety	
Community Workshop Suggestions	**Potential Actions**
"Or if they had electric scooters with little buggies on the back. Then I can put the babies in and go to Target."	**Safety Suggestion**: Include safety accessories for users, babies, and children riding with a parent on shared e-scooters and e-bikes. For example, provide helmets as well as child safety seats.

STRATEGY 7: Maintain CBO Partnership to Guide the Engagement Process

This strategy aims to maintain a community-grounded engagement process by building on the partnerships that Communities LEAP has built with local CBOs. Community workshop participants and facilitators suggested continuing to hire and partner with local CBOs as they engage with climate vulnerable communities and facilitate new activities to inform transportation planning and implementation. Further, they recommended trusting those organizations to guide the engagement process. This engagement strategy highlights the importance of building collaborative platforms that support community ownership of the transportation planning process.

Table 11. Strategy 7 Suggestions and Potential Actions

Strategy 7: Maintain CBO Partnership to Guide the Engagement Process	
Community Workshop Suggestions	**Potential Actions**
"Well, you're not going to have that issue if you hire agencies like mine to help facilitate in the community to help with this, like we got people here."	**Engagement Suggestion:** Hire and partner with local CBOs to continue engaging with local communities, facilitating activities, and guiding the process.

STRATEGY 8: Follow-Up Engagement with Practical Implications of Community Suggestions

Adding to the previous strategy, this suggestion focuses on how to follow-up with participants after community workshops. Participants emphasized that the Communities LEAP team include specific details on the practical implications of their community suggestions, including what was implemented, where the budget was utilized, what rebates are available, and information on how to access them. For example, when participants noted that "accessibility" to e-scooters was an issue, the follow-up should explain how that barrier was resolved or mitigated, such as the placement of a new e-scooter station was a mile from participants' homes. Combining this strategy with the collaborative platform of Strategy 7 would allow the Communities LEAP team to work with their CBO partners to build a grounded and more equitable approach to implementing community suggestions and following up with participants.

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Table 12. Strategy 8 Suggestions and Potential Actions

Strategy 8: Follow-Up Engagement with Practical Implications of Community Suggestions	
Community Workshop Suggestions	**Potential Actions**
"And then like specifics so if we said accessibility was an issue. It was like hey we put up a new electric scooter station a mile from your house. You don't have to know the practical ways in which it is being implemented. It will feel a little bit more, I don't want to say gratifying but like effective if we see the practical implications of what we did today."	**Engagement Suggestion:** Follow-up after community workshops, include specifics of the practical implications of the community suggestions. For example, "accessibility" to e-scooters was an issue, explain that a new electric scooter station was placed a mile from participants' homes.
"I would like to see that happen the same way we did it today. Like you guys come together and show us this was implemented. What happened? The stations are here. They put 20 million here. We have this in rebates and then we can get the information out to the community about what happened."	**Engagement Suggestion:** Follow-up after community workshops, include specifics of the practical implications of the community suggestions including what was implemented, budget utilized where, rebates available and information on how to access them.

STRATEGY 9: Co-Develop More Transparent and Equitable Engagement Processes

Aligned with Strategies 7 and 8, this strategy aims to co-develop more transparent and equitable engagement processes to inform transportation plans and deployment. Participants suggested grounding the engagement process for future transportation planning and implementation by starting with transparency: provide community members the current plan and budget, let them review it, clarify their questions and concerns, and then provide recommendations on how to adapt the plan and adjust the budget to align with community goals and follow their expertise. Furthermore, they stressed compensating all residents who engage in this process without extracting information in return, e.g., paying residents who attend information sessions. This strategy points to the potential for employing more participatory methodologies in the planning or implementation phase such as designing a participatory budgeting process to place more decision-making power in the hands of local communities.

Table 13. Strategy 9 Suggestions and Potential Actions

Strategy 9: Co-Develop More Transparent and Equitable Engagement Processes	
Community Workshop Suggestions	**Potential Actions**
"[...] during the engagement tell me what your actual plan is don't ask me vague questions about how I feel about something or what I think about it but give me your plan give me your budget let us look over it and make sure we have an understanding of what that is and then we'll give you recommendations based on that on how you should change your plan and how you should adjust your budget."	**Engagement Suggestion:** Change the engagement process by starting with transparency: for project-based engagement, give community members the current scope, initial plan and budget, let them look it over, clarify their questions and concerns, and then provide recommendations on how to adapt the plan and adjust the budget to align with community goals and follow their expertise. Ensure transparency in which elements of the effort the community engagement can actually influence change, and which ones are not flexible or modifiable.

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Strategy 9: Co-Develop More Transparent and Equitable Engagement Processes	
Community Workshop Suggestions	**Potential Actions**
"Pay people [for engagement]."	**Engagement Suggestion:** Compensate residents who engage in this process.
"Pay people to come and listen to what it is, absolutely. To like show up at like info sessions and things like that."	**Engagement Suggestion:** Compensate residents who engage in this process without extracting information in return, e.g., pay residents who attend information sessions.

Conclusion

High environmental and financial costs have negative effects on the health and well-being of all Americans, but particularly those in climate vulnerable communities. Historical investments in transportation infrastructure have often physically and symbolically divided communities as well as exacerbated racial and economic inequities. Recent federal funding marks the nation's largest investment in e-mobility technologies including zero-emission transit buses, EV charging stations, and clean transportation and electric grid research, manufacturing, community planning, and workforce development initiatives. Ensuring that the needs and priorities of climate vulnerable communities guide these investments is essential for a truly equitable transition to e-mobility technologies. Grounded in principles of energy justice, this project aims to actively involve historically underserved and climate vulnerable communities in the multi-agency planning and implementation of e-mobility solutions. This inclusive approach makes benefits from new, cleaner transportation technologies more likely to be equitably distributed, addressing long-standing disparities in transportation access and infrastructure.

Hennepin County and Brooklyn Park partnered with six CBOs that attended or hosted 47 events and six workshops between May and September 2023. Over 700 attendees were directly engaged in a conversation or completion of a questionnaire at the summer events including 78 participants in the community workshops. The findings from the community engagement activities reveal a strong interest in electric transportation across diverse demographic groups and geographic areas in Hennepin County, spanning various e-mobility options. Notably, personal EVs, e-buses, and e-bikes emerged as the most favored modes, with interest levels exceeding 75% of total questionnaire respondents. Affordability remains a significant barrier to e-mobility adoption, a challenge that cuts across all demographic and modal categories. To address these findings and the cost barrier in particular, the report proposes a set of community-identified targeted strategies.

Community suggested e-mobility outcomes include:

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Figure 13. Community-suggested e-mobility outcomes

Community workshop participants stressed that such outcomes can only be realized by partnering with residents to improve access to existing e-mobility benefits and co-design new transportation solutions.

The Communities LEAP project team shared a draft of this report with the partnering CBOs. They will reconvene with the CBOs in-person in Summer 2024 to continue a feedback loop of information sharing about this project and co-develop next steps to guide future transportation planning. The nine strategies community members prioritized for increasing e-mobility benefits and access in Hennepin County presented above target institutional actors whereas an accompanying handout is designed for the public. Next steps include working with CBO partners to chart a multi-agency path and coordinated process for moving community recommendations forward to achieve more equitable e-mobility solutions in Hennepin County.

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Appendix A. Landscape of State, Regional, and Local Climate, Mobility, and Equity-Focused Planning Documents

Table A- 1. E-Mobility Equity Goals

Entity	Plan	Related E-Mobility Equity Goals
Minnesota Department of Transportation	2023 Minnesota Electric Vehicle Infrastructure Plan	Use $68 million to deploy public EV charging along designated interstate corridors by distributing 40% of MEVI formula program benefits towards disadvantaged communities in Minnesota.
	2022 Statewide Multimodal Transportation Plan	Plan includes goals to make equitable transportation decisions through inclusive and collaborative processes that are supported by data and analysis.
Hennepin County	Climate Action Plan	Plan includes goals to protect and engage people, especially vulnerable communities; reduce emissions in ways that align with core county functions and priorities; and partner in ways that can be most impactful.
	Mobility 2040: Multi-Modal Transportation Plan	Goals include reducing energy use and/or using alternative power to reduce emissions and benefit air and water quality, providing transportation choices and modes that use less energy, producing fewer pollutants, and reducing greenhouse gas emissions.
	Racial Equity Impact Tool	The county uses this tool to consider how people of color and those who are most susceptible to negative climate impacts may benefit or be burdened by county decisions.
City of Minneapolis	2013 Climate Action Plan	Goals include reducing greenhouse gases by 30% by 2025 from a 2006 baseline and raising the bicycle commute mode share to 15%. Plan incorporated recommendations from an environmental justice working group.
Brooklyn Park	2015 Pedestrian and Bicycle Plan	Goals include implementing pedestrian routes and bikeways as a tool towards environmental, economic, and social sustainability by providing people mobility options that are non-polluting, affordable, healthful, and community-based.
	2020 Comprehensive Plan	Goals include providing modern transportation options (drive, ride, walk, bike) connect people to education, jobs, and recreation.
Metropolitan Council	2017 Transportation Public Participation Plan	Plan states participation opportunities should be inclusive and assure groups traditionally underrepresented in regional policymaking are engaged.

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Entity	Plan	Related E-Mobility Equity Goals
	Thrive MSP 2040	Plan places new emphasis on the importance of engaging communities equitably, to intentionally engage both historically underrepresented and under resourced communities such as communities of color, cultural communities and immigrants, people with disabilities, low-income individuals, the elderly, and youth in a way that more directly addresses existing social inequalities.
Metropolitan Council	2040 Transportation Policy Plan	Plan's goals include improving multimodal travel options for people of all ages and abilities to connect to jobs and other opportunities, particularly for historically underrepresented populations; and focusing on equity to highlight the protection and enhancement of these historically disadvantaged communities wherever transportation projects are being considered.

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Appendix B. Identifying Climate Vulnerable Communities in Hennepin County

Several tools were used to identify climate-vulnerable communities in Hennepin County, Minnesota. Some of these were used to identify the target communities as part of Hennepin County's Communities LEAP application and other planning processes. These tools and their results are summarized below. Additionally, the recently created Climate and Economic Justice Screening Tool (CEJST) was used during Hennepin County's Communities LEAP project to verify these results and elaborate on the variables of vulnerability. This project targeted residents within neighborhoods (and associated census tracts) in Brooklyn Park and Minneapolis where:

At least 30% of residents are reported as low-income.

Energy burden is higher than the Minnesota state average (of 2%)

Communities are in the 60th percentile or higher for exposure to environmental hazards, pollution, and toxicity (identified through the EJScreen tool).

Under these criteria, there are 34 qualifying census tracts across the two cities (four in Brooklyn Park, and 30 in Minneapolis), 33 of which have 11 EPA EJScreen indices in the 60th percentile or higher, while the remaining census tract meets 10 indices.

Hennepin County's Climate Action Plan development process also assessed vulnerability utilizing the CDC's vulnerability index, which incorporates 16 variables across four themes: socioeconomic status, household characteristics, racial and ethnic minority status, and housing type & transportation. The results, despite slightly different input metrics, also find that large areas of Brooklyn Park and Minneapolis satisfy prioritization for environmental justice outcomes.

Relevant Mapping Tools

EJScreen (*U.S. Environmental Protection Agency*) combines environmental and demographic socioeconomic indicators.

Vulnerability Index (*Center for Disease Control*) uses 16 U.S. census variables to help local officials identify communities that may need support before, during, or after disasters.

Environmental Justice online mapping tool (*Minnesota Pollution Control Agency*) Highlights regions where community members are disproportionately impacted by environmental issues.

LEAD Tool (*U.S. Department of Energy*) Low-Income Energy Affordability Data Tool calculates housing and energy characteristics for low- and moderate-income households.

CEJST (*White House Council on Environmental Quality*) Federal agencies will use the tool to help identify disadvantaged communities that will benefit from programs included in the Justice40 Initiative.

Equitable Transportation Community Explorer *(U.S. Department of Transportation)* explore the cumulative burden communities experience as a result of underinvestment in transportation.

EV Charging Justice40 Map Tool (*Argonne National Laboratory*)

State Local Energy Planning (SLOPE) *(National Renewable Energy Laboratory)* recently added equity filters to help communities prioritize equitable and inclusive clean energy planning and investments.

The Minnesota Pollution Control Agency (MPCA) conducted a geospatial assessment to identify environmental justice areas of concern across the state of Minnesota. The input metrics for MPCA's environmental justice areas of concern included income, race, native nations, and language. By this method as well, much of Brooklyn Park and Minneapolis were identified as priority geographies.

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According to the DOE's Low-Income Energy Affordability Data tool, many of the census tracts within the partner communities experience energy burden of 4% to 5%, averages significantly higher than the Minnesota statewide average of 2%. The south-central portion of Brooklyn Park experiences an average energy burden of around 3%, while many parts of Minneapolis experience energy burden between 3% and 5%, with concentration of greater burden in North Minneapolis and South-Central Minneapolis. Specifically, the Camden and Near North neighborhoods in North Minneapolis experience the highest average energy burden across the identified census tracts.

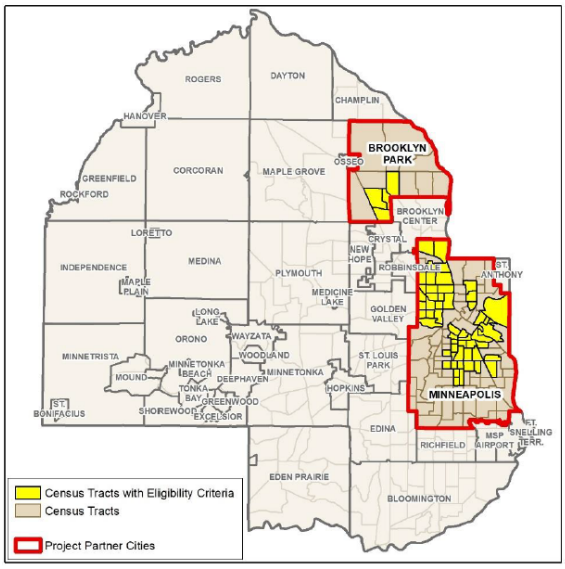

Figure B- 1. Census tracts within Brooklyn Park and Minneapolis that largely satisfy eligibility criteria for environmental justice community

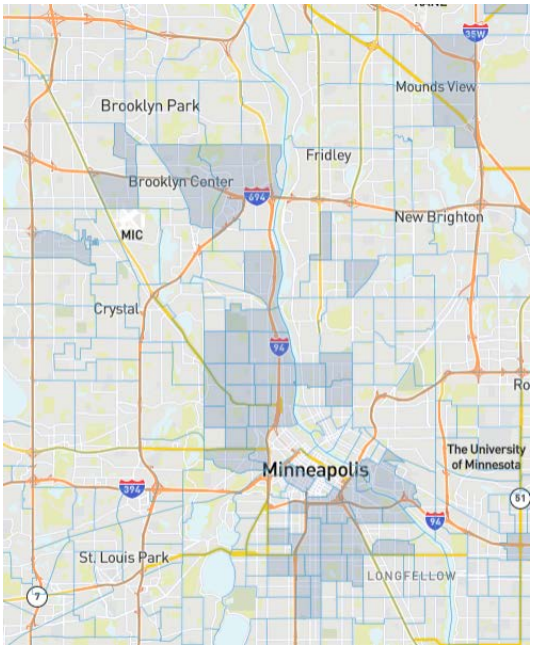

Figure B- 2. CEJST-identified disadvantaged census tracts

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Appendix C. Summarized Analysis of Past Community Engagement Methods

Table C- 1. Past Community Engagement Methods

Category	Brooklyn Park	Minneapolis	Hennepin County
Common Methods	Surveys, focus groups, in-person events, contracts with CBEs.	Community events, in-person events, contracting CBOs, ambassador programs, online tools (interactive maps and surveys), engagement in hot spots areas.	Visual support materials, diverse photos, accessible door-knocking materials, visible information posting.
Less Common Methods	Door-to-door, online forums, weekly church bulletins.	Tabling to inform about future engagements, non-traditional messaging channels for surveys and flyers.	Posting Blue Line extension information in visible areas, closing gap in translating materials, connecting with faith-based organizations, inviting Black, Indigenous, and people of color (BIPOC) groups to co-design, presenting and sharing strategies.
Alternative Methods	Non-traditional messaging channels, community listening sessions, draft plan presentations, white boards.	Utilizing neighborhood ambassadors in mobility hub pilot, community collective ownership of mobility hub.	Designing tailored and accessible engagement materials, compensating communities for survey time, continuing to build relationships with Latino communities, engaging communities on the climate impact of the light rail, and engaging more directly with businesses.
Key Findings	Robust engagement achieved via use of diverse methods; success in getting 150 to 4,000 responses per project; electric mobility referenced in 2040 Comprehensive Plan.	Increased survey response and online exposure with traditional channels and social media; effective use of neighborhood ambassadors; community ownership in mobility hub design; improved access to mobility hubs; increased comfort with alternative mobility options; significant increase in shared scooter ridership from 2018 to 2019.	Robust engagement achieved with 18 organizations, 500 participants, and 30+ conversations; use of Racial Equity Impact Tool; gap analysis conducted to inform diverse actions; 62 zero-waste actions processed highlighting seven themes; local frustration identified about plastics recycling; identified need for holding businesses accountable.

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Category	Brooklyn Park	Minneapolis	Hennepin County
Community-Identified Goals	Address transportation network gaps, simplify pedestrian crossings, provide consistent maintenance, install more bike racks, address safety concerns, inform on electric mobility.	Recommendations for cross mobility options; focus on safety, lighting, cleanliness; improved access to mobility hubs; increased usage of Nice Ride bikes and scooters.	Engaged participants selected milestones to be included in the Zero Waste Plan towards their goal of phasing out the Hennepin Energy Recovery Center energy plant.
Effective Strategies	Public participation guide (IAP2) and needs assessment.	Community events, in-person events, contracting CBOs, ambassador programs, online tools (interactive maps and surveys).	Continued use of mobility hubs for engagement; develop and determine tools to support and measure community knowledge of transportation electrification; continue partnerships with contracted CBOs.
Recommendations	Employ diverse and robust engagement methods; online website support during pandemic; facilitation by city staff, resident groups, and CBOs.	Continue to work alongside ambassadors; use non-traditional messaging channels for immigrant and BIPOC communities and younger populations.	Use non-traditional messaging channels like WhatsApp, Facebook, Twitter, Instagram.
Key Audiences	Majority white respondents in Bike and Pedestrian Online Survey; limited demographic data in other plans.	Engaged diverse groups including African-American, East African, public transport users during COVID-19, neighborhood residents, Latin/X, college students, Indigenous, Somali, Southeast Asian residents, public housing tenants, seniors, business association members, youth.	Prioritized diverse community representation in the workgroups including strong participation from Black, Indigenous, and people of color (BIPOC) communities. Engaged 22% BIPOC community members (relative to 27% of countywide population in 2023);. Included focus on gender diversity and age range; collaborated with 18 organizations targeting specific community groups like public housing residents, property managers. Key organizations included Action to Equity, Audubon Neighborhood Association,

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Category	Brooklyn Park	Minneapolis	Hennepin County
			Center for Hmong Arts & Talents, Climate Generation, Community Power, Congregations Caring for Creation, East Side Neighborhood Services, Ebenezer Oromo Evangelical Church, Encouraging Leaders, Lao Assistance Center of MN, Little Earth Protectors, McKinley Community, MN Renewable Now, NoMi Roots, Off the Blue Couch, Somali American Women Action Center, Resilient Cities & Communities with Inquilinxs Unidxs por Justicia, Thai Cultural Council of Minnesota.

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Appendix D. "Let's Talk About Electric Mobility" Education and Engagement Handouts

What is Electric Mobility?

Electrifying transportation includes cars and much more.

Electric Vehicles (EVs) – EVs use a battery to power an electric motor, which generates zero tailpipe emissions and can cost less to operate and maintain.

- Fully electric vehicles, sometimes called battery electric vehicles (BEVs), use only electricity to power the vehicle. These vehicles typically have a travel range of 150 to 400 miles. As of October 2022, there were almost 20,000 BEVs registered in Minnesota.
- Plug-in hybrid electric vehicles (PHEVs) combine a smaller battery for local or shorter trips with a gasoline-powered engine to make longer trips. There are more than 10,300 PHEVs on the road in Minnesota.

EV Rideshare – Companies that allow passengers to reserve a ride in a private vehicle, like Lyft and Uber, have set goals to become zero-emission by 2030, and they offer incentives for drivers to switch to EVs.

EV Carsharing – Members pay to use an EV when needed, with pricing by the minute, hour, or day, including discounts for low-income households. Evie Carshare is an all-electric carshare service operating in portions of Minneapolis and Saint Paul that offers a convenient, cost-effective alternative to owning a vehicle.

E-bikes – E-bikes are an increasingly popular alternative to traditional bicycles, offering the same benefits of cycling with a motorized system that makes the ride easier, especially when traveling up hills or over longer distances.

- Bikeshare systems enable users to rent bikes for short-term use and have added e-bikes in some communities.

Scooters – Similar to bike sharing, companies like Bird, Lyft, Lime, Spin, and Veo operate electric scooter rental programs in local communities for short trips. Many of these companies offer discounted rates for qualified users with limited incomes.

Learn more about electric vehicles and charging at **CleanAirChoice.org** and at **AFDC.energy.gov**

Recharging Electric Vehicles

EVs need to be plugged in to charge the battery. Many EV drivers can use a regular household power outlet (120 V) to plug in when parked at home or work.

Drivers traveling farther, or using larger batteries, may benefit from a higher voltage (240 V), referred to as Level 2 charging. This is common in public charging locations and can be installed at home.

The fastest recharging comes from direct current (DC) power supplies. This type of charger is more expensive.

To make EVs a viable option for everyone, charging stations are needed in many places, including public locations, fleet facilities, workplaces, and homes.

School Buses – Electric school buses create a healthier environment for students by improving air quality and reducing noise, and they lower fuel costs for schools. Osseo Area Schools, which serves part of Brooklyn Park, uses three electric buses and was one of the first districts in Minnesota to add electric school buses.

Transit – In addition to the electric light rail system, Minnesota is now testing electric buses, including on Metro Transit's C Line. In the immediate future, Metro Transit plans to purchase more.

Heavy-Duty Vehicles – Other medium- and heavy-duty EV options are becoming available for delivery services, waste hauling, and a variety of other commercial needs.

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LET'S TALK
About Electric Mobility

Get Involved!

Take our Survey!

Visit our website at: **bit.ly/CLEAP**

GET UP TO SPEED

Communities across the country — including ours — are transitioning to new transportation options that run on electricity. We want to hear your ideas about how electric mobility can benefit your community and the challenges you might face. Electric cars, bikes, and scooters are new options that could make it easier for you and your family to get around. Could you see yourself and your family using these options? **Tell us this summer through a community-wide survey!**

PROJECT GOALS

1. Understand your community's electric mobility priorities and share with your local units of government so they can use the information for future plans
2. Find better ways for government agencies to get input from the community about their ideas for transportation plans and projects in the future

HOW CAN ELECTRIC MOBILITY BENEFIT MY COMMUNITY?

- Improved air quality and public health
- More ways to get around, like shared transportation
- Reduced maintenance and fuel costs
- New economic opportunities, like jobs and increased retail sales
- Reduced local and global emissions (CO_2)

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WHAT IS ELECTRIC MOBILITY?

Electric mobility options include different types of transportation that run on electric motors instead of gas. including electric cars, transit buses, school buses, bikes, and scooters. To make these electric options work, we need to build special charging stations. This overall transition is called **transportation electrification**.

Did you know that electric mobility options already exist in the Twin Cities?

Evie Carshare...
provides all-electric carshare service in Minneapolis and Saint Paul.

Scooter Rentals...
are available in multiple cities throughout Hennepin County.

Osseo Area Schools...
which serves part of Brooklyn Park, was among the first districts in Minnesota to add electric school buses.

Metro Transit...
plans to purchase electric buses for 20 percent of their scheduled bus replacements.

Electric Bikes...
are growing in popularity for personal use.

Hennepin
Brooklyn Park

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Questions? Suggestions?
Contact climate@hennepin.us or call 612-543-2114.

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Appendix E. Facilitation Guide for Community Workshops

The guidance and suggested discussion questions below were included in workshop facilitation guide to the CBO partners.

Workshop Logistics: Partnering community-based organizations (CBO) will organize, facilitate, and report on the outcomes of the workshop.

Workshop length: 1.5 to 2 hours

Ideal size: 6-12 people

Notetaking & Recording: If possible, we request that all meetings be audio-recorded to make it easier to create a transcription of the community feedback. An audio-recording device will be provided for you by NREL for your organization to keep. This will help collect more complete community feedback from the workshop. We have included a spoken consent template at the end of this facilitation guide to use at the beginning of the meeting. In addition to the recording, we also strongly encourage that a notetaker be present. If no recording takes place, a notetaker is required. Hennepin County staff may be available to take notes.

Incentives: CBOs will use C LEAP project funding to purchase event supplies and compensate participants for their time. We suggest $50 an hour per participant.

Brief Technology Training: At the beginning of each workshop, the facilitator will educate attendees on electric mobility technologies. The Electric Mobility handout and posters can assist with this. There is also an optional PowerPoint presentation created by Minnesota Clean Cities Coalition available on Box.com for your use (optional). Minnesota Clean Cities Coalition can attend the session and assist with this training portion of the workshop if they are available. Please contact them early to coordinate availability.

Facilitation suggestions: It may be helpful to start the conversation by setting some ground rules – for example, each person should have the chance to speak, etc. To encourage participation, you might include an icebreaker question with introductions.

Demographics: Please provide each participant with a demographics form to complete. It is optional for participants to complete. A sample is provided at the end of this guide.

Reporting: After the workshop, please complete the workshop report template. Email the report template, transcription, notes, and demographics forms to project contacts.

Each Workshop Participant Should Receive:

- Let's Talk handout
- Electric Mobility handout
- Consent form
- Demographic questionnaire (please collect and return)

Agenda and Questions

- CBOs may edit this agenda and the timing as you see fit.
- Getting Settled (10 min)

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- Time to get food, get name tags, etc.
- Introductions (15 min)
- Facilitator reads oral consent form for recording
- Attendees share name and community/neighborhood (optional)
- Icebreaker
- Overview of project (5 min)
- Can refer to Let's Talk About Electric Mobility handout
- Overview of electric mobility (15 min)
- Use posters, Electric Mobility handout, and slides (optional) to review electric mobility technology options
- Ask participants: What questions do you have about electric mobility?
- Minnesota Clean Cities Coalition can be available to assist with this

Transportation electrification questions (40 min)

Introduction: We want to learn about how you think electrified transportation options can benefit you and your community, as well as any concerns that you may have. What we learn through our listening sessions and community-wide survey will be used to inform plans and projects at the City, Hennepin County, Metropolitan Council, Minnesota Department of Transportation and Minnesota Pollution Control Agency. While there are many aspects of our transportation system that could use improvements, today we want to focus specifically on electric mobility. We're also going to discuss ideas for how government agencies can improve community engagement efforts.

- How do you currently travel to your typical destinations (for example: work, school, grocery store, appointments, fun activities)? (5 min)
- Is there anything you would change about how you get around? What transportation options would you prefer to use in an ideal world? (5 min)
- What can the city and other government agencies do to improve your transportation options?
- Have you ever ridden in an electric car? This could include personal vehicles, or carshare options, like Evie, the local electric car share program. (5 min)
- Tell us about your experience: What went well? What were the challenges?
- How could your experience be improved?
- If you haven't used an electric bar, are you interested in using one? Why?
- Have you ever used an electric bike or electric scooter? This could include your own or shared programs like Bird scooters. (5 min)
- Tell us about your experience: What went well? What were the challenges?
- How could your experience be improved?
- If you haven't used an electric bike or scooter, are you interested in using one? Why?
- Do you feel like these types of electric mobility are accessible to you and your community? Why or why not? (15 min)
- Prompt: What are the barriers that may prevent you from using electric cars, buses, bikes, and scooters?
- Prompt: What concerns do you have about the broader community impact of the transition to electric vehicles, buses, bikes, and scooters?
- As we shared earlier, some of the benefits of electrifying our transportation system that we've identified include improved air quality and public health; reduced maintenance and fuel costs; new jobs in manufacturing, installing, and maintenance; increased retail sales at

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locations with EV chargers; reduced noise pollution; and more. Which benefits of electrifying our transportation system are important to you? Why? (5 min)
- Are there any other benefits that we're missing?
- What have we missed? Is there anything else you'd like to share with the city and project teams about electric mobility, or transportation system improvements more broadly?

Community engagement questions (25 min)

Introduction: As we mentioned, another goal of this project is to develop better ways for government agencies to get community input on plans and projects in the future. In the past, some agencies have struggled to get meaningful input from communities, or they haven't done a great job of informing residents how their feedback was used. We want to improve community engagement, starting with this project. We'd like to hear your ideas about improving community engagement.

- Who here has ever given input or shared feedback on a government project or plan happening in your community? For example, Brooklyn Park's bike and pedestrian plan, the Blue Line light rail extension project, bike lane projects. (10 min)
- For folks who have, tell us about your experience.
- Did you learn about how your feedback was used?
- For folks who haven't, can you talk about why not?
- Prompts: Do you feel like you typically hear about opportunities to participate? Do you feel like you have time to provide feedback on city plans and projects?
- Do you feel like your voice has been heard? Do you feel welcome to participate in city decision-making processes in some way? Why or why not?
- How do you currently learn about government projects happening in your community? (5 min)
- What are the best ways to get your feedback on government projects and plans happening in your community? (5 min)
- Prompts: Do you prefer in-person workshops like this one, virtual meetings, online surveys, texts or WhatsApp, phone calls, informal conversations at the grocery store or library, or other ways? Do you prefer to provide input anonymously?
- As we said, government agencies haven't always done a great job of informing residents how their feedback was used. How can our project team best share information with you about what we learn through this project? (5 min)
- Prompt: Email updates, mailings at different stages, phone call, etc.
- What have we missed? Is there anything else you'd like to share with the city and project team about community engagement in government projects?

Closing (10 min)

- Summarize what was discussed
- Thank participants for their time
- Next Steps
- Explain that the project team will record your input from today, and will report back about results.

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Appendix F. Community Engagement Questionnaire

The questions below were included in the online and print questionnaire used for the "Let's Talk About Electric Mobility" engagement and education campaign. Online questionnaires were distributed using a QR code on print materials, as a hyperlink in digital materials (social media, emails, websites), or in print form at tabling events. Online and print questionnaires were available in English, Hmong, Somali, and Spanish.

Hennepin County, City of Brooklyn Park, and other partners in the Minneapolis area are working together on a project with two main goals: 1.) learn about community priorities for electric mobility options, including electric bikes, scooters, cars, and buses; and 2.) improve how government agencies get community input on transportation plans and projects in the future. Visit the project website for more information and see this fact sheet to learn about electric mobility.

The questionnaire takes about 7-10 minutes to complete. Your responses will remain anonymous and confidential. Thank you for taking the time to participate in this project.

Language

1. Choose which language you want to take this survey in:
    a. English
    b. Hmong
    c. Somali
    d. Spanish

Introduction
Below are definitions of key terms related to electric mobility.

What is electric mobility? Electric mobility options include all transportation technologies that run on all-electric motors, including electric cars, transit buses, school buses, bikes, and scooters.

Electric cars (also known as electric vehicles, or EVs) are driven by electric motors powered by a battery. They have zero tailpipe emissions when running on electricity and can offer lower operating and maintenance costs.

Electric carshare programs rent electric cars for daily use. Evie is a program that is available in Minneapolis and Saint Paul.

Electric buses are now being tested in Minnesota, such as on Metro Transit's C Line. In the future, Metro Transit plans to purchase more electric buses.

Electric bicycles, or e-bikes, are becoming a popular alternative to traditional bicycles. They have an electric motor that makes the ride easier. Bikeshare systems, which allow users to rent bikes for short-term use, have recently added e-bikes to some communities.

Electric scooters can be rented for short trips in some communities through companies like Bird, Lyft, Lime, Spin, and Veo, or can be purchased for personal use.

EV charging stations are equipment that connect electric cars to a source of electricity to recharge their batteries.

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General Questions

1. What is your zip code?

2. How do you usually travel around town? Please select how often you use each mobility option.

	Never	Several times per year	1-2 times per month	1-2 times per week	Every day
Bicycle					
Bus					
Carpool					
Car share (HOURCAR, Evie)					
Light rail					
Personal car					
Rideshare (Uber, Lyft)					
Scooter					
Walking					
Other (please specify)					

Electric Mobility

3. How interested are you in using electric mobility options? Please choose the option that shows how interested you are in each option.

	Not at all interested	Somewhat Interested	Very interested
Electric car share program			
Personal electric car			
Shared electric bike (part of bikeshare program)			
Shared electric scooter (like Bird, Lime, etc.)			
Personal electric bike			

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	Not at all interested	Somewhat Interested	Very interested
Personal electric scooter			
Electric public transit bus			
Other (please specify)			

4. What is the biggest barrier preventing you from using each of the following electric mobility options? For each electric mobility option, select one barrier from the dropdown menu.
    a. Personal electric car
    b. Electric car share program
    c. Shared electric bike (part of bikeshare program) or scooter (like Bird, Spin, Lime, etc.)
    d. Personal electric bike or scooter
    e. Other (please specify)

    Barrier options

    i. Cost
    ii. Safety
    iii. I'm not physically able to use it
    iv. Doesn't travel far enough to get me to my destinations
    v. This option is not located near me
    vi. There isn't appropriate bike or scooter parking
    vii. I can't access charging stations
    viii. I'm happy with my current transportation
    ix. Not sure
    x. No barriers

5. Are there any other barriers you would like to list? (Please specify)

6. Some of the benefits of electric mobility are listed below. Rank these benefits in order of importance to you.
    a. Improved air quality and public health
    b. Reduced maintenance and fuel costs
    c. New jobs in manufacturing, repair, and installation of electric mobility options
    d. Business opportunities, like increased sales at local businesses near EV charging stations
    e. Improved connections that save time
    f. Option to go without a personal vehicle due to carshare, bike and scooter share programs
    g. Reduced noise from engines of gas-powered vehicles

7. Is there anything else you'd like to share about electric mobility or transportation system improvements more broadly?

Community Engagement

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8. Have you ever given input or shared feedback on a government project happening in your community? *Examples of government projects include (but are not limited to) Brooklyn Park's Bike and Pedestrian Plan, the Blue Line light rail extension project, and bike infrastructure projects.*
    a. Yes
    b. No

    [If yes] Did you learn how your input was used for the final project?

    a. Yes
    b. No
    c. Other (specify)

9. What has stopped you from participating in community engagement activities for government projects in the past? Select all that apply.
    a. I don't receive information about ways to participate
    b. I don't know where to look for information
    c. I don't have time to participate
    d. I am not interested in participating
    e. I don't think that my feedback will be used
    f. Language barriers
    g. Other (please specify)

10. What are the best ways for government agencies to **send you information** about government projects? Select all that apply.
    a. Text
    b. WhatsApp message
    c. Email
    d. Phone call
    e. Government agency webpage
    f. Newspaper
    g. Flyer at grocery store or other common locations
    h. Community events
    i. Social media (please specify)
    j. Other (please specify)

11. What is the best way for government agencies to **ask for your input and feedback** about government projects?
    a. In-person community meeting
    b. Online community meeting (Zoom, etc.)
    c. Online survey
    d. Pop-up events at community spaces, transit hubs, etc.
    e. Other (please specify)

[Optional] Demographic Questions

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The following demographic questions are optional and will remain confidential.

12. Please select the races and ethnicities that you identify as. Select all that apply:
    a. African
    b. Asian
    c. African American or Black
    d. Hispanic or Latino
    e. Native American or American Indian
    f. Native Hawaiian or other Pacific Islander
    g. White
    h. Another race or ethnicity
    i. Prefer not to answer

13. Please select your age.
    a. 17 or younger
    b. 18-20
    c. 21-29
    d. 30-39
    e. 40-49
    f. 50-59
    g. 60 or older
    h. Prefer not to answer

14. What is the primary language spoken in your home?
    a. English
    b. Spanish
    c. Vietnamese
    d. Somali
    e. Hmong
    f. Other (please specify)

What accessibility services or resources would help you use electric mobility options? For example, wheelchair-accessible vehicles, scooters with seats, etc.

1. Please select the statement that best describes your financial situation.
    a. My monthly expenses are exceeding my income
    b. I am meeting my monthly expenses but am putting aside little to no savings
    c. I am meeting my monthly expenses and have some money left over for savings
    d. I am on track to meet long-term financial goals such as retirement savings, tuition costs, and mortgage payments

2. If you'd like to be entered into the raffle to receive a $50 Visa gift card, please type your email address or phone number: _____

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If you're interested in receiving more information about the project, please type your email address or phone number: _____

Your personal information will be securely stored and will not be shared with anyone outside of the project team.

End message: Thank you for taking our survey. If you have any questions or comments about the project, please email climate@hennepin.us

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Appendix G. "Let's Talk About Electric Mobility" Education and Engagement Events and Workshops

Table G- 1. E-Mobility Education and Engagement Activities

Date	Organization	Event Name - Location
5/7/2023	MIND	May General Meeting – MIND offices
5/15/2023	Hennepin County	C LEAP Project Workshop for CBOs
5/20/2023	ACER, Inc. & CPC 2.0	Family Fun Day – Centennial Park
6/3/2023	MIND	Brooklyn Park Parade & Tater Daze – Noble Sports Park
6/14/2023	CPC 2.0	Health Fair Eden Park
6/15/2023	CPC 2.0	Health Fair Huntington Place
6/15/2023	Hennepin County	Jordan Week of Kindness Celebration – Irving Avenue North
6/17/2023	ACER, Inc.	Juneteenth – Centennial Park
6/17/2023	CPC 2.0 & Hennepin County	Juneteenth – North Hennepin College
6/17/2023	MIND	Juneteenth – Sanctuary Covenant Church
6/24/2023	1DAAT	Brooklyn Park Art Festival – Brooklyn Park Library
6/24/2023	PPNA	People's Pride – Powderhorn Park
7/7/2023	CPC 2.0	Summer Splash Event – Zanewood Recreation Center
7/13/2023	CPC 2.0	Health Fair on the Go - Autumn Ridge Apartments
7/20/2023	CPC 2.0	Health Fair on the Go – Huntington Place Apartments
7/20/2023	Whittier Alliance	Pop Up Table – Whittier Park
7/21/2023	CPC 2.0	HOTG - Health Fair & Food Distribution
7/22/2023	Hennepin County	Latino Conservation Week Festival - Bloomington Education and Visitor Center
7/22/2023	PPNA	Monthly Environmental Justice Session – Powderhorn Park
7/29/2023	CPC 2.0	Heath Fair on the Go – CVS parking lot
7/29/2023	MIND	Egbe Omo Oduduwa Picnic – Cottage Grove
8/5/2023	MIND	MIND Family picnic – Batthe Creek Regional Park
8/5/2023	Whittier Alliance	Really Really Free Market - Whittier Park
8/10/2023	Whittier Alliance	Community Dinner Night – Whittier Park
8/12/2023	ACER, Inc.	Community Health Fair – Centennial Park
8/19/2023	PPNA	Frogtown Climate Carnival – The LilyPad
8/19/2023	MIND	BP Back to School BBQ
8/24/2023	Whittier Alliance	Pop Up Table - Karamel
8/24/2023	ACER, Inc.	Kenyan Family Barbeque – Brooklyn Center Community Center
8/25/2023	Whittier Alliance	Pop Up Table - Rena Building
8/25/2023	Whittier Alliance	Pop Up Table - Halal Grocery
8/26/2023	PPNA	Monthly Environmental Justice Session – Powderhorn Park Office

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Date	Organization	Event Name - Location
8/28/2023	Whittier Alliance	Pop Up Table - Whittier Clinic
8/29/2023	Brooklyn Park	Brooklyn Park Ride & Drive – Community Activities Center
9/3/2023	PPNA	State Fair
9/9/2023	Hennepin County	Monarch Festival – Lake Nokomis Community Center
9/16/2023	Hennepin County	Buzz Fest – Moir Park
9/16/2023	PPNA	Powderhorn Porch Fest - Minneapolis
9/16/2023	Hennepin County	Open Streets – West Broadway

Table G- 2. E-Mobility Community Workshops.

Date	Organization	Event Name
6/3/2023	MIND	Community workshop
6/22/2023	ACER, Inc.	Community workshop
6/28/2023	PPNA	Community Workshop
7/29/2023	1 Day At A Time	Community Workshop
8/31/2023	Whittier Alliance	Community workshop
9/6/2023	CPC 2.0	Community Workshop

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Appendix H. Hennepin County Initial Thematic Coding Process

This document is a summary of the Hennepin County Climate & Resilience Department practices used to start coding the Community Based Organization transcript. Since there are several codes, we decided to facilitate the process of coding using various colors to highlight the text and key words for the following categories/codes:

A. Mobility and transportation

- A. Others (no colors)
- A. Limitations, challenges, concerns (-),
- A. Advantages, opportunities (+)
- A. Questions
- A. Suggestions

B. Community engagement

- B. Others (no colors)
- B. Limitations, challenges, concerns (+),
- B. Advantages, opportunities (-).
- B. Questions
- B. Suggestions

C. Demographics

A and B categories represent our two main research topics. The words highlighted in red will represent any negative perceptions and the blue words will represent positive perceptions in both categories.

Remember that most of the time we will have texts, comments and quotes that overlap with several codes. For example, "Scooters are difficult to drive for older people" this comment will be categorized as codes: Mobility/Challenges/scooters/. The order of words is important in this case.

"Scooters are difficult to drive for older people."

1. Select each quotation and add a color boxing depending on if it belongs to Mobility, Engagement, or demographics.
2. In case of finding a positive or negative impression, change the color of the word, if the quotation is positive (blue) or negative (red).
3. When a quotation or text have two or more codes, add the corresponding comments with the code. Add the comment always at the beginning of the quotation. Make sure to add the codes in the order that you think is best.
4. Feel free to add extra codes as need for each quotation.
5. When selecting a quotation, please add this text to the excel code book. Make sure that you are duplicating the same text in each corresponding code. For example, the previous quotation must appear in scooter and limitations codes. (This duplication will help us to overlap codes and detect frequent connections withing codes)
6. In the case of text or quotations not related to our research. Don't do anything. Just leave it as it is.

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7. In the case of text with relevant comments to our research, please save it as you wish. These quotations are very helpful to illustrate the context. We can inset them in the report.

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Appendix I. Community Workshop Codebook

Table I- 1. Community Workshop Codes

Code Name	Code Description
1 Mobility and Transportation	*Level 1 Supra-Code: References to mobility and transportation*
1.1 Electric Mobility and Transportation	*Level 2 Supra-Code: References to electric mobility and transportation*
1.1.1 EVs	Any reference to electric vehicles
1.1.2 E-bikes	Any reference to electric bikes
1.1.3 E-scooters	Any reference to electric scooters
1.1.4 E-wheelchairs	Any reference to electric wheelchairs
1.1.5 Light rail	Any reference to light rails
1.1.6 E-Public Transportation	Any reference to Electric public transportation
1.1.7 Private E-Transportation	Any reference to electric private transportation
1.1.8 Electric Vehicle Shares	Any reference to electric vehicles share companies
1.1.9 E-Buses	Any reference to buses
1.1.10 Hybrid	Any reference to hybrid cars
1.1.11 Electric vehicle charging stations	Any reference to electric vehicle charging stations of Level 1-3
1.1.12 Electric mobility charging stations	Any reference to electric mobility charging stations
1.1.13 Rebates	Any reference to electric transportation rebates, electric car rebates, electric bike rebates
1.1.14 Requirements	Any reference to the requirements to be able to access electric mobility
1.1.15 Sign up/Registration	Any reference to signing up or registering to get access to electric mobility
1.1.16 Range	Any reference to range of electric transportation that is neutral or positive
1.2 Non-electric Mobility and Transportation	*Level 2 Supra-Code: References to non-electric mobility and transportation*
1.2.1 Conventional Gas-Fueled Cars	Any reference to conventional gas fueled cars
1.2.2 Trucks/Freight	Any reference to trucks/freight
1.2.3 Public Transportation	Any reference to publicly owned transportation systems like buses, trains, and Nice Ride bikes
1.2.4 Private Transportation	Any reference to private owned transportation systems like own cars, share mobility

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Code Name	Code Description
1.2.5 Share transportation	Any reference to private owned transportations providing share transportation like Uber, Lyft, Lime scooters, HOURCAR, Evie carshare and others
1.2.6 Buses	Any reference to buses
1.2.7 Bikes	Any reference to non-electric bikes
1.2.8 Motorcycles	Any reference to motorcycles
1.2.9 Walking	Any reference to walking
1.2.10 Bike Lanes	Any reference to bike lanes
1.3 All Mobility and Transportation	*Level 2 Supra-Code: References to mobility and transportation not specified as electric or non-electric mobility*
1.3.1 Personal Ownership (Transportation)	Any reference to use of personal vehicle for transportation, such as a personal conventional car (with internal combustion engine) or personal EV
1.3.2 Shared Usage (Transportation)	Any reference to use of shared mobility options for transportation, such as a carshare, shared e-bikes, or shared e-scooters
1.3.3 Public Transportation	Any reference to public own transportation systems like buses, train, and Nice Ride bikes
1.3.4 Private Transportation	Any reference to private owned transportation systems like personally owned cars or private shared mobility
1.3.5 Share transportation	Any reference to private owned transportations providing share transportation like Uber, Lyft, Lime scooters, HOURCAR, Evie carshare and others
1.3.6 Accessories	Any reference to transportation accessories such as helmets, locks, chargers, charging station
1.3.7 Frequency (Travel/Usage)	Any reference to travel or usage and mobility frequency
1.3.8 Commuting	Any reference to commuting
1.4 Barriers, Challenges, Concerns	*Level 2 Supra-Code: Reference to e-mobility barriers, challenges, and concerns*
1.4.1 Traffic	Any reference to increased traffic and/or congestion related to vehicles
1.4.2 Battery	Any reference to a battery or batteries in electric mobility technologies
1.4.3 Insurance coverage	Reference to limitations related to insurance coverage
1.4.4 Security	Any reference to security while commuting
1.4.5 Safety	Any reference to safety related to mobility
1.4.6 Pollution	Any reference to pollution
1.4.7 Economic	Any reference to economic/financial barriers and/or concerns
1.4.8 Negative Experiences with E-Mobility	Any reference to negative experiences related to e-mobility like wait time, charging stations, transportation methods, cost, location

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Code Name	Code Description
1.4.9 Negative Experiences with Non-electric mobility	Any reference to negative experiences related to non-electric mobility, concerns with air quality, distance, weather
1.4.10 Accessibility Barriers and Concerns	Any reference to accessibility barriers and/or concerns
1.4.11 Cost	Any reference to cost and lack of affordability
1.4.12 Lack of Access to Charging Stations	Any reference to lack of access to charging stations
1.4.13 Insufficient/Limited Range	Any reference to insufficient/limited range related to e-mobility
1.4.14 Range Concerns/Anxiety	Any reference to e-mobility range barriers, such as anxiety related to insufficient range or concerns regarding range, from environmental to efficiency
1.4.15 Unavailability (lack of access to e-mobility options)	Any reference to unavailability (lack of access to e-mobility options)
1.4.16 Parking Limitations	Any reference to parking limitations
1.4.17 No Need for a Mobility Change	Any reference to not needing a mobility change given current conditions
1.4.18 Unsure / Lack of Information	Any reference to unsure / lack of information in relation to e-mobility
1.4.19 Poor air quality	Any reference to poor air quality
1.4.20 Fuel inefficiency	Any reference to non-electric transportation, concerns with fuel efficiency, inefficient fuel, not fuel efficient
1.4.21 Speed	Any reference to speed, speed limit/limitations, too fast, too slow
1.4.22 Unutilized	Any reference to mobility/transportation services being unutilized, unused, underutilized, not being used
1.4.23 Technology	Any reference to electric technology like batteries etc.
1.4.24 Limited storage capacity	Any reference to limited storage capacity, not enough storage, not enough space
1.4.25 Weather conditions	Any reference to weather conditions, hot, cold, snow, rain, hail
1.4.26 Sign up/registration	Any reference to sign up, app/mobile registration to use e-mobility services
1.4.27 Waiting period	Any reference to waiting period, wait time
1.4.28 Requirements	Any reference to requirements, e-mobility mobile requirements, e-mobility registration requirements
1.4.29 Information overload	Any reference to information overload, too much information
1.4.30 Location	Any reference to location barriers, challenges, or concerns related to mobility options
1.4.31 Insufficient/Lack of supply	Any reference to insufficient or lack of supply, limited supply, not enough of, not available
1.4.32 Time	Any reference to time barriers, challenges, or concerns related to mobility

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Code Name	Code Description
1.4.33 Lack of accessories	Any reference to lack of accessories, helmets, pads, safety measures
1.4.34 Need for demonstration	Any reference to a need for demonstration, lack of demonstration to use products/services, unclear instructions
1.4.35 Limited cellular service	Any reference to limited cellular service, lack of access to WIFI, no network, no service
1.4.36 Cultural exclusivity	Any reference to cultural exclusivity, not inclusive to meet cultural needs
1.4.37 Low driver awareness	Any reference to low driver awareness, lack of driver awareness, lack of cautiousness by drivers
1.4.38 Parking	Any reference to parking
1.4.39 Mobile App Navigation	Any reference to mobile app navigation, various app platforms
1.4.40 Charging	Any reference to e-mobility charging barriers, challenges, or concerns
1.4.41 Home ownership	Any reference to home ownership as a barrier, challenge, or concern related to e-mobility
1.4.42 Lack of Investment	Any reference to lack of marginal investments in accessible mobility options
1.4.43 Mechanical issues	Any reference to mechanical issues
1.4.44 Maintenance	Any reference to auto maintenance, fixing parts, etc.
1.4.45 Car manufacturer	Any reference to a car manufacturer, the origin of a car, a dealership, etc.
1.4.46 Payment method	Any reference to payment method for e-mobility access
1.4.47 Inadequate marketing	Any reference to inadequate marketing, insufficient marketing, not enough marketing related to e-mobility
1.5 Opportunities and Benefits	*Level 2 Supra-Code: References to e-mobility opportunities and benefits*
1.5.1 Recreation	Reference to recreational use of transportation
1.5.2 Lack of behavior change	Any reference to lack of commitment to mobility behavior change, not willing to change, not willing to change behavior
1.5.3 Lack of Centralized Infrastructure	Any reference to a lack of centralized mobility infrastructure, disconnected infrastructure
1.5.4 Lived Experience with E-Mobility	Any reference to lived experience with e-mobility
1.5.5 Interest in E-Mobility	Any reference to interest in e-mobility
1.5.6 Positive Experiences with E-Mobility	Any reference to positive experiences with e-mobility
1.5.7 Accessibility Benefits	Any reference to accessibility benefits related to e-mobility
1.5.8 Improved Environment	Any reference to improved environment related to decarbonized mobility

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Code Name	Code Description
1.5.9 Improved Air Quality & Public Health	Any reference to improved air quality and public health related to decarbonized mobility
1.5.10 Reduced Maintenance & Fuel Cost	Any reference to reduced maintenance and fuel cost related to e-mobility
1.5.11 Cost Savings	Any reference to cost savings related to e-mobility
1.5.12 New Jobs	Any reference to new jobs related to e-mobility
1.5.13 Business Opportunities	Any reference to business opportunities related to e-mobility
1.5.14 Improved Connections Saving Time	Any reference to improved connections saving time related to e-mobility
1.5.15 Collective Transportation Options	Any reference to collective transportation options
1.5.16 Noise Reduction	Any reference to noise reduction related to e-mobility
1.5.17 Mobile app accessibility	Any reference to mobile mobility app accessibility, app is easy to use, app is user friendly
1.5.18 Increased Investment	Any reference to increased marginal investments related to e-mobility
1.5.19 Technology capabilities	Any reference to e-mobility technology capabilities, benefits, modern
1.6 Suggestions	*Level 2 Supra-Code: Suggestions about mobility and transportation*
1.7 Questions	*Level 2 Supra-Code: Questions about mobility and transportation*
2 Community Engagement and Outreach	***Level 1 Supra-Code: References to community engagement and outreach***
2.1 Participation	*Level 2 Supra-Code: References to community participation*
2.1.1 Past Participation	Any reference to past participation in engagement activities
2.1.2 Participation Barriers	Any reference to participation barriers to community engagement/outreach
2.1.3 Awareness & Lack of Information	Any reference to awareness and lack of information related to participation in community engagement and outreach
2.1.4 Knowledge Gaps & Awareness	Any reference to knowledge gaps and awareness
2.1.5 Social Network	Any reference to social network
2.1.6 Outreach Limitations	Any reference to outreach limitations
2.1.7 Lack of Time (Capacity Limitations)	Any reference to lack of time for participating in engagement activities (capacity limitations)
2.1.8 Capacity	Any reference to capacity for participating in engagement activities
2.1.9 Interest in Future Participation	Any reference to interest in future participation in engagement activities
2.1.10 Engagement Follow-Ups	Any reference to engagement follow-ups

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Code Name	Code Description
2.1.11 Engagement Fatigue	Any reference to engagement fatigue
2.1.12 Lack of Interest in Participation	Any reference to lack of interest in participation in engagement activities
2.1.13 Lack of Trust	Any reference to lack of trust related to community engagement
2.1.14 Language Barriers	Any reference to language barriers related to engagement
2.2 Communications (Output/Info)	*Level 2 Supra-Code: References to engagement and outreach communications as output or informational to the public*
2.2.1 Text	Any reference to text communications via cellular phone for engagement/outreach
2.2.2 WhatsApp	Any reference to WhatsApp communications for engagement/outreach
2.2.3 Email	Any reference to email communications for engagement/outreach
2.2.4 Phone Call	Any reference to communications via phone calls
2.2.5 Social Media	Any reference to communications via social media
2.2.6 Website	Any reference to engagement/outreach communications via websites
2.2.7 Newspaper / Magazine	Any reference to engagement/outreach communications via newspapers or magazines
2.2.8 Flyer	Any reference to engagement/outreach communications via flyers
2.2.9 Community Events	Any reference to engagement/outreach communications via community events
2.2.10 Mailers	Any reference to engagement/outreach communications via mailers
2.2.11 Peer-to-peer contact	Any reference to engagement/outreach communications via peer-to-peer contact, sharing communications through a known network
2.2.12 Organizational partnerships	Any reference to engagement/outreach communications via partnerships with local organizations, information sharing via outside organizations
2.2.13 Marketing/Advertisement	Any reference to engagement/outreach communications via marketing and/or advertisements
2.3 Communications (Input/Feedback)	*Level 2 Supra-Code: References to engagement communications as input or feedback from the public*
2.3.1 In-Person Community Meetings	Any reference to engagement communications via in-person community meetings
2.3.2 Online Community Meetings	Any reference to engagement communications via online community meetings
2.3.3 Online Surveys	Any reference to engagement communications via online surveys
2.3.4 Workshops	Any reference to engagement communications via workshops

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Code Name	Code Description
2.3.5 Informal Conversations in Public Locations	Any reference to engagement communications via informal conversations in public locations
2.3.6 Pop-Up Events	Any reference to engagement communications via pop-up events
2.3.7 Email Updates	Any reference to engagement communications via email updates
2.3.8 Mailers	Any reference to engagement communications via mailers
2.3.9 Phone Call	Any reference to engagement communications via phone calls
2.3.10 Provide incentives	Any reference to providing incentives for community feedback
2.4 Barriers, Challenges, Concerns	*Level 2 Supra-Code: Reference to barriers, challenges, and concerns related to community engagement*
2.4.1 Feedback not used	Any reference to feedback provided by participants at an outreach event not being used
2.4.2 Lacking effective engagement	Any reference to ineffective engagement strategies
2.4.3 Lacking inclusion of community	Any reference to community being left out of the conversation
2.4.4 Government pre-established plans	Any reference to the government having an agenda regardless of community input
2.4.5 Lack of transparency	Any reference to government processes being opaque or difficult to access
2.4.6 No follow through	Any reference to the government not following through on promised actions
2.4.7 Lack of monetary investment	Any reference to the lack of investment into community needs
2.4.8 Accessibility Barriers and Concerns	Any reference to accessibility barriers and concerns
2.4.9 Cost	Any reference to cost as a barrier to participating in engagement
2.4.10 Unsure / Lack of Information	Any reference to unsure / lack of information as a barrier to community engagement
2.5 Opportunities and Benefits	*Level 2 Supra-Code: Reference to opportunities and benefits of community engagement and outreach*
2.6 Questions	*Level 2 Supra-Code: Reference to questions related to community engagement and outreach*
2.7 Suggestions	*Level 2 Supra-Code: Reference to community suggestions related to community engagement and outreach*
3 Socio-demographics	***Level 1 Supra-Code: Reference to socio-demographics of community workshop participant***
3.1 Accessibility Services	Any reference to participant's need(s) for accessibility services
3.2 Race/Ethnicity	Any reference to racial/ethnic identity of participant
3.3 Age	Any reference to age of participant
3.4 Language	Any reference to language preference of participant

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Code Name	Code Description
3.5 Economic Status	Any reference to economic status of participant
3.6 Location in Region [Zip Code]	Any reference to participant's location in the region and/or zip code
3.7 Gender	Any reference to gender identity of participant

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Appendix J. Overlapping Barriers and Opportunities by Mode From Community Workshops

Primary Overlapping Barriers by Mode from Community Workshops

Table J- 1. Primary EV Barriers Discussed in Community Workshops

Mode	Barrier (N = times mentioned)	Quote
EV (N=149)	Charging (N=27)	So, if I have a charging station in my house, would the electricity cost me, you know. If I charged the electric vehicle during the night, is it going to make my electricity bill more expensive? What are they going to do to help me?
	Cost (N=17)	I've never priced one out but it is very expensive to own an electric car. If a person can't afford it, then they will have very few options to get around.
	Safety (N=11)	We had an electric vehicle go by, and I was saying that it was very quiet, which is maybe good. But also, an issue in terms of, like, traffic safety.
	Pollution (N=4)	Plus, you got mines. And have you ever seen the strip mines up north with the iron ore taconite mines? They, you look at the land and it's like just huge pits and they do the surface mining. Well, what is building all these batteries gonna do?
	Unsure / Lack of Information (N=11)	Because like I said, you know, this EV stuff has been on my mind for a couple of years, but I just, you know, I really didn't know how to get, you know, to some nitty gritty.
	Accessibility Barriers and Concerns (N=8)	People that are not nerds or that don't understand electric stuff because they're dealing with real life and don't have time to take on another thing.
	Insufficient/Limited Range (N=5) and Range Concerns/Anxiety (7)	It was scary though. We sitting there, we all quiet. It was 1%. We just sitting there like "If this die, who pushing though?"
	Time (N=11)	Who's gonna want to sit for two hours to charge up your vehicle when you can just grab a regular vehicle and pump it up in like 10 minutes. Not even you sit there, pump it up, move around. Who wants to post up at a Target or in some kind of neighborhood where you're not familiar with, where you're uncomfortable where you don't feel safe and you have to sit there for two hours and wait for this slow vehicle that's supposed to be convenient for you.
	Technology (N=5)	So, most of the gasoline cars you can use for 10 years plus. With this battery technology, how long will it be before you have to replace the battery because it cannot hold a charge any longer?

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Mode	Barrier (N = times mentioned)	Quote
	Weather Conditions (N=9)	I've used the cars in the winter; would not recommend that to my worst enemy.
	Mechanical Issues (N=4) and Maintenance (N=7)	I am concerned about the cost to repair it, there are many expensive components in the battery.

Table J- 2. Primary E-Scooter Barriers Discussed in Community Workshops

Mode	Barrier	Quote
E-scooter (N=110)	Safety (N=20)	They should have helmets or something around because it is just like really really scary. But it was exciting.
	Accessibility Barriers and Concerns (N=17)	You have to be over 18 so you have to call a parent and let alone that have everything just, it's so complicated just to get a scooter if you're under 18. Soon as you're 18 everything there's like no complications.
	Unavailability / Lack of Access (N=11)	A concern is yeah how many there are like in one place like I said like me and my friends were trying to find some we couldn't find any. Or you find, like, two and there's eight of us and we're trying to walk around and find them. We just didn't ride them because we couldn't find any or they were really far away or there's like a whole bunch across the bridge. So, it was just like, whatever.
	Speed (N=12)	Because you have these people zipping by on the sidewalks or in the streets. They don't abide by the safety laws. They don't stop at the lights they just keep zipping on by.
	Location (N=16)	I have noticed that, there is more of these located in North Minneapolis than I have seen anywhere else.

Table J- 3. Primary E-Bike Barriers Discussed in Community Workshops

Mode	Barrier	Quote
E-bike (N=74)	Safety (N=7)	Um my husband really thinks that I should get one so I can go biking with him and I think it sounds kind of dangerous.
	Cost (N=10)	I have a few friends that have bought gone like made the investment which um the e-bikes are very expensive. Like kind of out of reach
	Unavailability / Lack of Access (N=11)	You can even see online how many people have had, like, aggressive or heated disagreements about who's bike is what. But like, literally in front of my building there is only one right there and someone locks it up because she takes it every day. There is just not enough if you wanted to take it.

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Mode	Barrier	Quote
	Accessibility Barriers and Concerns (N=9)	I do not think that this is accessible to everyone…for the e-bikes that stations are so few and far between and its even if you walk over there it's not like it's necessarily there.
	Lack of Information (N=6)	Well, I just looked it up yesterday 'cus I really wanna get one and my understanding is nobody knows how it works yet because they didn't actually like include all those details in the bill that they passed.
	Speed (N=6)	I have no desire to go faster than, say, 8 miles an hour on my bike.
	Location (N=7)	I only see them in town. They had them over North for a brief time.

Table J- 4. Primary EV Carshare Barrier Discussed in Community Workshops

Mode	Barrier	Quote
EV Shares (N=38)	Sign-up/Registration/Waiting (N=9)	The requirements are that you have a phone and a driver's license and that you don't have, like, a really really bad driving record. I think you get denied if you get in like a certain amount of accidents or have like a certain amount of like um like speeding tickets or something like that.

Table J- 5. Primary Hybrid Car Barriers Discussed in Community Workshops

Mode	Barrier	Quote
Hybrid (N=22)	Battery (N=14)	Maybe it's not a good option…When the battery expires or is no good anymore, it's expensive to replace.
	Maintenance (N=4)	It's probably more expensive because if the technology goes wrong on the battery side right you gotta deal with that cost right and something goes wrong on the gas side.

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Table J- 6. Primary Light Rail Barrier Discussed in Community Workshops

Mode	Barrier	Quote
Light Rail (N=11)	Safety/Security (N=3)	The train is electric, but it is not safe to ride that train. If it was safer, I would ride the train more often, like to the airport, to the mall. I don't know what they need to do but it is not safe.

Table J- 7. Primary E-Wheelchair Barrier Discussed in Community Workshops

Mode	Barrier	Quote
E-Wheelchair (N=2)	Charging (N=1)	We have couple of students who used electric wheelchairs and the problem is that they always are bringing them uncharged for some reason and we have to assist them and now we have to find a place for them to charge them while they are at school…I was talking to the building engineer and said it is very costly.

Table J- 8. Primary E-Bus Barrier Discussed in Community Workshops

Mode	Barrier	Quote
E-Bus (N=7)	No Barriers Identified	N/A

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Primary Overlapping Benefits by Mode from Community Workshops

Table J- 9. Primary EV Benefits Discussed in Community Workshops

Mode	Potential Benefit/Opportunity	Quote
EV (N=149)	Cost Saving (N=9)	So the entire weekend I was there [with an EV rental]. We used the car all over the place. You know I charged it and you know it was fully charged all the time…but my credit card and my bills for the entire weekend was no more than 15 bucks. In charging it to full capacity.
	Noise Reduction (N=6)	I was sitting in the car, and I was moving, but it was like the car was not moving, you know, no sound. It's cool though!
	Improved Environment (N=4)	[The US] is going to move towards electric vehicle. We're not going back, for the environment.

Table J- 10. Primary E-Scooter Benefits Discussed in Community Workshops

Mode	Potential Benefit/Opportunity	Quote
E-scooter (N=110)	New Jobs (N=4)	I did work for Lime…and they pay per task…So you have tasks where you can move the scooter around the city or you have a task where you get paid, like, $3 just to swap the battery.
	Accessibility Benefits (N=4)	You don't have to put it in a certain area, especially the scooters. You don't have to like to leave it where you found it, you can leave it wherever and someone can just pick it up and go with it. Wherever you go you see them laying on the side of the road or something and you just pick it up and go.

Table J- 11. Primary E-Bike Benefits Discussed in Community Workshops

Mode	Potential Benefit/Opportunity	Quote
E-bike (N=74)	Cost Saving (N=3)	But they're gonna be cheaper soon though because the rebate thing.
	Improved Air Quality & Public Health (N=2)	It's a good idea to have more bikes and scooters, because it can help reduce the pollution.

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Table J- 12. Primary EV Carshare Benefit Discussed in Community Workshops

Mode	Potential Benefit/Opportunity	Quote
EV Shares (N=38)	Cost Saving (N=4)	They're totally cheaper than an uber.

Table J- 13. Primary Hybrid Car Benefit Discussed in Community Workshops

Mode	Potential Benefit/Opportunity	Quote
Hybrid (N=22)	Cost Saving (N=2)	It's supposed to be economically better.

Table J- 14. Primary E-Bus Benefit Discussed in Community Workshops

Mode	Potential Benefit/Opportunity	Quote
E-bus (N=7)	Lack of Behavior Change (N=2)	Like electric buses and electric school buses, because there's like no change to the end user right like it's as far as everyone else is concerned its exactly the same as it was before but this bus doesn't stink, right, at least not on the outside.

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