New and Emerging Mobility Element
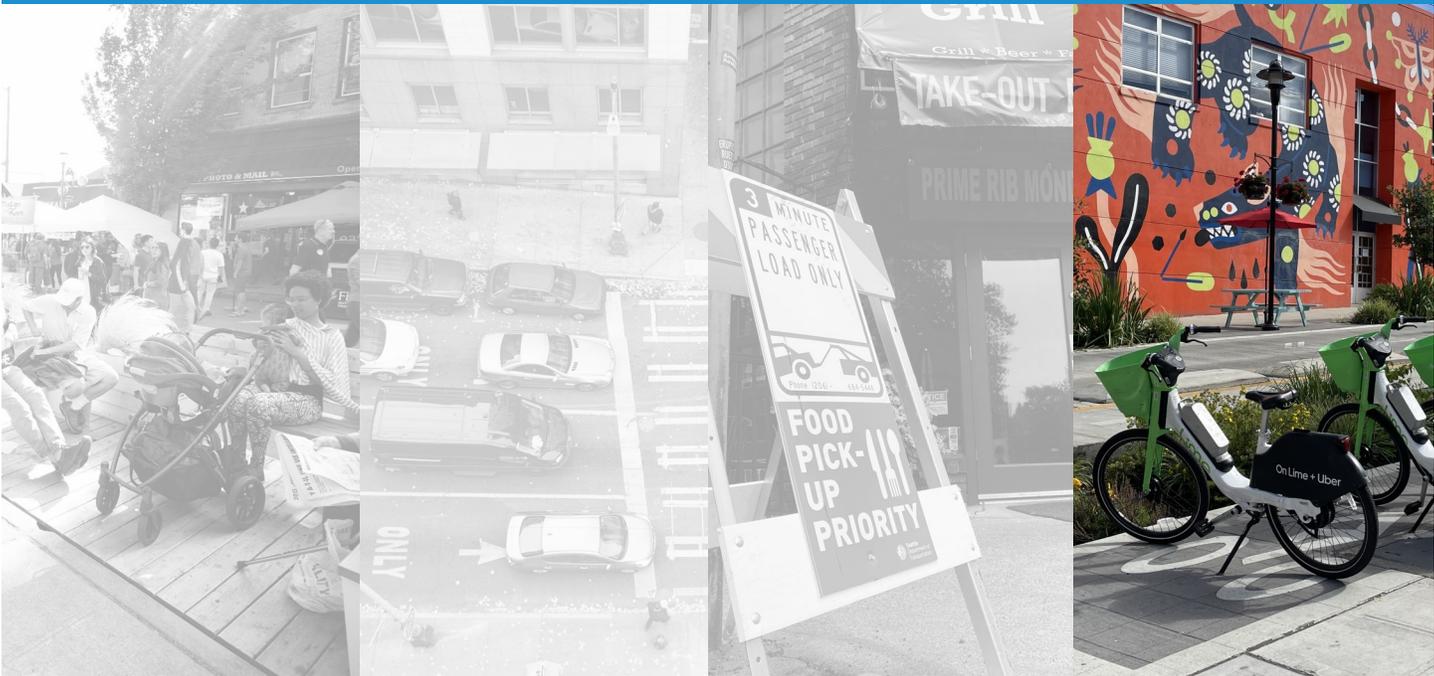
Seattle
Department of
Transportation

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INTRODUCTION

With each passing year, we see new forms of transportation emerge and gain momentum. People are adopting innovative technology to travel more quickly, efficiently, and sustainably, and using app-based systems to make smarter decisions about travel. As one of the first cities to regulate ridehailing operations like Uber and Lyft and to permit dockless bikeshare systems, Seattle has been on the forefront of new and emerging mobility adoption. In 2017, the Seattle Department of Transportation (SDOT) created the New Mobility Playbook,[1] a framework to ensure new transportation technology and emerging modes of mobility were deployed to support community goals.

New and emerging mobility (NEM) is a blanket term that describes forms of transportation that use technology to improve efficiency, access, and experience. NEM services increasingly offer seamless accessibility through digital platforms, enabling convenient payment and data-driven service adjustments. Emerging trends include electrification or automation of vehicles, services and devices, growth in the use of personal delivery devices (PDDs) for transporting urban goods, and urban air mobility for parcels and passengers. Well known examples include ride-hailing services like Uber and Lyft, car-sharing platforms such as ZipCar and Gig, and bike and scooter sharing programs like Lime and Super Pedestrian.

HOW NEW AND EMERGING MOBILITY ADVANCES THE STP

By replacing gas-powered trips with human or electric-powered trips on shared micromobility devices and increasing access to public transportation, NEM can contribute to our emissions reduction goals. Shared mobility can contribute to significant reductions in vehicle-miles traveled (VMT) by expanding travel options for people outside traditional transit networks and supporting first- and last-mile connections for transit and urban deliveries, particularly when operated in support of existing fixed-route transit services. Used responsibly, NEM can also create safer streets by integrating smart technology and safety innovations in vehicles and mobility devices. While we are committed to this work, SDOT relies on strong private sector partnerships to align new mobility options with our safety, sustainability, and equity goals.

Effective deployment of NEM must address the needs of Black, Indigenous, and People of Color (BIPOC) and vulnerable communities through inclusive planning and education. We'll need to consider how we can maximize the social benefits NEM provide to people while actively working with partners to limit negative or unintended outcomes. The NEM Element considers how we can incorporate technology, innovation, and partnerships into our transportation ecosystem to advance our goals— including the actions we'll need to take to support NEM deployments that are successful, sustainable, and beneficial to communities across Seattle.

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[1] https://www.seattle.gov/documents/departments/sdot/newmobilityprogram/newmobility_playbook_9.2017.pdf

Supporting Growth and Economic Vitality

As Seattle continues to grow, our transportation system must evolve in tandem with our changing landscape. Our comprehensive plan, One Seattle, guides how and where growth will occur to accommodate the growing number of people who live, work and travel here. No matter where people live or work, providing safe and equitable transportation will always be critical to connect people where they need to go. To achieve our shared goals as One Seattle, we must strategically plan for a range of appropriate travel options and supportive infrastructure that fits the needs of our unique and varied communities— whether a dense downtown grid, a quiet residential neighborhood, or a bustling manufacturing and industrial center.

In denser neighborhoods and commercial centers, development typically occurs close together. Combined with safe and supportive transportation infrastructure, density can make it easier for people to walk, bike and use transit because they don't have to travel as far. People have more access in these places, enabling them to live car free if they choose to or can't afford it. In places where development is more spread out, people might still walk or bike for shorter trips or to connect to transit services, but it is often harder due to longer distances between places.

While some people choose to live or work in places that are more spread out, others do so because they have no choice and driving is their only viable option. For instance, people who live outside of Seattle because housing is more affordable, or people who transport freight or cargo for a living may not have options for how they travel other than driving a vehicle.

Our transportation system can support anticipated growth in different places while continuing to advance our goals by making other travel options more viable and available in appropriate contexts. For example, freight-and-bus only lanes can support reliable travel times for industrial workers and transit riders, or on-demand rideshare services could provide more convenient shared trips. Each functional element of the STP plays a role in supporting Seattle's growth and economic vitality.

By planning for New and Emerging Mobility, several transportation technologies and mobility options can support our growing city:

- Shared micromobility devices, like bikes and scooters, can replace driving for short trips and make it easier for people to connect to transit services

- Carshare services can make living without owning a car more viable and affordable for people who occasionally need a vehicle

- Innovative transit services, such as on-demand rideshare, can make connecting to fixed-route bused faster and more convenient in lower density places— especially for older adults, people with disabilities, and other equity focus areas.

- Electric bikes and cargo-bike can provide smaller and more sustainable urban goods delivery solutions

- Digital platforms provide trip planning and payment tools that can make it easier for some people to use different services or travel options for different legs of a journey.

Economic Benefits of New and Emerging Mobility

The STP supports economic vitality in a range of ways and each functional Element plays a role. Maintenance and modernization of our transportation network enables efficient and reliable vehicle trips for the movement of freight, goods and services and provides significant benefits for our economy and communities—especially when our values around safety, equity, and sustainability remain centered.

- Rideshare and other gig-economy services can provide flexible jobs that can give people more choice in the hours they work

- NEM options like carshare, share micromobility or automation can make it easier for people to live without owning a car, which could free up funds to use on other things like housing, goods, and services

- Some NEM service providers and digital infrastructure providers provide local jobs, for example shared micromobility operators and on-demand rideshare services

- Urban freight and goods movement solutions like e-cargo bikes, personal delivery devices (PDDs) or urban are mobility devices could help companies keep pace with projected growth in e-commerce and retail deliveries

- Broadly, NEM provides space for innovation and entrepreneurship in transportation which creates economic opportunities for a NEM start-ups and service providers

- NEM options can help reduce VMT and related emissions which has positive impact on public health; improved community health outcomes are associated with a stronger workforce, productivity, and economy

- Automation and Connected Vehicles technology has the potential to increase the efficiency and reliability of long-distance (interstate) goods movement through caravanning

- Automation may help improve urban freight by reducing delivery operating costs and delivery times.

RELATIONSHIP TO STP GOALS

New and emerging mobility serves a cross-cutting role in supporting the Seattle Transportation Plan's goals for safety, equity, sustainability, mobility & economic vitality, livability, and maintenance & modernization.

SAFETY

Prioritize safety for travelers in Seattle, with no serious injury or fatal crashes. Safety is paramount, no matter how you get around Seattle. Our streets should be comfortable and intuitive for our most vulnerable travelers (people walking and biking). Shared, automated, and other new mobility models should advance our Vision Zero goals and maintain consumer protections.

EQUITY

Co-create with community and implement restorative practices to address transportation-related inequities. New mobility, whether shared, public, private, or automated, is a fundamental human need. New mobility models should promote clean transportation and roll back systemic racial and social injustices borne by the transportation system. SDOT can influence NEM in Seattle to support equitable outcomes through partnerships and thoughtful regulatory practices.

SUSTAINABILITY

Respond to climate change through innovation and a lens of climate justice. New mobility options hold potential to support our transition towards an electrified and more multimodal transportation system by supporting the growth of existing and emerging clean mobility options that decrease greenhouse gas emissions.

MOBILITY & ECONOMIC VITALITY

Provide reliable and affordable travel options that help people and goods get where they need to go. New mobility can provide reliable and affordable travel options for personal and commercial travel, particularly for shorter trips. NEM supports first- and last-mile connections to Seattle's transit system, provides independence for younger and older people, and grows travel options for all.

LIVABILITY

Reimagine our streets as inviting places to linger and play. NEM devices can increase access to housing, employment, parks, and community assets by filling transit gaps and providing more accessible point-to-point options. The city can integrate and selectively subsidize NEM services with existing public transit systems, making it easier for users to combine multiple modes in a single trip.

MAINTENANCE & MODERNIZATION

Improve city transportation infrastructure and ready it for the future. SDOT promotes a diversity of transportation choices that leverage new and emerging mobility. Data infrastructure is foundational to understanding, operating, and planning in a constantly changing transportation system. Partnerships and a fair and flexible regulatory environment will nurture and expand new mobility ideas, companies, jobs, and workforce training.

DELIVERING THE KEY MOVES

Part I, Chapter 3 of the Seattle Transportation Plan (STP) includes a collection of key moves, or strategies that describe the priority actions we've identified as critical to achieve our STP goals:

- Safety (S)
- Equity (TJ)
- Sustainability (CA)
- Mobility & Economic Vitality (PG)
- Livability (PP)
- Maintenance & Modernization (MM)

Each of the functional elements serve a distinct and important role in making our key moves happen. This section highlights the most relevant key move actions for this element.

Table 1 is intended to illustrate which of the key moves the **New and Emerging Mobility Element** will help us to accomplish.

- Element actions with a reference, such as "**Supports Key Move TJ1**," link directly back to the corresponding Part I Key Move that it supports. See Chapter 3.

- Element actions with a reference, such as "**Supports TEF 32.1**," link directly back to the corresponding Transportation Equity Framework (TEF) tactic(s) the action advances. A comprehensive list of supported TEF tactics is included at the end of each element.

Several actions are repeated across all STP functional elements because they are important commitments that should be present in all of our work. For example, all elements include:

Incorporate Vision Zero and Safe System approaches into every project and program, including proactive safety improvements for citywide implementation.
(Supports Safety Key Move S2a)

Feature community voices in planning documents. **(Supports Equity Key Move TJ1b)**

Part I, Chapter 4 Implementation Strategy of the STP provides additional information on how we'll deliver our shared vision, goals, and key moves.

New and Emerging Mobility: Delivering the Key Moves	STP Goals Supported					
	Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
SAFETY KEY MOVES						
Concentrate safety investments where fatal and serious injury collisions occur most or are at a higher risk of occurring (S2)						
NEM1. Incorporate Vision Zero and Safe System approaches into every project and program, including proactive safety improvements for citywide implementation. Work to align shared, autonomous, and other new and emerging mobility models with SDOT's Vision Zero goals and maintain consumer protections. (Supports Key Move S2a)	✓	✓				✓
NEM2. Accelerate implementation of research-backed improvements that are proven to make streets safer for everyone such as parking corrals at daylighted intersections and protected lanes for bikes, scooters, and other small mobility devices. (Supports Key Move S2c)	✓					✓
NEM3. Make people walking, biking, and rolling more visible by improving sight lines at intersections through treatments such as curb bulbs and, intersection daylighting, and refuge islands, with a focus on High Injury Corridors. (Supports Key Move S2d)	✓	✓		✓		
NEM4. Pilot and evaluate new and emerging safety treatments in locations where proven interventions are infeasible or do not address the identified safety issues. (Supports Key Move S2f)	✓			✓		
Make all journeys safer from departure to destination, especially for people traveling outside the protection of a vehicle (S3)						
NEM5. Provide dedicated places for people to walk, bike, or roll safely separated from vehicles by using context appropriate treatments, such as protected bike lanes or "complete street" corridors, especially on major truck routes. (Supports Key Move S3a)	✓			✓		
NEM6. Support programmatic activities and partnerships to reduce the size and weight of vehicles used for personal trips, transit, and urban goods movement. Heavier vehicles are a key factor in pedestrian fatalities. (Supports Key Move S3f)	✓		✓			
NEM7. Expand safety education for all travelers. Encourage safe driving near people walking, biking, and scooting as well as yielding to people walking by people riding a bike and or scooter. (Supports Key Move S3h)	✓					
EQUITY KEY MOVES						
Center the voices of communities of color and underrepresented groups in planning and decision-making processes (TJ1)						
NEM8. Implement the Transportation Equity Framework (TEF) to grow transparency, accountability, and shared power when making transportation decisions with community members. (Supports Key Move TJ1a)		✓				
NEM9. Feature community voices in planning documents. (Supports Key Move TJ1b)		✓				
NEM10. Continue to build and maintain relationships with vulnerable communities and underrepresented groups. (Supports Key Move TJ1c and TEF 29.1, 41.6)		✓				

New and Emerging Mobility: Delivering the Key Moves

		Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
NEM11.	Meet early and often to provide opportunities to influence projects during the initial phases of the development process. This includes efforts to co-create and consult with communities on new and emerging mobility policies or programs. (Supports Key Move TJ1d and TEF 3.4)		✓		✓	✓	
NEM12.	Build trust and capacity within organizations that prioritize our vulnerable communities and advocate to improve conditions for people who walk, bike, and roll. Learn from leaders active in these spaces. (Supports Key Move TJ1e and TEF 31.4)		✓				
NEM13.	Normalize the practice of making decisions about policies and right-of-way allocations with input from vulnerable communities. (Supports Key Move TJ1f and TEF 19.1, 25.4)		✓				
NEM14.	Support the transportation-related needs of local businesses owned by vulnerable communities and their commuting employees. Provide accessible and culturally relevant information about SDOT services. (Supports Key Move TJ1h and TEF 17.1, 21.2, 16.1)		✓		✓	✓	
NEM15.	Compensate community partners for their valuable work to connect and communicate with their networks and uplift community-driven initiatives. (Supports Key Move TJ1i and TEF 1.1, 13.4, 31.4, 37.1)		✓				
Address inequities in the transportation system by prioritizing investments for impacted communities (TJ2)							
NEM16.	Engage regularly with local businesses owned by our vulnerable communities to hear their concerns around NEM impacts and co-create transportation, public space, and permitting solutions. (Supports Key Move TJ2d and TEF 14.3 and 15.2)		✓			✓	
NEM17.	Identify actions to address inequities experienced by vulnerable community members who walk, bike, and roll, and provide capacity-building support to BIPOC-led organizations that focus on increasing active transportation. Enhance access to NEM options and establish safe, supportive infrastructure in neighborhoods historically underserved by the City, specifically areas with a high population of BIPOC. (Supports Key Moves TJ2e and TEF 31.4)		✓		✓	✓	
NEM18.	Implement improvements to make traveling in Seattle more accessible for everyone, such as curb ramps, accessible pedestrian signals, and guidelines to support accessible NEM technologies. (Supports Key Move TJ2h)	✓	✓		✓	✓	
NEM19.	Conduct and implement racial equity assessments at the program level. (Supports Key Move TJ2j)		✓				
Remove cost as a barrier so everyone can take the trips they need to make (TJ3)							
NEM20.	When a capital project is underway in a community, incorporate supplemental programs to help community members transition to sustainable travel options like walking, biking, and taking transit. For example, explore partnering with micromobility operators to offer discounts to encourage ridership. (Supports Key Move TJ3b)		✓	✓			
NEM21.	Enhance programs that provide free or reduced shared mobility fees for low-income households. (Supports Key Move TJ3c and TEF 32.1, 46.2, 46.3, 52.4)		✓		✓		
Support shifts toward non-punitive transportation enforcement approaches that reduce harm and enhance public safety on city streets (TJ4)							

New and Emerging Mobility: Delivering the Key Moves

	Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
NEM22. Prioritize street designs and infrastructure changes to create self-enforcing streets and curb regulations that encourage safe behaviors and reduce the need for enforcement. (Supports Key Move TJ4a)	✓	✓		✓	✓	
NEM23. Improve enforcement of existing regulations that support reliable mobility and safety, including those that keep bike lanes and pedestrian zones clear, deter improper use of transit-only lanes, and discourage speeding, especially in school zones. (Supports Key Move TJ4g)	✓	✓		✓	✓	

SUSTAINABILITY KEY MOVES

Improve neighborhood air quality and health outcomes by promoting clean, sustainable travel options (CA1)

	Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
NEM24. Expand beyond employer-based travel demand management programs to include residential and neighborhood-based strategies that encourage non-driving travel choices for all trips. (Supports Key Move CA1a)			✓			
NEM25. Expand public education campaigns to encourage bicycling, using e-mobility, walking, rolling, and taking transit. (Supports Key Move CA1b)	✓		✓			
NEM26. Develop and expand programs that incentivize sustainable alternatives to driving for large events and as a primary congestion mitigation tool during major construction projects. (Supports Key Move CA1c)			✓			
NEM27. Operate the transportation system–signals, markings, signage, and right-of-way allocation—to encourage sustainable travel choices (walking, biking, taking transit, and for moving goods). (Supports Key Move CA1g)	✓	✓	✓	✓	✓	

Foster neighborhood vitality and improved community health (CA3)

	Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
NEM28. Design for people-first streets to make sustainable travel choices the default and easy choice for neighborhood trips and to increase neighborhood business district activity. (Supports Key Move CA3d)	✓	✓	✓	✓	✓	
NEM29. Incentivize mobility options that don't use fossil fuels for transit, personal and urban goods delivery vehicles, and shared mobility (such as e-bikes or scooters. (Supports Key Move CA3e)			✓		✓	

Support the transition from fossil fuel to electric vehicles for personal, commercial, and delivery trips (CA4)

	Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
NEM30. Support the transition to electric vehicles for all segments of transportation, including personal mobility, goods movement and services, and fleets and transportation network companies, through equitable incentives, grant opportunities, partnerships, and pilot programming. (Supports Key Move CA4a and TEF 36.2)		✓	✓			✓
NEM31. Establish a comprehensive policy for EV charging in the right-of-way, outlining preferred locations, standards, and requirements. (Supports Key Move CA4b)			✓			✓
NEM32. Locate EV supportive infrastructure and charging facilities so they are safe, well-sited, and do not interfere with mobility or access for people traveling outside of personal vehicles. (Supports Key Move CA4e)	✓		✓	✓		
NEM33. Support electrification of shared mobility, ridehailing operations, and freight vehicles through programs that offer focused incentives, right-size vehicles, and			✓			✓

			STP Goals Supported		
Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization

install supportive infrastructure like chargers, parking, mobility lanes. (Supports Key Move CA4f)

MOBILITY & ECONOMIC VITALITY KEY MOVES

Create seamless travel connections (PG1)

ID	Description	Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
NEM34.	Prioritize efficient and sustainable movement of people within limited street space and reallocate street and curb space to maximize comfort, convenience, and directness for walking, biking, rolling and transit. (Supports Key Move PG1a and TEF 19.6, 43.4)	✓	✓	✓	✓	✓	✓
NEM35.	Improve the experience of making travel connections, especially between transit and travel options—such as personal and shared bikes and scooters—used for first-/last-mile trips. (Supports Key Move PG1b)	✓	✓	✓	✓	✓	
NEM36.	Coordinate with regional partners to simplify trip planning, booking, and mobility payment options across public and private mobility services. (Supports Key Move PG1d)				✓		✓
NEM37.	Provide equitable transportation access through direct subsidies and tailored mobility services for disadvantaged populations, including people with mobility impairment or low income. (Supports Key Move PG1e and TEF 32.1, 32.3)		✓		✓		
NEM38.	Work with transit agencies and private partners so real-time data can help travelers make informed decisions. (Supports Key Move PG1h)				✓		✓

Make walking, biking, and rolling more convenient and enjoyable travel choices, especially for short trips (PG2)

ID	Description	Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
NEM39.	Launch a citywide parking program for bicycles, scooters, and e-mobility devices, with a focus on community and mobility hubs and curbspace, and other locations. (Supports Key Move PG2e)				✓	✓	
NEM40.	Update private development bike parking guidelines and code requirements (for charging and storage) to support and grow the use of e-bikes, larger cargo bikes, and scooters. (Supports Key Move PG2f)			✓	✓		✓

Create world-class access to transit and make service more frequent and reliable (PG3)

ID	Description	Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
NEM41.	Improve transit access to underserved neighborhoods and populations through expansion of existing transit services, programs that reduce transit fares. Leverage emerging mobility technology options to provide first-/last-mile service to existing and future buses, light rail, and ferries. (Supports Key Move PG3g and TEF 35.1)		✓		✓		
NEM42.	Enhance existing and create new community and mobility hubs with connections to high-capacity transit services. (Supports Key Move PG3h)		✓	✓	✓	✓	
NEM43.	Prioritize low-carbon travel options through seamless, direct walking and rolling connections to community and mobility hubs. Support operations and infrastructure investments that provide a diversity of new and emerging mobility services at hub locations. (Supports Key Move PG3i)	✓	✓	✓	✓	✓	

Support access to jobs, freight movement, and growth in deliveries (PG4)

ID	Description	Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
NEM44.	Collaborate with private sector partners on pilots and programs that accelerate the shift of freight trips to more sustainable low- and zero emissions vehicles, such as			✓	✓	✓	✓

| | | STP Goals Supported | | | | | |
New and Emerging Mobility: **Delivering the Key Moves**		Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
	electric cargo bikes to replace a portion of last-mile deliveries made by larger vans and trucks in densely developed areas. (Supports Key Move PG4f)						
NEM45.	Pilot and expand use of technologies that can improve predictability and accessibility for vehicle loading/unloading. (Supports Key Move PG4g)				●		●
NEM46.	Explore programs and incentives that encourage rightsizing of freight vehicles for an urban environment. Work with impacted stakeholders to explore and pilot solutions such as small autonomous delivery robots or e-cargo bikes. (Supports Key Move PG4h)				●		●
NEM47.	Expand efforts to work with employers and property managers to provide sustainable transportation options, education, and incentives to promote sustainable travel options for shift workers, non-peak hour commuters, small business employees, and workers in MICs. (Supports Key Move PG4i)	●	●		●	●	
Manage curbspace to reflect city goals and priorities (PG5)							
NEM48.	Recognize that the curb supports all essential functions of the right-of-way (mobility, access for people, access for commerce, activation, greening, and storage) and develop decision frameworks to prioritize these functions based on local area and system needs. (Supports Key Move PG5a)				●	●	
NEM49.	Prioritize uses of the curb to address demands stemming from changes to more sustainable and efficient personal travel options and the evolving landscape of goods and service delivery over use as private car storage. (Supports Key Move PG5b)			●	●		
NEM50.	Develop strategies and new tools to accommodate more types of curb uses, including parking for bikes and other small devices, parking for shared micromobility, dedicated car share space, transit layover space, employer shuttle stops, and other curb uses that support low-emission travel options. (Supports Key Move PG5c)			●	●		
LIVABILITY KEY MOVES							
Boldly reallocate street space to prioritize people while preserving access for goods delivery and emergency response (PP1)							
NEM51.	Reallocate street space currently used for vehicle storage and general-purpose travel to prioritize access for people on our streets and support a variety of people-oriented uses, such as gathering, playing, walking, and biking in strategic locations. (Supports Key Move PP1a)					●	
NEM52.	Update Seattle's Right-of-Way Improvements Manual (*Streets Illustrated*) to implement actions and strategies outlined in this Plan. (Supports Key Move PP1d)	●	●	●	●	●	●
MAINTENANCE & MODERNIZATION KEY MOVES							
Reduce neighborhood disparities in the quality of streets, sidewalks, public spaces, and bridges (MM2)							
NEM53.	Conduct a racial equity assessment of the maintenance needs of existing assets in neighborhoods that score high on the city's Race and Social Equity Index. (Supports Key Move MM2a and TEF 19.3)		●				●

New and Emerging Mobility: Delivering the Key Moves	STP Goals Supported					
	Safety	Equity	Sustainability	Mobility & Economic Vitality	Livability	Maintenance & Modernization
NEM54. Focus resources for maintenance and improvements in neighborhoods that have been historically or are currently underserved. (Supports Key Move MM2b and TEF 19.4)		✓				✓
Ready city streets for new travel options and emerging trends and technologies (MM3)						
NEM55. Collect, monitor, and use data to inform changes to the transportation system. This includes data from NEM services and operators. (Supports Key Move MM3a)						✓
NEM56. Anticipate and leverage innovative transportation technologies so they are shaped to meet community values and goals, including safety, equity, affordability, and climate response. Work to guide engagement, develop policy, evaluate pilots, and collaborate with peer cities to respond to NEM technologies as they arise. (Supports Key Move MM3b)	✓	✓	✓	✓	✓	✓
NEM57. Proactively work with public, private, and academic sector partners to collaboratively develop transit and mobility solutions for the future. Maintain partnerships alongside a fair and flexible regulatory environment to nurture ideas, companies, jobs, and workforce training. (Supports Key Move MM3c)						✓
NEM58. Adapt streets for new and evolving forms of mobility devices such as commercial or private cargo bikes, e-scooters, personal delivery devices, low-speed electric vehicles, and others to create more travel options. (Supports Key Move MM3e and TEF 19.2)			✓	✓		✓
NEM59. Develop and maintain up-to-date asset data, including digital inventories of physical assets like curb space, load zones, and bike and scooter parking locations. Establish regulatory frameworks that include strong and clear data-sharing and storage requirements for private operators to deploy. (Supports Key Move MM3f)	✓	✓				✓
NEM60. Research and develop policies to manage the evolution toward connected and autonomous vehicles, recognizing that government and industry must partner to deliver their anticipated benefits safely. Work with legislators and regulators to foster a level playing field, positioning AV providers to offer transportation services that meet our safety, equity, and sustainability goals. (Supports Key Move MM3h)	✓	✓	✓			✓
NEM61. Explore ways to build trust with BIPOC communities and improve the accuracy of demographic and other data that inform transportation investments and decision-making. For instance, this could include respect for data sovereignty and alternative data collection approaches, such as an Indigenous research methodology that empowers community members to lead research, data analysis and interpretation. (Supports Key Move MM3i)	✓	✓				✓

SETTING THE CONTEXT

Seattle is a dynamic and ever-evolving city. We've seen dramatic changes in the types of travel options available for people to choose from, as well as when and where people want to travel. Additionally, there are increasing demands on the role streets play to support social, environmental, and economic health. We can't fully predict changing conditions (such as a global pandemic) that could disrupt the transportation system and all the functions it serves. As such, we will need to remain agile and prepared to continually adapt and respond to the evolving transportation needs of the city's residents, businesses, and visitors.

The STP provides a framework for how SDOT will navigate a changing transportation landscape over the next 20 years. This section describes the context we're operating in today, including significant opportunities, emerging trends, and challenges. It also includes a summary of major community engagement themes we heard that relate to New and Emerging Mobility. They were used to shape the actions we'll take to achieve our shared transportation vision. SDOT will continue to engage and co-create with community members as transportation system needs, preferences, and circumstances continue to evolve in the years to come.

Both technology and our transportation needs have evolved since we published the New Mobility Playbook[2]. The COVID-19 pandemic significantly impacted how and when people travel, with fewer workers making the daily commute during traditional rush hours and a dramatic increase in package and food delivery trips. Local, state, and national policy to combat climate change is becoming more proactive as the impacts of global warming become more common and more significant.

For more than a decade, Seattle has welcomed new technology into its transportation ecosystem in a systemic, regulated, and integrated manner, and encouraged innovation in transportation that supports its broader mobility goals. SDOT collaborates with service providers, such as Uber or Lime, on their programming and develops policies that empower and protect residents and visitors. However, there are limitations and continued ambiguity in regulatory authority with new and emerging mobility options.

We will continue to operate within a shifting legislative and regulatory environment. SDOT's goal is to understand, collaborate, and regulate new and emerging mobility to best serve the needs of communities while mitigating potential harm and prioritizing customer safety.

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[2] Learn more about the history of NEM in Seattle at: NewMobility_PlaybookFINAL.pdf (seattle.gov)

WHAT IS NEW AND EMERGING MOBILITY?

Shared Micromobility, with the right policies, offers flexible, low-cost mobility options that allow people to rent an electric bicycle or scooter for a quick errand, a trip to light rail, or a commute trip. Riders locate (via app or sight) and rent the nearest available device with their phone, ride where they want to go, and are required to leave it responsibly parked for the next person to ride.

Car Share is a practice where people subscribe to become members in an organization that owns a fleet of cars, which members can then use under the terms of their membership. Car share permits are only available to approved companies. Car share services can offer either fixed-location cars or free-floating cars, meaning they don't have designated parking spots. Car share gives users the temporary benefit of a vehicle for moving items or traveling longer distances without the storage and maintenance costs of private vehicle ownership. Car share may operate point-to-point (one-way) or round-trip.

Person riding a shared scooter

Microtransit, sometimes called **ridesharing**, is a flexible, on-demand transit service that uses smaller vehicles, such as shuttle buses or vans, within specific zones rather than fixed routes and stops. Microtransit is generally requested through an app or by phone with a limited wait time (usually 30 minutes or less) and can be door-to-door or curb-to-curb. Through real-time software, microtransit can dynamically change routes and ensure the most time-efficient service for riders in the zone while also optimizing the number of passengers.

Transportation Network Companies (TNCs), also known as **ridehailing services**, allow people to request a driver for hire through a website or smartphone app. Common examples include Uber and Lyft. Unlike taxicabs and for-hire vehicles, passengers are connected to drivers through an online dispatch application using a smartphone or tablet. TNCs can supplement fixed-route transit service by offering flexible pick-up and drop-off locations and 24-hour service.

Autonomous Vehicles (AVs) are vehicles equipped with hardware and software systems providing the capacity to perform specific driving functions without any intervention or supervision by a human operator. If deployed responsibly, AVs have the potential to revolutionize mobility and safety by expanding travel options for seniors and people with disabilities, as well as greatly reducing incidents associated with human factors.

Urban Air Mobility (UAM) refers to a new class of vehicles that are typically electric or hybrid and designed to reduce emissions and noise pollution. These vehicles often have vertical takeoff and landing (VTOL) capabilities and can be used for both autonomous and piloted operations for the transportation

of passengers and/or cargo. UAM includes efforts to deploy small, automated aircraft for the short-range transportation of goods or passengers within cities.

Urban freight delivery using cargo bikes

Urban Freight Innovation includes high-impact, low-cost solutions for businesses delivering goods in urban settings and cities trying to manage limited curb and parking space where delivery trucks, bikes, pedestrians, and cars all need to coexist[3]. As e-commerce continues to grow its share of the retail sector, cities across the country are looking for more efficient and climate friendly solutions for distributing urban freight such as grocery delivery, restaurant take-out, and parcel delivery.

Growth in e-commerce deliveries has led to increased pressure on curb space in our neighborhoods and business districts, especially where off-street parking and loading spaces are limited. Innovative solutions have emerged to address the changing delivery needs and demands curb space, including the use of smaller and more sustainable devices to transport urban goods and freight. One novel solution that is common overseas and gaining momentum in the U.S. is the use of e-cargo bikes.

E-cargo bikes are human operated devices with battery-powered pedal assist, with capacity to transport packages or other small goods in a front-mounted wagon or rear-hitched trailer.

Other solutions include the use of **Personal Delivery Devices (PDDs),** which are automated or remotely piloted devices that contain storage space for packages, food, and other delivery items, including sidewalk robots, automated delivery shuttles, and delivery lockers.

Vehicle Electrification (EVs) refers to vehicles powered by batteries and electric motors and produce few or zero tailpipe emissions. Electric vehicles typically rely on charging infrastructure to keep them powered and operable. Most electric vehicles today are personal cars, and the widespread adoption of other type of electric vehicles, such as trucks, heavy equipment or delivery vans, are expected to continue to grow as market availability, costs and battery and charging technology continues to improve.

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[3] Urban Freight Lab | Supply Chain Transportation and Logistics Center at the University of Washington

Other New and Emerging Mobility Concepts

Connected vehicle (CV) technologies present transformative opportunities for transport modes, enhancing safety and efficiency. CV and cellular vehicle-to-everything (C-V2X) technologies allow individual vehicles to communicate with each other digitally, as well as with infrastructure such as intersection signals and roadways. CV technologies use C-V2X communications to interact with the surrounding environment, such as other vehicles, people on bikes, pedestrians, signals, and road and curb infrastructure. CVs have specific requirements, including advanced safety protocols, infrastructure adaptability, and support for autonomous vehicles. This technology has the potential to lead to fewer collisions between vehicles and other modes. CV and C-V2X technologies would also increase the complexity of our transportation system and present security and safety concerns.

CVs have specific requirements, including advanced safety protocols, infrastructure adaptability, and support for autonomous vehicles. The integration of CV and C-V2X technologies into existing traffic systems demands substantial infrastructure investment. Safety outcomes for non-vehicle road users should not depend on beacons or other personal equipment for these technologies to work.

Security and privacy become more critical in the face of increased connectivity. Additionally, interoperability among different technologies is necessary for global standardization.

Data Governance, Cybersecurity, and Data Privacy. Effective transportation management is becoming more data-dependent to create and sustain optimal, user-friendly solutions. As early users of the Open Mobility Foundation's (OMF) mobility data specification (MDS), SDOT is well-prepared to handle data from new mobility technologies. Uniform software interfaces aid in sharing public data on real-time device availability and mobility program metrics. As previously mentioned, these tools can help unite systems, boost fair access opportunities and programs like mobility wallets, and lead to better decision-making.

New and emerging mobility is unique in that most often the technology is owned and operated in public spaces by private companies. Finding the overlap in public and private interests, partnering with non-traditional mobility providers (such as tech companies), and navigating roles, responsibilities, and requirements can prove challenging.

There are also potential cybersecurity and data privacy risks. These require data governance to address cyber-attack threats, data usage agreements, and aggregation methods that protect user data. By setting well-developed guidelines for data from the outset, we can provide appropriate oversight of private mobility operations, protect people living in and traveling through Seattle, and develop data-informed policies and programs.

Technology and Data Integration. New technologies offer convenience and a streamlined user experience. They make using mobility platforms and devices easier, such as those used to purchase a transit pass, which could help attract new transit riders and replace existing car trips. Historically, trip planning and payment across different providers (i.e., King County Metro for buses and Sound Transit for Link Light Rail) could be challenging or confusing for people who had to find, understand, and use various systems for a trip. Integrated systems are now much more common and can help lower the barrier to entry for transportation modes by combining information and services into a single platform.

Mobility as a service, or MaaS, is a concept to unify transportation trip planning, simplify payment methods, and provide multi-modal transportation options citywide. Using a seamless, integrated mobility system, people can plan and pay for a trip across various operators (such as bike to bus to scooter), allowing more shared, zero emission trips.

Open data standards and integration can also help enable implementation of more equitable policies and programs such as universal basic mobility programs and mobility wallets. These programs provide access to disadvantaged populations with enhanced mobility choices through direct incentives into a virtual "wallet" or card. Users can then access various mobility options, such as transit and shared micromobility, by using that wallet as their pass.

Technology integration can also allow gamification of travel choices and create incentives for taking transit or shared mobility. An example of this concept in practice already exists on a limited scale through the Transit GO Rewards App.[4] Developed through a partnership between Seattle and King County Metro Transit, the app allows people to pay for and earn points for transit and shared micromobility trips.

> **Spotlight: Metro TransitGO Rewards App**
>
> King County Metro offers riders the TransitGO Ticket mobile app, which enables people to purchase digital tickets for King County Metro Buses and Water Taxi, Sound Transit Light Rail and Sounder, Seattle Streetcar, and Kitsap Transit. The app offers a seamless and cashless method of transferring between transit services and includes a rewards program.
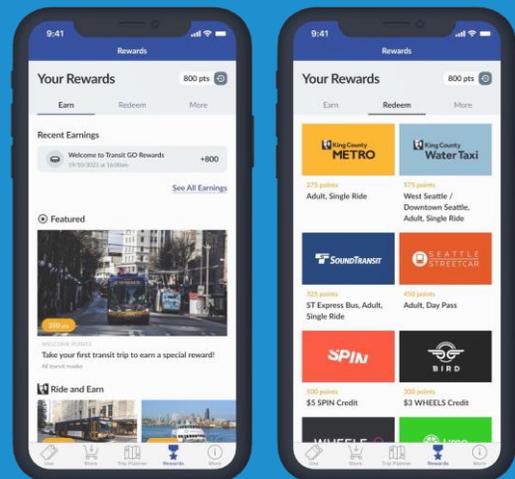>
>
>
> *Image Source: King County Metro*

Creating requirements around data integration and access at the onset, as we have sought to do with the Open Mobility Foundation, can help address challenges as new modes and technologies appear. Equity considerations must also be incorporated into technology integration to ensure those with

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[4] https://kingcounty.gov/depts/transportation/metro/fares-orca/transit-go-ticket/transit-go-rewards.aspx

limited access to technology, data, and banking are not left out or further harmed by the changing technology landscape.

Metro bus kiosk with bus route information and a bus pass card reader to "tap on"

As we integrate technology into our transportation system, there is a growing challenge of how to make services and devices accessible for people who have limited or no access to personal phones and/or bank accounts. Enabling access to these services for under or unbanked people[5] and those without a mobile data package or a smartphone is essential to improve access to transit and increased mobility.

This challenge can be addressed by providing low income and equity area micromobility programs while concurrently expanding and introducing programs to subsidize service and eliminate barriers such as security deposit holds, the need for electronic payment, or a smartphone. These considerations should address the need to create access solutions, such as through kiosks, call-centers, cash options, and mobility wallets.

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[5] An "unbanked" person is someone that does not have a checking or savings account with an insured (FDIC) institution. The term "underbanked" means that the household had a checking or savings account with FDIC insured institution, but regularly used alternative financial services (AFS). Source: Library of Congress.

OPPORTUNITIES, EMERGING TRENDS, AND CHALLENGES

This section discusses opportunities, challenges, and emerging trends that we need to understand and respond to as part of the STP new and emerging mobility strategy. While new and emerging mobility has the potential to significantly improve mobility and access throughout the city, it also has the potential to exacerbate existing inequities. We must be informed and intentional about adopting and incorporating new technologies to ensure that we maximize benefits and mitigate negative externalities.

Seattle is an incubator of innovation, but we remain grounded in our collective values. Our commitment to equity, racial, and social justice remains steadfast. We recognize the misguided decisions and plans of the past, especially in transportation policy and infrastructure, that amplified challenges for our most vulnerable neighbors. As we integrate new transportation technologies, we endeavor to mold them to serve all our citizens more effectively. In the evolution of our transportation system, our guiding principle is to ensure that new and emerging mobilities prioritize people first.

New technology is transforming transportation systems in cities across the country. There are new vehicles on the streets, new services, and new ways to travel. These innovations could lead to safer, more vibrant cities, but they could also disrupt existing services, reduce options, increase prices, and upend current business models. They could supplement public transit or compete with our investments in buses, streetcars, and light rail.

We need to accommodate new technologies while also ensuring that innovations benefit the people living and working in our city. Cities will need new infrastructure and new policies and rules to manage the rapidly changing transportation system. Some jobs may change dramatically or go away altogether, but there are also new opportunities, new skills to learn, and new industries about to emerge.

A person booking a carshare service with a bike on top of the car

Opportunities and Emerging Trends

We can influence NEM deployments to align with climate, equity, safety, and affordability goals through intentional policies and regulatory frameworks.

Shared Micromobility and private e-micromobility is on the rise with an average of over 10,000 daily trips as more people adopt e-bikes and scooters as a quick and convenient travel mode.

- Offers convenient, flexible, and efficient travel options for short trips in urban areas
- Fills gaps in first-and-last-mile connectivity to transit hubs
- Can reduce traffic congestion and lower urban greenhouse gas emissions
- Usage data can inform city planning and development of bike-friendly infrastructure
- Provides a low-impact form of small goods delivery (i.e., food, groceries)

Carshare

- Can reduce personal car ownership, making transportation more accessible and practical in urban areas
- Electrification of car share fleets contributes to reducing emissions
- Reduces financial and space-related burdens of car ownership
- Car sharing could be implemented through partnerships with nonprofit organizations, such as cooperative or housing communities, to expand the reach and provide an additional transportation option, with sufficient funding and dedicated program staff

Microtransit/Ridesharing

- Potential to fill gap in traditional fixed route transit services and provide a more dynamic and efficient transit option
- Can be an effective solution in lower-density settings to connect people to main-line transit services
- Microtransit can operate on-demand or semi-fixed routes, offering more direct and efficient travel options compared to conventional public transit.

TNC/Ridehailing

- On-demand transportation for those without access to personal vehicles or adequate public transit
- Income opportunities for drivers
- Complement public transit systems

Autonomous Vehicles (AVs). Automation can be applied to several other NEM concepts that— when combined and implemented responsibly in alignment with our STP values— present a range of potential opportunities and emerging trends.

- Could improve traffic flow and reduce congestion, especially for freight and goods movement by reducing delivery operating costs and delivery times. Paired with electrification, could help reduce transportation emissions.

- May offer independence and supplemental mobility for people with disabilities, seniors, youth, and other non-drivers by eliminating the need for a driver.

- Potential to reduce number and severity of collisions. Deployed responsibly, automated safety features (i.e., pedestrian detection or emergency braking), or fully eliminating need for a human driver can reduce collisions associated with human driving behaviors.

- Potential to support and complement fixed-route transit service by providing cost effective automated microtransit or neighborhood circulator connections that can serve lower-density areas without existing transit networks, increase first-and-last-mile connections, or improve efficiency on high volume transit routes.

- If affordable for people with a range of incomes to access, AVs could reduce reliance on personal vehicle ownership and associated operating costs and storage needs.

- If industry claims are accurate, and if we can implement AVs with equity, climate, and mode share goals in mind, AVs hold the potential to improve traffic flow and reduce congestion, especially for freight and goods movement.

Urban Air Mobility (UAM) has become an emerging option to transport more people and goods within the city based on recent noise reduction and automation advances.

- Within low-altitude spaces, UAM could be a possible zero-emissions solution to reduce surface-level congestion or to improve access to goods for people living in hard-to-serve or isolated communities.

- Presents the opportunity to reduce roadway congestion and VMT.

E-Cargo Bikes and other Personal Delivery Devices (PDDs) offer an opportunity to introduce more sustainable and right-sized methods of **urban freight** transport and deliveries.

- Increasing cargo bike capacity within the city could significantly reduce VMT and greenhouse gas emissions (GHG), as well as traffic congestion caused by circling, double parking, and competition for load zone use.

- PDDs reduce demand for limited curbspace and reduce emissions by enabling a transition to electric alternatives.

- Personal delivery devices (PDDs) can also play a role in addressing competing curbside needs and making progress on our emission goals. PDDs do not require the same curbside space as traditional urban goods delivery vehicles and help reduce emission levels by replacing gas-powered methods for electric delivery methods.

Electric Vehicles (EV) play a vital role in making progress toward a zero-emissions transportation network, especially if balanced with goals to shift a greater share of trips to other sustainable options like walking, biking, and transit.

Connected Vehicle (CV) technologies present transformative opportunities for transport modes, enhancing safety and efficiency, but increase the cost and complexity of the transportation system, including security and safety concerns, alongside expensive supportive infrastructure in things like sensors and detection.

Data Governance offers opportunities to standardize data formats across NEM operators to support more integrated and user-friendly trip planning and real-time data sharing for the public, as well as performance monitoring for various NEM pilots and operations for SDOT.

Mobility-as-a-Service (MaaS) platforms seek to integrate various forms of transportation and related services into a single application and single payment system.

- Can support sustainable, multimodal linked trips between different options (like walking, biking, shared mobility, and transit) and create opportunities for encouraging mode shift through gamification.

- Various technologies could streamline trip planning, booking and payment platforms that can help reduce barriers to accessing transit, especially with MaaS and real-time travel information made more readily available to riders.

Challenges

Across the NEM industry, public and private entities often have divergent goals and priorities that must be reconciled through collaboration and intentional policy and regulation.

Shared Micromobility
- Ensuring safe integration into urban traffic mix and compliance with regulations

- Providing equitable access across different demographic groups and neighborhoods

- Sustainability of operations, including maintenance and resource utilization.

- Need for infrastructure adaptation to safely accommodate increased use

Carshare
- Ensuring that car share services are affordable and accessible for diverse populations.

- Adapting urban infrastructure to support car share services, including parking zones and EV charging stations.

- Sustainability of operations, including maintenance and resource utilization.

Microtransit/Ridesharing

- Balancing the cost of operation with affordable pricing for users is crucial to ensure the long-term financial sustainability of microtransit services.

- Equitable Service Distribution

TNC/Ridehailing

- Contracting pay structure can create a cycle of debt and exposure for drivers

- Inability for city to regulate and guide opportunities

- Managing competition within the industry and with traditional taxi services

- Addressing concerns about the impact on traffic and the environment, such as deadhead mile

Autonomous Vehicles (AVs)

Achieving successful AV integration necessitates thoughtful consideration of various challenges and the active engagement of stakeholders at all levels. Regulatory guidelines for autonomous vehicles are still developing and remain ambiguous in some cases.

- Seattle's complex transportation system poses limitations for safely testing new AV technologies.

- Traffic congestion, vehicle miles traveled increases, and emissions could result from 'deadheading', or zero-occupancy vehicle trips, especially from non-low- or no-emissions vehicles.

- Competition with transit could divert support, funding, and trust from public transportation.

- Privacy, cybersecurity, liability concerns, and other related policies and regulatory frameworks continue to evolve.

- Unintended equity impacts need to be further explored, such as access for people without mobile devices or payment methods, safety and access for pedestrians and people with disabilities, and job losses due to automation.

- City and private industry priorities are not always aligned.

Urban Air Mobility (UAM)

While we don't have sole authority to regulate urban air mobility **,** many concerns related to security, nuisance, safety, and privacy remain unresolved by regulating agencies. UAMs have a high cost to operate and introduce further concerns about equitable access to UAM services.

E-Cargo Bikes and PDDs

The most significant challenge to cargo bike and personal delivery device (PDD) deployment is incorporating them into the existing fabric of our existing transportation network.

- Bike lanes are currently not designed for bicycles with large trailers or cargo, and loading zones are reserved for use by traditional commercial vehicles. To support wide-spread adoption, we'll

need to redesign existing bike facilities, loading zones and more to accommodate specific needs of delivery devices and bikes with cargo trailers.

- Enabling legislation and guidelines for safe and efficient e-cargo bike use in Seattle are also needed.

- PDDs are restricted in where they can operate and can introduce accessibility issues when they operate on a sidewalk.

- Size, use, storage, and locational of "hives" used by operators to store and deploy PDDs may present zoning challenges and conflicts with other curb use priorities. We'll need to carefully consider dispensers locations to best fit our communities and work with other departments to revise codes, as needed, to maximize accessibility and reduce impacts.

Vehicle Electrification (EVs)

To ensure that electric mobility maintains far reaching benefits to everyone, infrastructure and programs must address personal vehicles, goods delivery, city fleets, shared mobility, and the transition to zero-emissions transit. Obstacles to scaling electric mobility include:

- EVs can be cost-prohibitive, including the cost of charging infrastructure

- Trading gas-powered vehicles for electric ones isn't enough to achieve sustainability or safety goals

- Building out a reliable network of EV charging will require substantial investments in electrical infrastructure and right-of-way impacts to stay ahead of adoption

- As demand for electricity grows, the city must ensure the grid is reliable and built out to enable rapid adoption of emerging electric transportation technologies and vehicles

- EVs are often heavier and faster[6] than internal-combustion equivalents, which may lead to increased pavement maintenance costs or safety risks, especially to vulnerable users

- Accommodating EV charging in the ROW may conflict with higher-priority curb uses for non-vehicle users, like bike lanes or bus stops, or commercial and passenger loading

Connected Vehicle (CV) and Cellular Vehicle-to-Everything (C-V2X)

While technologies can increase safety and system efficiencies, integration of CV and C-V2X technologies into existing traffic systems demands substantial infrastructure investment. AV industry developers haven't signaled a need for CV and C-V2X technologies for AV vehicles to operate; testing and deployments have proceeded in areas without these technologies available.

Data governance

Data standards and protocols are broadly needed to address cyber-attack threats, data usage agreements, and aggregation methods that protect user data.

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[6] NTSB head warns of risks posed by heavy electric vehicles. NPR.

Mobility as a Service (MaaS)

MaaS platforms and standardized data requirements necessitates coordination across multiple public and private mobility operators, especially as emerging technologies are often owned and operated in public spaces by private companies. Technology could become a barrier to access for people who do not have or use a smartphone or may not have a bank account.

Transportation Equity

Due to private ownership and operation, SDOT is limited in influence for crucial aspects of NEM deployments, such as locations, payment options, and cost. If decisions are driven solely by market forces, without effective policies and management, new and emerging mobility has the potential to exacerbate existing equity problems.

COMMUNITY ENGAGEMENT

From May 2022 through November 2023, we conducted citywide public engagement as part of the Seattle Transportation Plan development process, using a variety of tools. During this process over 2,780 responses provided feedback specifically on topics related to new and emerging mobility. General themes related to new and emerging mobility include:

- **Encourage options**. Some respondents feel there is an overemphasis on electric vehicles (EVs); they question the ability of EVs to address safety, affordability, street and curb management, and other priorities; and they want to see the availability of and an emphasis on other options

- **Facilitate electrification. S**upport for the installation of more charging stations throughout the city to support individuals transitioning to electric vehicles, keeping in mind the concerns mentioned above

- **Responsible environmental stewardship**. Concern for EV viability given waste (e.g., spent batteries and vehicle manufacturing)

- **Support small-scale mobility needs**. Support for more neighborhood circulators and on-demand transit, especially in low-income neighborhoods (see following page for an example of a neighborhood circulator)

- **Support mobility for vulnerable populations**. Desire for micro-shuttle services for seniors and those with limited mobility, especially in low-income neighborhoods and to light rail stations

- **Manage the pace of deployment to promote safe operations and protocols**. For example, concerns that safely testing of new AV technology without a test driver in Seattle's complex urban environment can pose a risk to public safety until fully developed

- **Anticipate and mitigate unintended consequences from Automated Vehicles (AVs).** Widespread use of AVs in the future could increase vehicle-miles traveled and congestion and result in job displacement, liability issues, and the need for workforce retraining. Cybersecurity concerns, nascent regulatory frameworks, and a disconnect between City and private industry operators could also further complicate AV and other NEM technologies.

Key themes among respondents from BIPOC communities included:

- **Focus on the essentials**—sidewalks, frequent and convenient bus service, and safe crossings— was identified as more important than investing in electric vehicle infrastructure

- **Prioritize safety** – keeping people safe was often cited as a top priority

NEW AND EMERGING MOBILITY IN SEATTLE

New and emerging mobility contributes to local mobility in many ways and across many geographies. It can provide first-/last-mile connections to transit, replace driving trips, make loading and unloading goods at a curbside shared with large freight vehicles easier, and integrate new travel options in spaces shared with people walking, biking, and rolling.

Data generated by new and emerging mobility companies and services can also be a powerful tool for planning and dynamic management of the transportation system, enabling SDOT and other agencies to analyze where additional transit service may be needed, or where community and mobility hubs should be located. This data can also help the city decide where to site EV charging stations in the public right-of-way and plan where bicycle and e-mobility lanes are needed. Layering new and emerging mobility data with demographic, community assets, and equity priority area data can highlight gaps and potential opportunities for enhancing equitable mobility (such as new micromobility transit routes) and access.

Because most new and emerging mobility services are operated through private companies (not owned and operated by SDOT), clear policy guidelines and boundaries for their deployment (i.e., what physical space they can use and operate in within our right-of-way) are needed along with education and engagement to ensure they are meeting community needs.

Shared Micromobility

In Seattle, SDOT permits private operators to deploy a fixed number of scooters and bikes in the public right-of-way. Permits are contingent on compliance with regulations, including equity, parking, and data-sharing requirements. To be inclusive of people of all ages and abilities, participating vendors are encouraged to offer different kinds of devices, such as seated and standing scooter options and e-bikes.

Car Share

SDOT issues two types of car share permits to allow car share services to operate in the ROW in Seattle. Each permit type comes with different terms and fees that apply to operators, primarily addressing parking needs.

- **Free floating car share** allows permitted vehicles to park at any legal paid parking space in the City without paying at a pay station, to park without regard to time limits in on-street time-limited spaces, and to park in any restricted parking zone (RPZ) without regard to time limits in the zone which members use through a reservation system. Providers are allowed to operate within the city under a conditional permit, which includes data sharing and service area distribution requirements.

- **Designated Space car share** allows permitted vehicles to park in designated on-street or private parking members access through a reservation system.

Microtransit or Specialized Transit (Rideshare)

Seattle has coordinated and previously funded microtransit service with agency partners as a solution to reduce barriers to transit and improve access for people who rely on public transportation. For example, through our partnership with King County Metro, the *Via to Transit* pilot service enabled travelers to

request a ride to or from select transit stations. People who lived, worked, or went to school within the specified service areas used an app or called to book a ride on a Via microtransit vehicle to connect to buses and trains or a limited number of community hubs providing access to grocery stores, parks, libraries, healthcare, and more. Importantly, wheelchair-accessible vehicles were made available.

Due to the flexible and right-sized nature of microtransit services, on-demand transportation has become an increasingly promising solution to help close transit gaps in lower density areas, such as suburban and rural areas, where long distances and lower population densities can make the cost of operating fixed routes expensive or infeasible. Microtransit may also continue to provide a solution for people who can't drive, especially people with disabilities, older adults, and youth.

In Seattle and other cities across the country, microtransit services have been found to offer increased independence, access to essential needs and services, and reduced social isolation for these populations. As a complement to our main line transit system, microtransit can continue to play an important role in achieving an age-friendly transportation system that enables people to live without relying on a personal vehicle.

Transportation Network Companies (TNCs/(ridehailing)

In Washington, TNCs, or ridehailing services, are predominantly regulated at the state level. At the local level, the City of Seattle and King County collaborate in regulating TNCs—the county regulates drivers, and the city regulates vehicles. Seattle has established worker protections such as minimum compensation and driver deactivation rights and requires TNC operators to meet vehicle safety inspection standards. TNC companies are also required to submit quarterly electronic data reports for all requested trips in the city of Seattle. Seattle's Transportation Electrification Blueprint commits to create a path for TNC and car-share vehicles operating in Seattle to transition to zero-emission by 2030. The TNC permitting process is an important tool to support progress towards our electrification goal in the future.

Autonomous Vehicles (AVs)

Fully autonomous vehicles, capable of operation without any human involvement, will roll out as the technology is tested and improved, while highly automated vehicles currently operate around the region. Seattle's complex transportation system poses limitations for safely testing or deploying this technology without a test driver, as current autonomous systems struggle with the intricate conditions required for urban street operation. Regulatory frameworks also present challenges, with dissenting approaches and conflicting interests between private industry operators and long-term City needs and goals.

Our role in regulating AVs will be dependent on evolving state legislation. Today, most states have fully preempted cities from regulating AVs leaving all regulatory authority to state agencies. This approach has resulted in differing rules in each state and removes cities from creating policies to manage the AV transportation services in their jurisdiction.

In 2023, we partnered with the City of Bellevue on a collaborative Strategic Vision for Automated Vehicles[7] which explored the potential for AVs to improve urban transportation for people and goods movement. These technologies include, but are not limited to:

- **Microtransit/Specialized Transit** – Automated vans or shuttles designed to serve local transit needs

- **Mass Transit** – Automated transit vehicles

- **Shared Fleet Vehicles** – Shared highly automated vehicles, made available through carshare-like or ride-hail programs

- **Personal Delivery Devices (PDDs)** – small automated or remote piloted robots designed for short deliveries carrying food, packages, or other goods

- **Commercial Freight Vehicles –** large freight trucks primarily used for long-haul goods transport

Urban Air Mobility (UAM)

In Seattle, major retailers like Amazon have invested significant funding in developing air parcel delivery devices and have begun to deploy them on a limited scale in 2022 in California. Future innovations in urban air mobility are likely to include passenger transport, as numerous companies have proposed quieter electric, helicopter-like vehicles for short haul passenger movement. Private mobility providers like Uber and Blade already offer urban passenger air travel, such as a helicopter option for travel between JFK Airport and Manhattan.

While aerial mobility may not have the same potential impacts on right-of-way (ROW) use and allocation as other forms of new and emerging mobility, it remains crucially important for us to monitor its impact on people and urban goods movement.

UAM for urban goods delivery will likely be focused in remote and rural areas for initial deployment. Aerial passenger vehicles will be predominantly regulated by the Federal Aviation Administration and the Seattle Department of Construction and Inspections as it is unlikely that transport design will seek to use SDOT-managed right of way.

This framework may resemble existing regulations around heliports. Our current policy focus is on ground-based last mile delivery strategies as well as freight mobility.

Urban Freight: E-Cargo Bikes and Personal Delivery Devices (PDDs)

Growth in e-commerce deliveries and demand for parking and curbspace has sparked the need to explore innovative methods to deliver goods and manage the ROW. SDOT leverages existing on-street Commercial Vehicle Loading Zones (CVLZs), alleyways, and loading zones to meet this demand and work with our community to improve and implement new dedicated loading space. We also play a role in advancing bike facilities that can accommodate e-cargo bikes and integrating e-cargo bike parking and loading connections at community and mobility hubs.

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[7] FR1_Bellevue_Seattle_AVStrategicPlan_Feb23.pdf

We collaborate with e-cargo bike and PDD services and manufacturers to understand the unique needs of devices and find appropriate ways to deploy them efficiently and equitably on our streets. To support this work SDOT will need enabling legislation and program guidelines for safe and efficient e-cargo bike use in Seattle.

To support wide-spread adoption of PDDs and E-Cargo Bikes, we'll need to redesign existing bike facilities, loading zones and other aspects of the transportation system to accommodate the specific needs of different delivery devices and bicycles with large trailers for cargo. We can also activate our curbspace to increase the efficiency of cargo bike deliveries and send clear market signals to our private partners that we are serious about moving towards zero emission solutions.

SDOT regularly partners with other public and private institutions on research and development. In 2021 SDOT ran a limited neighborhood delivery hub pilot led by the University of Washington's Urban Freight Lab[8] that included urban freight delivery via cargo bike. The pilot found cargo bikes traveled up to 50% fewer miles per package than conventional delivery trucks. Similarly, we have and continue to work in partnership with the C40 Zero Emission Freight Project[9] and the Green and Healthy Streets Accelerator signatory cities to accelerate the spread of zero-emission vehicles and supportive infrastructure.

Vehicle Electrification

Electrification of trips previously taken in fossil fuel powered modes is critical to reducing emissions. Electric propulsion is increasingly common for vehicles of all shapes, sizes, and uses. In January 2023, 17.2% of all newly registered vehicles in the Seattle area were battery electric or plug in hybrid.[10] Additionally, King County Metro is committed to transitioning its fleet to zero-emissions by 2035 and purchased 40 new battery-electric buses in 2022 alone.

We are committed to supporting the installation of necessary EV infrastructure, working with public and private partners on programs to electrify commercial freight vehicles, supporting electrification of shared mobility and transit, and leading by example through an electrified and right-sized City fleet. We're also committed to working with our partners on programs that make ownership of electric mobility options beyond vehicles more affordable and accessible, especially to lower-income and historically underserved communities.

To support this work, we will need to continue working with the Office of Planning and Community Development (OPCD), the Office of Sustainability and the Environment (OSE), and Seattle City Light (SLC) to ensure coordinated land use and transportation policy that support the shift to electric vehicles. SDOT works closely with these departments to accelerate the shift to electric and zero-emission passenger and freight vehicles, across modes and throughout the city. These programs are guided by goals outlined in the Transportation Electrification Blueprint (2021).[11]

For example, SDOT is currently working with OSE and SCL on a pilot program to install Level 2 (240 volts) electric vehicle chargers at curbside locations throughout Seattle for public use. The program aims to

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[8] The University of Washington's Urban Freight Lab (UFL), housed within the UW's Supply Chain Transportation and Logistics Center, brings together private industry with City transportation officials to study, design, and test solutions around urban freight management.

[9] See the Curbside Management Element for additional information on the C40 Zero Emission Freight Project.

[10] https://www.axios.com/local/seattle/2023/04/20/electric-vehicles-seattle-registrations

[11] https://www.seattle.gov/documents/Departments/OSE/ClimateDocs/TE/TE%20Blueprint%20-%20March%202021.pdf

accelerate the adoption of electric vehicles, micromobility, and transit, and provide additional charging options for EV owners who do not have off-street parking or private charging availability.

We are working with our partners to install EV charging equipment in the public right-of-way (ROW) to understand how this installation type benefits EV owners while determining the impacts to other users of the ROW. This information will guide SDOT's future policies on EV charging in the ROW as we explore alternative pathways including current city incentives for installing EV charging in off-street parking locations.

We will need to balance the transition to electric mobility with other zero-emissions transportation strategies, such as walking and biking. Simply trading gas-powered vehicles out for electric vehicles alone will not be enough to achieve our sustainability and transportation goals. Nor does such a transition advance critical safety goals.

In fact, the projects, programs, and initiatives that deliver multimodal improvements (including right-of-way allocation, advancement of non-driving mobility options, and supportive pricing signals) can result in nearly a 10x return on investment, according to our analysis in SDOT's Climate Change Response Framework (CCRF)[12]. When it comes to reducing emissions, the CCRF recognizes that vehicle electrification is just one piece of the puzzle, alongside strategies that make it easier to walk, bike and take transit.

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[12] SDOT's Climate Change Response Framework describes strategies needed to reduce emissions in a way that improves safety, leads to better health outcomes, promotes a thriving local economy, and delivers climate justice.

SEATTLE'S CLEAN TRANSPORTATION ELECTRIFICATION BLUEPRINT(2021)—2030 GOALS

100 Percent of Shared Mobility Is Zero Emissions
As shared mobility services like bikes, scooters, taxis, Uber, Lyft, carshare services and others continue to expand in Seattle, the city will ensure those options will be electric and emissions free.

90 Percent of All Personal Trips Are Zero Emission
By 2030, 9 out of 10 trips must be walking, biking, electric transit or in an electric vehicle (or avoided all together). This will require transformational infrastructure investments for expanded equitable transit service, comprehensive bike lanes, ADA-compliant sidewalks, and EV charging. It will also require city actions to facilitate large-scale behavior change and policies that lead to increased density for better connected neighborhoods. Supportive State and Federal level policies, funding, and road-pricing initiatives are required to encourage mode shift, grow EV adoption, and eventually phase out internal combustion engines completely.

30 Percent of Goods Delivery Is Zero Emissions
Goods movement is a growing cause of congestion and emissions on our roads, as more and more of the goods we buy and the food we eat are purchased online. This goal is aimed to spur the transition of private fleets to EVs and support market transformation in freight and goods delivery over the next 10 years.

100 Percent of City Fleet is Fossil-Fuel Free (Executive Order 2018-02)
Continuing to lead by example, Seattle will operate a large municipal fleet with zero fossil fuels by 2030. This includes rapid fleet electrification and use of biofuels like sustainable biodiesel and renewable diesel/gasoline for any vehicles that may not have commercialized electric options by that time, such as specialized medium and heavy-duty vehicles or emergency response equipment.

One or More 'Green & Healthy Streets' in Seattle
(C40 Fossil Fuel Free Streets declaration, 2017)
Seattle is a member of C40 Cities, a global network confronting climate change, and has signed a declaration that a major area of our city will have zero emissions from transportation including streets or blocks that restrict cars and promote walking, biking, electrified transit, and electric goods delivery and services.

Electrical Infrastructure Required to Stay Ahead of TE Adoption Is Installed and Operational
Infrastructure investments will enable a rapid transition to an electrified transportation system. Seattle City Light will work strategically to make sure the grid is reliable and built out in order to enable rapid adoption of emerging electric transportation technologies and vehicles.

Urban Air Mobility

While aerial mobility may not have the same potential impacts on right-of-way (ROW) use and allocation as other forms of new and emerging mobility, it remains crucially important to monitor its impact on people and urban goods movement. Major retailers like Amazon have invested significant funding in developing air parcel delivery devices and have begun to deploy them on a limited scale in 2022 in California. Urban air mobility presents the opportunity to reduce roadway congestion and VMT. It can also improve access to goods for people living in difficult to serve or isolated communities.

Future innovations in urban air mobility are likely to include passenger transport, as numerous companies have proposed quieter electric, helicopter-like vehicles for short haul passenger movement. Private mobility providers like Uber and Blade already offer urban passenger air travel, such as a helicopter option for travel between JFK Airport and Manhattan.

SDOT's current policy focus is on ground-based zero-emission last mile delivery strategies. SDOT does not have sole authority to regulate urban air mobility (UAM), and many concerns remain unresolve by regulating agencies related to security, nuisance, safety, and privacy in regard to right-of-way, airspace regulations, and drones—small, automated vehicles that hold small parcels or cameras. Aerial passenger vehicles will be predominantly regulated by the Federal Aviation Administration and the Seattle Department of Construction and Inspections as it is unlikely that transport design will seek to use SDOT-managed right of way. This framework may resemble existing regulations around heliports. UAM for urban goods delivery will likely be focused in remote and rural areas for initial deployment.

Transportation Equity

New and emerging mobility services have great potential to improve transportation equity, especially by providing mobility services in historically underinvested and underserved communities. New and emerging mobility technology like micromobility, shared fleet vehicles, and autonomous shuttles can connect new areas of the city into the larger public transit network and expand mobility options for people who do not own a personal vehicle or would like to save on transportation costs.

SDOT has a significant role and responsibility to make sure these new services and technologies to mitigate potential harm while maximizing benefits for people in Seattle, with a focus on addressing the needs of Black, Indigenous, and People of Color (BIPOC) and vulnerable communities through inclusive planning and education. This includes using the city's right-of-way, our permitting capabilities, and other services we control to ensure equitable roll-out of technology and services. This will require intentionally drafted policy and close collaboration with stakeholders and community.

A person sitting on a shared bike wearing a helmet with a basket of fresh vegetables, Image Source: SDOT

Embracing emerging mobility will require intentional planning and open lines of communication with all stakeholders. Our Transportation Equity Framework (TEF) serves as a roadmap for SDOT decision-

makers, employees, stakeholders, partners, and the greater community to collaboratively create an equitable transportation system.

The TEF highlights opportunities for advancing equity, many of which relate to new and emerging mobility. As a foundational principle, Seattle can rely on strategies outlined in the Transportation Equity Framework (TEF) to ensure that new and emerging mobility is serving people and aligns with city goals.

New and emerging mobility technologies can be especially challenging with transportation equity because they are usually owned and operated by private companies, and we are limited in how we can influence crucial aspects like deployment locations, payment options, and cost.

If decisions are driven solely by market forces, without effective policies and management, new and emerging mobility has the potential to exacerbate existing problems.

SPATIAL REQUIREMENTS AND OPERATIONAL CONSIDERATIONS

As we continue to adapt our street design to meet the changing needs of our community, we must also stay ahead of the constantly evolving mobility technologies and devices. We need to anticipate the requirements of shared, electrified, autonomous, and other innovative mobility options and evaluate the suitability of transportation modes in specific areas due to limited space. To ensure safe transportation, we should consider the "physics of mobility," such as direction, speed, and mass, when allocating lanes and sidewalks. These fundamental movement properties will help transportation modes operate safely and harmoniously, regardless of the mode typography. If a particular mode or technology is deemed unsuitable for a specific street or area, we can redirect it to alternative routes with similar movement characteristics on parallel streets to optimize mobility and safety. We will seek to develop and install infrastructure and maintain policies that are flexible and dynamic. Infrastructure considerations should include:

- Community and mobility hubs designed to accommodate and integrate new technologies (see the **STP Transit Element** for more information on community and mobility hubs)

- Bike lanes designed with large enough widths to accommodate commercial or private cargo bikes, e-scooters, and other active mobility devices (see the **STP Bicycle and E-Mobility Element** for more information)

- Slow lanes that allow human-powered or small motorized devices like bikes, scooters, e-bikes, PDDs, and more to travel in safe, dedicated right-of-way that is separated from larger and potentially more dangerous personal vehicles, transit, and freight (Supports TEF 19.2)

- Curb spaces designed and managed for loading and unloading of passengers and cargo by new and emerging urban goods delivery methods

- Parking areas for small devices such as personal and cargo delivery bikes, scooters, and PDDs

- Autonomous vehicle (AV) and TNC pickup and drop zones within digitized (with automated, real-time information) priority zones (i.e., near-transit hub) and parallel path drop zones

- Electric charging infrastructure for vehicles and mobility devices of all sizes, as well as other potential charging uses that create equity benefits such as allowing cell phone charging or internet access, where possible and needed (Supports TEF 36.2)

PROGRAMMATIC ACTIVITIES

SDOT engages in a variety of programmatic activities (that is, activities that relate to programs or are ongoing, rather than specific to a project) to complete the work outlined in this Element. This section highlights existing and new programs or initiatives. Over time, it's not uncommon for program groupings and organization to change. However, the program activities listed here provide helpful general information to describe the types of tools and methods SDOT will employ to manage the transportation system.

Affordable Shared Micromobility and Transit Integration

- Nurture the long-term sustainability of affordable integration of shared micromobility into multimodal transit trips at a cost proportional to the service's share of the total journey by actively allocating resources for programming through subsidies and funding of program management

- Collaborate with private sector mobility providers to establish economically viable subsidy programs (Supports TEF 35.2)

- Support the development of mobility hubs near high-traffic and transit-connected areas, with secure parking for micromobility, charging stations, and transit information, while considering the daylighting of intersections or placing hubs at high-risk intersections to reduce pedestrian and car conflict and maintaining clear sidewalks for those walking and rolling

Shared mobility devices parked near a bus stop, Image Source: SDOT

- Continue collaborating with transit agencies in incentivizing and promoting 1st/last mile connection to transit

- Collaborating with vendors to support on-demand last-mile deliveries

Permitting and Partnership

- Work with permitted vendors to improve equitable access, safety, and integration into the transit system

Subsidy Programs

- Develop subsidy programs or forge partnerships with private sector mobility providers to seamlessly integrate shared electric micromobility services into multimodal, transit trips at a cost proportionate to the share of the total trip, fostering accessibility and affordability (Supports TEF 35.2)

Community Outreach, Engagement and Education

- Build community feedback into permitting, regulations, guidance, partnerships, and solicitations for consultant services to reduce barriers to mobility access for those who need it most

- Increase engagement and education programs to familiarize people throughout the city with new and emerging mobility modes

- Set guidance and requirements for community engagement and education through partnerships with private companies and community groups. Employ best practices so that equity is integrated and considered in process and outcomes (Supports TEF 52.1)

Technology Integration for Trip Planning and Payment

- Continue to work with other regional mobility providers to ensure accessible and streamlined trip planning and fare payment systems

- Work with partners towards a Universal Basic Mobility solution

- Provide access to new and emerging mobility options through low and no cost programs, analog access for those with limited or no data or smart phone use, and cultural and multilingual options, etc.

Data Management

- Continue to modify how data is being collected, used, managed, and stored in alignment with the department's efforts to enable a more collaborative and inclusive data environment

- Develop and maintain up-to-date digital inventories of physical assets like curb space, load zones, bike and scooter parking locations, and traffic regulations that are compliant with uniform API standards like the Mobility Data Specification (MDS), Curb Data Specifications (CDS)

- , and the General Bikeshare Feed Specification (GBFS) Explore the utilization of Mobility Data Specifications (MDS) and real-time data to enhance the safety and efficiency of automated and shared mobility fleets, particularly in emergencies or construction zones

- Continue City participation in the Open Mobility Foundation (OMF) to ensure that data policies remain proactive and nimble in the face of constant chance

Vehicle Electrification

- Maintain cross-department collaboration with the Office of Planning and Community Development, the Office of Sustainability and the Environment, and Seattle City Light to coordinate land use and transportation policy and programs that supports the shift to electric vehicles

- Support the goal to transition TNC and carshare in Seattle to zero-emission by 2030

Automation

- Coordinate with regional partners in implementing appropriate recommended strategies and actions from Seattle and Bellevue's joint report: A Strategic Vision for Automated Vehicles

- Conduct a community-inclusive planning process to inform an approach to inform a federal, state, and local partners study, test, and piloting of automated technology in various modes.

- Research and develop policies that address the trend of continued evolution toward connected and autonomous vehicles (CAV), recognizing that CAVs have the potential to reduce crashes and provide some throughput benefits, which could lead to further lane reallocations.

Urban Air Mobility (UAM)

- Evaluate existing programs in other cities to understand program parameters, regulations, and equity considerations.

- Proactively consider policies for aerial mobility management that considers permitted use areas, allowable takeoff and landing sites, and traffic management at landing sites.

Pilot Management

- Oversee the procurement, launch, performance, and analysis of pilot programs for new and emerging mobility technology.

- Manage pilot data and ensure pilot performance aligns with city goals to reduce drive-alone mode share and improving mobility options, especially in underserved communities.

DEFINING SUCCESS

To track progress toward the STP goals, it is important to define what success looks like and how we'll measure it. This section defines the performance measures that have been identified as important indicators of our progress, as well as relevant Transportation Equity Framework (TEF) tactics that this Element supports. Performance measurement is how SDOT is held accountable and provides transparency for community members and decision makers to understand the impacts of the plan as it is implemented over time.

MEASURABLE OUTCOMES

This section outlines desired outcomes and recommended performance measures to monitor the implementation of the STP New and Emerging Mobility Element. They are part of a 3-tiered system of measures that includes:

- **Tier 1:** Overarching, and sometimes aspirational, outcome-based measures are identified in the STP implementation strategy (see Part I document). Generally, they are tracked at a citywide scale, and SDOT may not have primary control over their achievement. Examples include a reduction in vehicle-miles traveled and the percentage of household income dedicated to transportation.

- **Tier 2:** These measures are tracked in individual elements, as they are not as overarching as the measures in Tier 1. Typically measures in Tier 2 are a combination of outcome and output measures over which SDOT has a relatively large degree of control. These measures help SDOT track progress towards our Tier 1 goals. Examples include the percentage of fleet vehicles that have zero emissions and eliminating fatal and serious injury crashes involving NEM devices.

- **Tier 3:** Measures in the Tier 3 category are typically tracked by individual programs. SDOT has a high degree of control over these measures. They are used to track productivity and to help allocate resources. Examples may include the number of publicly available EV charging stations.

While all metrics in the table below will be tracked at a citywide scale, it will be important to track several metrics by demographics and/or geography so that SDOT can pivot as needed to meet our equity goals over the next 20 years. The table indicates which metrics will be tracked using the city's Race and Social Equity Index (RSEI) and/or race. RSEI combines information on race, ethnicity, and related demographics with data on socioeconomic and health disadvantages to identify census tracts where priority populations make up relatively large proportions of neighborhood residents.

The ability to successfully track performance measures is dependent on city staff capacity to collect and analyze data, the availability of relevant data, and/or the availability of resources to acquire data.

Table 2 includes the Tier 2 performance measures that will be tracked for the NEM Element.

Table 2. New and Emerging Mobility Performance Measures

Desired Outcome	Performance Measure (source)	Baseline	Target or Desired Trend	Track measure by RSEI and/or race	Related STP Goal
End traffic deaths and serious injuries on city streets	Number of fatal and serious injury crashes involving NEM devices (SPD collision report data)	1 (2022)	Zero fatalities or serious injuries by 2030	Yes	Safety Equity Sustainability Livability
Decrease the carbon footprint of in-City package delivery	Percent of fleet vehicles that are zero emissions (TBD)[13]	TBD	30% of goods delivery is zero emissions by 2030	No	Equity Sustainability Mobility & Economic Vitality Livability
Increase walking, rolling, biking, and transit mode share	Increase percent of bicycle and micromobility trips (SDOT)	3 % (2019)	8% by 2044	Yes	Safety Equity Sustainability Mobility & Economic Vitality Livability
Achieve the transition to electric vehicles	Percent of City fleet that is zero emissions (City of Seattle)	12.5% Zero Emissions (2023)	100% of City fleet is zero emissions by 2030	No	Equity Sustainability
Support the transition to electric vehicles	Percent of shared mobility that is zero emissions (SDOT)	All: 25% Micromobility: 100% Vehicles: 8% (2023)	100% of shared mobility is zero emissions by 2030	No	Equity Sustainability

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[13] Seattle DOT working to identify an appropriate dataset to calculate this baseline.

RELEVANT TEF TACTICS

TEF 19.2—Identify opportunities to repurpose some travel lanes for transit, biking, and smaller, lighter-weight vehicles and devices to create more travel options with the Seattle Transportation Plan approach, focusing on starting with the community's perspectives and needs

TEF 22.1—Analyze how movement of goods was impacted during COVID and whether there are specific ways we can maintain any benefits that were seen

TEF 31.1—Data storytelling on the comparative costs of cars, electric cars, other mobility options and transportation burdens and privileges; connecting this back with our climate, equity and safety goals and investment

TEF 33.2—Consider partnership opportunities with transportation network companies (TNCs) in providing transportation options for communities such as night-shift workers, university/college students and people living with disabilities

TEF 35.1—Invest in connections to transit that serve specific neighborhoods and/or target populations, both new and existing through grant opportunities

TEF 35.2—Assess first-/last-mile connections as part of the transit system; this is part of access to transit and its costs should not be measured separately; it should be a part of the package for any transit access improvement

TEF 36.2—Support transition to electric vehicles for all segments of transportation including personal mobility, goods movement, and services through targeted, equitable incentives and policy design. Implement related actions in the Transportation Electrification Blueprint

TEF 37.4—Identify and allocate funds to new or existing programs to address pedestrian safety concerns that are reflected from community data collection

TEF 43.4—Review SDOT policies, practices, standards, and funding allocation strategies to elevate/give priority to access and use of right-of-way (ROW) for people of all ages and abilities - people recreating, shopping, walking, rolling, riding bikes and transit

TEF 45.3—Identify spaces for equitable investment that can activate community, foster local economic development, and facilitate connections to transit

TEF 52.1—Create and implement a community-centered engagement approach for the development of the citywide integrated modal plan; rather than a top-down approach, focusing on starting with the community's perspectives and need

GLOSSARY

ADA: Americans with Disabilities Act

Adaptive bikes: Bicycles that are designed for people with disabilities or who cannot ride a traditional two-wheeled bicycle. Examples include trikes and hand cycles.

AV: Autonomous vehicles

Bicycle and Pedestrian Safety Analysis (BPSA): A data-driven study conducted by SDOT to understand where, how, and why pedestrian and bicycle crashes happen. The study used data of where crashes happened and pedestrian, cyclist, and vehicle volumes. The results are used to identify locations and prioritize safety investments with the goal of preventing future crashes.

BIPOC: BIPOC stands for Black, Indigenous, and all People of Color (BIPOC). It is a term to make visible the unique and specific experiences of racism and resilience that the Black/African Diaspora and Indigenous communities have faced in the structure of race within the United States. BIPOC is a term that both honors all people of color and creates opportunity to lift up the voices of those communities.

Bioswale: Vegetated ditches that capture and filter stormwater runoff.

C40: A global network of 96 cities working toward mitigating climate change and limiting global temperature rise by 1.5 degrees Celsius. As a member city, Seattle has committed to creating a low-emission neighborhood and making its bus fleet entirely emission-free by 2030.

C40 Green and Healthy Streets Accelerator: An initiative by C40 in partnership with mayors of signatory cities to transform cities into greener, healthier, and more prosperous places to live. To achieve this, signatory cities commit to work with partners to procure zero-emission buses from 2025 onward; and to ensure a major area of the city is zero-emission by 2030. The City of Seattle committed to the actions of the initiative in 2017.

C40 Zero Emission Freight Project: A collaboration between C40 cities to accelerate the adoption of zero-emission vehicles and goods delivery.

Café Streets: Streets with high levels of foot traffic and lots of restaurants, cafes, shops, bars, markets, museums, and/or tourist destinations. Vehicles are still permitted to use the street for local access, goods loading, business access, and emergency access, although the street is designed to keep speeds low and to give priority to pedestrians. They are a type of Shared Street.

Cellular vehicle-to-everything (C-V2X): Technology that enables vehicles to wirelessly connect and interact with their surroundings, such as other vehicles and 5G service. C-V2X has the potential to make travel safer by reducing crashes and conflicts between road users.

Climate Change Response Framework (CCRF): Released in 2023, the CCRF is SDOT's approach toward addressing climate change through a lens of reducing emissions from vehicle tailpipes. The CCRF primarily focuses on strategies that make it easier to walk, roll, bike and take transit, while also acknowledging the need to electrify personal and commercial vehicle trips at scale.

Community and Mobility Hubs: Community and mobility hubs are places of connection that bring together transportation options, community spaces, and travel information into a seamless, understandable, and on-demand travel experience. They are located with major transit facilities and places and may feature People Streets and Public Spaces (PSPS) elements.

Connected and autonomous vehicles (CAVs): Vehicles that can communicate with other vehicles (connected) and can drive without a human operator (autonomous).

Curb bulbs: Extensions of the sidewalk into the street that give pedestrians a shorter distance to cross.

Deployment: The launch of a new service, system, or technology.

Digital infrastructure: Technology and data that makes the foundation of transportation systems. For example, the software system for Metro Flex, or the programming for streetlights.

E-cargo bikes: Human-driven bikes with battery-powered pedal assist that can transport packages or other small goods in a front-mounted wagon or rear-hitched trailer.

E-commerce: The buying and selling of items via mobile apps and desktop computers. E-commerce businesses generally do not have a traditional storefront or walk-in business model, and goods are delivered to homes or businesses. Examples include Amazon or eBay

EV: Electric vehicles

First-/last-mile: The distance traveled at the beginning or end of a trip from transit to a final destination.

Fixed-route transit service: Traditional transit services like buses, light rail, and streetcars, which follow fixed paths with designated stops and schedules.

GHG: Greenhouse gas emissions.

Innovation: New ways of solving problems, often with new technology or programs that are creative and different than traditional practice.

Integration: In the context of new and emerging mobility, integration means the ability to plan, book, and pay for a trip across multiple platforms or modes without having to access different maps, schedules, or payment sites

Key moves: A series of strategies across the 6 STP core values that explain how the goals of the STP can be achieved. The Key Moves represent an integrated view of our complex transportation system, touching multiple elements.

Leading pedestrian intervals (LPIs): Walk signals at intersections that give pedestrians an additional 3-7 seconds to cross the street before vehicles.

Mobility: The ability to move around freely, enabled by a variety of vehicles or modes (bus, train, car, bike, etc.)

Multimodal: Using multiple modes or methods of travel. For example, a trip that includes a bike ride to a ferry to a bus, is a multi-modal trip.

Neighborhood Greenways: Neighborhood Greenways are safer, calmer neighborhood streets where people walking and biking are the priority. These streets work together with trails and protected bike lanes to provide connected routes to bring people to the places they want and need to go as part of Seattle's all ages and abilities bicycle network.

New mobility: New forms of transportation that use technology to improve efficiency, access, and experience. Examples of new mobility include shared bikes and scooters, rideshare apps like Uber and Lyft, and microtransit.

New Mobility Playbook: A plan adopted by SDOT in 2017 that provides policies and strategies for the City to adopt new transportation technologies and forms of mobility while prioritizing safety, equity, affordability, and sustainability.

On-demand: Services that respond to real-time requests, usually via mobile phone apps. Examples include Uber, Lyft, King County Metro's Metro Flex on-demand transit service, and others

Open Mobility Foundation (OMF) mobility data specification (MDS): The Open Mobility Foundation (OMF) is an open-source foundation that creates a governance structure around open-source mobility tools, beginning with a focus on the Mobility Data Specification (MDS). The MDS standardizes communication and data-sharing between cities and private mobility providers, such as e-scooter and bike share companies. It is intended to help better manage transportation in the public right of way.

OSE: Office of Sustainability and Environment

Permitting: A common process required for private companies to do business in public spaces, usually through established regulations, rules, requirements, reporting, and fees.

Personal delivery devices (PDDs): Small automated or remotely piloted robots designed for short deliveries carrying food, packages, or other goods.

Racial Equity Toolkit (RET): The Racial Equity Toolkit lays out a process and a set of questions to guide the development, implementation and evaluation of policies, initiatives, programs, and budget issues to address the impacts on racial equity.

Refuge islands: A paved median that protects pedestrians crossing a multi-lane street by providing a safe place to stop.

Right-of-way (ROW): A strip of land legally established for the primary purpose of public travel by pedestrians and vehicles. This is the land that is used for transportation, including roads, curbs, and sidewalks.

Road diet: Physical changes to the right-of-way that decrease vehicle volumes and speeds and reallocate space toward non-motorized modes, such as walking and biking. Examples include curb bump-outs, pedestrian refuge islands, narrowed lanes, street cafes, and street trees and landscaping.

Rolling: A form of travel that includes low-speed, wheeled mobility devices that use the pedestrian network. Examples include wheelchairs and strollers.

Safe System Approach: A framework for transportation planning to move toward a transportation network that is safe for everyone. The approach differs from traditional approaches to traffic safety by recognizing that humans will make mistakes and layers of protection must be built elsewhere into the system to address that. The approach is based on 6 principles:

- Death and serious injuries are unacceptable
- Humans make mistakes
- Humans are vulnerable
- Responsibility is shared
- Safety is proactive
- Redundancy is crucial

Goals are to create safer vehicles, speeds, roads, and people and provide post-crash care.

SCL: Seattle City Light

SDOT: Seattle Department of Transportation

Shared micromobility: Shared bikes and scooters that offer low-cost options for a short distance trip. Riders locate and rent available devices with their phone, ride it where they want to go, and leave it responsibly parked for the next person.

STP: Seattle Transportation Plan

Streets Illustrated: Seattle's Right-of-Way Improvements Manual; an online resource for property owners, developers, and architects involved with the design, permitting, and construction in the street right-of-way.

Transportation Electrification Blueprint: Adopted in 2021, the Transportation Electrification Blueprint is a framework for Seattle to reduce its transportation-related greenhouse gas emissions, with a primary focus on electrification of personal trips, shared mobility, goods delivery, travel by the city fleet, and the installation of electrical charging infrastructure.

Transportation Equity Framework (TEF): A roadmap for SDOT decision-makers, employees, stakeholders, partners, and the greater community to collaboratively create an equitable transportation system. The TEF addresses the disparities that exist within the transportation system due to institutional racism.

TNC: Transportation network company (e.g., Uber and Lyft)

Urban air mobility (UAM): Small, electric-powered, automated aircraft that are used to transport people or goods over short distances in cities.

Vision Zero: The City's goal to eliminate traffic deaths and serious injuries on city streets by 2030.

VMT: Vehicle-miles traveled

Vulnerable communities: Communities that have historically and currently been erased, intentionally excluded, and/or underinvested in by government institutions. SDOT's Transportation Equity Program and Transportation Equity Workgroup include:

- BIPOC communities
- Low-income communities
- Immigrant and refugee populations
- Native communities
- People living with disabilities
- LGBTQIA+ people
- People experiencing homelessness or housing insecurity

- Women and female-identifying populations
- Youth
- Aging adults
- Individuals who were formerly incarcerated
- Displaced and/or high-risk displacement neighborhoods

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