Emerging Mobility Evaluation Report

Evaluating Emerging Mobility Services and Technologies in San Francisco

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY

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Contents

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EXECUTIVE SUMMARY

New technologies are rapidly enabling innovations in transportation modes and services. These technologies include ride hailing services such as Lyft and Uber; microtransit services such as Chariot; courier network services such as Postmates; and autonomous vehicle technologies. In some cases, these new services complement San Francisco's policies and goals; in other cases, they conflict.

This report takes the first comprehensive look at the rapidly evolving emerging mobility sector in San Francisco. This report establishes an inventory of services operating in San Francisco, a set of Guiding Principles for emerging mobility services and technologies, and evaluates how these services and technologies align with the city's long-range transportation goals in relation to a healthy environment, livability, economic competitiveness, and world-class infrastructure, and through transportation lenses such as equity and affordability. This report provides a framework allowing the city to strike a balance between the emerging mobility sector and the city's Guiding Principles. Numerous recommended policies, pilots and research contained in this report will allow San Francisco to actively partner with emerging mobility providers to jointly improve our transportation system.

The results of this report will inform ConnectSF (the city's long-range transportation plan) and the next update of the San Francisco Transportation Plan (SFTP); provide a roadmap for guiding future Transportation Authority policies and initiatives in the emerging mobility sector; and, inform the SFMTA Emerging Mobility Strategy Report.

Defining Emerging Mobility

The following are the different service and technology types and examples of each.

TYPE OF SERVICE	EXAMPLES OF SERVICE PROVIDERS (BOLDED COMPANIES ARE ACTIVE IN SAN FRANCISCO)
Electric Standing Scooter Sharing	Bird, Lime, Spin *
Bike sharing	B-Cycle, Bluegogo, **Bay Area Bike Share/Ford GoBike (operated by Motivate), JUMP Bike (operated by Social Bicycles)**, Limebike, Scoot, Zagster
Moped Sharing	Renault's Twizy, **Scoot**, Toyota's iRoad
Car sharing	Car2go, **Getaround**, GIG, **Maven, Zipcar**
Ride sharing	Blablacar, **Scoop**, Tripda, **Waze Carpool**
Ride hailing	**Flywheel, Lyft, Uber,** Via
Microtransit	Bridj, **Chariot**, Leap, Night School, Via**
Courier Network Services	**Amazon's Flex, Caviar, FedEx, Good Eggs, Grubhub, Instacart, Postmates, Omni, UPS**
TYPE OF TECHNOLOGIES	EXAMPLES OF TECHNOLOGY PROVIDERS (BOLDED COMPANIES ARE ACTIVE IN SAN FRANCISCO)
Autonomous Vehicles	Cruise/GM, EasyMile, Ford, Lyft, Mercedes, Renault/Nissan, Navia, Nvidia, Tesla, Uber, Waymo, Zoox***
Robots + Drones	Amazon Prime Air, Marble, Starship

* Electric standing scooter sharing was not included in the evaluation because their service was introduced after the evaluation period

** Bridj, Leap and Night School are no longer in operation but are presented as examples of microtransit services

*** The full list of autonomous vehicle developers and their activities is currently unknown

GUIDING PRINCIPLES FOR EMERGING MOBILITY

In June 2017, the Transportation Authority and the SFMTA adopted ten Guiding Principles to serve as a framework for evaluating emerging mobility services and technologies, identifying 10 ways to meet city goals, and shape future areas of studies, policies, and programs. The vision is for emerging mobility services and technologies to align with the Guiding Principles on balance. However, not every Guiding Principle may be relevant to each service or technology type.

Safety

Emerging Mobility Services and Technologies must be consistent with the City and County of San Francisco's goal for achieving Vision Zero, reducing conflicts, and ensuring public safety and security.

Congestion

Emerging Mobility Services and Technologies must consider the effects on traffic congestion, including the resulting impacts on road safety, modal choices, emergency vehicle response time, transit performance, and reliability.

Transit

Emerging Mobility Services and Technologies must support and account for, rather than compete with, public transit and encourage use of high-occupancy modes.

Accountability

Emerging Mobility Services and Technologies providers must share relevant data so that the city and the public can effectively evaluate the services' benefits to and impacts on the transportation system, and determine whether the services reflect the goals of San Francisco.

Equitable Access

Emerging Mobility Services and Technologies must promote equitable access to services. All people, regardless of age, race, color, gender, sexual orientation and identity, national origin, religion, or any other protected category, should benefit from Emerging Mobility Services and Technologies, and groups who have historically lacked access to mobility benefits must be prioritized and should benefit most.

Labor

Emerging Mobility Services and Technologies must ensure fairness in pay and labor policies and practices. Emerging Mobility Services and Technologies should support San Francisco's local hire principles, promote equitable job training opportunities, and maximize procurement of goods and services from disadvantaged business enterprises.

Disabled Access

Emerging Mobility Services and Technologies must be inclusive of persons with disabilities. Those who require accessible vehicles, physical access points, services, and technologies are entitled to receive the same or comparable level of access as persons without disabilities.

Financial Impact

Emerging Mobility Services and Technologies must promote a positive financial impact on the city's infrastructure investments and delivery of publicly-provided transportation services.

Sustainability

Emerging Mobility Services and Technologies must support sustainability, including helping to meet the city's greenhouse gas (GHG) emissions reduction goals, promote use of all non-auto modes, and support efforts to increase the resiliency of the transportation system.

Collaboration

Emerging Mobility Services and Technology providers and the city must engage and collaborate with each other and the community to improve the city and its transportation system.

EVALUATING EMERGING MOBILITY

Using the adopted Guiding Principles for Emerging Mobility Services and Technologies, the Transportation Authority collaborated with the SFMTA, the emerging mobility industry, and community stakeholders to develop a series of evaluation criteria related to the ten Guiding Principles. That criteria included quantitative, outcome-based questions and policy and design features associated with the service and mobile application.

Evaluation results summary

1. Pilots and permits lead to better performance

Companies that have performed pilots with San Francisco public agencies have provided data and experience that has informed development of permit systems for those mobility types. The resulting permit systems for bike share, moped share, and microtransit have guided these mobility types to be more aligned with the Guiding Principles. There are opportunities to strengthen and harmonize the various permit programs. In addition, the City does not yet have a standardized process to proactively conduct pilots and incorporate innovative service types and new companies into the city's permitting and planning systems.

2. Inadequate data

The city does not have adequate data from enough emerging mobility companies to fully evaluate how well emerging mobility services are aligned with our Guiding Principles. Other researchers have produced important studies and findings about some emerging mobility services, but more traveler trip data and surveys are needed to characterize SF travel markets and individual traveler choices.

3. Opportunities for equitable access

Many emerging mobility services are available during late-night hours, on weekends, and/or in areas less well covered by public transit. This may provide opportunities to increase mobility for people with disabilities and increase access for people underserved by public transit.

4. Conflicts with public transit

San Francisco is a Transit-First city, but inadequate data means we do not have comprehensive information on how the emerging mobility sector is impacting transit ridership or our capital investments. While some services play a useful first/last-mile connection role, no emerging mobility companies have implemented design features or policies that our methodology identified as directly supportive of transit.

5. Impacts on safety

With the exception of Microtransit providers, operator training is inconsistent among emerging mobility services; almost no providers test operators following training. As a consequence, many services may exhibit roadway conflicts at curbs, in transit-priority lanes and on sidewalks - all of which may have significant impacts, particularly on vulnerable roadways users. Additionally, many emerging mobility services may contribute to distracted driving, which also decreases roadway safety.

6. Impacts on congestion

Because we have inadequate data, we do not fully understand how this sector is impacting travel mode choice behavior and congestion. We do know that many emerging mobility services rely on city rights-of-way and curbs. The city and the emerging mobility companies have not consistently coordinated to develop a robust curb management approach. Other researchers have found mixed impacts. For ride-hailing in particular, our TNCs Today study found that ride-hail vehicles in San Francisco are concentrated during times of day and neighborhoods of the city where traffic is most congested. A UC Davis study found that adoption of ride-hailing is likely to result in a net increase in vehicle miles traveled due to competition with public transit. Other studies have found that users of other mobility services chose to drive personal vehicles less frequently.

RECOMMENDATIONS

1. Partner

Proactively Partner

The SFMTA and the Transportation Authority should develop a framework for emerging mobility pilots that considers this study's evaluation results and encourages the city to proactively partner with companies to develop innovative solutions to address unmet city transportation needs. This framework should consider partnerships with transportation companies, employers, developers, and civic and neighborhood organizations.

2. Measure

Collect Emerging Mobility Data and Conduct Research

San Francisco public agencies should develop a data reporting and warehouse strategy to coordinate and consolidate existing data streams. Additionally, the city should employ a travel decision study to understand travel behavior. Such a study could be combined with a mobile application pilot that studies traveler choices and factors that inform them.

3. Regulate

Regulate and Recover Costs

The SFMTA should harmonize existing permit programs related to emerging mobility and create a framework for new services. The emerging mobility permit program should administer a permit fee that considers the full cost to plan for and regulate these services. Similarly, the city should seek regulatory and/or impact fees to mitigate effects these services have on safety, city resources and investments, as warranted by research studies. The permit must also require a standard set of data necessary to conduct ongoing evaluation of these services and include standards for equitable provision of services to underserved areas and to people with disabilities.

4. Bridge

Bridge Mobility and Access Gaps

The city should develop a user study to more clearly understand who uses emerging mobility services and for what purposes. This study should focus on equity gaps for low-income users and issues related to disabled access. The SFMTA and the Transportation Authority should also develop pilots to fill mobility and access gaps, such as for on-demand accessible services, late night transportation, school-related transportation, and in areas less well-covered by public transit.

5. Prioritize

Support and Prioritize Public Transit

The Transportation Authority and the SFMTA should uphold, strengthen, and enhance the Transit First Policy by supporting the expansion of transit-priority facilities and methods to make transit service more competitive. The Transportation Authority and the SFMTA should collaborate in developing a series of studies related to rights-of-way prioritization, vehicle miles traveled, financial impacts, and cost-recovery. To support these studies, the Transportation Authority and the SFMTA should conduct pilot programs that improve first and last mile connectivity to transit stations.

6. Enforce

Enforce Safe Streets

The SFMTA and the Police Department should increase enforcement of known emerging mobility conflict areas throughout the city and consider piloting enforcement blitzes to encourage safe operation. Similarly, they should seek legislative authority and implement a pilot that automates enforcement to promote safety, ensure more systematic adherence to traffic rules, and reduce enforcement costs. The SFMTA should also develop a Vision Zero study that studies collision rate trends and unsafe operations, determines whether there is a correlation with emerging mobility services, and identifies recommendations to reduce traffic fatalities.

7. Price

Manage Congestion at Curbs and on City Roadways

The SFMTA and the Transportation Authority should prioritize developing a curb management strategy that allocates and prices curb access appropriately. Such a strategy should be supported by curb management pilots with emerging mobility services and through a curb management prioritization study. The SFMTA should also develop and implement an emerging mobility streets design guide to reduce modal conflicts. Finally, based on current congestion levels on San Francisco roadways, San Francisco should move toward implementing a decongestion pricing and incentives system, whether through cordons or roadway user fees, to manage roadway congestion.