

Transportation Research Record

GOVERNING MICRO-MOBILITY: A NATIONWIDE ASSESSMENT OF ELECTRIC SCOOTER REGULATIONS

--Manuscript Draft--

Full Title:	GOVERNING MICRO-MOBILITY: A NATIONWIDE ASSESSMENT OF ELECTRIC SCOOTER REGULATIONS
Abstract:	The character of urban transportation and mobility is dramatically changing in part because of the explosive growth of shared-use modes (SUM) of travel such as ridesourcing bikesharing, carsharing and, more recently, electronic (e-)scooter-sharing. Although these new forms of mobility are freeing riders from mode- and ownership-constrained choices of travel, they are also creating tremendous uncertainty among planners and policymakers who are struggling to both understand and manage their potential impacts. Developing, adopting and enforcing regulations that aim to maximize transportation options while simultaneously ensuring public safety and the public good is proving to be a challenging task for municipal transportation planners given the rapid pace at which new systems of travel are evolving. Greater coordination between cities and the private and public sectors via the sharing of policy responses and transportation technology information will help facilitate collective learning and smoother transitions toward growing alternative transportation options in cities. Toward this end, the present paper draws from contemporary news articles, municipal and statewide policies and professional reports to provide timely guidance related to e-scooter sharing programs including information about vendors, vehicles, programs and novel regulatory responses.
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1 **GOVERNING MICRO-MOBILITY: A NATIONWIDE ASSESSMENT OF ELECTRIC**
2 **SCOOTER REGULATIONS**

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1 **ABSTRACT**

2 The character of urban transportation and mobility is dramatically changing in part because of
3 the explosive growth of shared-use modes (SUM) of travel such as ridesourcing bikesharing,
4 carsharing and, more recently, electronic (e-)scooter-sharing. Although these new forms of
5 mobility are freeing riders from mode- and ownership-constrained choices of travel, they are also
6 creating tremendous uncertainty among planners and policymakers who are struggling to both
7 understand and manage their potential impacts. Developing, adopting and enforcing regulations
8 that aim to maximize transportation options while simultaneously ensuring public safety and the
9 public good is proving to be a challenging task for municipal transportation planners given the
10 rapid pace at which new systems of travel are evolving. Greater coordination between cities and
11 the private and public sectors via the sharing of policy responses and transportation technology
12 information will help facilitate collective learning and smoother transitions toward growing
13 alternative transportation options in cities. Toward this end, the present paper draws from
14 contemporary news articles, municipal and statewide policies and professional reports to provide
15 timely guidance related to e-scooter sharing programs including information about vendors,
16 vehicles, programs and novel regulatory responses.

17
18 **Keywords:** electric scooter; shared-use mobility; transportation policy; United States

1 **REPORT MOTIVATION AND OBJECTIVES**

2 The character of urban transportation and mobility is dramatically changing in part because of
3 the explosive growth of shared-use modes (SUM) of travel such as ridesourcing (e.g., Uber,
4 Lyft) bikesharing (e.g., New York’s CitiBike and Chicago’s Divvy systems), carsharing (e.g.,
5 Car2Go and Turo) and, more recently, electronic (e-)scooter-sharing. Although these new forms
6 of mobility are freeing riders from mode- and ownership-constrained choices of travel, they are
7 also creating tremendous uncertainty among planners and policymakers who are struggling to
8 both understand and manage their potential impacts.

9
10 Developing, adopting and enforcing regulations that aim to maximize transportation options
11 while simultaneously ensuring public safety and the public good is proving to be a challenging
12 task for municipal transportation planners given the rapid pace at which new systems of travel
13 are evolving. Private transportation network companies (TNCs) are simply demanding public
14 action at a much faster rate than governmental procedures (e.g., committee schedules and open
15 meeting laws), elected officials and volunteer commissions conventionally support. This cross
16 sector ‘decision velocity’ imbalance is evident in the rather haphazard fashion that dockless
17 bikeshare systems have rolled out across the country over the past couple years; many of which
18 provide cautionary tales of the need for cities to have in place coherent strategies for managing
19 new forms of mobility (1).

20
21 Greater coordination between cities and the private and public sectors via the sharing of policy
22 responses and transportation technology information will help facilitate collective learning and
23 smoother transitions toward growing and sustaining alternative transportation options in cities.
24 The policy report *Dockless Bike: Regulation Breakdown*, for example, provides guidance on
25 operations & maintenance, social equity, fleet number, rebalancing, parking requirements and
26 safety for cities looking to responsibly adopt dockless bikeshare (2).

27
28 Similarly, this report provides timely policy guidance related to e-scooter sharing programs
29 including information about vendors, vehicle designs, programs and existing regulatory
30 responses. Part one of the paper summarizes fundamental characteristics—including location,
31 places of operation and funding status—of sixteen e-scooter vendors currently operating within
32 the United States. Part two outlines several categories of challenges cities are facing concerning
33 the regulation and implementation of e-scooter sharing and reasons why certain cities have gone
34 so far as to halt operations via cease and desist orders. Part three of the report summarizes
35 general policy approaches of select cities that have either passed or are in the process of writing
36 scooter regulations. Lastly, part four lays out the key dimensions of e-scooter regulations, while
37 referencing specific policies and programs.

38 **PART ONE: VENDOR CHARACTERISTICS AND VEHICLE SPECIFICATIONS**

39 E-scooters, the SUM mode of interest for this paper, share many characteristics with dockless
40 bikeshare in terms of technology, business model, pricing, stated missions and funding. For
41 example, both tend use smartphone applications to locate and unlock vehicles, both have a fixed
42 cost to initiate a ride with additional expenses charged on the basis of trip duration and both
43 emphasize health and the environment as some of their key socio-ecological benefits. Further,
44 both have largely been funded via venture capital investments. A few examples of large
45 investments by venture capitalists into e-scooter companies include the recent Uber/Jump
46 acquisition (3), the Lyft/Motivate partnership (4) and Lyft’s foray into e-scooters via their San

1 Francisco Scooter Permit proposal (5). These investments into companies that rely on
 2 widespread capital penetration into urban environments prove that shared micro-mobility
 3 (dockless bikes, e-bikes, e-scooters, etc.) is something municipalities should take seriously (6).
 4

5 Table 1 lists sixteen major e-scooter vendors and highlights key operational elements including
 6 locations of company headquarters, geographic availability or operations (in terms of US cities
 7 and university campuses) and funding (as well as valuation estimates). Like all private-public
 8 partnerships, when evaluating vendors, cities should consider both the sustainability of the
 9 company and their respective business models. As the table indicates, Jump/Uber have the
 10 greatest level of funding with \$27.1 billion in funding, followed by Lyft (\$4.9 billion), ofo (\$2.2
 11 billion) and Lime (\$382 million). However, narrow margins, high startup costs and scale issues
 12 might suggest a natural monopoly, which means that the current competitors are merely using
 13 short-term venture funding to gain first-mover advantage, which could potentially push
 14 latecomers from the market. If this occurs, it may be difficult to regulate such a monopoly
 15 without an agreement at the outset.
 16

17 **TABLE 1. Headquarters, Locations, Funding and Valuation by E-Scooter Vendor**

Vendor	Headquarters	Operations	Funding; Valuation
<i>Bird</i>	Venice, California	11 cities	\$265M; \$2B
<i>Lime</i>	San Mateo, California	59 cities; 18 campuses	\$382M
<i>Spin</i>	San Francisco, California	30 cities; 18 campuses	\$8M; \$43.2M
<i>Skip</i>	San Francisco, California	2 cities	\$31M; \$100M
<i>GOAT</i>	Austin, Texas	1 city	-
<i>ofo</i>	Beijing, China	25 cities	\$2.2B
<i>JUMP</i>	New York City, NY	5 cities	\$27.1B
<i>Hopr</i>	Miami Beach, FL	15 cities; 14 campuses	\$3.9B
<i>Scoot</i>	San Francisco, CA	1 city	\$4.5B
<i>Lyft</i>	San Francisco, CA	<i>Not yet launched</i>	\$4.9B
<i>Razor</i>	Cerritos, CA	<i>Not yet launched</i>	-
<i>Ridecell</i>	San Francisco, CA	<i>Not yet launched</i>	\$45.8B
<i>Uscooters</i>	El Paso, Texas	-	-

18 Data sources: (3, 7–10)
 19

20 It is also critical for public agencies to be aware of e-scooter design and performance in order to
 21 better understand how these vehicles will accommodate consumers and fit into the broader
 22 transportation ecology in terms of speed and allocation of public rights of way. Most vendors
 23 purchase their scooters from the Chinese company Xiaomi/Ninebot/Segway, a company also
 24 known for its low cost smartphones and wearables (11). Even though many of these scooters are
 25 purchased from the same manufacturer(s) and have roughly the same equipment, there are
 26 several characteristics that set these vehicles and vendors apart, such as motor wattage, max
 27 speed, mile range, license requirement, lock-to technology, handlebar adjustment, free helmet,
 28 gyroscope sensor (to monitor the axis), and accelerometer sensor (to record/measure a rider's
 29 speed). Cities should consider these differences when negotiating with potential e-scooter
 30 vendors given that the technologies offer different opportunities for data sharing and have
 31 varying implications with regard to consumer experience and safety.
 32
 33

1 **TABLE 2. Vehicle Specifications by E-Scooter Vendor**

Vendor	Motor Wattage	Max Speed (mph)	Mile Range (miles)	License	Free Helmet	Lock-To	Handle Bar Height	Gyro-scope	Acceler-ometer
<i>Bird</i>	250	15	15	Yes	Yes	No	No	No	No
<i>Lime</i>	250	18	35	Yes	Yes	No	No	-	-
<i>Spin</i>	250	15	19	Yes	-	No	No	No	No
<i>Skip</i>	350	18	30	No	No	Yes	Yes	Yes	Yes
<i>GOAT</i>	-	-	-	No	Yes	No	No	No	No
<i>Ofo</i>	250	14.5	18.6	-	No	No	No	No	No
<i>JUMP</i>	350	-	-	-	No	No	No	Yes	Yes
<i>Hopr</i>	300	15	12	-	No	Yes	No	No	No
<i>Scoot</i>	350	15	-	-	Yes	Yes	Yes	No	No
<i>Lyft</i>	250	15.5	18	-	No	No	No	Yes	Yes
<i>Razor</i>	-	-	-	-	No	No	No	No	No
<i>Ridecell</i>	-	-	-	-	No	No	No	No	No
<i>Uscooters</i>	350	18	-	-	-	No	Yes	No	No

2 Data sources: (3, 7–10)

3 **PART TWO: IMPLEMENTATION CHALLENGES**

4 Cities are tasked with examining numerous regulatory challenges when considering whether to
 5 allow e-scooters to operate within their jurisdictions. For example, it is important to ask: Which
 6 scooter company best aligns with the mission and values of the community? 2) Will e-scooters
 7 actually translate into greater environmental performance? 3) How can e-scooters help make
 8 critical connections to existing modes, such as improving first- and last-mile connections with
 9 public transit? 4) To what extent will e-scooters be equitably distributed throughout the city? 5)
 10 Will the program provide opportunities for community economic development? And lastly, 6)
 11 what are the safety standards for riders and how does the company educate customers and
 12 emphasize safe riding?

13
 14 Cities will also need to consider negative externalities that are likely to arise from the new
 15 transportation mode. Recent reporting on e-scooters has been mixed with stories of: scooters
 16 being knocked over or crowding the sidewalk (12); users riding two or more people on a single
 17 scooter (13); young riders riding scooters without licenses (14); users riding on the sidewalk
 18 (15); e-scooter and vehicle and bicycle collisions (16); riders running out of battery power prior
 19 to arriving at their desired destination (17); people hotwiring and otherwise damaging the
 20 scooters (18). It is also important for both vendors and municipalities to inform customers of the
 21 liability they assume when they ride an e-scooter. Most companies assume that riders are solely
 22 responsible for any damage to the vehicle beyond simple wear and tear. Given that the
 23 replacement cost for an e-scooter ranges from \$500 to \$1,500 (19), participation comes with
 24 considerable financial risk to the rider. These and many other issues may be challenging to
 25 regulate, but cities should at least consider them when drafting scooter legislation.

26
 27 **Cease and desist**

28 Because of these problems and more, San Francisco, Nashville, Denver, Scottsdale, and
 29 Charlotte among other cities, have written cease and desist letters to scooter vendors operating in
 30 their respective cities. The basis for these letters differs from city to city. In some cases, riders

1 were not obeying local laws while in other cases, vendors were unequipped to solve rebalancing
2 and parking issues. Illegal launches due to a lack of up-to-date legislation, however, was the
3 most common reason. The reasoning behind select cities' decisions to discontinue operations is
4 briefly summarized below.

5
6 San Francisco, CA

7 E-scooters launched in San Francisco in March 2018, but by April 2018 vendors received cease
8 and desist letters due to the city receiving 1,800 complaints of e-scooters blocking sidewalks and
9 riders illegally riding on the sidewalk and bumping into pedestrians. 500 scooters were collected
10 by the Department of Public Works before San Francisco developed a pilot program, which was
11 slated to start in July 2018 (20).

12
13 Nashville, TN

14 The City of Nashville warned the e-scooter company Bird to remove scooters within 15 days due
15 to scooters obstructing sidewalks. Nashville officials also stated that they didn't have preemptive
16 legislation in place to allow scooter vendors to operate at all (21).

17
18 Denver, CO

19 Denver ordered Lime and Bird to remove their scooters immediately due to a failure by vendors
20 to coordinate with the city prior to dropping off scooters in their jurisdictions as well as receipt
21 of rider complaints about uncharged batteries and close calls. Vendors broke local laws by
22 placing their products on city sidewalks when Denver law specifically states you are "not
23 allowed to store goods, wares or merchandise in public" (22). In addition, riders were not
24 following local laws. Denver's law states that scooters are not allowed to operate on the
25 roadway, except to cross the street at an intersection, and they are not allowed in bike lanes (23).

26
27 Scottsdale, AZ

28 In Scottsdale, Bird was accused of breaking the law by allowing its customers to park on
29 sidewalks and to operate the scooters on streets where the speed limit is more than 25 mph. Bird
30 had initially met with city officials and had agreed to comply with city laws. The city had
31 allowed the company to operate in Scottsdale as long as they followed state and city ordinances.
32 A spokesperson from Bird said the company thought it was operating lawfully under existing
33 regulations, but the city thought otherwise (24).

34
35 Charlotte, NC

36 The City of Charlotte stated Lime's electric scooter program was shut down because it
37 had "not been approved by the city" after only one day of operation (25). The city has since
38 amended their dockless ordinance to include e-scooters while specifically capping the number of
39 e-scooters at a minimum of 50 and maximum of 300.

40
41 Honolulu, HI

42 Honolulu outlawed e-scooters and had them confiscated by police, claiming e-scooters were
43 classified as mopeds (26). Closer inspection of Hawaii's moped law reveals that a moped must
44 have a "seat or saddle for the driver" and that "no person shall drive a moped except while sitting
45 astride the seat, facing forward, with one leg on each side of the moped." These requirements are
46 clearly not applicable to e- scooters because e-scooter have no seat and riders must stand at all

1 times (27). The penalties in Honolulu are also very steep with up to \$1,000 fine and up to 30
2 days in jail (28). According to Donna Leong, Department of Corporation Counsel, the penalties
3 could be issued twice, to both the rider and the vendor.

4
5 Two currently operating scooter companies that have yet to be issued any cease and desist letters
6 are Skip (formerly Waybots) and GOAT. Skip, GOAT, and now Spin, all say they plan to work
7 with cities prior to launching, as opposed to launching first and then asking for forgiveness later
8 (26). This new approach promises to steer vendors in the right direction and put them in the good
9 graces of municipalities while cities can simultaneously adapt their legal framework to
10 accommodate the new mode.

11 **PART THREE: POLICY APPROACHES**

12 Within a relatively short period of time, cities and states have employed disparate approaches for
13 experimenting with and regulating e-scooters in their jurisdictions. These include developing:
14 statewide legislation; combining dockless bike & e-scooter pilot programs; separating dockless
15 bike and e-scooter pilot programs; and amending dockless bike pilot programs. How government
16 officials decide to regulate e- scooters depends on the city’s specific needs and concerns. The
17 examples outlined below cover a variety of approaches and the reasons why different
18 specifications were considered.

19 20 **California (Statewide E-scooter Legislation)**

21 The California legislature introduced statewide e-scooter legislation A.B. 2989. This bill would
22 closely align e-scooters with current laws for e-bikes. Main takeaways from the bill include: 1) it
23 defines e-scooters as a stand-up scooter; 2) it creates a new category of vehicle with an allowed
24 top speed of 20 mph (as opposed to the previous allowed speed of 15 mph); and 3) it allows each
25 city to decide where e-scooters can be ridden (e.g. on sidewalks and/or streets).

26 27 **Palo Alto, CA (Combined Dockless & E- scooter Pilot Program)**

28 The City Council of Palo Alto authorized its City Manager to draft a one-year dockless bike pilot
29 program; however, shortly after the authorization, the council was approached by an e-scooter
30 vendor. The council then added e-scooters to its pilot program which requires them to follow the
31 same guidelines as dockless bikes (e.g. safety requirements, parking guidelines, provision of
32 low-income rates, and cash payment options). Not all municipalities have been lucky enough to
33 line up dockless and e-scooter legislation and because of this, some cities found it necessary to
34 amend their dockless legislation.

35 36 **Charlotte, NC (Amended Dockless Bike Pilot Program)**

37 Some cities, like the City of Charlotte, have decided to retroactively add an e-scooter pilot
38 program or amend their dockless pilot program to include e-scooters. Charlotte amended its Bike
39 Share Permit Requirements to allow current vendors, with the necessary permits, to add e-
40 scooters to their fleets without requiring additional permits. Even though new permits are not
41 necessary, current vendors are required to follow the new guidelines. Their new M11
42 requirement states that a maximum fleet of 500 bicycles (minimum 200) is allowed while
43 allowing an additional maximum fleet of 300 (50 minimum) e-scooters.

1 **San Francisco, CA (Separate Dockless Bike & E-scooter Pilot Programs)**

2 Cities like San Francisco have passed a separate e-scooter ordinance after issuing cease and
3 desist letters to vendors. San Francisco decided to create a 12-month pilot program and to grant
4 five e-scooter vendor permits (there were 12 vendors that applied). During the first six months, a
5 total of 1,250 e- scooters were allowed. If all goes well, vendors will be allowed a total of 2,500
6 e- scooters. The permit application requires a potential vendor to describe its plan to keep
7 sidewalks clear of clutter, provide user education, share data, offer a low-income plan, address
8 sidewalk riding and parking, and other requirements (29).

9
10 **Santa Monica (No E-scooter Pilot Program)**

11 Santa Monica allowed e-scooters to operate without a pilot program for an entire year (Sept 2017
12 to Sept 2018). In the fall of 2017, e-scooters were launched without notice and without proper
13 permits. Eventually vendors applied for business licenses and vending permits, but it wasn't until
14 June 2018 that Santa Monica passed its e-scooter and dockless bike pilot program (30). The 16-
15 month pilot program will go into effect in September 2018 and requires e-scooter and e-bike
16 companies to apply for a permit, pay an annual fee of \$20,000, and pay a \$130 fee per vehicle.
17 Vendors are currently paying for a permit of \$50 a year and a \$60 impound fee for e-scooters
18 obstructing the public way. One highlight of the pilot program is the requirement for real-time
19 data sharing to track rebalancing and usage (31).

20
21 **Chicago, IL (Proposed E-scooter Pilot Program)**

22 Chicago, which recently passed its own Dockless Bike Share Pilot Program in 2018, is now
23 considering its own e-scooter guidelines. The scooter guidelines were proposed by 1st Ward
24 Alderman, Joe Moreno, as an attempt to get ahead of the inevitable scooter invasion. The
25 Alderman's recommendations include an electric scooter share license; minimum of 100 e-
26 scooters; a requirement that companies pay a daily \$1-per-vehicle fee (to guarantee at least \$100
27 per day from each vendor to go towards better infrastructure (which is an idea borrowed from
28 Bird's Save Our Sidewalk campaign); a 20 mph maximum speed limit; bike lane & trail use only
29 (no sidewalk riding); parking requirements (upright on street furniture but not fire hydrant, call
30 box, bus bench, or utility pole); and no more than 50% of a vendor's e- scooters can begin the
31 day located in the downtown central business district (32).

32 **PART FOUR: REGULATORY DIMENSIONS**

33 When it comes to regulating e-scooters there are a few main points to consider: e-scooter
34 definition and associated performance requirements; restrictions on where to ride or permitted
35 loctions for operation; restrictions on when to ride; parking options; lock-to technology; charging
36 workforce operation standards as well as a low-income equity plan and permitting and fees.
37 Information on these topics are summarized below for the purpose of providing cities an
38 adequate starting point when considering their own e-scooter pilot programs.

39
40 **Definition**

41 Definitions and rules pertaining to e-scooters differ between cities across the country. All e-
42 scooters currently operating in the US (Spin, Lime, Skip, Bird) are motorized stand-up, foot
43 scooters and, therefore, any ordinance describing e-scooters as having a seat or requiring riders
44 to sit is inapplicable to this new mode of transportation. One model approach by the Oregon
45 DOT emphasizes restrictions like maximum speed as opposed to allowed speed for scooters. The

1 Oregon DOT's definition also includes a clear picture of an e-scooter, clearly communicating its
2 upright design thereby reducing confusion among readers.

3 4 **When to Ride**

5 Some companies have designated specific hours of e-scooter availability. In many SF Scooter
6 Permit applications, vendors proposed their hours of operation. For example, Lime states they
7 will be available every day from 7am until 8pm whereas Lyft's availability is from two hours
8 before sunrise until two hours after sunset. Ofo's proposed hours of availability are 6am to 8pm
9 and Razor's hours from 7am to 8pm. These proposed availability hours for scooters are
10 important for operations and maintenance teams who need to collect and charge scooters, but
11 also useful for municipalities when considering issues of safety. For example, past research has
12 shown that bicyclists tend to overestimate their own night-time visibility to drivers (33). Given
13 that e-scooters are not typically equipped with extra safety devices nor do casual riders typically
14 wear reflective material, limiting e-scooter availability to daylight hours is advisable.

15 16 **Where to Ride**

17 Cities must consider where e-scooters are allowed to operate: sidewalks, bike lanes, streets
18 and/or other multi-use trails. Most municipalities ban e-scooters from riding on sidewalks and
19 only allow them to operate in the street or bike lane however, that may not be the safest option in
20 rural areas with high posted speeds. California state legislation, for example, allows local
21 officials to decide where e-scooters will be allowed to operate (34). Such discretionary
22 legislation allows local governmental entities to decide on the best paths for e-scooters whether it
23 be on the sidewalk for rural riders or on streets in primarily residential areas. Denver, Colorado
24 actually outlaws e-scooters from riding in their streets and requires riders to ride on the sidewalk.
25 One of the reasons Denver officials issued their cease and desist letters to e-scooter vendors is
26 because of safety concerns associated with customers riding in the streets. Cities like
27 Atlanta faced problems of e-scooter riders on their Beltline multi-use trail (35) and San Diego
28 faced issues of riders on their boardwalk, which led to an accident sending a mother and
29 daughter to the hospital (36).

30 31 **Parking Options**

32 The rise of micro-mobility options has created substantial parking issues (e.g. bikes and e-
33 scooters blocking the right of way). There are a few ways operators and cities have been
34 experimenting to create better parking including requiring vendors to apply for a space within a
35 "furniture zone" and apply for a "corral" in a traditional car parking spot. With these basic
36 requirements in place, cities can decide whether to take a long-term or short-term approach to
37 parking. One short-term option is to paint an area in the "furniture zone" to indicate a parking
38 spot for e-scooters and bikes. However, if this option is selected, there is a good chance that a
39 pedestrian, a rider, or the weather (e.g. wind) will knock down one of the scooters or bikes,
40 setting off a chain reaction knocking down several more bikes and scooters. A long-term solution
41 is for cities and vendors to work together to install physical parking infrastructure (i.e. bike
42 racks). If micro-mobility vendors, like Zagster, have the capital to install physical structures, it
43 might be beneficial for cities to utilize that capital to finance more micro-mobility parking (37).
44 Installing physical parking structures with private capital on private property shows that some
45 vendors are willing to invest in the community with the goal of continuing to operate in the city
46 for years to come.

1
2 As multi-modal options become more common, bike and e-scooter corrals could evolve to serve
3 ride sharing services as origin/destination drop off locations where you conveniently can hop on
4 a scooter for your next leg of the trip, or vice versa. In their San Francisco Scooter Permit
5 proposal, Lyft introduced a “hypothetical” rendering of a potential multi-modal hub.

6 7 **Lock-To Technology**

8 US cities like Chicago, Illinois (38), Austin, Texas (39), Boulder, Colorado (40), and
9 Bloomington, Indiana (41) have made, so-called ‘lock-to’ technology mandatory in order to help
10 combat issues of vandalism, clutter, and community backlash. These mandatory lock-to
11 requirements have positioned certain dockless bike companies, like Zagster and Jump, to be the
12 only vendors able to legally operate in these cities. As of July, 9th 2018, ofo had pulled out of
13 Chicago to protest the lock-to requirement in the dockless bikeshare pilot that limited their fleet
14 to a mere 50 bikes and allowed up to 350 lock-to bikes per vendor (38). Consequently, a few e-
15 scooter vendors are now following the lead of these trailblazing companies.

16
17 Skip is the only current vendor with lock-to abilities. However, in their San Francisco Scooter
18 Permit proposals, Hopr and Scoot have mentioned that they possess the capability. Since there
19 have been so many issues reported with knocked over and vandalized scooters, the lock-to
20 requirements will likely become more and more appealing to municipalities. Spin is one
21 company that indicated it will equip its fleet with lock-to technology only if it is required to do
22 so.

23
24 Another option for municipalities is tethering technology. In their San Francisco Permit proposal,
25 ofo proposed tethering technology that would allow their e-scooters to be tied to a physical
26 object (keeping it upright), but with the ability to unhook it if the scooter must be removed due to
27 an emergency or if it falls down (6). Chicago and Austin are the first of potentially many cities
28 likely to emulate the lock-to requirement and/or tethering technology in policies and legislation,
29 but only time will tell.

30 31 **Charging Workforce Operation Standards**

32 There have been issues reported such as violence, fraud, and theft related to e-scooter chargers,
33 juicers, and Bird hunters due to cutthroat competition (42). This temporary workforce makes
34 their money by picking up e-scooters off the street, bringing them to their homes for recharging,
35 and then re-distributing them around the city the next morning. One option for resolving these
36 issues is to more carefully regulate who can become a charger. If these chargers are classified as
37 independent contractors for e- scooter vendors, they are an extension of the e-scooter vendor and
38 any problems (e.g. violence, fraud, and theft) should be handled by the e-scooter vendor who has
39 contracted with the individual(s) to perform the charging services. Cities should make these
40 liability standards clear and should consider implementing fees/fines for any issues that may
41 arise pertaining to this temporary workforce.

42
43 Another option for preventing the problems of violence, fraud, and theft related to vigilante
44 chargers, is to hire a fleet of full-time (or part-time) employees to do the charging. In their San
45 Francisco Permit proposals, Hopr, Lyft, and Razor have proposed hiring official charging
46 operation teams. Requiring companies to hire regular employees and, in some cases, to pay for

1 their benefits, may be financially burdensome. Some e-scooter companies are more financially
2 equipped to do this while other companies with less financial backing may find such a
3 requirement to be infeasible.

4 **Low-Income Plan**

5 Residents in many communities experience difficult commutes due to poor city planning,
6 systematically racist policies, and overall lack of public transportation resources. If a reliable
7 means of transportation is not readily accessible, it will obviously affect the day-to-day lives of
8 residents in areas that are underserved by modes of public transportation. In the long-term,
9 according to the Smithsonian, the lack of affordable and accessible transportation stifles the
10 ability of individuals to move out of poverty by making it difficult, if not impossible, to obtain
11 good paying jobs. Further, the lack of affordable/accessible transportation severely limits access
12 to healthcare and other important social services (43).

13
14 Dockless bike vendors have already begun to expend considerable effort in attempting to address
15 the mobility gap in their respective communities. One such effort has been made to supply free
16 bikes (donated to “bike libraries”) to riders of all races and socioeconomic backgrounds. Efforts
17 have been made to partner with companies like PayNearMe so riders without a credit/debit card
18 can access the bikes with cash. Some companies have offered subsidies to allow low-income
19 riders to use their products.

20
21 Companies submitting applications for a San Francisco Scooter Permit have been required to
22 include a plan for making the scooters accessible to low-income users. San Francisco (SF) transit
23 official, Tom Maguire, explained that the intention of the new permit and pilot program is “to
24 prioritize public safety, build in equity, and focus on accountability” (29). Furthermore, Maguire
25 emphasized that the conditions SF has asked vendors to meet (in permit requirements) correlate
26 with real challenges and goals that the city hopes to achieve. All SF e-scooter proposals will
27 benefit low-income customers in some capacity once approved and implemented. Below are
28 some outstanding proposals submitted by prospective SF scooter vendors that we believe are
29 progressing in the right direction and will potentially yield long-term positive results:

30
31 **Lime** has proposed 50 percent off all rides for users who qualify for SFMTA Lifeline (SF
32 monthly transit pass), CalFresh (food stamps), or individuals who qualify for PG&E Care (utility
33 discount). In addition, once its scooter vehicle count reaches 1,000, Lime has proposed a
34 \$10 prepaid card for a total of \$100 in rides for anyone who qualifies for the aforementioned
35 programs.

36
37 **Skip’s** low income eligible users can potentially receive up to two free rides per day. The most
38 intriguing element of Skip’s proposal is its application to become a service provider eligible for
39 Clipper Card payments. A Clipper Card is an all-in-one transit card for the Bay Area that may be
40 used as a payment alternative for Skip scooter users by the end of 2018.

41
42 **Ofo’s** low-income plan for riders can be accessed with proof of low-income status as evidenced
43 by emailing (or physically mailing) proof of enrollment in any one of San Francisco’s many
44 social programs. Riders can also purchase a prepaid ofo card at partner locations. Potential
45 scooter users who cannot afford smartphones, but who have a phone with basic texting
46

1 capabilities, can first register their number with ofo and then proceed to unlock a scooter by
2 texting “START,” and then lock it by texting “STOP,” which will end the ride.

3
4 **Lyft** has proposed an “Uplyft Community Pass” for \$5 a year which includes unlimited free 30-
5 minute rides within a proposed service zone. The Uplyft Community Pass will be available to
6 Bay Area residents who qualify for CalFresh, SFMTA Lifeline, or PG&E Care. Lyft is currently
7 exploring the option of cash payments accepted through their community partnerships program,
8 which would allow individuals to purchase coupon vouchers with unique codes to unlock
9 scooters. To ensure that the Uplyft Community Pass is an option available to all eligible San
10 Francisco residents, Lyft has consulted with TransForm (a transportation equity nonprofit
11 organization) to help build a strong and effective community outreach strategy.

12
13 Key elements of Lyft’s strategy include consulting with trusted community leaders, addressing
14 the need for socioeconomic diversity, achieving ridership demographics that reflect the local
15 community, and increasing first and last mile connectivity in transit deficient communities. Lyft
16 understands the importance of involving and listening to the communities they wish to serve; and
17 this philosophy is apparent in their community engagement approach. Lyft’s grassroots
18 community strategy is a component that many organizations have unfortunately forgotten, but it
19 is deeply woven into the very fabric of San Francisco’s cultural and political identity.

20 21 **Permitting & Fees**

22 Lastly, there are many factors for cities to consider when deciding the amount to charge for an e-
23 scooter permit fee, vehicle fee, permit review, fines for removal and relocation, and performance
24 bonds. We have compiled relevant information in Table 3 to build on information that was
25 included in the City of Los Angeles’ pilot proposal. This information should provide city
26 officials a good idea of what other municipalities have decided to propose and it should provide a
27 good starting point for their own proposals. Other considerations not featured in this chart
28 include, but are not limited to, the creative allocation of dockless bike/e-scooter fines. For
29 example, some cities may choose to use the income to build better bike/scooter infrastructure,
30 promote a cleaner environment, or promote safer transportation.

1 **TABLE 3. Dockless Bikeshare and E-Scooter Municipal Fees by City**

CITY	Annual Permit Fee	Vehicle Fee	Permit Review	Removal & Relocation Fee	Performance Bond
Seattle, WA (Bike)	\$149	\$15 per year	\$209/hr or \$1,672/8 hr shift	city crew hourly rate + 15%	\$80 per - \$10,000 max
D.C.	NO FEE	NO FEE	NO FEE	NO FEE	None
Palo Alto, CA (Bike/Scooter)	NO FEE	NO FEE	NO FEE	NO FEE	None
San Francisco, CA (Bike)	\$12,208 - \$19,558	NO FEE	NO FEE	NO FEE	None
San Francisco, CA (Scooter)	\$25,000	NO FEE	\$5,000 (One time application fee)	NO FEE	\$10,000 total
Bellflower, CA (Bike)	No Fee	NO FEE	NO FEE	NO FEE	None
St. Louis, MO (Bike)	\$500	\$10 per year	NO FEE	NO FEE	None
Durham, NC (Bike)	\$250	\$10 per year	NO FEE	\$50 per bike	\$80 per - \$10,000 max
Charlotte, NC (Bike/Scooter)	NO FEE	NO FEE	NO FEE	NO FEE	none
Chicago, IL (Bike)	\$250	\$50 per (Annually)	NO FEE	NO FEE	None
Chicago, IL (Scooter Proposal)	NO FEE	\$1 per (Daily)	NO FEE	NO FEE	None
Plano, TX (Bike)	\$500	NO FEE	NO FEE	NO FEE	\$5,000 in escrow per 1,000 bikes
LA, CA (Bike/Scooter Proposal)	\$500	\$50 per (Annually)	NO FEE	Maintenance Laborer \$28.32/hr	\$80 per
Austin, TX (Bike/Scooter)	NO FEE	\$30 per (Annually)	NO FEE	NO FEE	\$100 per bike
Santa Monica, CA (Bike/Scooter)	\$20,000	\$130 per (Annually)	NO FEE	NO FEE	NO FEE
Scottsdale, AZ (Bike)	NO FEE	NO FEE	NO FEE	NO FEE	NO FEE
Nashville, TN (Bike/Scooter)	\$500	\$35 per vehicle (Annually)	NO FEE	NO FEE	\$80 per vehicle, with a cap of \$100,000
St. Louis, MO (Bike)	\$500	\$10 per (Annually)	NO FEE	NO FEE	NO FEE
Houston, TX (Bike)	\$250	\$10 per (Annually)	NO FEE	\$80 per bike	\$80 per bike, with a cap of \$20,000
Durham, NC (Bike)	\$250 (\$100 renewal)	\$10 per (Annually)	NO FEE	\$50 per bike	\$80 per bike, with a cap of \$10,000

2 Data sources: (3, 7-10)

1 **CONCLUSION**

2 The purpose of this policy paper is to provide cities with timely information relevant for crafting
3 policies that manage both the positive and negative externalities of e-scooter sharing in their
4 jurisdictions. The information in this report was drawn from a wide breadth of contemporary
5 news articles and professional reports that are summarized in a way that makes it useful for cities
6 to make decisions about how new transportation technologies may fit best within their particular
7 urban context. Ultimately, cities must evaluate for themselves how a new transportation
8 technology will mesh within the broader fabric of their respective community, although all
9 communities will likely need to consider the regulatory dimensions discussed above.
10 Considering the impressive rate at which new micro-mobility technology is being created and
11 produced, national standards for novel transportation modes will require continual updating in
12 order to develop effective responses in a timely fashion. States and cities should not be tasked
13 with re-inventing the wheel when it comes to defining and addressing new technologies but
14 rather focus on how e-scooters and other transportation modes can positively contribute to
15 improving quality of life of residents through enhanced mobility and accessibility.

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