



TO THE MEMBERS OF THE SAN DIEGO CITY COUNCIL

# SIDEWALK DRIVING:

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# WHAT TO DO.

THE PROPOSED CHANGES ASK YOU  
TO CHOOSE BETWEEN  
THE SAFETY OF SCOOTER DRIVERS  
AND  
THE SAFETY OF PEDESTRIANS.

After years of deaths, injuries, complaints, a change of Mayor and members of Council, Council made clear that motorized scooters were to be parked in the street and driven in the street, not on sidewalks, to protect the safety of pedestrians in accordance with state law.

The City requested proposals from Shared Mobility Device (SMD) operators who wanted contracts. They told the City they could comply and keep motorized scooters off sidewalks.

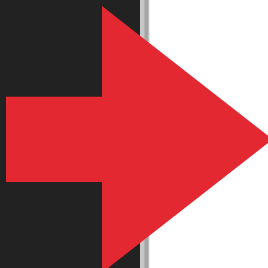
Believing them, the City drew up contracts which required them to deploy the promised technology to keep scooters off sidewalks. The operators signed contracts with the City assuring it they could comply.

Not only did they claim they could  
they signed contracts saying they would.

Here's what Spin said in 2022.

Bird acquired them in 2023.

Emphasis added



3. Describe the device technology and software that would be implemented within the City of San Diego, including but not limited to device location systems (specifically geofencing capabilities, detection technology for sidewalks and corrals), device capabilities, and system data collection details.

If selected to participate in the new program, the City should be confident that Spin will take our commitments seriously and endeavor to exceed the City's compliance expectations. We are proud to offer San Diego a suite of new technologies, programs, and services that, taken together, deliver a best-in-class shared micromobility operation that addresses unsafe riding and improper parking.

Sidewalk Riding Technology

Overview

Our commitment to a compliant-and safety-first program includes bringing our latest technologies to San Diego. Earlier this year, we began deploying our most advanced, most durable motorized foot scooters, S-100 7th Edition, equipped with Spin Insight Level 2 smart, self-enforcing sidewalk riding technology, across North America. Spin Insight Level 2 uses artificial intelligence and a privacy-protecting camera to do what GPS-based geofencing alone cannot do: detect and validate precisely when a rider is on a sidewalk or path where riding is not allowed. Spin Insight Level 2 instantly detects if someone is riding on sidewalks, providing an audible alert to the rider and nearby pedestrians, and slowing the vehicle down immediately in locales where such riding is prohibited.

Competitive Landscape:

	SPIN	dott	Lime	voi.	TIER	LINK	BIRD
Works without a GPS or cellular data	✓	✓		✓	✓		
Does not require a current and accurate map	✓	✓	✓				
Real-time parking validation	✓	✓		✓	✓		
Detects bike lanes and other objects	✓						
Adapts and scales easily	✓	✓	✓				
Currently deployed at scale in market	✓		✓			✓	
On-board camera with AI image analysis	✓						
Provide immediate audible feedback to the rider during the ride	✓		✓				✓
Ability to intervene and correct poor rider behavior in real time	✓		✓			✓	✓

Many companies claim to have sidewalk riding technology, but they do not have all of the components that make up Spin Insight Level 2 -- what we would consider to be a functioning sidewalk, lane, and parking detection technology that responds in real-time and provides the user with active feedback and/or enforcement. Spin Insight Level 2 powered by Drover AI uses a camera and machine learning artificial intelligence to "see" a rider's surroundings and make decisions in real-time. Camera-based solutions use forward (and sometimes backward) facing cameras, along with various detection algorithms, to determine what is in front of or around the vehicle. This information can be used to identify city infrastructure such as sidewalks, bike lanes, parking corrals, and curbs and in the future can also be used to identify pedestrians or obstacles in a rider's path. With our on-board cameras, we can also slow vehicles down when they go onto a sidewalk.

# Spin's contract continued...

Emphasis added



Other companies' purported solutions rely on either location-based or accelerometer-based technologies, both of which have fundamental flaws. The lack of on-board cameras in particular is indicative of the unpreparedness of other vendor's claimed solutions. Location-based technology relies on a very precise and static on-board map. Any new bike racks, bike lanes, construction detours, etc. would need to be manually added to the static map and then uploaded to all vehicles, which leaves significant room for error, is not easily scalable, and will likely cause the effectiveness of this technology to degrade over time as changes are made to city infrastructure. Accelerometer-based technology uses the device's on-board accelerometer to analyze vibrations and inertial measurements, along with an algorithm that measures the seams, or gaps in the slabs of concrete, to determine when a rider is on a sidewalk. However, sidewalks come in many varieties, and cracks or damage to a sidewalk could easily confuse the algorithm, leading to low accuracy. Without a camera, operators simply can't gather enough data to accurately detect when a rider is on the sidewalk and intervene to correct behavior (e.g., by slowing down the vehicle) in real-time. The table above outlines the primary features we believe to be necessary for proper sidewalk riding technology, and our understanding of the offerings currently available in the micromobility industry.

Lastly, Spin is the only company to have actually deployed working sidewalk riding technology -- we currently have 1,300 vehicles with Spin Insight Level 2 deployed across seven cities. Therefore, other companies are simply unprepared for the operational complexities of deploying and maintaining a fleet with this on-board technology.

### Sharing Data with the City

We will provide a data dashboard through Blue Systems' Mobility Manager platform, which visualizes sidewalk detection and parking compliance data collected from our devices enabled with Spin Insight Level 2. This dashboard includes heatmaps for riding location by infrastructure type, aggregated metrics and evaluation including time, distance, and percentage of riding by infrastructure type, and near real-time availability map and metrics indicating parking compliance. The dashboard can incorporate geospatial layers for evaluation of specific geographies or comparison with other data sets, such as parking corral locations or bike infrastructure networks. Additionally, time and date filters allow for evaluating change in metrics over time. See [Appendix](#) for screenshots and brief description of Blue Systems' Spin Insight Level 2 data platform.

### Global Positioning System (GPS)

Each of our deployed devices have an onboard GPS device that provides continuous location notifications to users and Spin Mission Control, our internal backend system. We do not track rides with our user's phone. The vehicles update their geolocation every second and can report this information every five seconds during a trip and every three minutes when parked. Since the GPS frequently updates and reports geolocations, lag time for geofence activation is typically within five seconds. Factors affecting the lag time or accuracy of geofencing include the presence and density of tall buildings and the speed of the device--like the margin of error when using a smartphone for navigation. If the GPS signal is obstructed or lost, the device will continue to communicate with our servers. Our internal system will show the last location of the device until a successful GPS connection submits a new location. It's important to note that GPS technology on its own is not sufficient to deter sidewalk riding; see [above section](#) "Sidewalk Riding Technology" to see how Spin combats improper riding behavior.

### Geofence Technology

Prior to launch, we will implement all special operations zones using our industry-leading geofencing

Here's the  
Superpedestrian /  
Link contract.

They withdrew from  
the USA market in  
2023.

Emphasis added



### San Diego Launch (April 2022)

Pedestrian Defense's centimeter-level mapping and motor integration allows us to customize enforcement actions to a range of unsafe riding behaviors. These are informed by the intricacies of San Diego's streets, infrastructure, and possible edge cases. We are mapping San Diego for Pedestrian Defense enforcement now, using the City's open streets data and additional third party mapping resources. For example, we've cross analyzed vehicle collisions from 2020 onward involving pedestrians. **Most occurred on major thoroughfares** rather than in specific neighborhoods such as Downtown. This data-driven approach has shifted our deployment strategy from mapping high-density neighborhoods first to prioritizing major streets across the city, incorporating additional corridors over time.



**We are excited to announce:**

**San Diego will be the first city in the world to receive Pedestrian Defense scooters!**

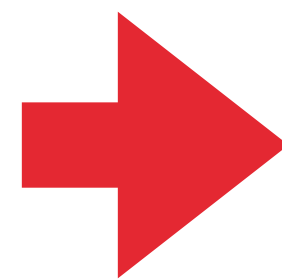
As we launch Pedestrian Defense across the U.S., we've prioritized San Diego to properly address the City's RFP requirements and new municipal code amendments. San Diego will benefit from features such as accurate sidewalk and virtual on-street corral detection. We've outlined our pre-launch (in progress), launch, and expansion framework for Pedestrian Defense mapping in San Diego below, including the completed process steps:

- Data collection and aggregation
- Analytics on current usage and theft/vandalism
- Identification of areas of interest
- Deployment strategy (timelines, areas)
- Tooling refinement and testing

# More of the Superpedestrian / Link contract.

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Emphasis added



Pedestrian Defense our technology, this step will then be accompanied by a warning that if our scooter detects erratic or unsafe riding, the ride may be slowed or stopped and the rider flagged in our system.

If a rider indicates that they are inebriated, they will not be able to proceed with their reservation. Instead, they will be shown information about reserving a taxi or local public transportation.

# Here is what Lime said in their signed contract:

IM + SAN DIEGO | REQUEST SUBMISSION

## Sidewalk Riding Detection

*Lime was the first company with sidewalk detection technology in use within a city anywhere in the world. Lime first deployed this technology in San Jose, California, to detect sidewalk riding. With this functionality, Lime is able to discern with up to 95% accuracy when a rider is riding on sidewalks instead of the street.*

Lime shares the City's concerns about sidewalk riding. So, Lime's vehicles use accelerometer and speed data from local surfaces collected through sensors onboard our vehicles to detect specific vibrations from the underlying riding surface (e.g. brick, asphalt, or sidewalks with expansion joints), detecting sidewalk riding with 95% accuracy. In an analysis of sidewalk riding from 5,000 rides over a two week period in Milton Keynes, UK, our data indicated that 95% of users were properly riding in the street right of way instead of the sidewalk. Additional details are provided in the case study below.

Understanding that audible sounds are also a policy priority for San Diego<sup>4</sup>, when sidewalk riding is detected, the vehicle makes an audible ping and we send an in app message reminding the rider to ride in the street. We are upgrading this technology to allow us to safely slow riders who are on sidewalks for a prolonged period of time. We follow up the notification with an educational email and we apply our progressive discipline protocol (see **Section M.2**) for those who repeatedly ride in illegal locations, beginning with mandated education and progressing to fines after the second infraction and account deactivation after the third.

Screenshot

Emphasis  
added

The scooter companies reported they have the technology to detect sidewalk driving and slow their vehicles to a stop\* and they signed contracts with the City saying they have or would have this technology.

\* See for instance:

- JANUARY 2020: LIME;
- OCTOBER 2021: BIRD;
- JULY 2022: LIME

Specifically in July 2022 about Lime...

"At a Lime event in Paris, the startup shared plans to pilot an in-house built computer vision platform that will leverage cameras to detect when users are riding on the sidewalk. While it will be at the discretion of the cities whether to **both audibly alert the riders** to their transgressions and **actually slow them down**, **both functions are available.**"

(Emphasis added).

Repeatedly the City was told that the operators had the technology to detect sidewalk driving accurately and slow their scooters to a stop.

The operators signed contracts with the City that said they would detect sidewalk driving and apply it to protect pedestrian safety.

But then Lime's representative told the AT&I committee on September 23, 2023, that the degradation of the appeal of San Diego as a market is the City's insistence on slowing scooters when they are driven on sidewalks. She said the technology is not commercially available nor scalable and "it can't be done"...yet.

## Safety of Pedestrians or Safety of Scooter Drivers

The problem is that although they said they could do it none of the operators has been able to distinguish accurately enough between the road and the sidewalk. The result is that because the Council requires scooters on sidewalks to be slowed down, scooters driven in the street sometimes slow down inappropriately. **That endangers the safety of the scooter driver.**

To avoid that problem SMD operators have asked that instead of the scooter slowing down if on a sidewalk the City requires only that the driver be given an audible warning. The rationale is that if the scooter mistakenly detects it is on a sidewalk when in fact it is in the street, the resulting audible warning will not endanger the safety of the scooter driver.

But an audible warning can be ignored. So if the proposed change to the Municipal Code is adopted someone who wants to drive a motorized scooter on a sidewalk at 15mph will be able to do so. **That endangers the safety of pedestrians.**

# SAN DIEGO HAS REGULATIONS THAT PROTECT PEDESTRIANS.

- YOU PASSED REGULATIONS TO PROTECT THE SAFETY OF PEDESTRIANS.
- YOU ASKED THE SMD OPERATORS TO COMPLY.
- THEY SAID THEY COULD COMPLY.
- THEY SIGNED CONTRACTS PROMISING THEY WOULD COMPLY.
- THEY DIDN'T COMPLY.
- THEY WANT YOU TO ALLOW THEM BACK TO CONTINUE TO NOT COMPLY.
- ONLY LET THEM RETURN WHEN THEY CAN COMPLY.

SAN DIEGO HAS REGULATIONS THAT  
PROTECT PEDESTRIANS.  
IT NEEDS MORE NOT LESS.

CM LaCava pointed out at the AT&I committee meeting that the proliferation of privately owned devices is creating problems. He said the City will need to address them. We agree.

It makes no sense at all for the City to roll back safety measures protecting pedestrians when what is needed are more such measures.

# 1. MAKE MUNICIPAL CODE CONSISTENT WITH STATE LAW.

There IS a problem with the Municipal Code. It appears to permit sidewalk driving, contrary to state law. State law prohibits sidewalk driving at ANY speed whereas the Code allows it at 3mph. This can be solved by replacing "three" with "zero".

San Diego Municipal Code  
(7-2022)

Chapter 8: Traffic and Vehicles

- (d) Through *geofencing* or similar technology, a *provider* shall prevent any *motorized scooters* and *motorized bicycles* in the *provider's fleet* from being operated, locked, parked, or ending a ride on a City sidewalk, except for shared use bikes or e-bikes that can lock to existing City bike racks. *Providers shall reduce the speed of any motorized scooters and motorized bicycles in its fleet to three miles per hour on all City sidewalks, once such technology is commercially available and has been demonstrated by a provider that it can be implemented safely and effectively across its entire fleet. This speed reduction is intended to effectuate the prohibition of operating shared mobility devices on the sidewalks.*

# 1. MAKE MUNICIPAL CODE CONSISTENT WITH STATE LAW.

In San Diego scooters are slowed to 3mph rather than to a stop because this was requested by the scooter operators, for the 2019 ordinance. In fact scooters can be required to coast to a stop without any risk to the driver as is the case in Kansas City, MO, and stated repeatedly in the contracts.

In 2022 that speed limit was mistakenly applied to sidewalk driving, contrary to state law which makes it illegal to drive a motorized scooter on a sidewalk at ANY speed.

Rather than removing the three mph slowing requirement the Council should amend it to zero mph in order to be consistent with state law. It should also do so to be consistent with the contract operators and the City signed.

## 2. REMOVE THE EXEMPTION. OPERATORS MUST PROTECT PEDESTRIANS FROM DRIVERS WHO PUT THEM AT RISK.

The operators told the City they have slowing technology and the contracts they signed reflect that. As a result the Municipal Code should remove the words in section d).

"... once such technology is commercially available and has been demonstrated by a provider that it can be implemented safely and effectively across its entire fleet."

If they cannot, they misled the City and should not return.

### 3. ADD THE AUDIBLE WARNING BUT DON'T REPLACE THE SLOWING REQUIREMENT.

The contract the operators signed says...

“g) For stand-up or sit-down scooters, Contractor shall **ensure** that sidewalk detection technology is provided and maintained in good and working order **to ensure that the use of scooters does not occur on City sidewalks**; City multi-use pathways are exempted from this unless otherwise regulated for speed within the Municipal Code.”

(Emphasis added)

An alarm or audible warning does not ensure that scooters are not driven on sidewalks. It can be ignored. It could be an additional feature but the proposed replacement of slowing technology is **not** consistent with the contract the City and operators signed.

4. DO NOT REMOVE THE SLOWING REQUIREMENT. CONTINUE TO PROTECT PEDESTRIANS. DO NOT RISK UNDERMINING CITY INDEMNIFICATION.

If you remove the requirement that SMD operators have slowing technology you will undermine the contract requirement that operators "...ensure that the use of scooters does not occur on City sidewalks" and doing that will:

- ▶ Increase the risk that motorized scooters will be driven on sidewalks, endangering pedestrians, particularly the elderly.
- ▶ Increase the risk that the City's indemnification will be void and it held liable for injuries or deaths that occur as a result.

# Sidewalk Driving: What To Do

- ▶ Retain the requirement that operators have slowing technology to provide an incentive for them to innovate further ways to protect pedestrian safety.
- ▶ Remove the exemption wording in section d). They said they can protect pedestrians. Only allow operators that do so.
- ▶ Reduce the speed of shared scooters and bikes to zero if driven on sidewalks, consistent with state law and the contracts the City and operators signed stating they could comply.
- ▶ Add a requirement that the device makes a warning noise if driven on a sidewalk. This will help warn pedestrians approached from behind.

# Sidewalk Driving: What To Do

THE PROPOSED CHANGES ASK YOU  
TO CHOOSE BETWEEN  
THE SAFETY OF SCOOTER DRIVERS  
AND  
THE SAFETY OF PEDESTRIANS.

CHOOSE THE SAFETY OF SAN DIEGO'S PEDESTRIANS.



**CHOOSE PEDESTRIAN SAFETY.**

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**THANK YOU.**