

MEMORANDUM

To: Warren Logan, Policy Director of Mobility and Inter Agency Relations, City of Oakland

From: Shivani Raina, Intern

Date: 24 August 2020

Re: Oakland Deliveries Project | Strategies for Improving Curbside Management

Background

This memo summarizes trends in e-commerce and delivery network companies, identifies key issues related to municipal curb management and outlines select innovative curbside management strategies. It is a part of a broader study that identifies a series of policy and design proposals which the City of Oakland can adopt to improve its curb management.

E-Commerce Trends

The rapid growth of e-commerce over the past decade has made a mark on how our streets function. In 2018, the global last-mile delivery market for e-commerce was valued at \$3.2 billion and was associated with traffic congestion worsening by 180%.¹ Within the e-commerce world, expedited deliveries have quickly gained consumer preference and by 2025, same-day deliveries are projected to account for 15% of all products delivered via e-commerce in the U.S.² App-based instant delivery companies such as Uber Eats and Postmates--hereafter referred to as 'Delivery Network Companies (DNCs)'--are major players in this rapidly growing expedited-delivery sector. As a result of their rising dominance, these companies have become key users of our cities' curbs.

Besides compounding existing roadway conflicts, instant-deliveries have created new demands such as high-volume curbside pickups and drop-offs,³ and has introduced new sites for conflict—such as high-density residential areas⁴. This necessitates a paradigm shift in curbside management. Over the past couple of years, cities have innovated, tested and implemented creative curbside management strategies that have transformed curbs into multi-use spaces that balance a plethora of users and needs.

E-Commerce & DNC Effects on Urban Rights of Way

1. **Parking Violations & Road Safety:** The lack of parking space and loading zones force delivery workers to double park and block bike lanes and sidewalks⁴. This not only results in drivers having to pay fines but also endangers bicyclists and pedestrians.^{4,2} For example, in New York City, UPS, FedEx, FreshDirect and Peapod accumulated 28% more summonses for parking violations in 2018 than they did in 2013⁵.
2. **Traffic Congestion:** Delivery vehicles are projected to increase by 36% by 2030, which would translate to an additional 11 minutes of commute time in urban areas for each passenger every day². Since parking spaces and loading zones aren't available and deliveries are both frequent and uncoordinated, delivery workers constantly "stop-and-go" which is a major contributing factor to increased traffic congestion¹.
3. **Delays in Delivery:** Delivery workers frequently cruise city streets to find parking spaces which delays deliveries and inconveniences both the consumer and the delivery company⁴.

¹ "The Battleground of urban mobility - Curbside Management", bliq.ai (2020)

² World Economic Forum (2020)

³ "Curbside Management Resources", ITE.org (2020)

⁴ ITE (2018)

⁵ Kraft (2020)

4. **High Carbon Footprint:** A projected 36% rise in delivery vehicles by 2030 would be accompanied by a 30% increase in emissions². This constant cruising and the high volume of delivery vehicles due to the lack of consolidation of deliveries, would result in higher automobile emissions—making DNCs environmentally unsustainable and a major contributor to greenhouse gasses^{2,6,4}.

Overview of Curbside Management Strategies

1. Real Time Information Systems (RTIS)

Real-Time Information Systems are a set of technologies and strategies that can help monitor and manage traffic based on real-time traffic information.⁴ Columbus, Ohio implemented a successful pilot called curbFlow that aimed to address the growing demand for curb space.⁵ The program used an app to reserve city-designated Loading Management Zones (LMZs) using real-time parking data. The program reduced double parking by DNC drivers, maximized curb space and reduced fines and citations.⁶ Such programs are efficient but can be expensive for the city and require real-time data and intensive data management.⁴ Other examples include the partnership between HERE Technologies, a global leader in location platform services, with Glympse, a pioneer in real-time location technology, to offer real-time parking data to improve last-mile deliveries in Chicago specifically for retailers and quick-serve restaurants⁷.

2. Flex Zones & Ranking Curbside Priorities

Flex zones are flexible areas that accommodate different right-of-way functions along segments of the same roadway. They can serve different purposes through simultaneous or temporal mixed-use designation⁶. In 2016, the City of Seattle adopted “flex zones,” by allocating ranked curb use priorities according to street types (see fig. 1)⁵. Similarly, in 2017 Washington DC reallocated curbside space from private vehicle parking to pick-up and drop-off zones for ride-hailing services and then expanded the program in 2019 by including loading and unloading zones for delivery services¹. The City of Rotterdam has been experimenting with *temporary* repurposing of curbs to gauge public reaction before making the changes permanent¹.

	Commercial or Mixed-use Areas	Residential Areas	Industrial Areas	Ranked Priority
Modal Plan Priorities	1	1	1	
Access for Commerce	2	3	2	
Access for People	3	2	3	
Public Space Activation	5	6	4	
Greening	6	4	5	
Private Vehicle Storage	4	5	6	

Figure 1 'The City of Seattle ranked curbside priorities'; Source: NACTO (2017)

3. Expanding the Scope of Commercial Loading Zones

Allowing DNCs to access commercial un/loading zones at a cost, reduces the duration of occupancy and prevents illegal use. Realtime Information Systems (described above) complements this strategy well. Washington D.C. uses an app through which DNC vehicles can purchase permits to park in loading zones during designated time periods⁸. This program initially met with some pushback, but soon the District found that delivery companies were willing to pay for the reliability that the app-based permit provided. The program helped reduce delivery delays and parking violations⁶.

4. Off-peak Delivery and Congestion Pricing

Demand at peak periods can be mitigated by encouraging off-peak delivery for businesses in central districts through off-peak delivery and congestion pricing. For e.g., NYC DOT started charging delivery vehicles up to \$20 at critical points of entry into Manhattan and made commercial customers such as restaurants and other small businesses switch delivery to off-peak time periods⁹. Shifting delivery hours was most viable for large, chain businesses and businesses with extended opening hours. DNCs reported that the program resulted in ‘better availability of parking, lower congestion, less stress from driving, faster travel times, and less time required to complete delivery routes’⁶.

⁶ curbFlow.com (2020)

⁷ Frost (2019)

⁸ GoDCgo (2018) in ITE (2018)

⁹ NYC DOT (2010) in ITE (2018)

5. Delivery Vehicle Staging Zones

Dedicated time-limited on-street space for next-in-queue transport trucks waiting to access single-access off-street loading/unloading points in high demand building locations can help reduce incidents of large vehicles illegally stopping and blocking lanes or cruising unnecessarily⁶. Toronto has implemented delivery vehicle staging as part of its Curbside Management Strategy (2017).

6. Urban Consolidation Centers (UCCs) for Last Mile Delivery (Hub & Spoke Model)

UCCs are Public Private Partnerships (typically between municipal governments and DNCs) that reduce redundancy in delivery services within neighborhoods that have a high number of low-volume deliveries via different delivery services⁶. They consolidate packages from multiple DNCs and enable their last mile delivery via smaller, low-emission vehicles thereby reducing congestion, accidents and environmental impact and freeing up curb space⁶. Demand for UCCs can be seen in how DNC workers informally adopt such models and inadvertently block curbs in cities such as Oakland. In such cases, a UCC could potentially be a designated parking lot.

7. Moving Loading and Access Around the Corner

Rather than creating loading zones directly in front of each delivery destination, cities can identify a reasonable proximity for loading and unloading access. By relocating loading zones, main street curb space can be reallocated to high-turnover parking, public transit and community/green use.^{6,5} This strategy is especially useful for dense residential areas where curb priorities with respect to safety and community building are unlike those in commercial districts. A study by NYC DOT in Brooklyn showed that delivery drivers prefer reliable, legal and lengthier access to a slightly distant dedicated loading space over the option of parking illegally closer to their destination⁶.

Enforcement & Equity Considerations

While enforcement is essential to implement most of the strategies listed above, consideration needs to be given to how this enforcement is practiced since it is deeply entangled with widespread equity issues in the US. Manual enforcement can not only be expensive and inefficient,⁵ but also raise issues of over-policing especially in vulnerable neighborhoods. On the other hand, automated enforcement has a high initial cost but is consistent, predictable, unbiased and has been demonstrated to improve the efficiency of the entire street⁵. In New York City, pole-mounted license plate readers are used to enforce transit lanes and in San Francisco, bus-mounted cameras are used to monitor unauthorized vehicles blocking bus lanes⁵.

Tickets, in these cases, are issued to the vehicle registrant rather than the driver and are civil violations. Heavy fines have a disproportionate impact that varies with race, income, gender et cetera. According to NACTO (2017), 'in setting fines for transit lane or parking violations, the lowest effective fine should be used'. Fines in Oakland's CBD are 50% higher compared to the rest of the city⁵, but data from multiple cities shows that consistently enforced but relatively low fines are more efficient in deterring parking violations. NACTO (2017) also recommends that parking violation fines be reduced or diverted for disadvantaged groups. For e.g New York State, the City of Minneapolis, and several other states and cities allows certain offenses to be dismissed if drivers participate in a relevant driver education program⁵. However, such driver education programs do entail several hours that need to be dedicated every week and time is a privilege that many low-income families cannot afford.

Conclusion

This memo outlines learnings from a literature survey conducted in June '20, pertaining to the rise of e-commerce and DNCs, associated right of way issues and innovative curbside management strategies. Most of the literature found focused on e-commerce delivery vehicles and was not specific to DNCs. DNCs typically have lesser schedule flexibility and usually need to park their vehicles for a shorter amount of time than vehicles associated with e-commerce services such as Amazon. Hence, several strategies presented above may not perfectly fit DNCs and will have to be adapted in order to be adopted.

This literature survey has now been supplemented with learnings from a month-long site study as well as interviews. A report summarizing appropriate policy and design changes specific to Oakland has been submitted.