

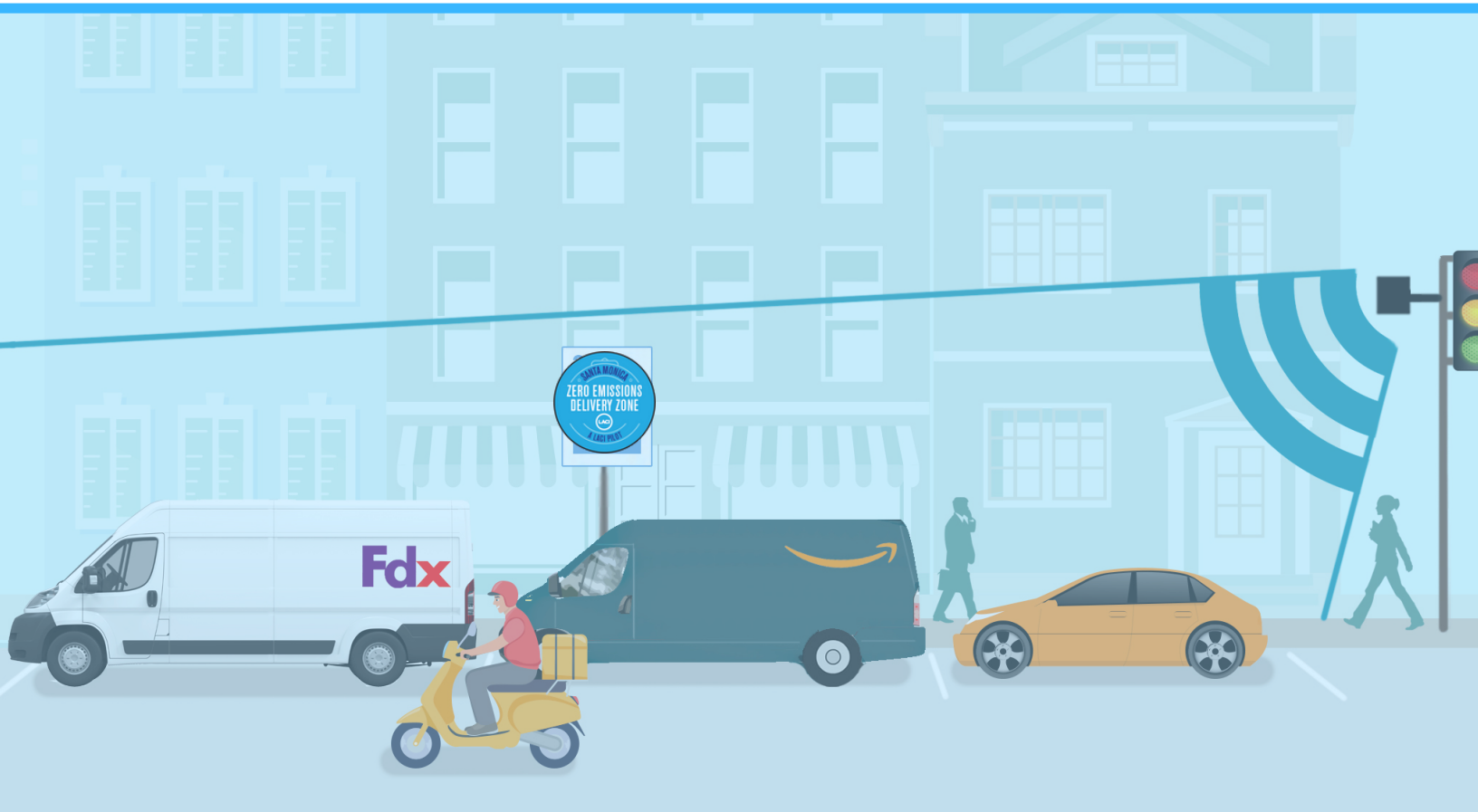
December 2022

# City of Santa Monica Zero Emissions Delivery Zone

2022 Report

Report by

**Automotus**



# Table of Contents

Definition of Terms.....	2
Overview .....	3
Locations .....	5
Data .....	7
Strategies for Success .....	13
Next Steps .....	14
Acknowledgments.....	15

# Definition of terms

## Park Types

**Full:** Parking fully alongside a curb or spot

**Double:** Parking parallel to a car already parked at the curb

**Lazy:** Crooked, or partially out of a curb or spot

## Vehicle Types

### **Car**

1. Limousine - Large luxurious often chauffeur- driven vehicle
2. SUV - Taller and boxier than sedans, offer an elevated seating position, and have more ground clearance than a car
3. Sedan - Four doors and a traditional trunk
4. Pick-up - has a passenger cab and an open cargo bed in the rear

### **Bus**

1. Large - Passenger carrying vehicle over 35 feet long
2. Mini - Passenger carrying vehicle with larger passenger capacity than a minivan or sedan, but less than a large bus (20-25 feet in length)

### **Cyclist**

1. Pedal-based Mountain bicycle, road bicycle, or similar
2. E-Cargo

### **Delivery Vans**

1. Heavy Van (USPS) and (UPS)
2. Light Van (Amazon Prime)

### **Pedestrians**

1. Adults
2. Toddlers

### **Freight/ Freight Trucks**

1. Light - Larger than a van, but smaller than a large freight
2. Heavy - Tractor trailer, semi-truck, Lorry, 3 axle or more

### **TNC - transportation network companies**

1. Lyft
2. Uber

## Zone Types

**Control:** no signage, no time limits

**Zero Emissions Delivery Zone (ZEDZ):** a zone with signage designating that it have a max loading time of 10 minutes and it for zero emission vehicles only

# Overview

Automotus was selected by the Los Angeles Cleantech incubator in 2020 to provide curbside analytics zero emissions only loading zones for the Santa Monica Zero Emissions Delivery Zone.

The Zero Emissions Delivery Zone formally launched in February 2021 and the first set of ZE curbs went online July 2021. A second set of control locations were added in February 2022. There are a total of 8 ZEDZ curbs and 4 Control locations in the Zero Emissions Delivery Zone.

## Goals

### Safer Streets (Safety)

reducing or minimizing impact to vulnerable road users by tracking:

- Lazy parks are parking outside the lines (more than half of the car outside the lines). That could be over the curb, or even into the street.
- Double parks are when the vehicle is stopped completely inside the street for over 90 seconds.
- Overnight parking is when the vehicle that starts past 9pm stays for over 6 hours.

### Support for Local Businesses

increasing pick up/drop off (PUDO) efficiency and increasing access to local businesses by tracking:

- Number of park events
- Dwell times

### Emissions Reductions

reducing the pollution impacts of transportation, specifically from commercial activity by tracking:

- Propulsion types where zero emission vehicles are categorized as electric, low emission vehicle are hybrid, and ICEs are combustion.
- Comparing outcomes across ZE Curbs (ZEDZ) and Controls

# Other Background on the Zero Emissions Curbs project

## Community Engagement & Marketing

- Main Street ZE Curb locations were identified with support from the Main Street BID during a walk through in late 2020. Other locations were identified through information provided by parking enforcement and anecdotal reports.
- Marketing the ZE Curbs were done primarily through larger scale promotion of the Zero Emissions Delivery Zone project.
- There were two events where Automotus tabled to share information on the ZE Curbs.
- Each location for the ZE Curbs (ZEDZ) is identifiable by signage.

### Media and engagement:

- Featured in Fast Company, UtilityDive, SurfSanta Monica
- BID newsletters

## Signage

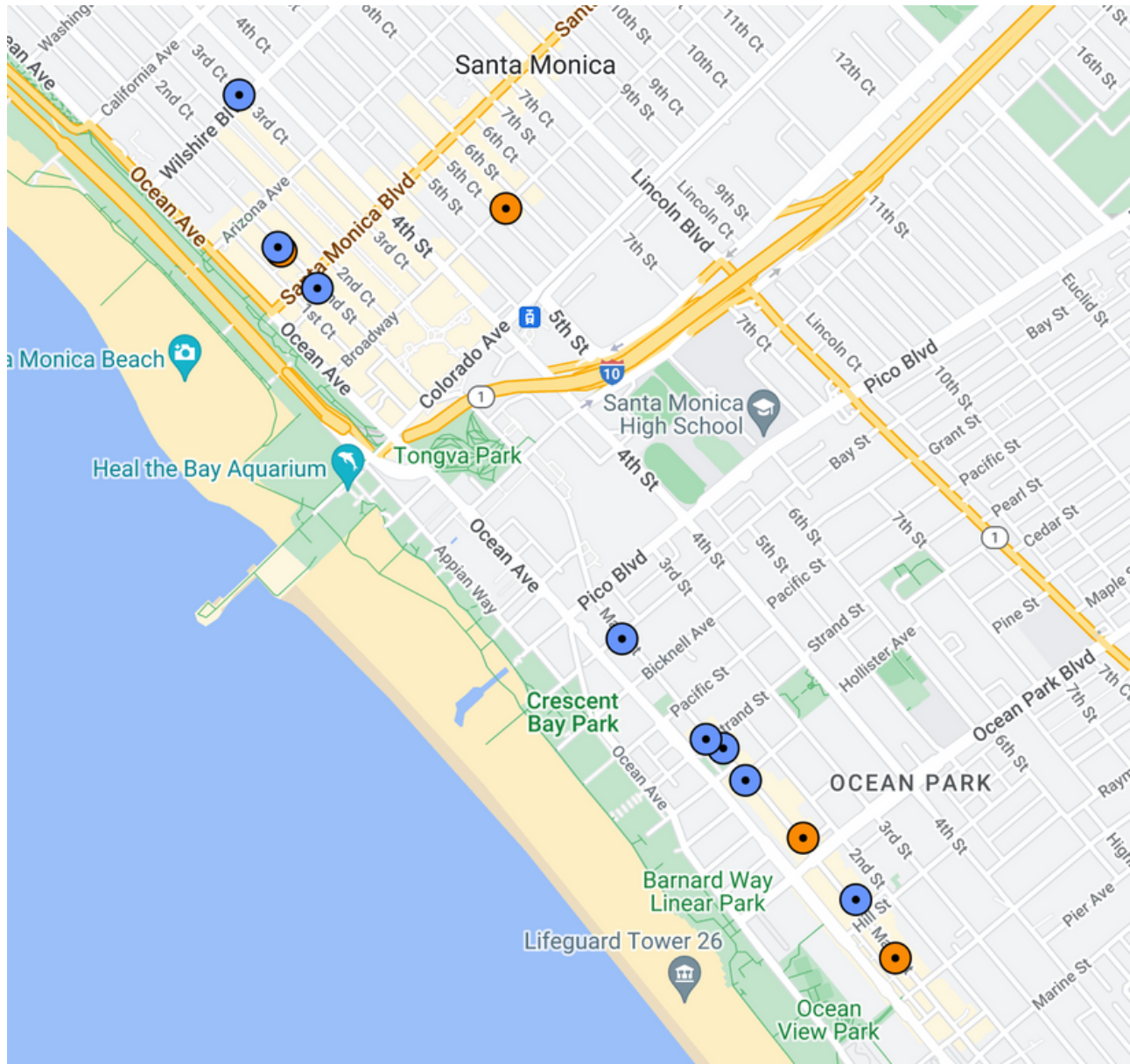
Located close to the ground with small letters. It can be difficult to see from far away, as well obstructed if another vehicle is parked. Furthermore, the sign may be difficult to see from inside the vehicle upon parking in a zone.



# Locations

The Zero Emissions Delivery Zone curbs are located in the Main Street and Downtown neighborhoods.

All locations were previously metered locations.



Blue = ZE Curbs

Orange = Control (no regulations)

# Locations

## Zero Emission Curbs (ZEDZ)

Sensor Locations	Size of Zone	# of restaurants within 500ft	Parking nearby
319 Wilshire Blvd	1 space	10	onstreet metered
2665 Main Street	1 space	10	onstreet metered
2400 Main Street	2 spaces	15	onstreet metered
2309 Main Street	1 space	9	onstreet metered + offstreet lot
2000 Main Street	1 space	4	onstreet metered
200 Strand Street	1 space	7	onstreet metered + offstreet lot
1401 2nd Street	1 space	20	onstreet metered + offstreet lot
1318 2nd Street	1 space	8	onstreet metered + offstreet lot

## Control Curbs

Sensor Locations	Size of Zone	# of restaurants nearby	Parking nearby
520 Broadway	1 space	4	onstreet metered + offstreet lot
2810 Main Street	2 spaces	20	onstreet metered + offstreet lot
2525 Main Street	1 space	5	onstreet metered + offstreet lot
1332 2nd Street	1 space	11	onstreet metered + offstreet lot

# Safety Data

SEPT 2021 - AUG 2022

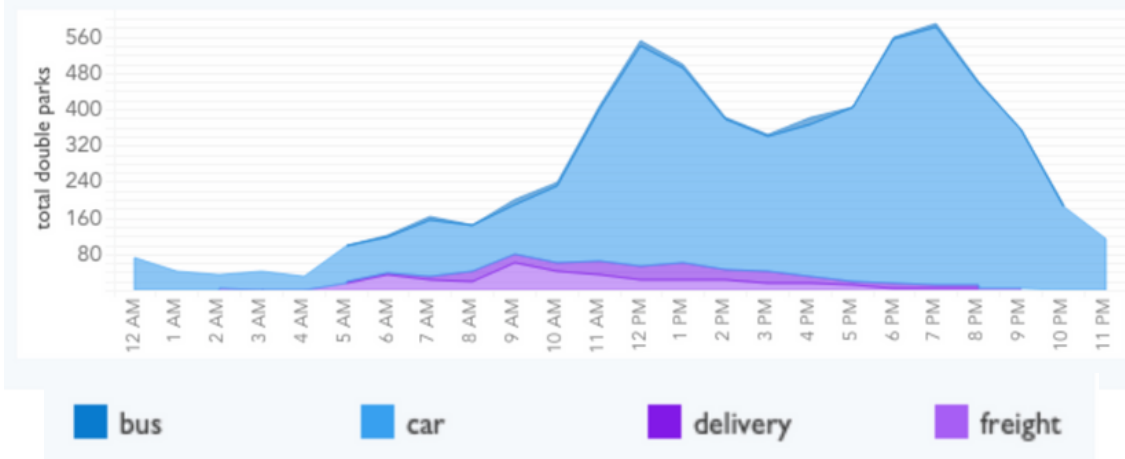
## Double Parks Data

<b>Total Double Parks</b>	6,419
<b>Highest Double Park (ZEDZ)</b>	1318 2nd Street
<b>Highest Double Park (Control)</b>	1332 2nd Street
<b>Avg. Double Park Duration</b>	5:02



## Double Park Peaks

Hourly Breakdown



## DATA INSIGHTS

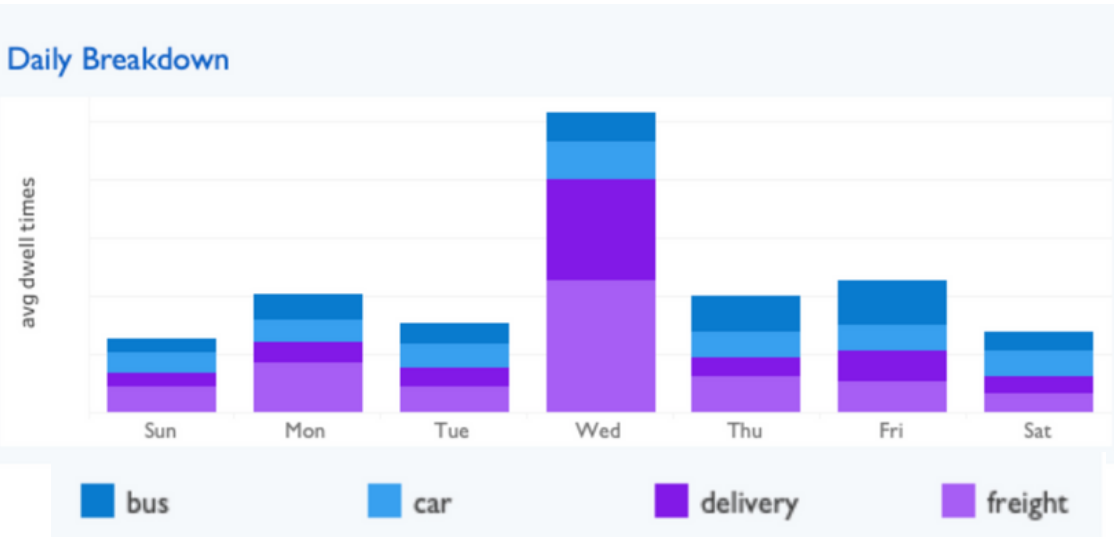
- ✓ 2nd St has highest number of double parks and longest duration of double parks. Opportunity to encourage more offstreet parking and add more loading along 2nd Street to reduce high number of double parks.
- ✓ Double parks peak between 11am and 1pm and with another peak between 5pm and 8pm. The highest peak at 7pm. This mirrors the number of total park events.



# Safety Data

SEPT 2021 - AUG 2022

## Double Park by Vehicle Type



## Lazy Park Data

<b>Total Lazy Parks</b>	16,697
<b>Avg. Lazy Park per day per zone (ZEDZ)</b>	4.54
<b>Avg. Lazy Park per day per zone (Control)</b>	2.35

## DATA INSIGHTS

- Weekends and Wednesdays are highest for double park events; likely contributing is package delivery on Wednesday (Amazon see most purchases Mon/Tues)+ weekend is highest volume of restaurant attendance.
- ZEDZ have significantly more lazy parks than control zones (93% more per day) but fewer double parks & dwell time than control.

### Turnover Data

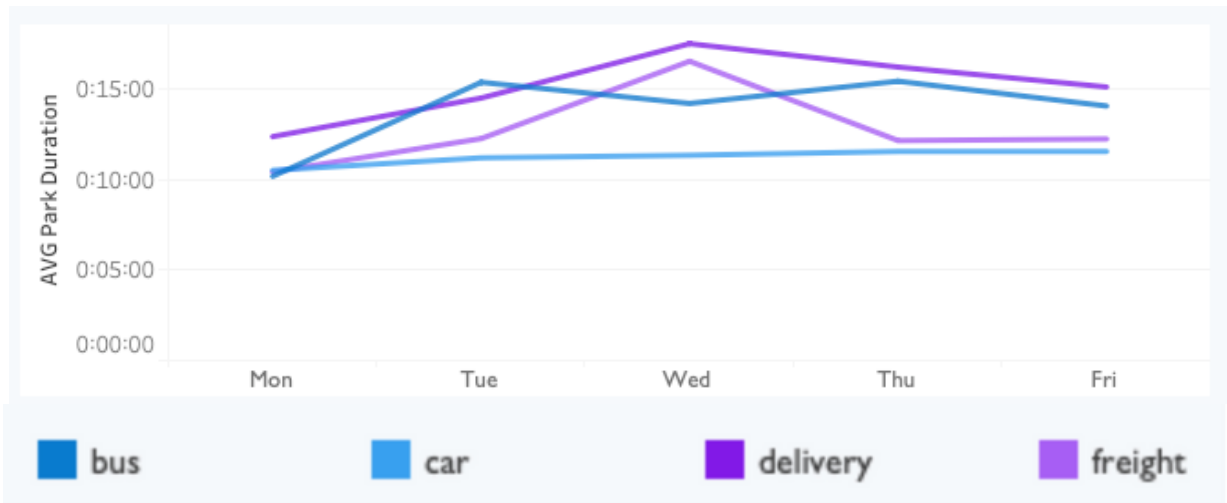
<b>Total Parks</b>	77,278
<b>Total Parks/Day (ZEDZ)</b>	21.57
<b>Total Parks/Day (Control)</b>	4.2; 9.8 (outlier included)
<b>Most Parks (ZEDZ)</b>	1318 2nd Street
<b>Most Parks (Control)</b>	1332 2nd Street
<b>Avg. Dwell Time (ZEDZ)</b>	12:03
<b>Avg. Dwell Time (Control)</b>	26:19; 52:34 (outlier included)



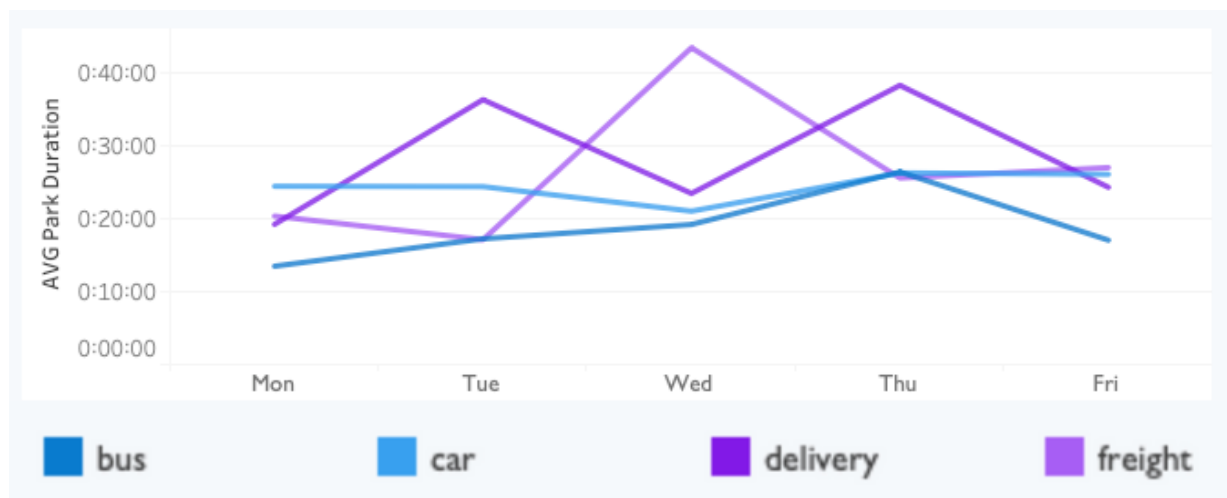
### Parks

Sensor Name	Σ	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
319 Wilshire Blvd.		668	328	596	595	635	602	704
2665 Main St.		695	333	375	520	473	546	588
2400 Main St.		1,514	1,401	1,305	1,471	1,347	1,460	1,529
2309 Main St.		1,645	1,631	1,703	1,617	1,655	1,666	1,623
2000 Main St.		543	418	446	485	455	661	581
200 Strand St.		1,436	1,657	1,584	1,622	1,474	1,762	1,579
1401 2nd St.		778	797	770	846	884	890	744
1318 2nd St.		1,833	1,846	2,101	1,857	1,918	1,851	1,918
(control) 520 Broadway		161	162	210	224	185	210	187
(control) 2810 Main St.		240	210	214	217	254	225	251
(control) 2525 Main St.		182	222	252	279	227	213	296
(control) 1332 2nd St.		1,315	1,232	1,279	1,379	1,293	1,421	1,777

## ZEDZ



## Control



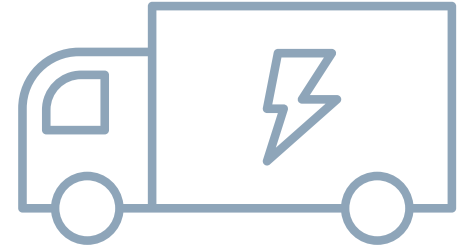
## DATA INSIGHTS

- ✓ Peak parking is the same for ZE Curbs and the Controls with a ramp up from starting at 6am and peaking at noon, a drop off until 4pm, and then another ramp up to a peak from 6-7pm.
- ✓ Park duration in ZE Curbs is significantly lower than the Controls. Control Curbs show a freight peak on Wednesdays of up to 40 minutes. ZE Curbs show a peak on Wednesdays for freight and delivery vehicles with an average max of 15-20 minutes.
- ✓ Locations along 1300 block of 2nd Street have highest number of park events, also highest number of double parks.
- ✓ Zone with highest dwell time include 2810 Main (control) with average of over 60 mins every day of the week. This has a lot of room for improvement due to its proximity to restaurants (20).

## ZEDZ vs. Control

### ZEDZ Park Data

Avg. ZE or Hybrid Parks/Zone	178.8
Avg. ZE Parks/Zone/Day	0.49
ZE or Hybrid as % of all vehicles using ZEDZ	2.27%



### Control Park Data

Avg. ZE or Hybrid Parks/Zone	60.25
Avg. ZE Parks/Zone/Day	0.165
ZE or Hybrid as % of all vehicles using Control	1.68%

## DATA INSIGHTS

- ✓ Number of hybrids and zero emission vehicles are likely low due to the model needing to learn/train to recognize new zero emission vehicles on the market.
- ✓ ZEDZ locations are seeing more zero emission and hybrid vehicles parking and as a total percentage of use than control locations.

# Key Strategies for Success

## Robust Privacy Policies & Practices

- Full compliance with all new and existing data management and privacy policies set by the city.
- Raw video feeds are NEVER stored or streamed and all metadata used for analytics is completely de-identified before shared.
- License plate information of relevant vehicles only used to process parking payments and citations.
- Completed SOC2 Compliance and thorough review by internal IT systems.
- No PII being collected and strict standards against sharing data.

## Access to Infrastructure

- Engaged early and worked closely with Public Works and Parking teams to identify best locations considering optimal zone locations and physical restrictions of streetlight infrastructure.

# Next Steps

## Narrow in

- Build case for curb and onstreet parking changes driven by Automotus data.
- DOE VTO work to support baseline case for other cities to investigate policies to support zero emissions adoption through curb management.

## Support parking policy

- Implemented city ordinance sponsored by forward leaning council-member with support letters from BIDs, CBOs, and relevant community leaders to enable automated (no-app and no-meter) payment, with graduated curb pricing.
- Follow LADOT ALPR to enable higher level for parking rule compliance and improve street safety through reduction of double parks and higher parking turnover.



# Acknowledgments

## Thank you!!!

Automotus would like to thank the many partners who have supported the Zero Emissions Delivery Zones project so far. Innovation and charting new territory does not come easily and would not be possible without the collaboration, advocacy, and feedback from many partners including the teams from:

- City of Santa Monica
- Los Angeles Cleantech Incubator
- Main Street Business Improvement District
- Downtown Santa Monica Business Improvement District