

TECHNICAL MEMORANDUM

West Oakland 2017 Truck Parking Study

Date: September 28, 2017 Project #: 21509
To: Diane Heinze, Port of Oakland
From: Aaron Elias & Mike Aronson, Kittelson & Associates, Inc.
cc:

This memorandum summarizes the findings by Kittelson & Associates, Inc. (KAI) of a truck¹ parking study conducted in West Oakland in June 2017. The objective of this study was to assess whether drayage trucks associated with the Port of Oakland were parking in residential or truck-prohibited areas of West Oakland. The findings of the 2017 survey are also compared with prior surveys completed in 2015 and 2016.

This truck parking study is intended to include a survey of all heavy duty trucks parked in the West Oakland and the Jack London Square area during two different time periods with an emphasis on identifying Port-related trucks. The study area includes all public streets in an area bounded by I-580 to the north, the Estuary on the south, San Pablo Avenue and I-980 and Brush Street to the east, and I-880 to the west, as well as an additional area around Jack London Square bounded by Brush Street, Embarcadero, Oak Street, and I-880 (see Exhibit 6). The detailed findings from the survey are presented and organized by:

- Data Collection and Methodology
- 2017 Survey Findings
- 2017 3rd Street Corridor Findings
- 2017 Residential Zone Findings
- Comparison with 2015 and 2016 Parking Studies
- Conclusions and Summary

¹ “Truck” includes all large vehicles matching the nine (9) types of vehicles categorized in Exhibit 1.

Key findings from the 2017 study include:

- Similar to the 2015 and 2016 studies, the 2017 study showed only a minimal number of drayage trucks parked in residential zones. Over the three years and eight total observation periods, no more than two Port-related trucks have been found in the residential zones per survey period.
- The number of non-Port trucks has also remained relatively consistent over the three years, with zero to seven non-Port heavy trucks and four to fourteen box trucks parked in residential zones.
- The highest concentration of parked trucks is in the 3rd Street Corridor, which generally accounts for about 30%-50% of all trucks in the study area. The second highest concentration is in the industrial zones around the W. Grand Avenue and Mandela Parkway intersection.

DATA COLLECTION AND METHODOLOGY

The data collection methodology described below is consistent with the methodology used in the previous parking studies for West Oakland completed by KAI in 2015 and 2016. The days and time periods of data collection for 2017 were determined based on discussions with Port staff and were selected to be representative of the maximum potential truck parking conditions in West Oakland (when the Oakland International Container Terminal and TraPac were operating night gates).

A survey of the study area was performed on:

- Weekday Daytime (Before 4:00 PM) – Tuesday, 6/20/17
- Weekday Evening (After 6:00 PM) – Tuesday, 6/20/17

Data collection was conducted by personnel from the data collection subconsultant Quality Counts LLC. Quality Counts drove through each street of the study area looking for the different truck classifications shown in Exhibit 1. When a large vehicle was observed, they collected data related to truck type, Port/non-Port classification, and location, and took geotagged photos of the parked trucks. Their deliverable was the photographs of each truck observed and electronic spreadsheets with detailed data on truck location and classification.

Box trucks, which are all non-Port vehicles, were also categorized separately to distinguish them from the larger and heavier duty Port and non-Port trucks. The detailed classifications collected for each truck are shown in Exhibit 1. Most trucks fell into one of these categories; the exceptions were assessed on a case-by-case basis by considering the intended use of the vehicle.

Port-related vehicles were identified in four ways:

- Secure Truck Enrollment Program (STEP) sticker on the driver's side door,
- California Air Resources Board (CARB) "Drayage Truck Registry" sticker on the door,

- Radio-frequency identification (RFID) transponder on the driver's side mirror, and
- Vehicle classification (e.g. a chassis with a container – see Exhibit 1).

The classifications for each truck were also reviewed via the collected photographs to confirm the classification selected by the data collection subconsultant.

Exhibit 1: Vehicle Types and Port/Non-Port Classification

Photo	Vehicle Type	Description	Port/Non-Port Classification
	Bobtail Truck	Tractor only, no chassis or other attachments	Port vehicle if STEP stickers, CARB stickers, or RFID transponders were present
	Container Truck	Semi-truck with chassis and container	Port vehicle
	Truck with Chassis	Semi-truck with only the chassis	Port vehicle
	Chassis Only	Only the chassis, no tractor or container	Port vehicle
	Chassis with Container	Only the chassis and container, no tractor	Port vehicle
	Box Truck	Single-Unit Delivery Vehicle	Non-Port vehicle
	Standard Semi-Truck	Standard semi-truck with tractor and non-container trailer	Non-Port vehicle
	Standard Trailer	Standard semi-trailer without tractor and non-container trailer	Non-Port vehicle
	Other Heavy Duty Trucks	All other trucks not fitting into the categories above (garbage trucks, dump trucks, etc...)	Non-Port vehicle

Source: KAI, 2017

2017 SURVEY FINDINGS

The following describe the various trends that were observed across the data collection surveys performed in 2017. The analysis includes a comparison of Port/non-Port/box truck classifications, vehicle classifications among Port-related vehicles, and vehicle locations.

Port/Non-Port/Box Truck Classification

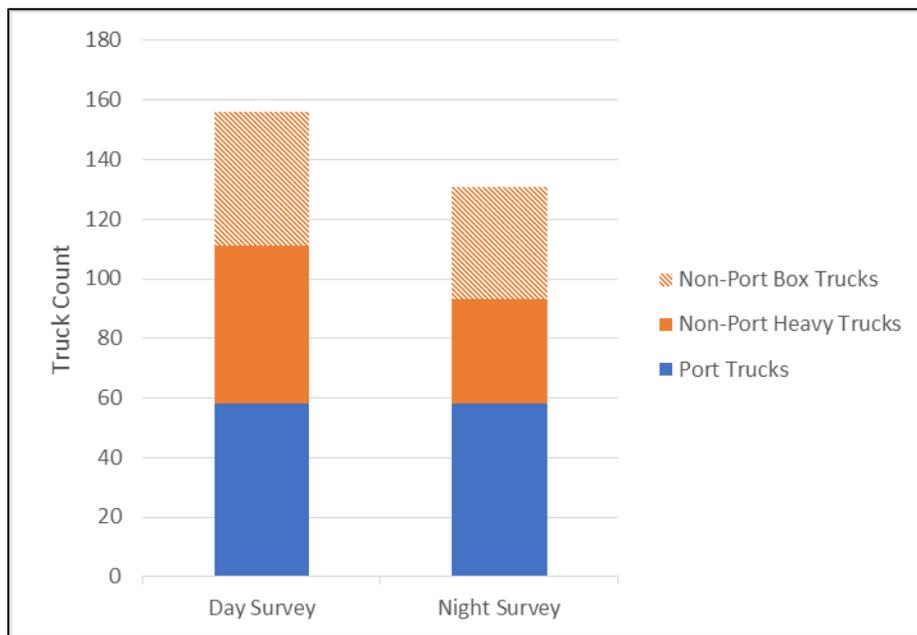
Exhibit 2 summarizes the breakdown of the vehicles observed during the two survey periods by Port and non-Port classifications. The non-Port trucks have an additional breakdown to separate box trucks from heavy trucks. This information is also graphically represented in Exhibit 3.

Exhibit 2: Summary of Truck Classification – All Parked Trucks

Port Classification	Weekday Daytime (Tues. 6/20/2017)		Weekday Evening (Tues. 6/20/2017)		Total of Survey Periods	
	# of Trucks	% of Trucks	# of Trucks	% of Trucks	# of Trucks	% of Trucks
Port Trucks	58	37%	58	44%	116	40%
Non-Port Heavy Trucks	53	34%	35	27%	88	31%
Non-Port Box Trucks	45	29%	38	29%	83	29%
All trucks	156	100%	131	100%	287	100%

Source: KAI, 2017.

Exhibit 3: Classifications for Two Survey Periods on Tuesday, 6/20/2017



Source: KAI, 2017.

As shown in Exhibit 2, a majority of observed trucks were non-Port-related at 60% of all trucks observed over the two survey periods. The primary difference between the day and night survey periods was the number of non-Port heavy trucks, which decreased between the day and night surveys.

Port Vehicles – Vehicle Type Classifications

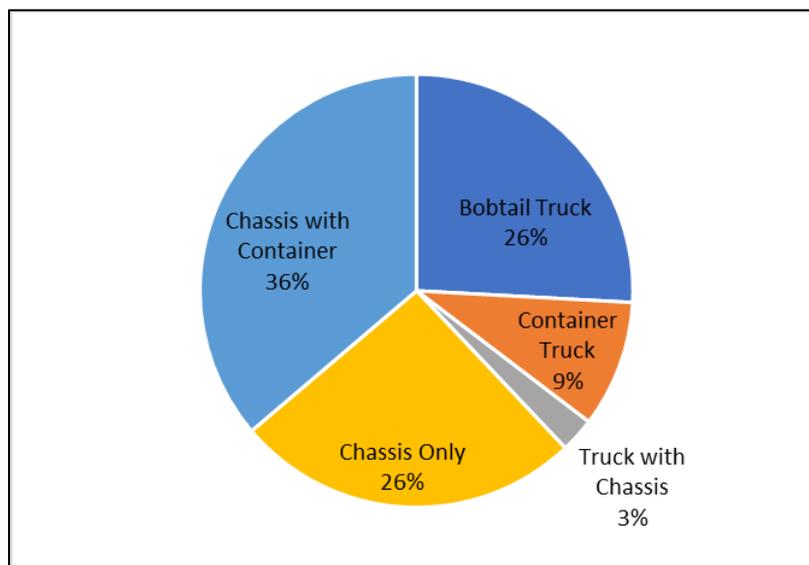
A detailed breakdown of the observed Port-related vehicles is shown in Exhibit 4 and Exhibit 5. The largest Port-related classification (36%) was chassis with containers. The second and third highest were bobtail trucks (26%) and chassis only (26%).

Exhibit 4: Summary of Trucks Classification – Port-Related Vehicles

Port Classification	Weekday Day (Tuesday 6/20/2017)		Weekend Evening (Tuesday 6/20/2017)		Total of Survey Periods	
	Port Trucks	% of Port Trucks	Port Trucks	% of Port Trucks	Port Trucks	% of Port Trucks
Bobtail Truck	15	26%	15	26%	30	26%
Container Truck	3	5%	8	14%	11	9%
Truck with Chassis	1	2%	2	3%	3	3%
Chassis Only	16	28%	14	24%	30	26%
Chassis with Container	23	40%	19	33%	42	36%
All Port-Related Vehicles	58	100%	58	100%	116	100%

Source: KAI, 2017

Exhibit 5: Breakdown of Port-Related Vehicles



Source: KAI, 2017.

Vehicle Locations

Exhibit 6 and Exhibit 7 show the locations of all trucks observed in the study area for the weekday daytime and weekday evening survey periods in 2017, respectively. The maps also show the zoning for the areas in the study area, including commercial, industrial, residential, open space, and other² land uses, as well as the locations of truck-oriented businesses³. The zoning map is consistent with the latest available from the City of Oakland (May 2017). Port-related vehicles are denoted as a black circle, non-Port heavy duty trucks are denoted as a blue square, and smaller box trucks (non-Port) are denoted as a green square.

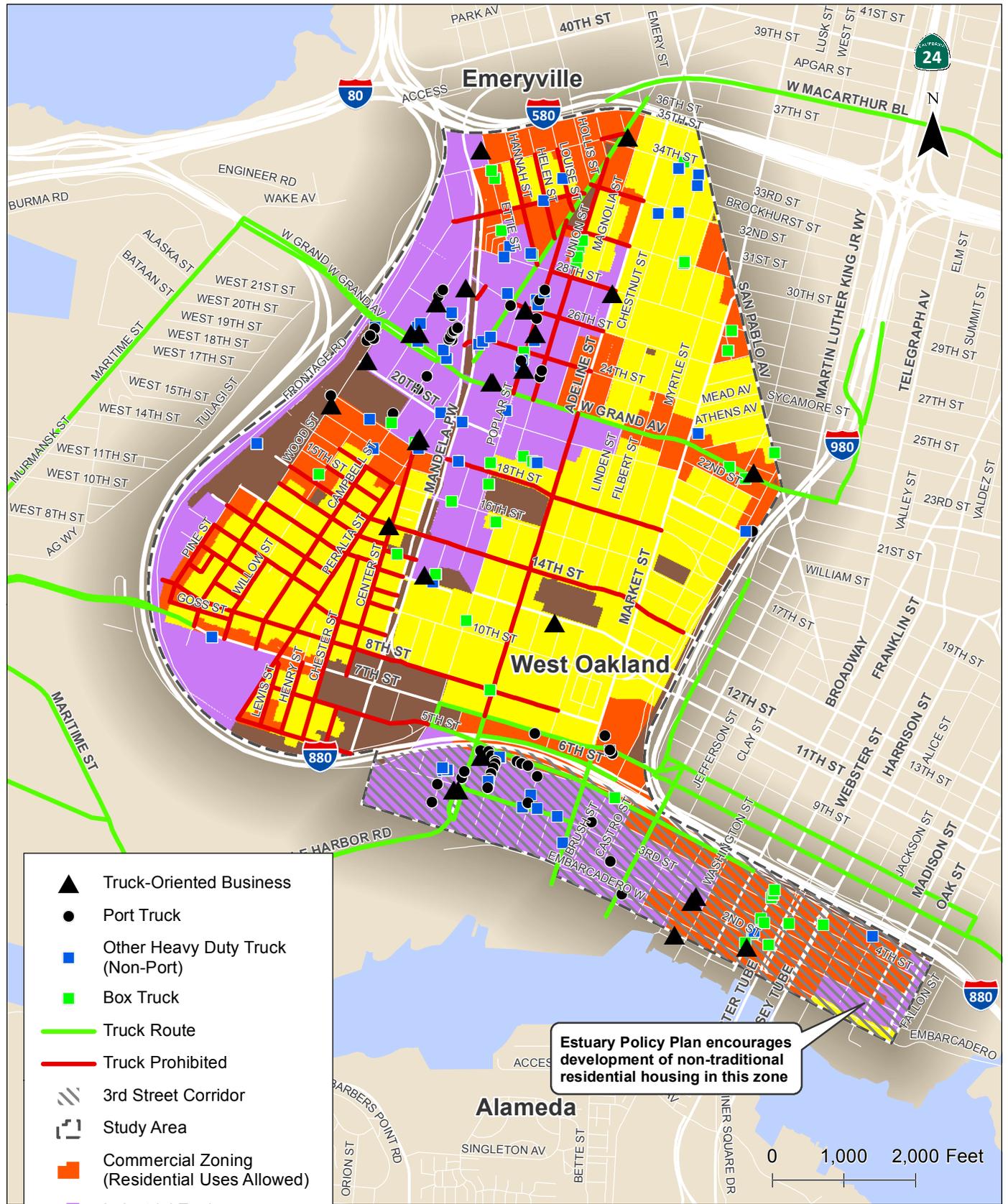
The Port-related trucks were generally found in the following locations:

- The area to the south of I-880, along 5th Street and Chestnut Street, part of the 3rd Street Corridor
 - There are several truck-oriented businesses in the area - A.V. Trucking Co. Inc., Narayan's Trucking Inc., Cargobay Trucking, and Rinehart Oil - that may account for truck parking activity in this area zoned as industrial.
- The industrial area to the north of W. Grand Avenue east and west of Mandela Parkway
 - There are eight truck-oriented businesses in the area - A.M. & S. Transportation Co., Jays Small Moves LLC, Mutual Express Company, Tighe Drayage Company, Inc., Matheson Mail Transportation Inc., Saroni Food Services, and Quintero Trucking Corporation, and the Customs Inspection Station - that may account for truck parking activity. The City of Oakland's truck routes show both Poplar Street and Union Street are truck prohibited north of W. Grand Avenue. However, a substantial amount of trucks were parked on these streets, likely related to the truck-oriented businesses.

As described above, the Port-related vehicles are primarily in locations with a source of Port-related uses, such as container yards and trucking facilities. There was one Port-related truck observed in the residential areas during the evening survey near Market Street and 8th Street. No Port-related trucks were observed in residential areas during the daytime survey.

² The "Other" category for zoning includes Special and Combining land uses, such as the Residential Commercial Combining, Broadway Valdez District, and other miscellaneous land uses.

³ Truck-Oriented Businesses were defined in this study as those businesses identified by the North American Industry Classification System (NAICS) codes 4841 (General Freight Trucking), 4842 (Specialized Freight Trucking), and 4931 (Warehousing & Storage).



- ▲ Truck-Oriented Business
- Port Truck
- Other Heavy Duty Truck (Non-Port)
- Box Truck
- Truck Route
- Truck Prohibited
- ▨ 3rd Street Corridor
- ▭ Study Area
- Commercial Zoning (Residential Uses Allowed)
- Industrial Zoning
- Residential Zoning
- Other Zoning

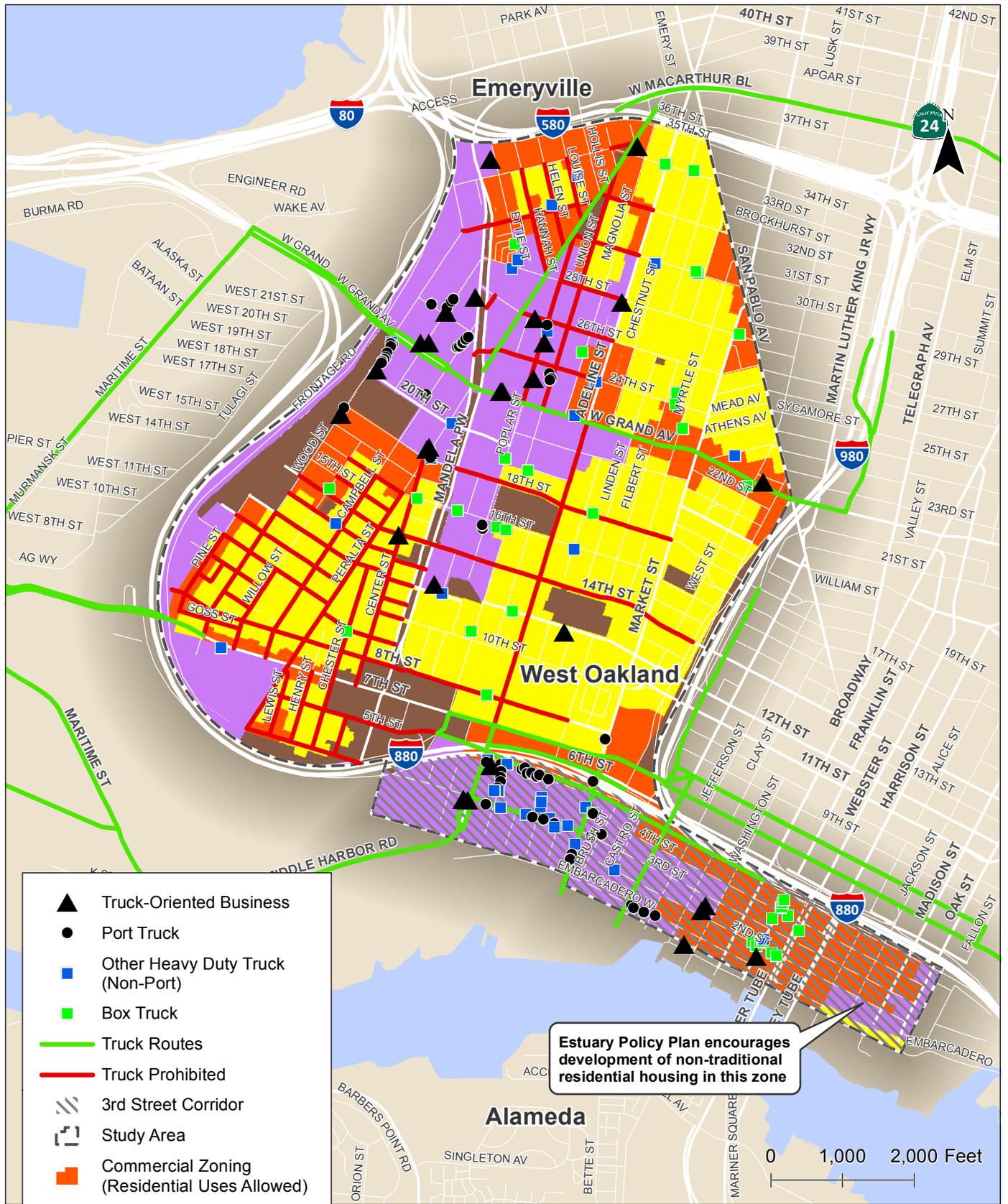
Estuary Policy Plan encourages development of non-traditional residential housing in this zone

0 1,000 2,000 Feet

**Weekday Daytime 6/20/2017
Truck Parking Locations
Oakland, California**

**Exhibit
6**

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Estuary Policy Plan encourages development of non-traditional residential housing in this zone

**Weekday Evening 6/20/2017
Truck Parking Locations
Oakland, California**

Exhibit
7

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2017 Truck Parking in 3rd Street Corridor

As shown in Exhibit 6 and Exhibit 7, there was a high concentration of Port-related trucks in the 3rd Street Corridor south of I-880 between the Port of Oakland and Fallon Street. Known as the 3rd Street Corridor, it includes various businesses served by trucks and is primarily zoned for industrial and commercial land uses; however, a few residential land uses, such as high rise residential east of Alice Street, are included since residential uses are allowed in commercial zoning and the Estuary Policy Plan further allows residential uses in industrial zones of the 3rd Street Corridor.

Exhibit 8 summarizes the number and percentages of observed vehicles that were found in the 3rd Street Corridor area and compares it with the total number found for the entire study area. Overall, almost half of Port-related trucks (44%) in the entire study area were found in the 3rd Street Corridor, and more than a third (38%) of all trucks (Port and non-Port) observed in the entire study area were found in the 3rd Street Corridor. Port-related trucks accounted for a little less than half (51 out of 108) of the parked trucks observed in the 3rd Street Corridor.

Exhibit 8: Comparison of 3rd Street Corridor Trucks and All Surveyed Trucks

Classification	Weekday Daytime (Tuesday 6/20/2017)			Weekday Evening (Tuesday 6/20/2017)			Total		
	3rd St Corridor	Total Study Area	3 rd St % of Total	3rd St Corridor	Total Study Area	3 rd St % of Total	3rd St Corridor	Total Study Area	3 rd St % of Total
Port Trucks	23	58	40%	28	58	48%	51	116	44%
Non-Port Heavy Trucks	12	53	23%	18	35	51%	30	88	34%
Non-Port Box Trucks	13	45	29%	14	38	37%	27	83	33%
All trucks	48	156	31%	60	131	46%	108	287	38%

Source: KAI, 2017.

2017 Truck Parking in Residential Zones

A large portion of the study area is zoned for residential land uses. Exhibit 9 summarizes the number of parked trucks that were observed in areas zoned for residential land uses compared to the total number of parked trucks observed in the study area. Of the 287 total (non-Port and Port-related) parked trucks observed in the daytime and evening surveys, a total of 38 trucks (13%) were parked in residential areas. This includes only one Port-related truck which was parked on Market Street between 7th Street and 8th Street during the evening survey.

Exhibit 9: Comparison of Trucks Parked in Residential Zoning and All Survey Trucks

Classification	Weekday Daytime (Tuesday 6/20)			Weekday Evening (Tuesday 6/20)			Total		
	Residential Areas	Total Study Area	Residential % of Total	Residential Areas	Total Study Area	Residential % of Total	Residential Areas	Total Study Area	Residential % of Total
Port Trucks	0	59	0%	1	59	2%	1	118	1%
Non-Port Heavy Trucks	7	52	13%	5	34	15%	12	86	14%
Non-Port Box Trucks	11	45	24%	14	38	37%	25	83	30%
All Trucks	18	156	12%	20	131	15%	38	287	13%

Source: KAI, 2017.

COMPARISON WITH 2015 AND 2016 TRUCK PARKING STUDIES

Truck parking data were previously collected for similar studies in 2015 and 2016 for the same study area. The 2015 study included four survey periods while the 2016 and 2017 studies included two survey periods each. The data collection dates for all truck parking surveys include:

- 2015
 - Wednesday July 15, 2015 (Evening)
 - Saturday July 18, 2015 (Daytime)
 - Thursday July 23, 2015 (Daytime)
 - Wednesday September 16, 2015 (Evening)
- 2016
 - Saturday August 13, 2016 (Daytime)
 - Tuesday August 16, 2016 (Evening)
- 2017
 - Tuesday June 20, 2017 (Daytime)
 - Tuesday June 20, 2017 (Evening)

Residential Area Trends

Exhibit 10 shows a comparison between the three survey years of trucks parked in residential areas. Conclusions regarding trucks parked in residential areas include:

- The number of Port-related trucks parked in residential areas remains consistently low at between 0 and 2 per survey period.
- There were more non-Port trucks, both box truck and heavy truck classifications, parked in the residential zones in 2017 compared to the surveys conducted in 2016 and 2015.

3rd Street Corridor Trends

Exhibit 11 shows a comparison of trucks parked in the 3rd Street Corridor for the three survey years. Conclusions regarding trucks parked in this area include:

- Similar to the overall trend in truck parking for the study area, the 3rd Street Corridor had the lowest number of parked trucks in 2016. The 2017 numbers were similar to 2015 with about 45 to 60 trucks parked in the area depending on the day.
- The number of box trucks in the 3rd Street Corridor was comparable between 2015 and 2017 at between 13 and 23.
- There are more non-Port heavy trucks in 2017 compared to 2015 and 2016.
- The number of Port-related trucks observed in the 3rd Street Corridor was generally similar between 2015 and 2017, with 2017 being a little lower during the weekday daytime observations. The number of Port-related trucks observed in 2016 was lower than 2015 and 2017, consistent with the overall trend.

Overall Trends

Exhibit 12 shows a comparison of the data collected across the three survey years. The comparison shows the following:

- 2017 had the most trucks parked in the study area with an average of 144 trucks per survey period. The 2016 survey showed an average of 59 trucks per survey period, while the 2015 survey had 105 trucks on average.
- The increase in the number of total parked trucks observed in 2017 is made up primarily of non-Port heavy trucks, in particular a cluster of dumpster trucks on Poplar Street, concrete mixing trucks on Peralta Street, and recycling trucks on Willow Street. These non-Port trucks were not observed in 2015 or 2016.
- The 2015 and 2017 studies had a comparable number of parked Port-related trucks, ranging from 53 to 68 trucks per survey. The 2016 study showed a much lower number, with between 28 and 42 parked Port-related trucks.
- The percentage of Port-related trucks to all parked trucks observed dropped from 59 percent in 2015 and 2016 to 40 percent in 2017.

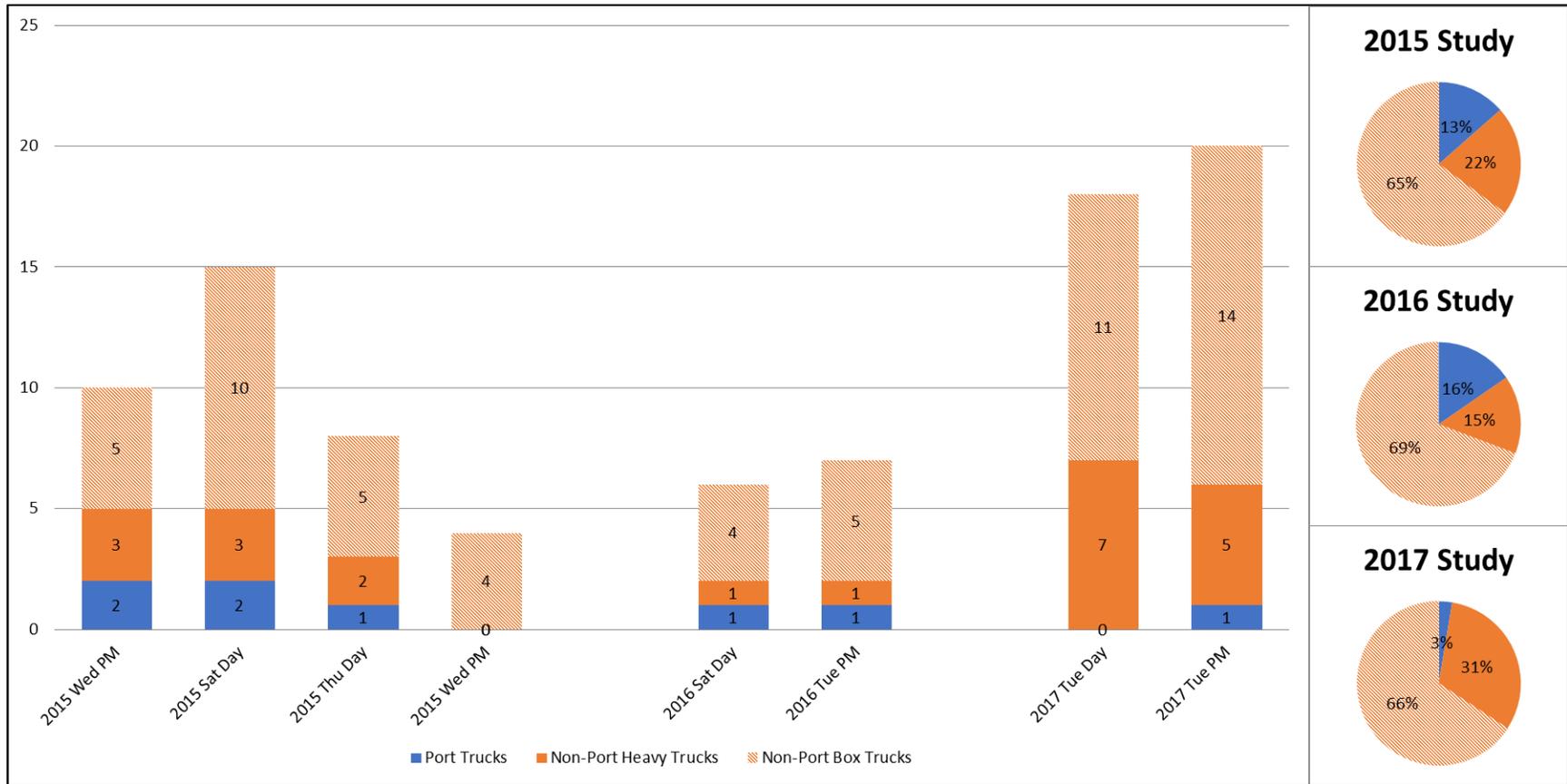
Port-Related Truck Parking Location Trends

Exhibit 13 shows the locations of Port-related trucks during all surveys conducted for 2015-2017. Port-related trucks from the 2015 study are shown in blue, the 2016 trucks are shown in red, and the 2017 trucks are shown in black. Conclusions regarding Port-related truck parking include:

- Overall, trucks were parked in similar areas in all three survey years.
- Approximately half of Port-related trucks parked in the study area were in the 3rd Street Corridor area (49% in 2015, 47% in 2016, and 44% in 2017).

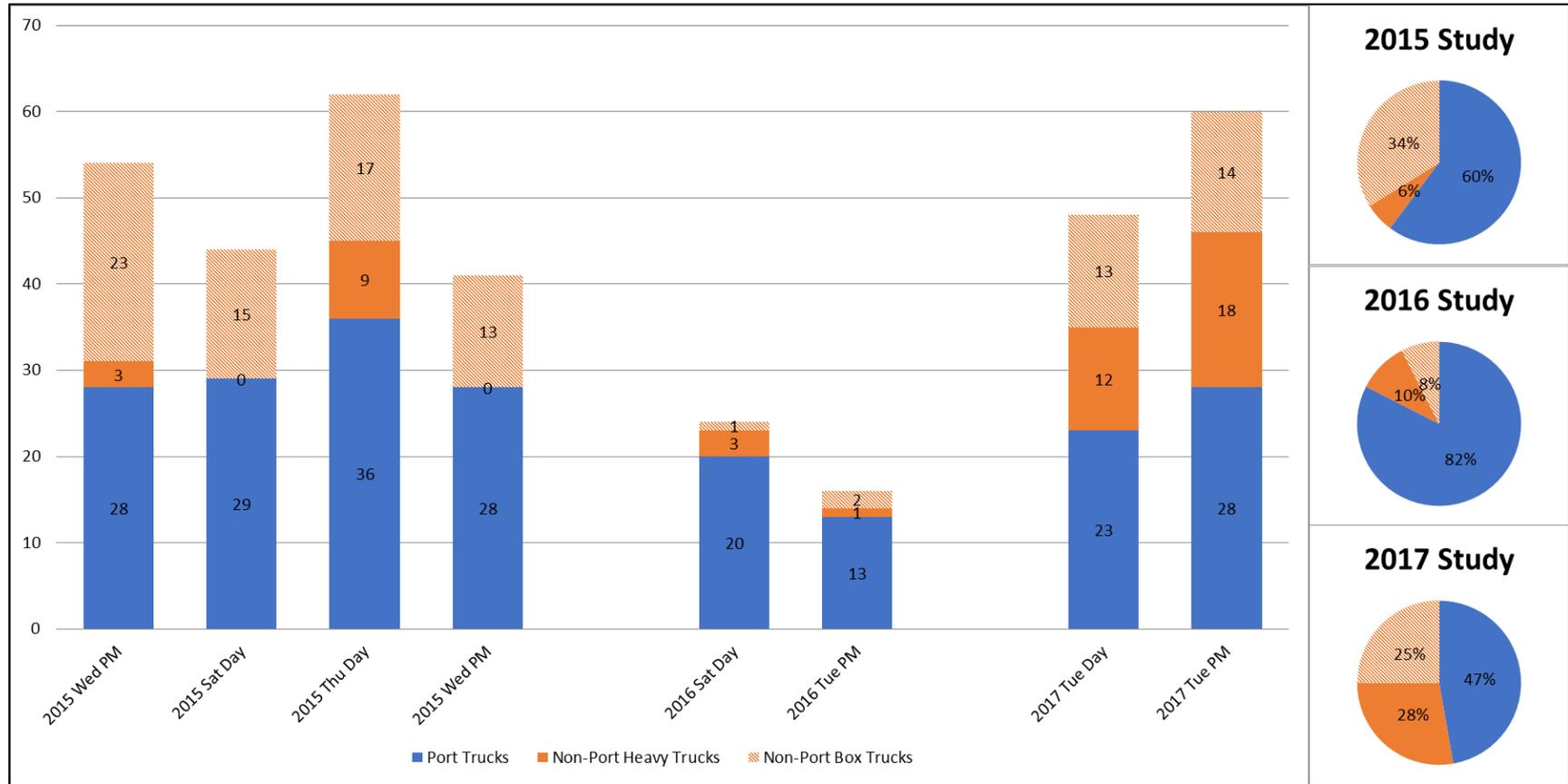
- Zero to two Port-related trucks per survey period, representing approximately one to three percent of all Port-related trucks, were observed in residential zones in the study area.

Exhibit 10: Comparison of Truck Parking in Residential Zones by Survey Classifications (2015-2017)



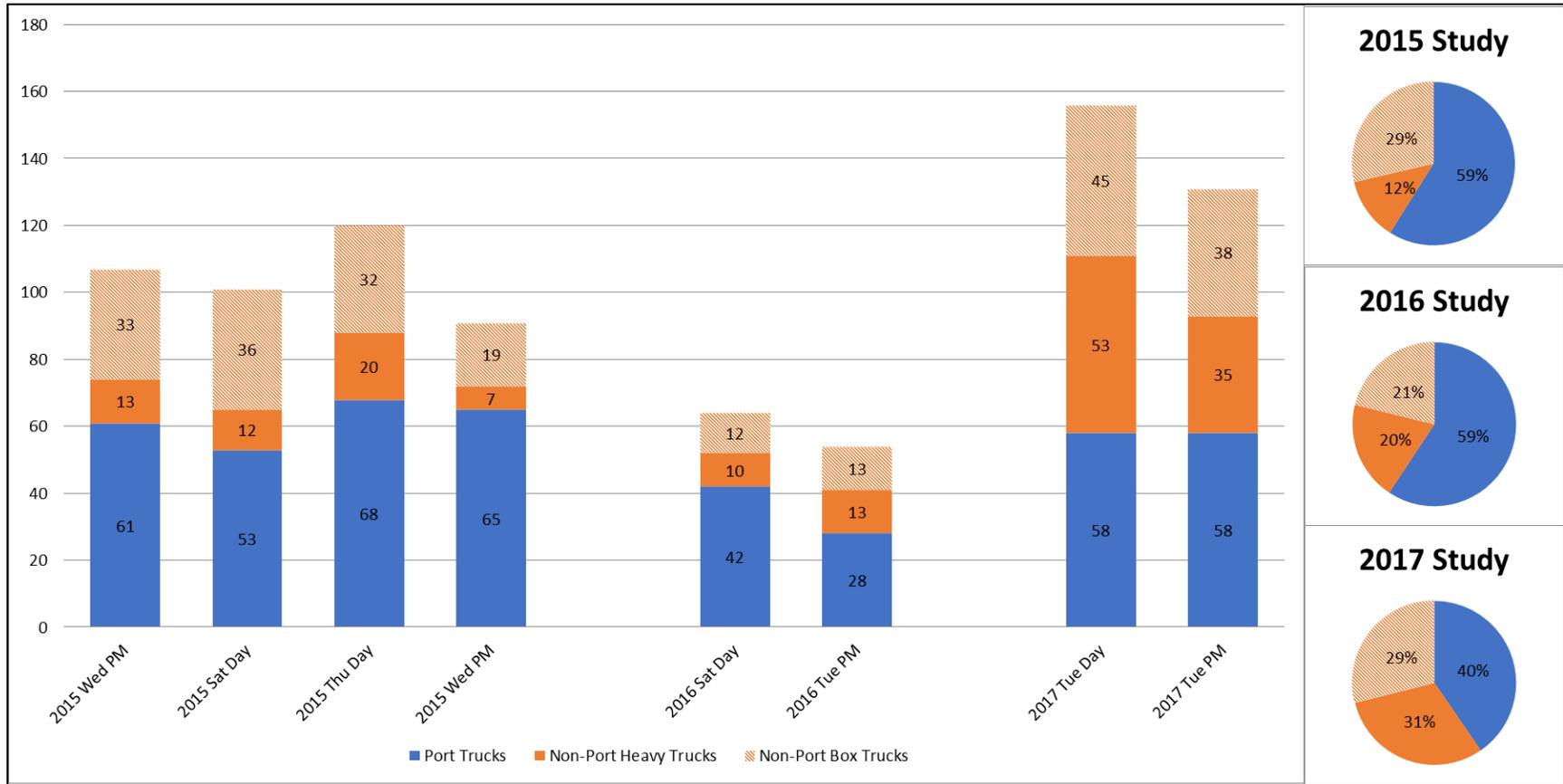
Source: Kittelson & Associates, Inc. 2017

Exhibit 11: Comparison of Truck Parking in 3rd Street Corridor Truck Parking by Survey Classifications (2015-2017)

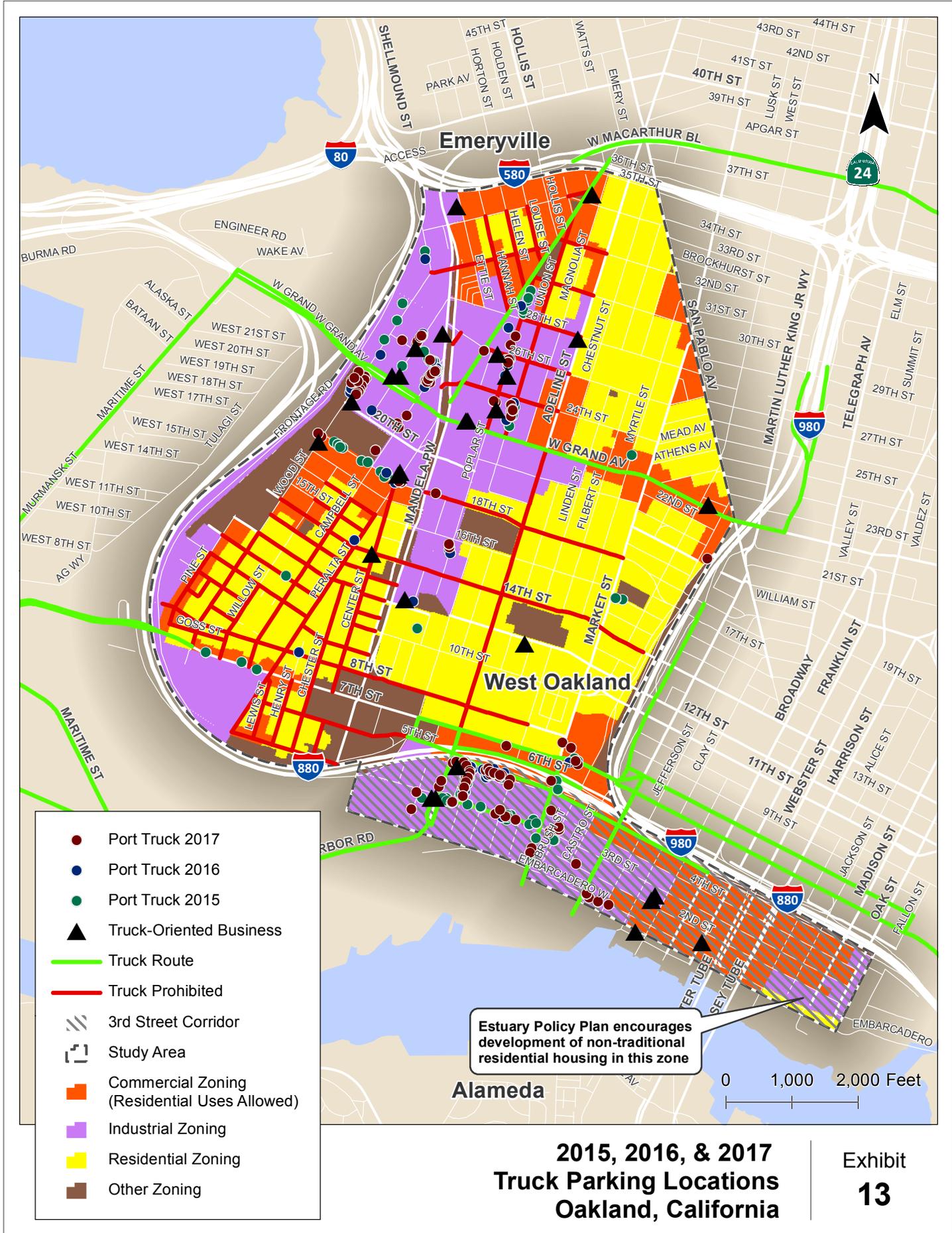


Source: Kittelson & Associates, Inc. 2017

Exhibit 12: Comparison of Total Truck Parking by Survey Classifications (2015-2017)



Source: Kittelson & Associates, Inc. 2017



**2015, 2016, & 2017
Truck Parking Locations
Oakland, California**

**Exhibit
13**

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CONCLUSIONS AND SUMMARY

This study documented the findings of a truck parking survey in 2017 and how the current findings compared to similar surveys in 2015 and 2016. Findings from this analysis include:

- Similar to the 2015 and 2016 study, most Port-related trucks in West Oakland were legally parked in industrial areas that cater to trucks, such as the 3rd Street Corridor and the industrial zone around the intersection of West Grand Avenue and Mandela Parkway.
- There has been no change in the number of Port-related trucks parked in residential areas. The surveys for all three years have shown zero to two Port-related trucks parked in these areas per survey period, representing less than 2% of all Port and non-Port parked trucks.
- Most trucks were parked on streets that were not truck prohibited. However, Poplar Street and Union Street north of Grand Avenue are both truck prohibited but had a number of trucks (both Port and non-Port) parked on these streets. This is likely due to the truck related businesses being on the restricted streets of Poplar Street and 26th Street.
- The average number of Port-related trucks parked in the study area was consistent in both 2015 and 2017. The survey conducted in 2016 showed a lower number of both non-Port trucks and Port-related trucks.
- 2017 showed the highest average number of total trucks parked in the study area; the increase was primarily from an increase in the number of non-Port heavy trucks, which was substantially greater in 2017 compared to the other two survey years. In particular, a cluster of dumpster trucks on Poplar Street, concrete mixing trucks on Peralta Street, and recycling trucks on Willow Street may have contributed the most to this increase. These clusters were not observed in previous years. This may indicate that the 2017 survey day, June 20, 2017, had an unusually high number of clustered non-Port trucks.
- Similar to the 2015 study, the 3rd Street Corridor in 2017 had about the same number of Port-related trucks, but there was an increase in the number of non-Port heavy trucks in this area. Both 2015 and 2017 had more parked trucks in all three categories than what was observed in 2016.

Based on these findings, residential neighborhoods do not appear to be significantly affected by Port-related truck parking. The 2015, 2016, and 2017 surveys showed no more than two Port-related trucks parked in residential zones per survey period. In the industrial/commercial areas of West Oakland, Port-related truck parking, primarily chassis with and without containers and bobtail trucks, occurred in two main areas: the 3rd Street Corridor and around Grand Avenue north of Mandela Parkway. These two areas contain businesses that support trucks, such as the US Customs facility at 1700 20th Street.