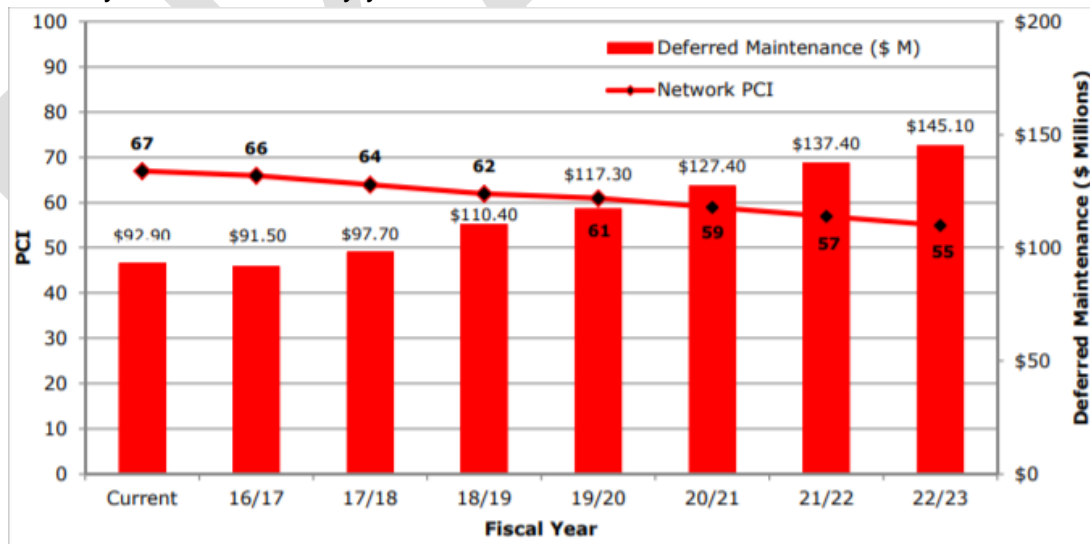


## City of Carson Allocation of the \$9 Million Shortfall for Roadways

- In January 2017, the City of Carson completed the Pavement Management Program Update Report (“NCE PMP Report”), prepared by NCE consulting firm. The report is published on the City’s website:  
<http://ci.carson.ca.us/content/files/pdfs/planning/AdHocMoratorium/Carson2016Pavement%20MangmtProgUpdate-Final%20Report-Jan2017.pdf>
- The NCE PMP report identified road conditions of streets city-wide and concluded that the City will need \$9 million annually to improve its network Pavement Condition Index (PCI) to 70 over the next seven years.

Condition Category	PCI Range	Arterial (%)	Secondary Arterial (%)	Collector (%)	Residential (%)	Entire Network (%)	Budget Distribution (%)	Rehabilitation Budget Amount per Year	Preventive Maintenance
<b>Table1: Pavement Network and Condition Summary [PMP Pg.6]</b>							<i>Budget Distribution based on PCI</i>		
Good (I)	70-100	15%	0%	3%	32%	49%			\$ 1,000,000
Fair (II/III)	50-69	10%	2%	3%	12%	28%	55%	\$ 4,392,157	
Poor (IV)	25-49	8%	1%	2%	5%	17%	33%	\$ 2,666,667	
Very Poor (V)	0-24	5%	1%	0%	0%	6%	12%	\$ 941,176	
<b>TOTAL</b>		<b>38%</b>	<b>4%</b>	<b>8%</b>	<b>49%</b>	<b>100%</b>	<b>100%</b>	<b>\$ 8,000,000</b>	<b>\$ 1,000,000</b>

- Per the NCE PMP report, without the \$9 million annual funding, the City only has \$1.5 million allocated towards maintaining the pavement conditions of its roadways. This will reduce city-wide PCI to 55 by year 2023:



- NCE PMP Report documented the conditions of specific streets (e.g. good, fair, poor), and determined the costs to bring these roads up to and/or maintain at good condition.

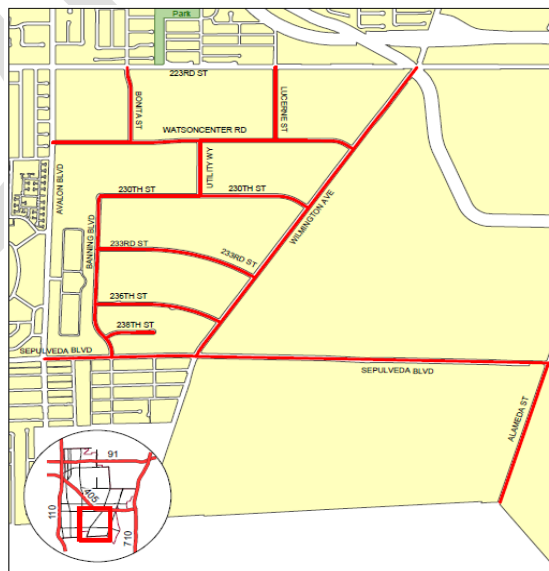
## City of Carson Allocation of the \$9 Million Shortfall for Roadways

- For budgetary purposes, the City's Engineering Division used the specific streets from the NCE PMP Report and divided it into four primary categories: (1) Arterial, Collector & Residential, (2) Regular Truck Routes, (3) Overweight Truck Routes, and (4) Truck Oriented Routes (also refer to as Local Truck Routes). The costs to bring the roads up to good condition are then reallocated by the four categories.

Condition Category	Budget Distribution (%)	Rehabilitation Budget Amount per Year	Treatment Cost for Network Per PMP 2017
<i>Budget Distribution based on Truck Routes Treatment Needs</i>			
Arterial, Collector & Residential		\$ 1,000,000	
Regular Truck Routes	72%	\$ 5,792,436	\$ 43,287,159
Over Weight Truck Routes	11%	\$849,049	\$6,344,988
Truck Oriented Routes	17%	\$1,358,514	\$10,152,243
<b>SUB-TOTAL for Truck Routes</b>	<b>100%</b>	<b>\$ 8,000,000</b>	<b>\$ 59,784,390</b>
<b>TOTAL for the Entire Network</b>		<b>\$ 9,000,000</b>	<b>\$ 102,514,838</b>

In the chart above, the \$1 million is used for all other city-wide streets. The remaining budget is distributed to truck routes. Truck routes require more maintenance and the truck designated streets are in poorer conditions. The budget is prepared to reflect that. The subsequent maps depict the four road categories. **Arterial, collector and residential roads** are not depicted in any color, but cover all other roads not shown.

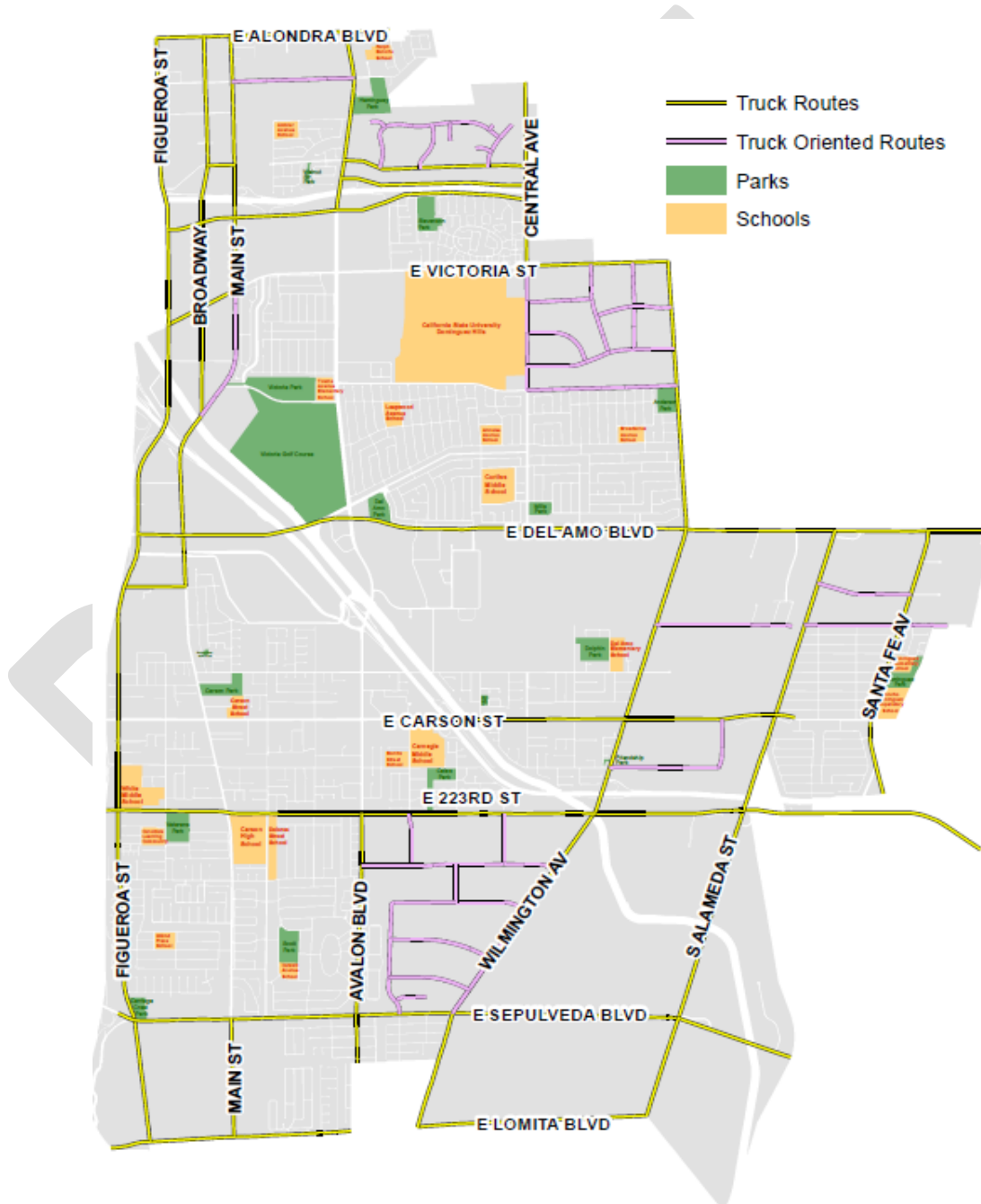
**Overweight Truck Routes** are routes designed in the Carson Municipal Code (CMC 3262.3) to allow the use of oversight vehicles over 80,000 pounds, up to 95,000 pounds, also depicted below in red.



## City of Carson Allocation of the \$9 Million Shortfall for Roadways

**Truck Routes** are designed routes by the Carson Municipal Code (CMC 3260.2) and are depicted in the areas in yellow. Commercial vehicles exceeding a maximum gross weight of six thousand (6,000) pounds are only allowed on these streets within the City of Carson.

**Truck Oriented Routes (or local truck routes)** does not have code specific designation; however they are located in industrial zones. The truck oriented routes/local truck roads are shown in magenta. The primary users are industrial properties.



**City of Carson**  
**Allocation of the \$9 Million Shortfall for Roadways**

- NBS CFD Fiscal Impact Analysis Report examined rates based on land use categories. To determine how the \$9 million is broken down by land use category, the City's Engineering Division prepared an analysis to determine the impacts attributed to non-rucks, commercial trucks and industrial trucks. This analysis (Exhibit 1) is attached.
- For residential, Engineering Division also allocated \$800,000 to maintain residential streets. This is a reasonable assumption as the original breakdown of residential, arterial and collectors are allocated \$1,000,000.
- Using trip generation and pavement impact ratios provided in Exhibit 1, the remaining \$8.2 million dollar shortfall is divvy up between commercial and industrial by the four categories. Explanation and footnote is included below which is derived from the NBS CFD Fiscal Impact Analysis Study:

Description	Total Amount(1)	Residential Allocation	Commercial Allocation	Industrial Allocation
Arterial, Collector or Residential(2)	\$1,000,000	\$800,000	\$86,000	\$114,000
Regular Truck Routes(3)	5,792,437	0	2,490,748	3,301,689
Truck Oriented Routes(4)	1,358,514	0	0	1,358,514
Overweight Truck Routes(4)	849,049	0	0	849,049
<b>Totals:</b>	<b>\$9,000,000</b>	<b>\$800,000</b>	<b>\$2,576,748</b>	<b>\$5,623,252</b>

- (1) Per PMP 2017 CIP Budget Recommendations for Truck Routes.  
(2) Per City, costs allocated 80% to residential property and 20% to non-residential property. The non-residential portion is allocated 57% to industrial property and 43% to commercial property.  
(3) Per City, costs allocated 57% to industrial property and 43% to commercial property.  
(4) Per City, costs allocated to industrial property only.

- Truck Oriented Routes (Local Truck Routes) and Overweight Truck Routes are primarily industrial. Therefore, two new zones are created (Exhibit No. 2). New projects located in these zones will pay their fair share of costs. Community Development Department estimates that 20% of properties in this area would be developed over the next twenty years. These projects undergoing redevelopment will annex into the CFD to partially address this shortfall. As such, the total costs are divided by 20% of acreage in the respective zones.

Description	Zone 1	Zone 2
Additional Enhanced Roadway Services Costs	\$1,358,514	\$849,049
Estimated Development or Redevelopment Acreage(1)	576.81	159.46
<b>Additional Enhanced Roadway Services Costs per Acre</b>	<b>\$2,355.22</b>	<b>\$5,324.53</b>

- (1) Assumes 20% of the area identified in each zone will developed or redevelop over the next 20 years. Appendix A of this report includes a GIS Map that identifies each zone.

- The zone rates are added to the final rates established in the Fiscal Impact Analysis Report – refer to Table 37 of the Report.

**EXHIBIT NO. 1**

**CITY-WIDE TRAFFIC AND TRUCK VOLUMES  
PREPARED BY CITY OF CARSON**

<b>Land Use</b>	<b>Quantity*</b>	<b>Trip Generation** Rate (trips per day)</b>	<b>Generated Traffic (per day)</b>
Residential	4,608 DUs	7.33/DU	33,800
Commercial	2,112,800 s.f.	43.51/ksf (5% Trucks)	91,900 87,300 Non-Trucks 4,600 Trucks
Industrial	6,672,000 s.f.	4.54/ksf (20% Trucks)	30,300 24,200 Non-Trucks 6,100 Trucks
<b>TOTAL</b>			156,000 145,300 Non-Trucks 10,700 Trucks

\* Source: Community Development Department –Projection for Year 2040 (75 % Industrial Growth, 25% Commercial Growth) from NBS Fiscal Impact Analysis Report

\*\* Source: Institute of Transportation Engineers *Trip Generation Manual*. For Residential – the rate is the average for single-family dwellings, apartments, and condos. For Commercial, the rate is the average for specialty retail and shopping centers. For Industrial, the rate is the average for light industrial, heavy industrial, industrial park, manufacturing, and warehouse.

Research indicates that a single truck trip is equivalent to 10,000 automobile trips with regard to pavement wear-and-tear and damage (for a truck that weighs 80,000 pounds). So the 10,700 truck trips per day that are generated in Carson could potentially be equivalent to 107,000,000 automobile trips per day (if the trucks were fully loaded). As some of the trucks are not fully loaded and some are empty, an equivalency table has been prepared with the assumption that a truck trip is equivalent to 2,500 automobile trips (assuming that some trucks are fully loaded, some are partially loaded, some are smaller trucks, and some are empty). Using this assumption, the total volumes relative to pavement wear-and-tear are as follows:

**TRUCK/TRAFFIC EQUIVALENT VOLUMES  
RELATIVE TO PAVEMENT WEAR/DAMAGE**

<b>Vehicle Type</b>	<b>Equivalent Volumes (trips per day)</b>	<b>Percent</b>
Non-Trucks	145,300	0.5 %
Trucks – Commercial	11,500,000	42.8 %
Trucks - Industrial	15,250,000	56.7 %
<b>Total</b>	<b>26,895,300</b>	<b>100.0 %</b>

For this scenario, the table indicates that trucks are responsible for 99.6 percent of the pavement wear and damage in the City of Carson (42.8 % for commercial trucks plus 56.7 % for industrial trucks).

**EXHIBIT NO. 1**

**CITY-WIDE TRAFFIC AND TRUCK VOLUMES  
PREPARED BY CITY OF CARSON**

Truck traffic results in the following impacts:

- Pavement wear-and-tear and damage
- Increased safety risk for vehicles, pedestrians, and bicyclists
- Damage to City property/facilities from collisions (reported and unreported); i.e., street lights, traffic signal equipment, signs, trees, curbs, medians, etc.
- Reduced levels of service on streets and at intersections
- Increased impacts from improperly over-loaded trucks
- Increased noise for residents
- Increased emissions and fuel consumption
- Increased costs to the City to administer and enforce trucking activities

EXHIBIT NO. 2

CFD INDUSTRIAL ZONE MAPS

City of Carson



- Truck Route
- Local Truck/Truck Route
- Overweight Truck

- Industrial Rate Citywide
- Industrial Zone 1 (Local Truck / Truck Oriented Route) - 2884.05 AC - 49.69 LM
- Industrial Zone 2 (Overweight Truck Route) - 797.31 AC - 8.55 LM
- Other Industrial Zones - 1869.49 AC

