National City **SMART** Foundation

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NATIONAL CITY
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SMART...
SAFE, MULTI-MODAL, ACCESSIBLE ROUTES TO... TRANSIT, WORK, SCHOOL, SERVICES & RECREATION
FOUNDATION

Introduction

1

Project Description

National City was awarded a Community-Based Transportation Planning Grant (CBTP) from Caltrans in November 2012. CBTP grants support livable communities, Smart Growth land-use and transportation planning, long-term economic development, multimodal linkages between jobs and housing, commute alternatives, and safe pedestrian and bicycle travel. These grants reflect community values, and encourage nontraditional community participation in transportation planning processes.

A strong foundation is needed to support real changes in land use and transportation. The National City S.M.A.R.T. Foundation (Safe, Multi-modal, Accessible Routes to… Transit, Works School, Services and Recreation) is based upon improvements to the walkability and bikeability of a community. With limitations on funding for making dramatic changes, it is critical that this limited funding be used in areas where it can make the most difference for the health, safety and welfare of the community. Improvements that can make a real difference are related, in the short term, to improving the physical environment with new walking facilities, and in the long term, for integrating land use and transportation planning. Both of these actions require a blueprint with enough detail to identify capital improvement projects that can be prioritized and implemented.

Project Focus

The focus of this planning study is on integrating pedestrian access, neighborhood enhancements, Safe Routes to School and improvements with a variety of ongoing studies, regulations and opportunities. The Smart Foundation is the basis on which non-motorized mobility and land use improvements can be made at a neighborhood level.

The SMART Foundation process includes:

- Development of Geographic Information Systems (GIS) mapping correlating pedestrian safety concerns throughout the city with current transportation facilities and uses.

- Development of a GIS map that utilizes demographic, land use, and transportation data, as well as destinations for pedestrians including public facilities, community programs and transit facilities, all intended to promote better access for those that choose or may not have the option to drive vehicles.

- Review of policies, CIP projects and implementation strategies for pedestrian facilities as they affect equity for the diverse community.

- Integration of previous efforts with new planning regarding the Bikeway Master Plan, Complete Streets Analysis and Wayfinding Signage program, ADA Transition Plan and Capital Projects.

- Integration of planning efforts focused on circulation and mobility related elements, smart growth and urban infill strategies.

- Coordination of proposed street expansions, extensions and improvements to make sure that the non-vehicular requirements of bikes, pedestrians, disabled access and transit access are incorporated into these future efforts, as required by complete streets legislation.

- Identification of opportunities for expanding access to public parks, open space and other recreational facilities through improved pedestrian access on a neighborhood scale.

- Review of how improved pedestrian facilities and integrated land use and transportation planning of alternative modes of travel can help the City in obtaining conformance with climate action plans and greenhouse gas emission reduction goals and lowering overall vehicle miles traveled.

- Implementation of a public input plan and strategy to discuss issues with the community and recommend projects that match the community priorities. This includes walk audits to collect data and identify areas in each neighborhood for improvements.

- Integration with Rady Children's Hospital's Safe Routes to School programs.

Project Scope

The basis of the SMART Foundation is to identify bicycle and pedestrian deficiencies throughout the City and engage its residents in providing feedback on what improvements they would like to see. Whether it is regular maintenance or enhanced crossings, multiple outreach events were conducted along with the distribution of hard copy and online surveys to gather this type of input. Social media such as Facebook and Twitter were also used to announce workshops and events. A project website website was also developed.

Public Outreach

In April 2013, neighborhood walk audits were conducted from the city's three neighborhood parks: Kimball Park, El Toyon Park and Las Palmas Park. The consultant team, along with Rady Children's Hospital, city staff, local organizations and residents worked together to walk almost every street in National City to collect bicycle and pedestrian deficiencies that would be compiled in a citywide database for use in the identification of existing conditions and development of recommendations.

Six additional focus group workshops were conducted from June to October 2013 to reach specific demographics that regularly use the city's non-motorized and transit oriented infrastructure. These workshops included a hispanic, senior, young professionals and parent-student focus. While the hispanic focus, young professional and parent-student were stand alone workshops, the senior focus workshops were conducted during each of the three neighborhood council meetings. Additional outreach was conducted at the National City Library's Literacy nights. Over 500 people responded to the hard copy and online surveys, identifying locations across the City where improvements can be implemented. Details of the workshops and outreach efforts can be found in Chapter Four.

Parent-Student workshop at the Boys and Girls Club

Kimball Elementary Walk to School Day with Rady Children's Hospital

Existing Conditions

Examining the City's existing conditions, documents and planned capital improvement projects provided the baseline information to begin the data gathering phases from a pedestrian and bicycling perspective. Existing and proposed land use, the motorized and non-motorized transportation network and demographics were summarized to provide the City's current and planned conditions. This analysis streamlined the process of identifying deficiencies and gaps in the City's existing transportation network. The SMART Foundation followed many of the policies and guidelines set forth by the recently adopted General Plan to further enhance the grant funding opportunities for project implementation.

Safety Analysis

A bicycle, pedestrian and crime analysis was conducted with cooperation from the City's Police Department. The Police Department provided the necessary data on bicycle and pedestrian collisions and crime data between 2007 and June, 2013.

Bicycle and pedestrian collisions were summarized by community and neighborhood to get a better sense of which neighborhoods had the highest instances of non-motorized collisions. The collisions were analyzed further by intersection, vehicle code violation and other collision factors.

Due to the volume of crime data that was collected, the data was subdivided into three levels of violation. Feedback was provided by the City's Crime Analyst to determine the subcategories appropriate for this project.

- Level one are the non-physical violent crimes which include, amongst others, robbery, vandalism, disorderly conduct, loitering, indecent exposure, possession of firearms, gang activity, and disturbing the peace.
- Level two crimes are more physical and related to children such as assault, battery, child cruelty, possession of a deadly weapon, lewd and lascivious acts, sexual battery, annoying children, crimes against children, firearm discharge and unlawful sexual intercourse.
- Level three are the most serious crimes which include murder, rape and kidnapping.

Additionally, the safety analysis was conducted within a quarter-mile from schools and parks to identify the parks and schools with high rates of collisions and crime for future Crime Prevention Through Environmental Design (CPTED) projects.

Future Conditions

As part of the grant requirement, Geographic Information Systems (GIS) analysis was performed to highlight areas in the City for bicycle and pedestrian priority and Smart Growth areas.

Smart Growth means developing urban, suburban and rural communities with a compact and efficient development pattern that places housing and transportation choices near jobs, retail and schools. The primary focus is on the efficient use of existing infrastructure to preserve open space and natural resources.

SANDAG has developed a Smart Growth Concept Map which identifies locations in the San Diego region that can support smart growth and transit. The concept map is for planning purposes and use in the TransNet Smart Growth Incentive Program. Three concept areas have been identified in National City.

In order to confirm these concept areas are suitable to accommodate smart growth, two separate GIS exercises were performed. These exercises consisted of a City-wide Bicycle and Pedestrian suitability model and an Attractor Element Model. This analysis can also be used to identify areas for project prioritization because of the density of population and attractions. This exercise strengthened the locations of SANDAG's Smart Growth Concept Map which identifies location within the City that can support smart growth and transit.

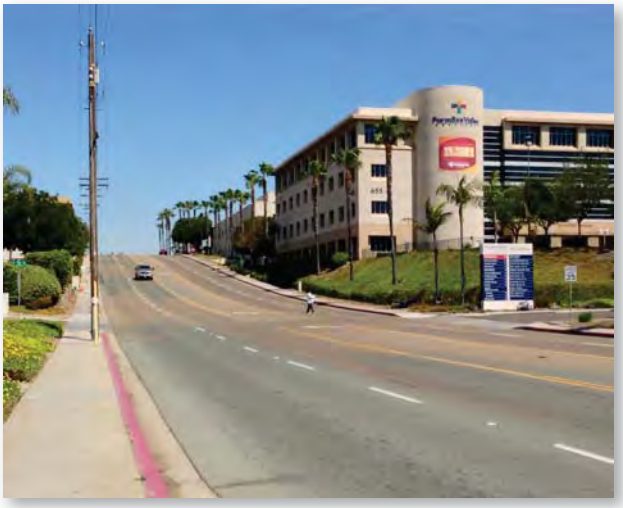
Guidelines were also developed specific to neighborhood improvements through various topics set forth by the City's General Plan. These guidelines have been developed to provide residents the opportunity to implement and take initiative with assistance from the City to begin implementing projects.

Recommended Projects

Once data was gathered from workshops and surveys, a project list was compiled to identify the most commented locations and issues. The projects were narrowed down by eliminating those that were completed during the duration of this project and those that have already been analyzed. Some have either received grant funding or are in the process of applying for grants for these improvements. The initial list of projects confirmed what the City is planning to improve which in turn narrowed down the recommended project list.

SMART Foundation projects are categorized into Tier One and Tier Two.

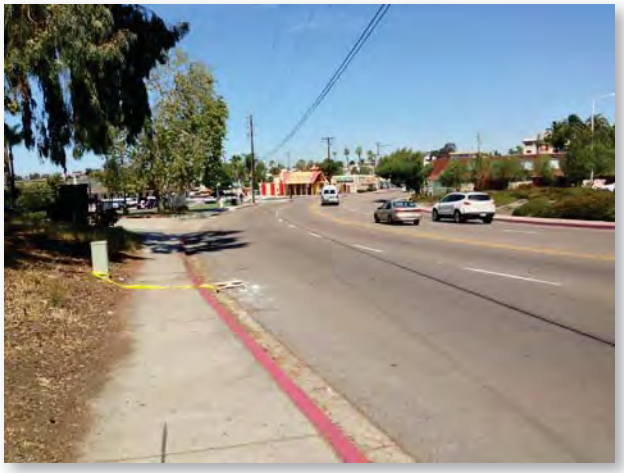
- Tier One projects were identified at high priority projects and moved forward with conceptual designs. These conceptual designs will allow the City to immediately apply for grant funding to further study and install these improvements.
- Tier Two projects are secondary priorities with recommendations identified and located on maps along with planning level-cost estimates.
- Tier Three projects range from widening or improving sidewalks to installing crosswalks or maintenance. While not high priority projects, they provide the framework to identify improvements when/if other improvements are made in the area.



Euclid Ave between 4th Street and 8th Street was identified as a potential project.

Projects that did stand out included improving the pedestrian connections along Euclid Ave between 4th Street and Plaza Boulevard, and improving Joe's Pocket Farm/ Mundo Gardens in northeast National City. These projects were identified as Tier One from the level of public input gathered and priority ranking found in Chapter Five. From input gathered, residents wanted to improve pedestrian crossing Euclid Avenue near Paradise Valley Hospital between 4th Street and 8th Street.

Other input suggested improving crossing Euclid Avenue near Windmill Plaza Shopping Center between 8th Street and Plaza Boulevard. These two sections have been analyzed further with recommendations and are detailed in Chapter Six.



Euclid Ave between 8th Street and Plaza Boulevard

Joe's Pocket Farm/Mundo Gardens

Existing multi-use path along I-805

Adjacent to Joe's Pocket Farm is a multi-use path that connects the neighborhoods north of Division Street to El Toyon Elementary and El Toyon Park. A multi-use path from El Toyon Park and East 12th Street was proposed to eventually connect to the future transit station at I-805 and Plaza Blvd. However, Caltrans would not relinquish the right-of-way to the City, so an alternative on-street route was identified as part of this project to address this connectivity and to extend to Las Palmas Park and Elementary School. This project would then provide a north-south bicycle connection between Joe's Pocket Farm, El Toyon Elementary and Las Palmas Elementary, eventually providing an identifiable route between the two schools. The recommendations associated with this project are found in Chapter Six.

Other projects that came about from public input and planned projects were then categorized into Tier Two Projects. These projects had smaller, but no less important recommendations. These projects were analyzed to address the public's concerns, ADA and pedestrian deficiencies from a planning level perspective.

Funding Sources

National City has been very successful in obtaining grant funding to implement projects such the 8th Street Corridor, 4th Street traffic calming and the Coolidge Avenue Community Corridor. The funding chapter provides the City a menu of grant resources for projects such as striping bike lanes to purchasing equipment for neighborhood pocket farms. This section has been updated to include Federal legislations including MAP-21 to local agencies, such as the San Diego Foundation. This chapter provides the City with the resource to identify which programs will work best for any particular project.

Existing Conditions

2

Community Characteristics

The City is divided into three communities based on their regional parks; El Toyon, Kimball and Las Palmas. These communities are further divided by school district boundaries. The General Plan is built upon this "Neighborhood Unit Concept" where all residential portions of the City are to become identifiable neighborhoods focused on the local public elementary school. These ten neighborhoods can be identified in Figure 2-2 The focus of the walk audits and recommended projects will be within these ten neighborhoods.

The elementary schools within each community are as follows:
Kimball Park: Central, Kimball (includes Old Town) and John Otis, Harbor District
El Toyon: El Toyon, Rancho De La Nacion, Ira Harbinson and Palmer Way
Las Palmas: Olivewood, Las Palmas and Lincoln Acres

Data from the City's General Plan, SANDAG and the US Census Bureau have been summarized to provide demographic characteristics based on each community. The data presented identifies the differences between each community and will be used to assist in project prioritization.

Table 2-1: Community Population Estimates

Community	Population 2010	Population 2030
El Toyon	20,444	23,293
Kimball	17,431	24,749
Las Palmas	18,647	22,390
Total	**56,522**	**70,432**

Source: General Plan 2012, SANDAG

Table 2-2: Community Employment Estimates

Community	Population 2010	Population 2030
El Toyon	3,699	4,881
Kimball	13,362	14,332
Las Palmas	5,568	5,621
Total	**22,629**	**24,834**

Source: SANDAG

Figure 2-1: National City Communities

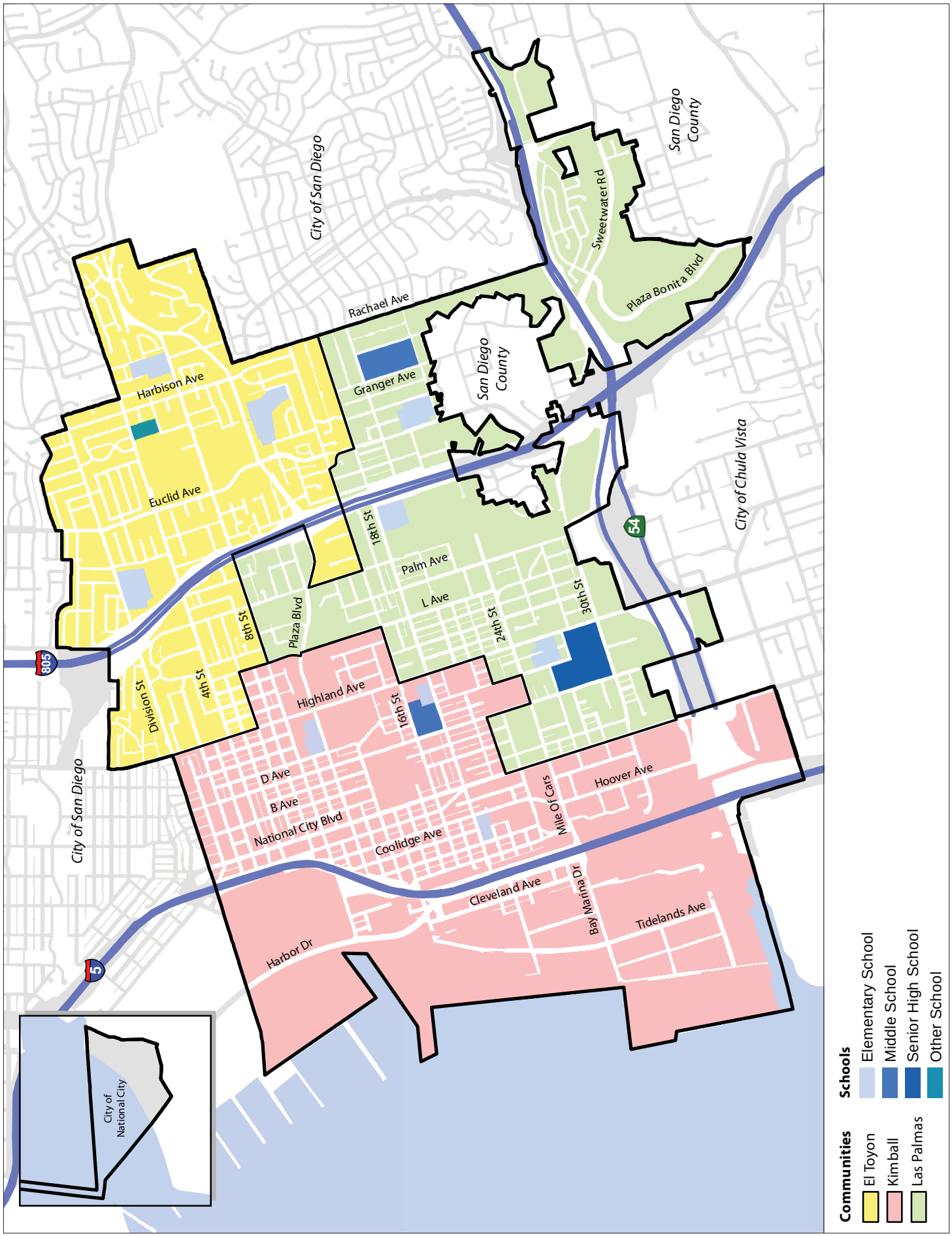
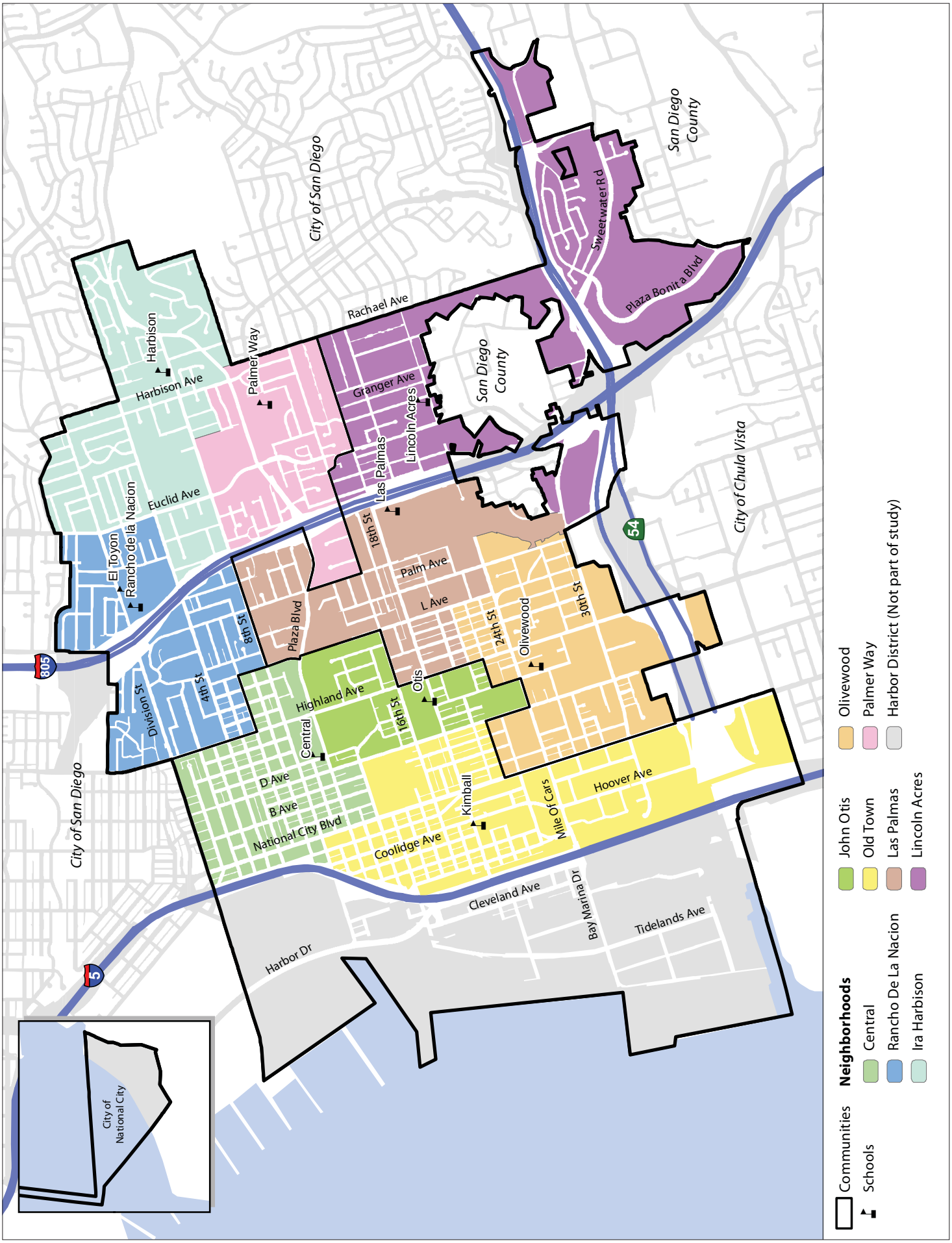


Figure 2-2: National City Neighborhoods



National City is one of the lowest income communities in San Diego County. According to SANDAG's 2010 estimates, the city's median income is the lowest in the county. The median for the county is $62,771. The city has a large minority population where the majority come from a Hispanic or Latino background. The low socio-economic status of National City residents has led to overcrowded households, a disproportionate share of undesirable land uses and crime. Due to the low income, it's more apparent that improvements to the pedestrian, transit and bicycling environment become a priority. Vehicle ownership is low and many residents rely on public transit or travel on foot or bicycling.

Geographically, median income increases eastward from the City's central urban district. The eastern communities of Las Palmas and El Toyon have a high median income that than the Kimball community.

Table 2-3: Median Income

Community	Average Median Income
El Toyon	$46,246
Kimball	$30,101
Las Palmas	$52,426
Total	**$43,620**

Source: American Community Survey 2010

The city has seen it's population increase 4% between 2000 and 2009. While the population of White residents has decreased by 4%, the Hispanic/Latino population increased by 4% of the total population. The Asian/Pacific Islander population is made up of predominantly Filipinos. The increase in the Hispanic/Latino population indicate that National City and has experienced and influx of immigrants from Mexico and Central America as well as Asian and the Pacific Islands. The total population of White and African Americans has seen a decrease over the last decade.

Table 2-4: Ethnic Characteristics

Race/Ethnicity	2000		2009	
	Number	Percent	Number	Percent
White	7,653	14%	5,878	10%
Hispanic/Latino	32,053	59%	35,391	63%
Asian/Pacific Islander	10,262	19%	10,897	19%
African American	2,823	5%	2,683	5%
Other Races or 2+ Races	1,469	3%	1,673	3%
Total	**54,260**	**100%**	**56,522**	**100%**

Source: General Plan 2012

Figure 2-3: Median Income

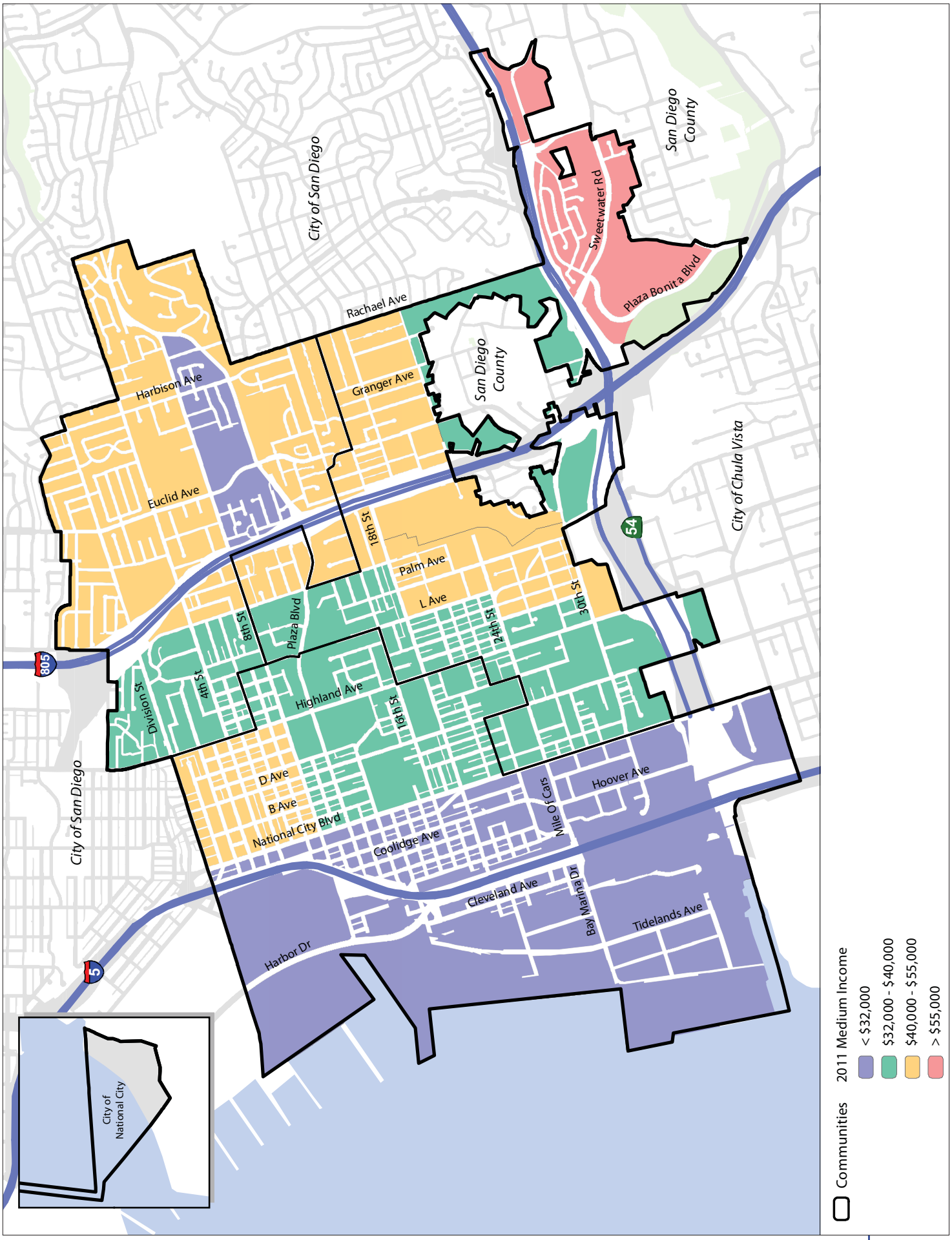


Figure 2-4: 2010 Population Density

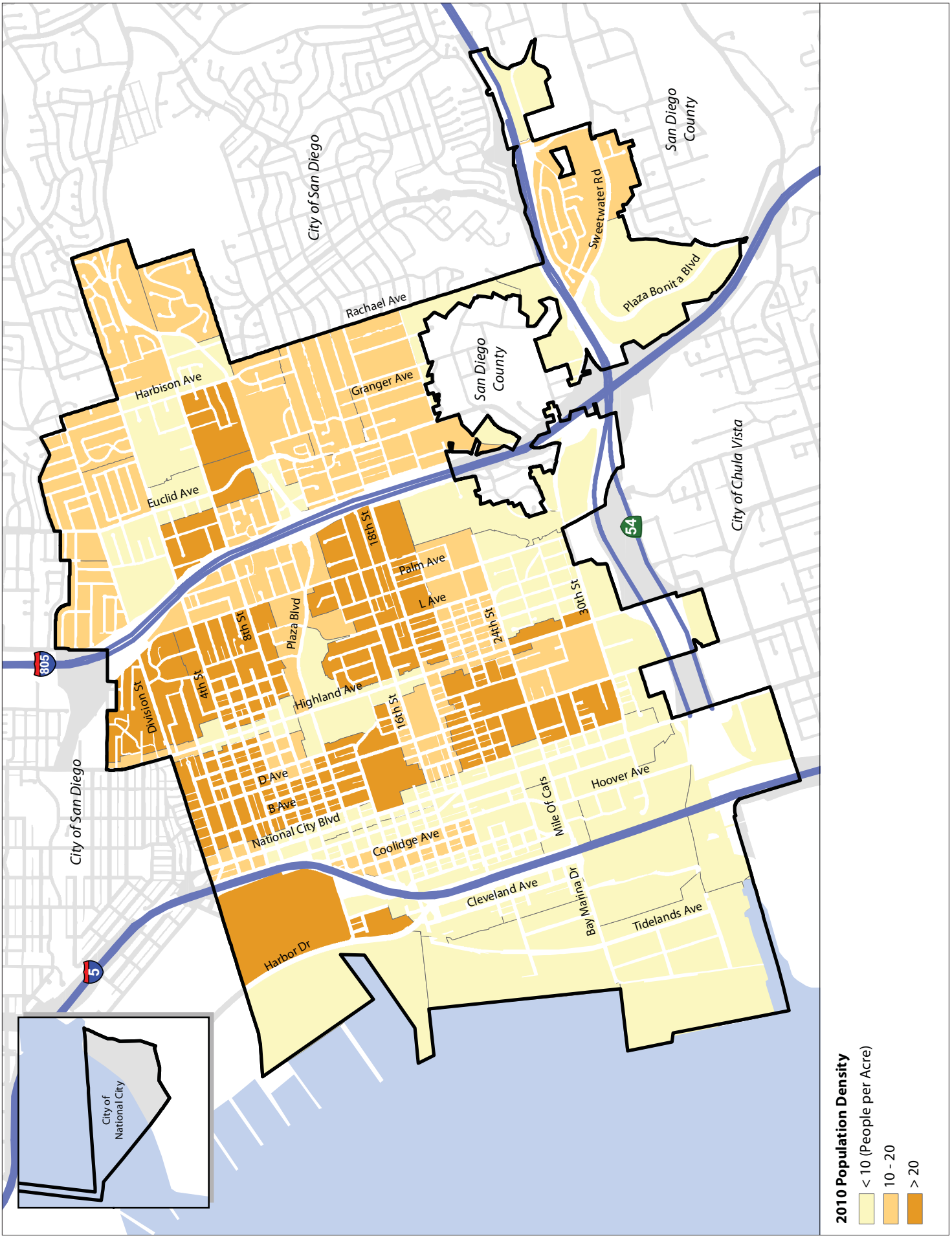


Figure 2-5: 2030 Population Density

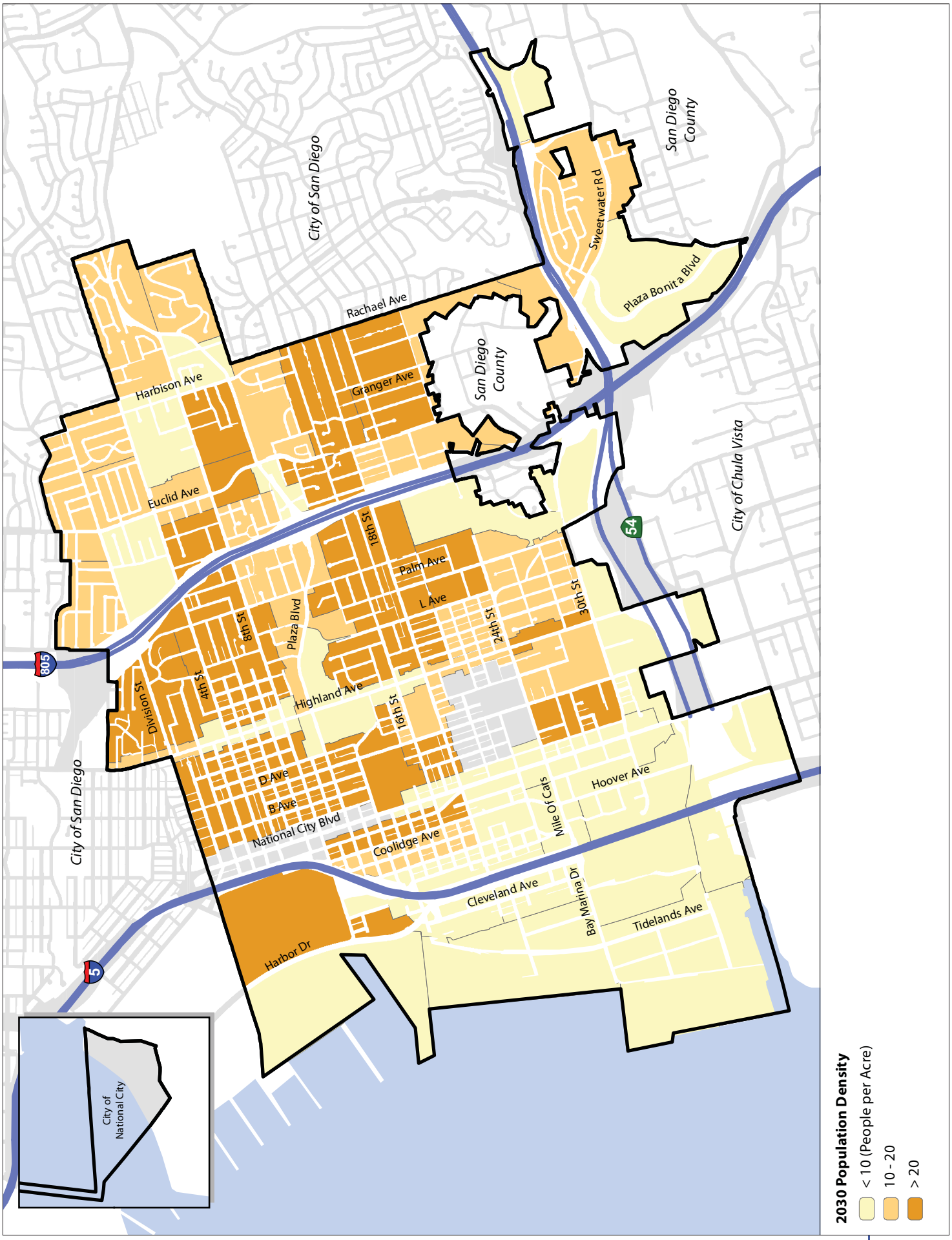
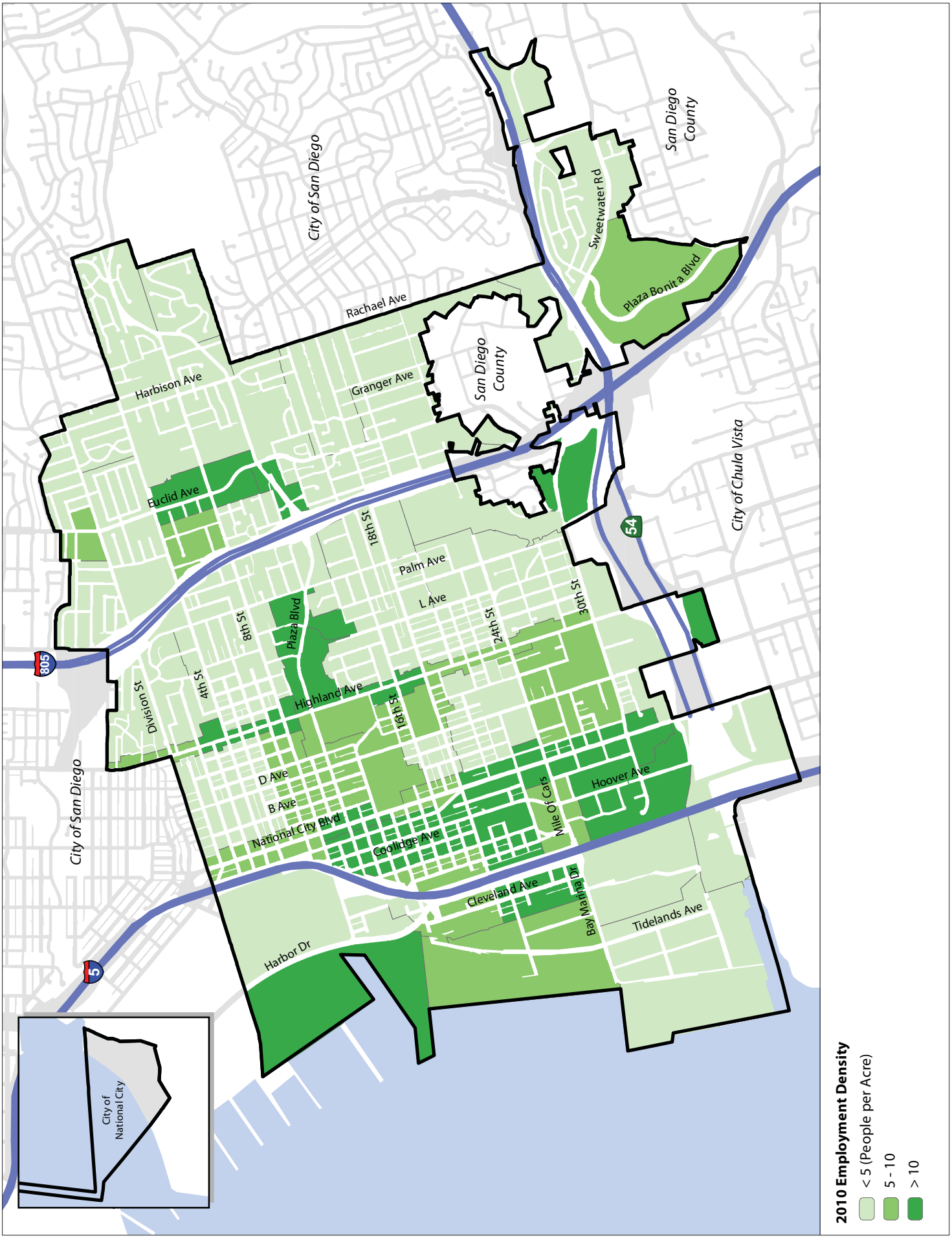


Figure 2-6: 2010 Employment Density



Commute to Work Characteristics

The city's socio-economic status lends itself to be a very transit oriented and multi-modal community. According to the American Community Survey's 2010 estimates, 13% of employed residents either bicycle, walk or use public transit to commute to work. SANDAG[1] estimates that San Diego County's average is 7% for these three modes of transportation. National City is has almost double the amount of alternative transportation users as the rest of the county. Twenty-three percent of the residents are 16 years old or younger and the City has a high rate of children walking to school.

There are approximately occupied 15,502[2] households in which 1,486 are without vehicles. The Kimball community has the most residents using public transportation or walking to work in the City but also has the lowest number of residents employed. The Kimball community also has the highest amount of households without vehicles, nearly doubling that of Las Palmas. The following tables and maps show the distribution of commuting characteristics throughout the City.

Table 2-5: Non-Motorized Commuter Modes

Community	Total	Bicycle to Work	Public Transit to Work	Walk to Work
El Toyon	6,971	30	399	226
Kimball	6,447	24	864	349
Las Palmas	9,210	44	650	279
Total	**22,629**	**98**	**1,913**	**855**

Source: American Community Survey 2010

Table 2-6: Age Characteristics for Children and Seniors

Community	< 16 Years Old	17-64	> 64
El Toyon	4,977	12,712	2,690
Kimball	3,507	12,376	1,520
Las Palmas	4,560	12,121	2,059
Total	**13,044**	**37,209**	**6,269**

Source: American Community Survey 2010

Table 2-7: Vehicle Ownership

Community	Households without Vehicles
El Toyon	247
Kimball	827
Las Palmas	412
Total	**1,486**

Source: American Community Survey 2010

1. City of National City, General Plan, 2012
2. SANDAG 2010 Demographic and Socio-Economic Estimates

Figure 2-7: Public Transit to Work Density

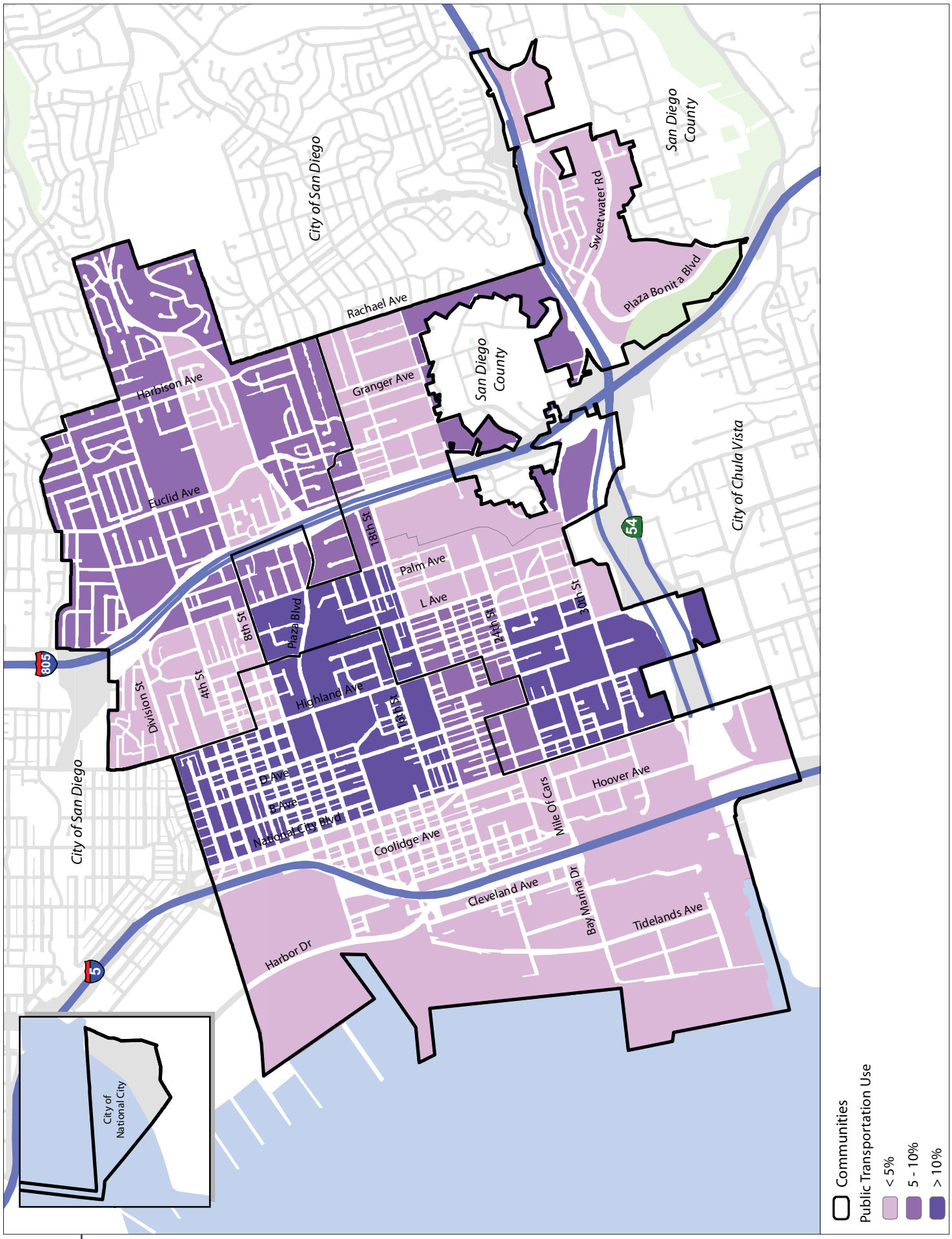


Figure 2-8: Walk To Work Density

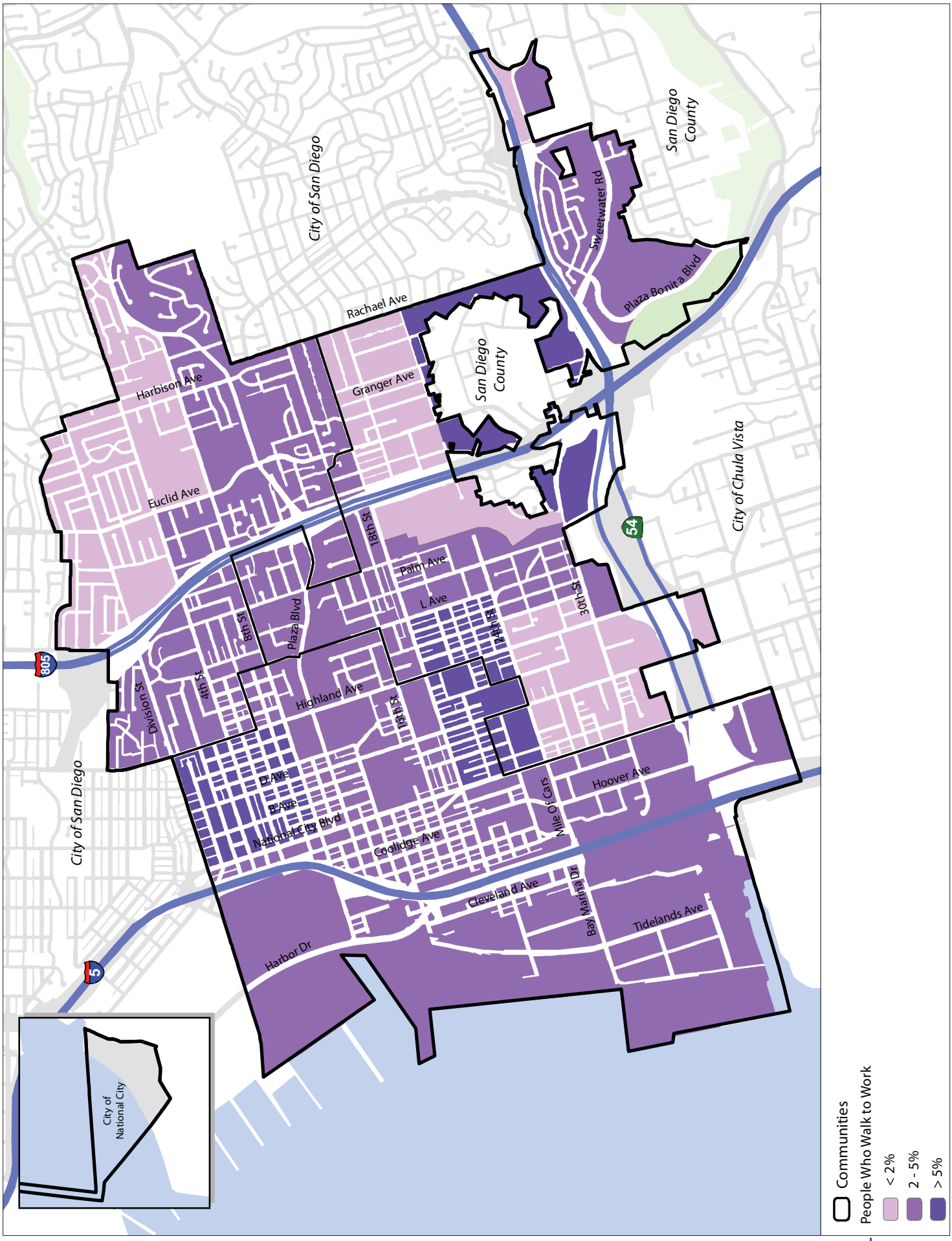


Figure 2-9: Bicycle to Work Density

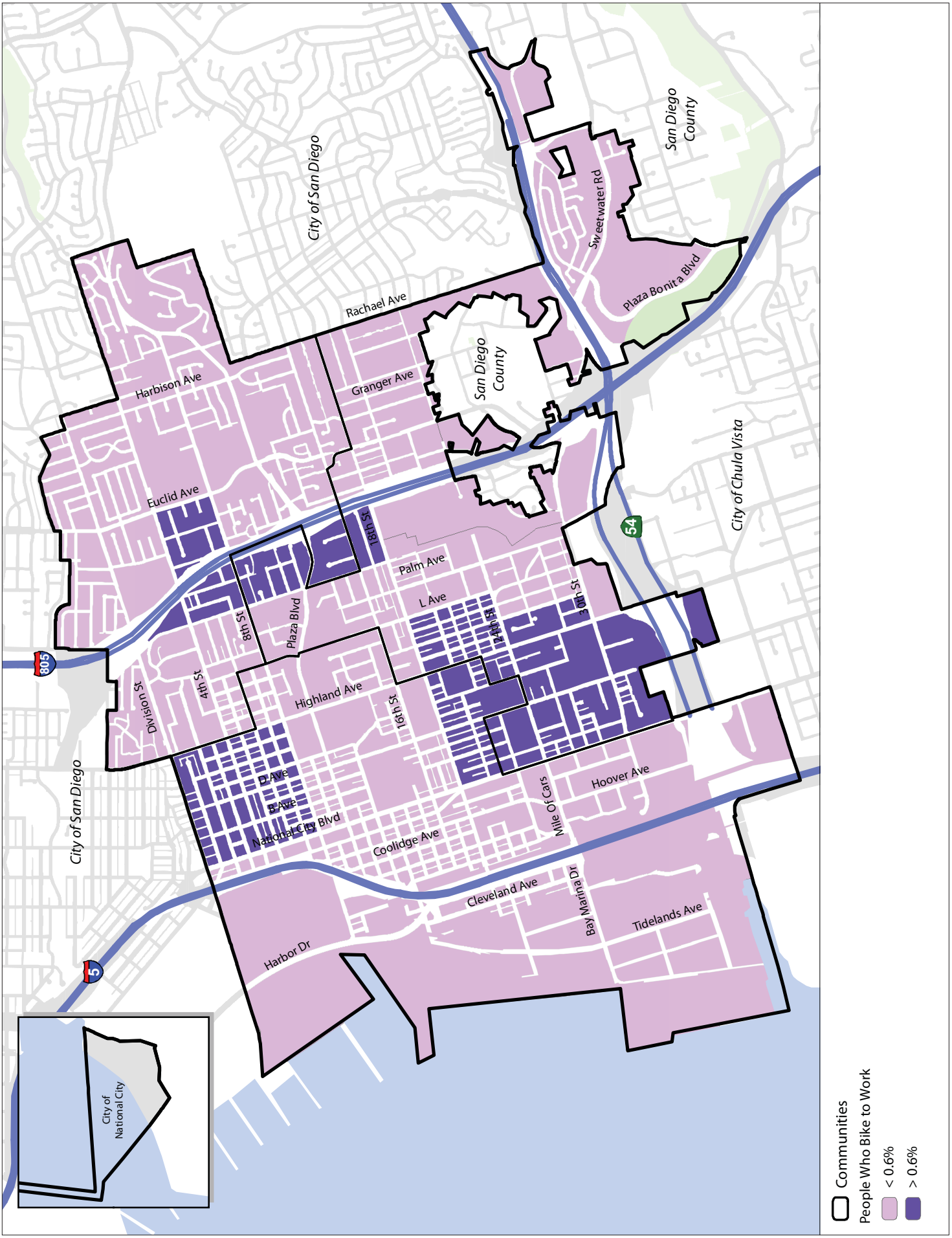


Figure 2-10: Age Density - 16 Years Old and Under

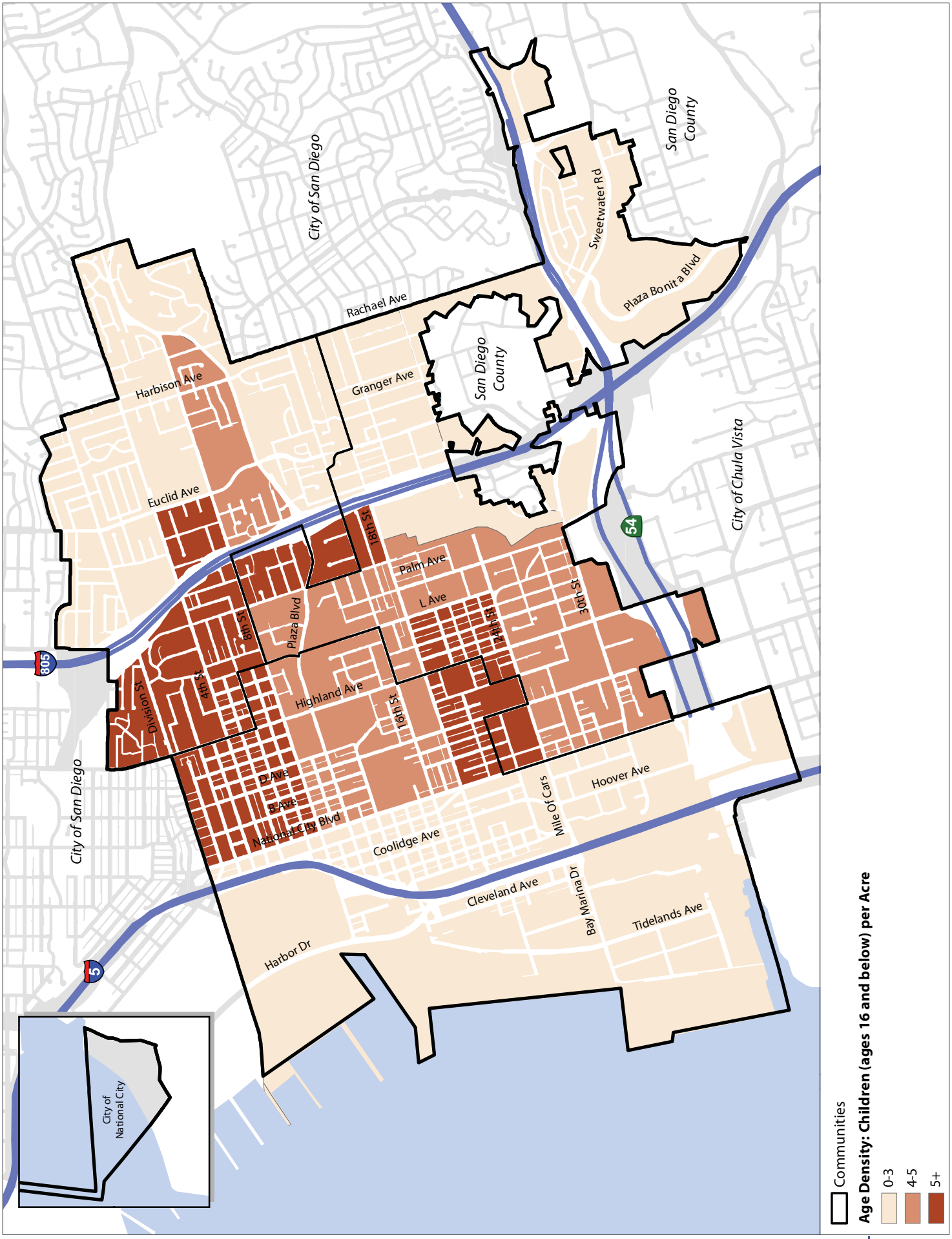


Figure 2-11: Age Density - 65 Years and Older

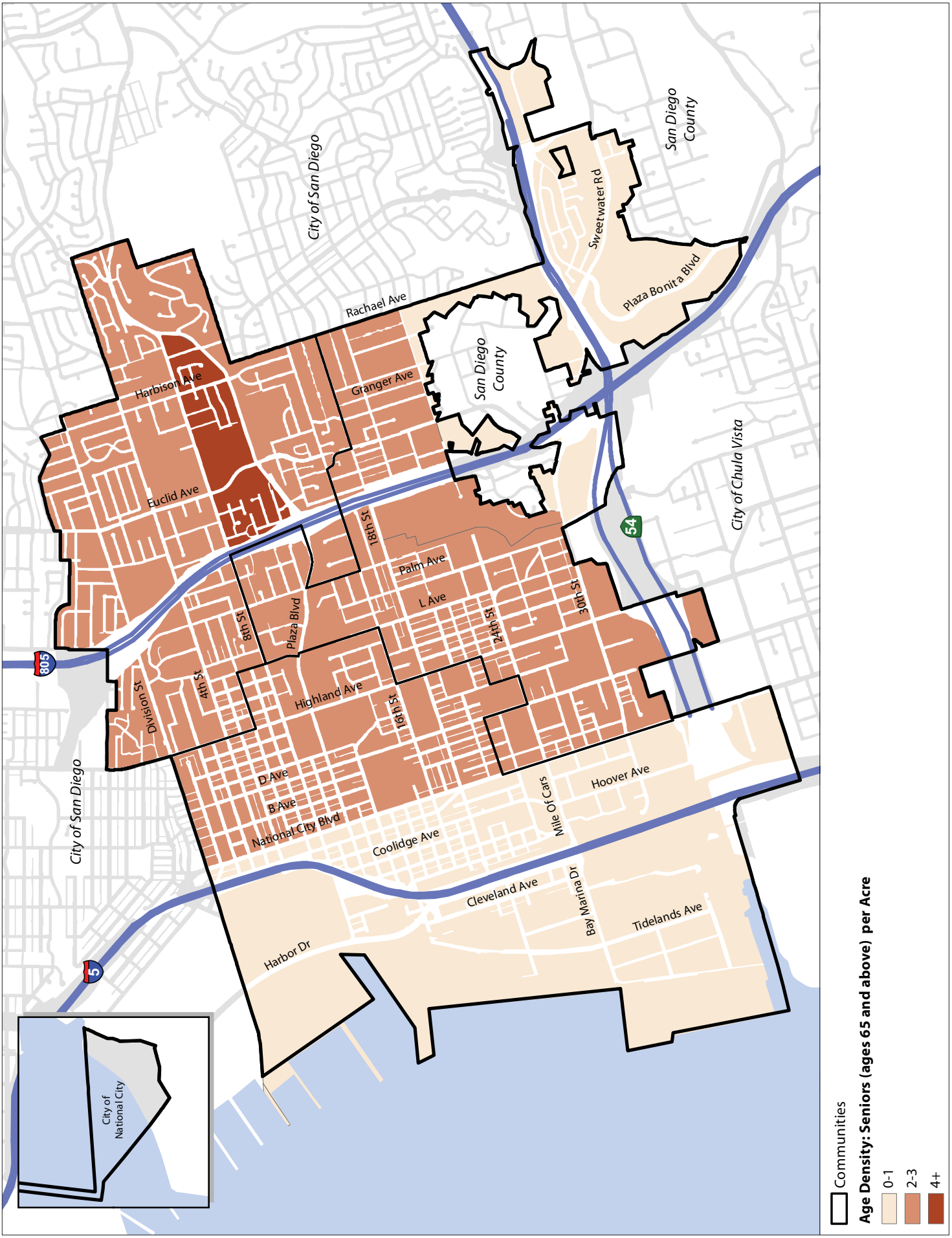
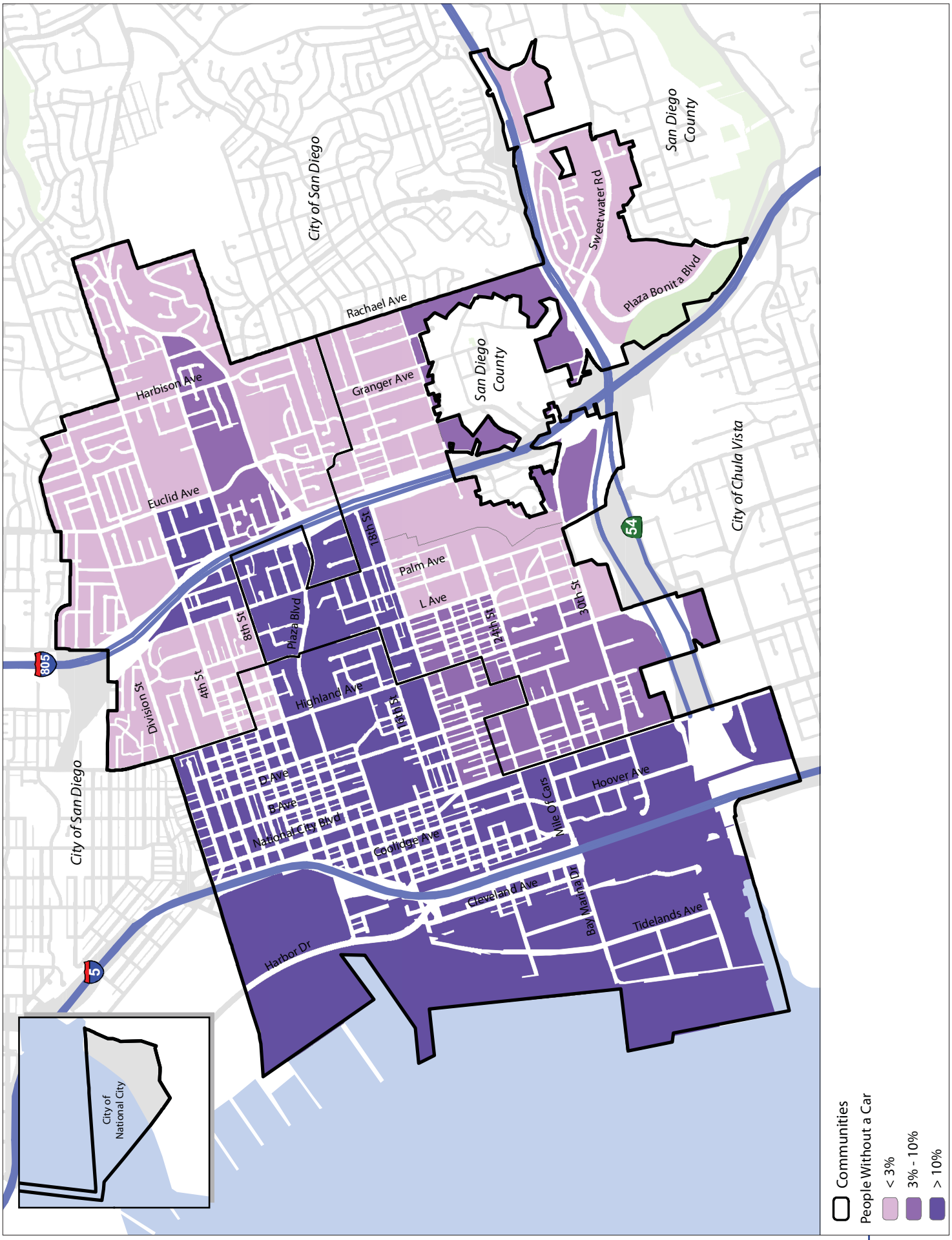


Figure 2-12: Vehicle Ownership



Citywide Land Use

A number of factors drive pedestrian and bicycle improvements. The maps on the following pages illustrate those that will be analyzed for this plan. These factors include land use, existing and future population and employment density and activity centers. These datasets have assisted in citing walk audit locations and walk zones and will assist in the analysis phases of the SMART Foundation project.

Origins and Destinations

Activity centers are defined as a community's major employers, office buildings, industrial sites, government sites, retail centers, hospitals, major attractions, colleges, schools or parks and open space. Commercial and retail activity centers can also be regarded as employment centers because, in addition to the customers that constitute the typical activity center users, they also represent significant numbers of employees. The civic activity centers include National City's parks and schools.

These centers particularly define trip origins and destinations, and generally include residential areas, employment centers, parks, schools and civic centers. Most cities have unique origins and destinations, as well as special events and variations in seasonal demand.

As seen on Figure 2-13, Activity Centers, most major employers, office buildings and industrial sites are clustered in specific areas generally associated with the main thoroughfares running through National City such as Plaza Boulevard, Highland Avenue and National City Boulevard. Employment density can be an. indicator of bikeway and pedestrian facility commuting trips, but it is also an indicator for shopping trips, especially to areas with concentrations of retail and service businesses.

Overall, activity centers tend to lie within an acceptable distance from their nearest adjacent bicycle facilities. This is supported by the locally gentle topography that drove the development pattern of a traditional street grid throughout most of the City.

Figure 2-13: Activity Centers

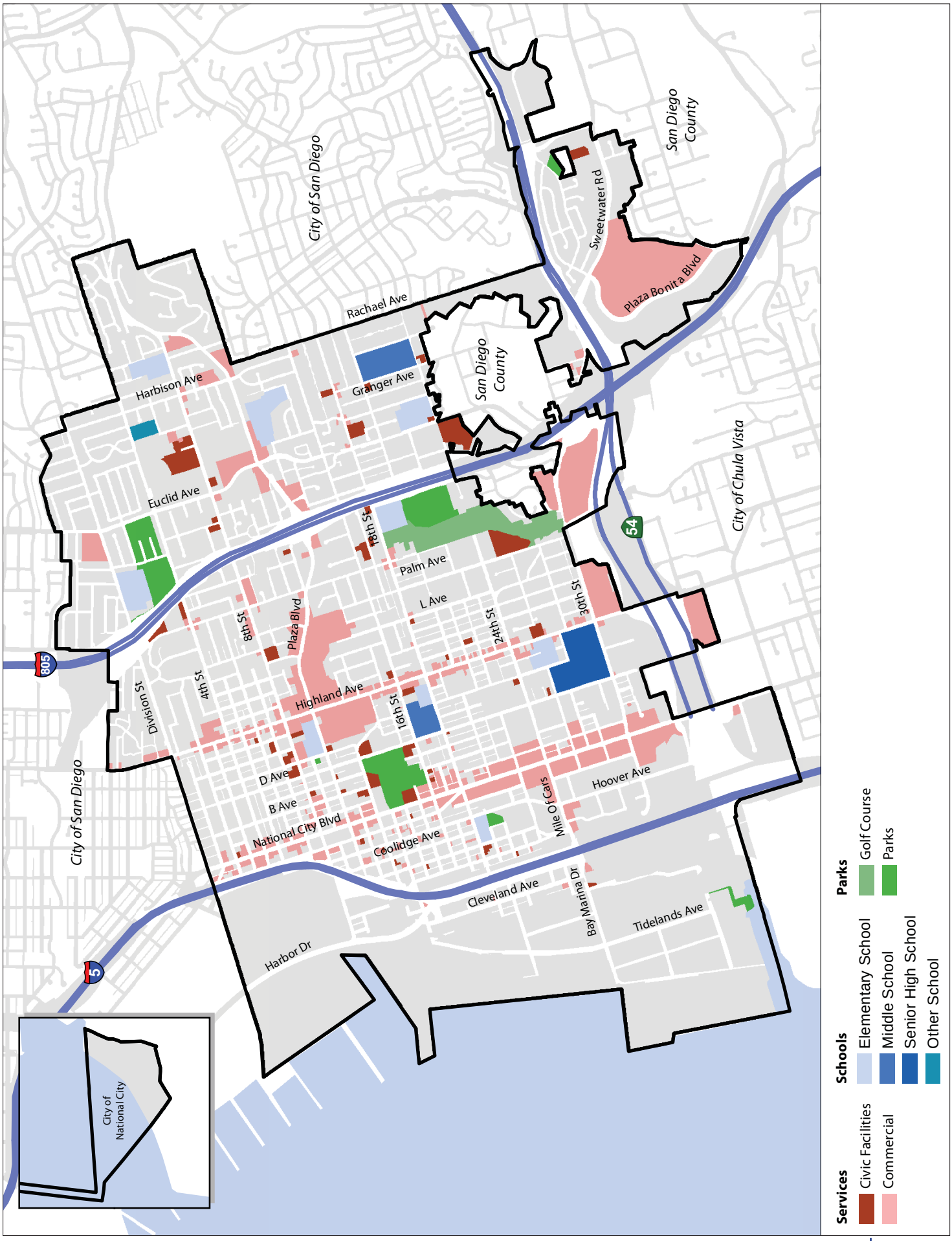


Figure 2-14: Zoning

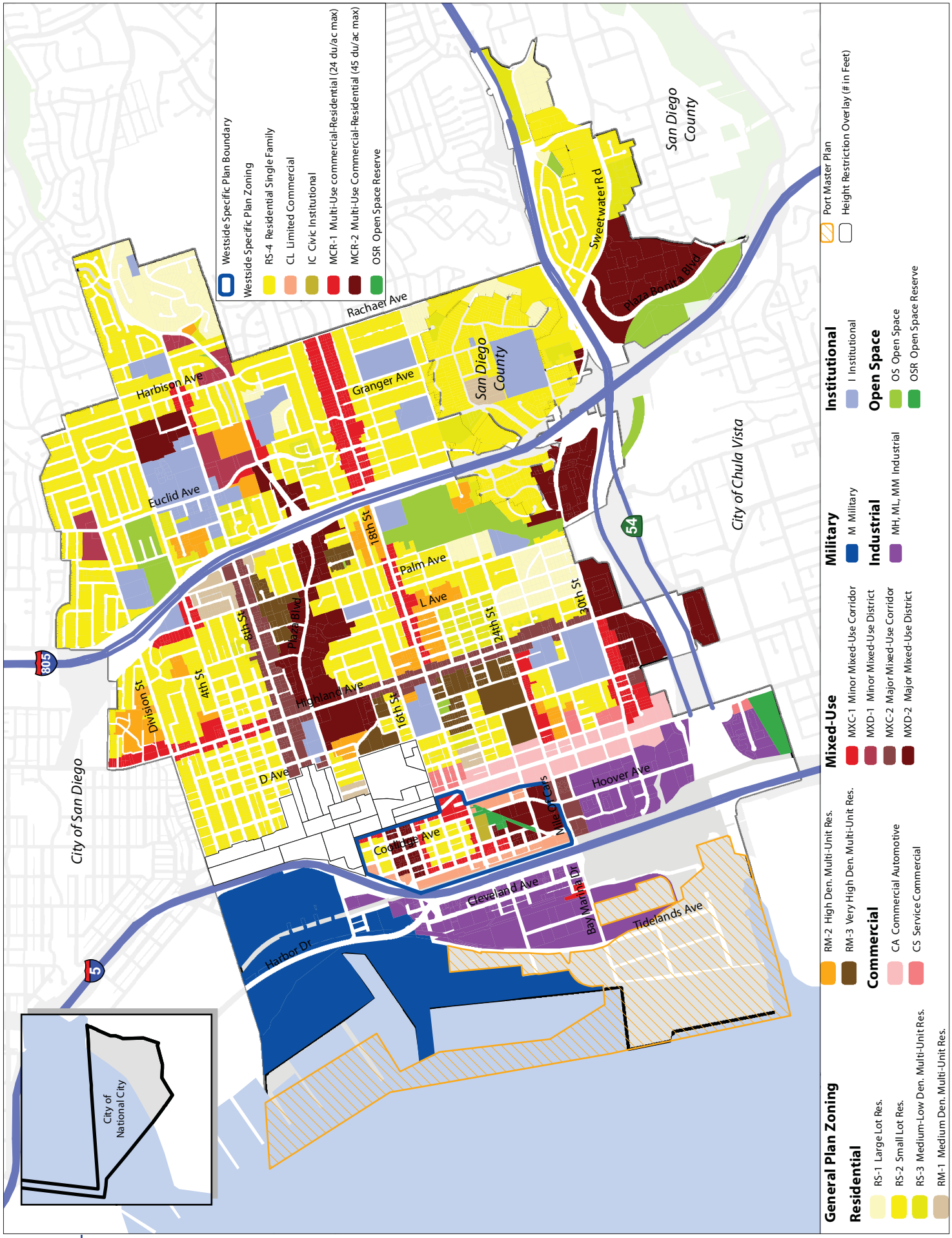


Figure 2-15: Existing Land Use

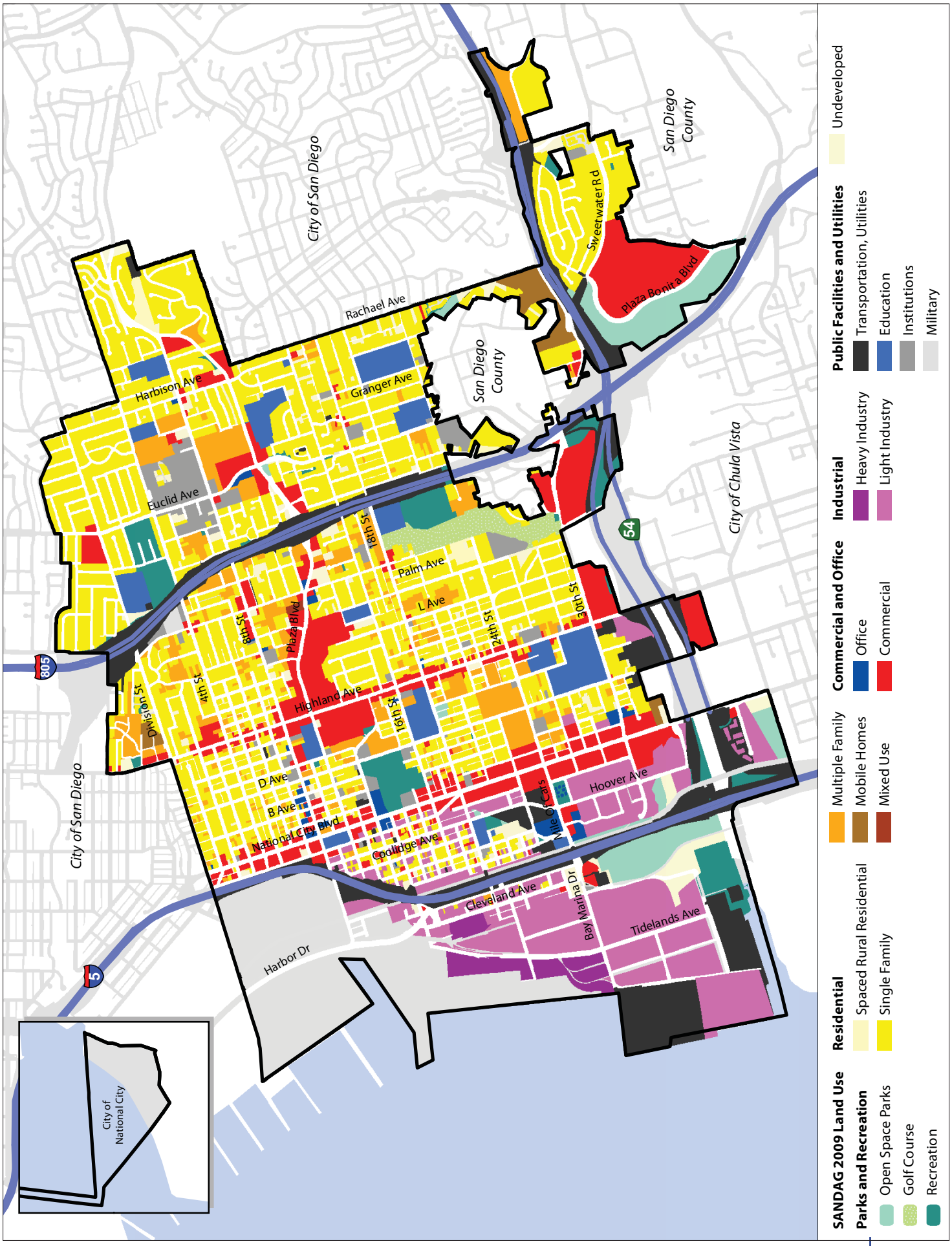
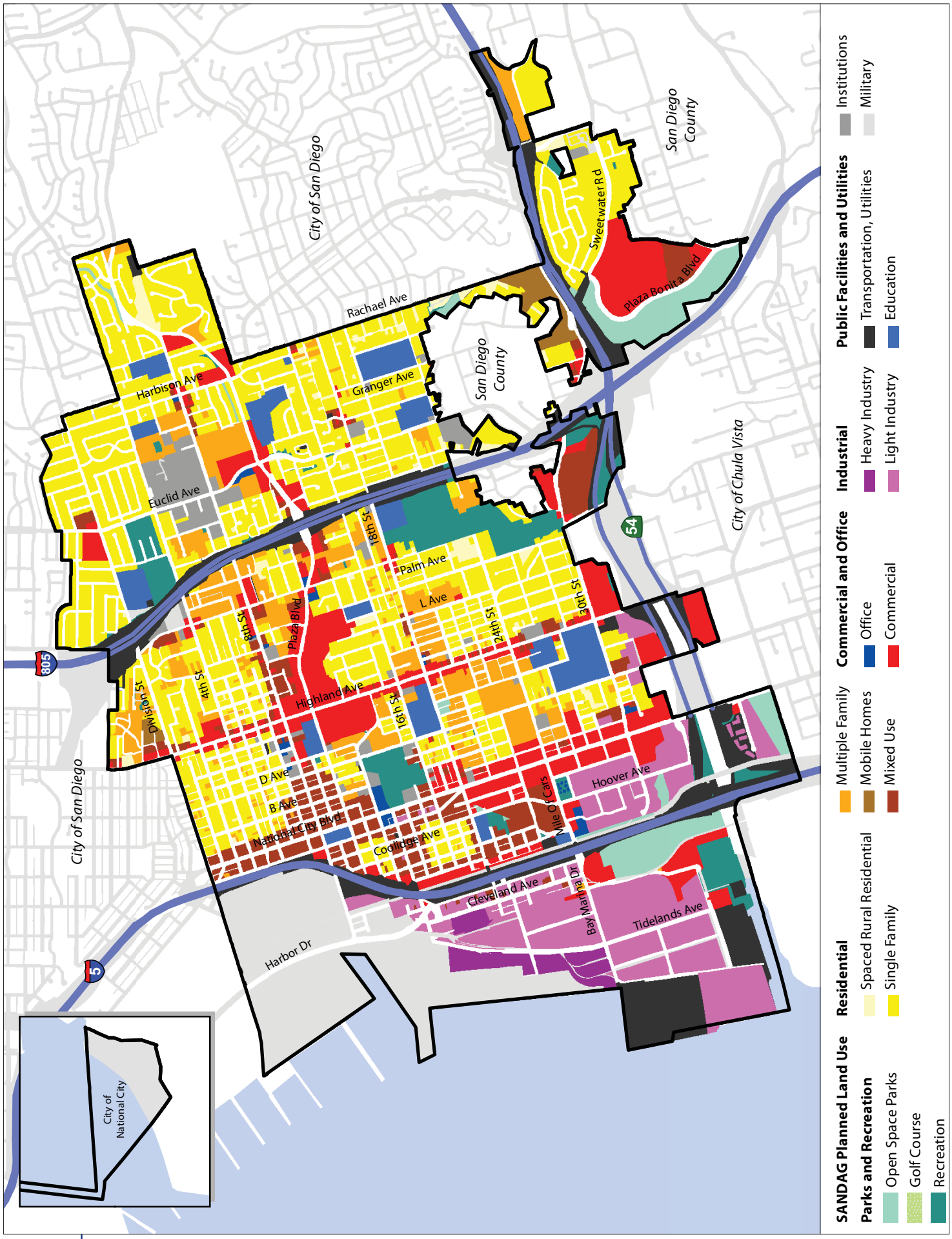


Figure 2-16: Planned Land Use



Vehicular Circulation System

The City's planning area currently has approximately 110 miles of paved streets and the existing roadway system generally follows a traditional grid pattern particularly west of I-805.

The City has 15 major arterial roadways providing circulation across the City and to major destination points throughout the region. These streets are typically four lanes and are generally spaced at half-mile intervals with speeds ranging between 30-40 mph. Additionally, the City is served by 30 collector roadways that operate as local conduits to take users in and out of neighborhoods and business districts onto the arterial routes. These are generally two lane roads with signalized intersections.

While a traditional grid pattern tends to diffuse traffic onto adjacent and connecting streets, there are still high volume streets within the City. These streets tend to be connected to the freeways such as Division St, 8th St and Sweetwater Road. The commercial areas of Highland Ave, National City Blvd and Plaza Blvd also generate high volumes of traffic and connect to adjacent cities.

According to the General Plan, the street system within the planning area includes major roadways, which are broken down into four classifications: freeways, arterials, collectors, and local roads. Figure 2-19 identifies the locations of these various roadway typologies within the planning area. Definitions of these classifications are provided below.

Freeway: A state-designated, high-speed, high capacity route with limited direct access that serves statewide and interregional transportation needs.

Arterial: A major local traffic channel, providing circulation across the City and access to major destination points throughout the region. These are usually comprised of four to six driving lanes, often with synchronized signals to help traffic flow.

Collector: A local conduit that distributes vehicular traffic from neighborhoods or business districts onto arterials and sometimes to other collectors. These may serve as alternate routes to arterials for movement across the city.

Local: A low capacity, low-speed road providing direct access to individual properties within neighborhoods. These roads usually consist of two driving lanes.

Figure 2-17: Posted Speed Limits

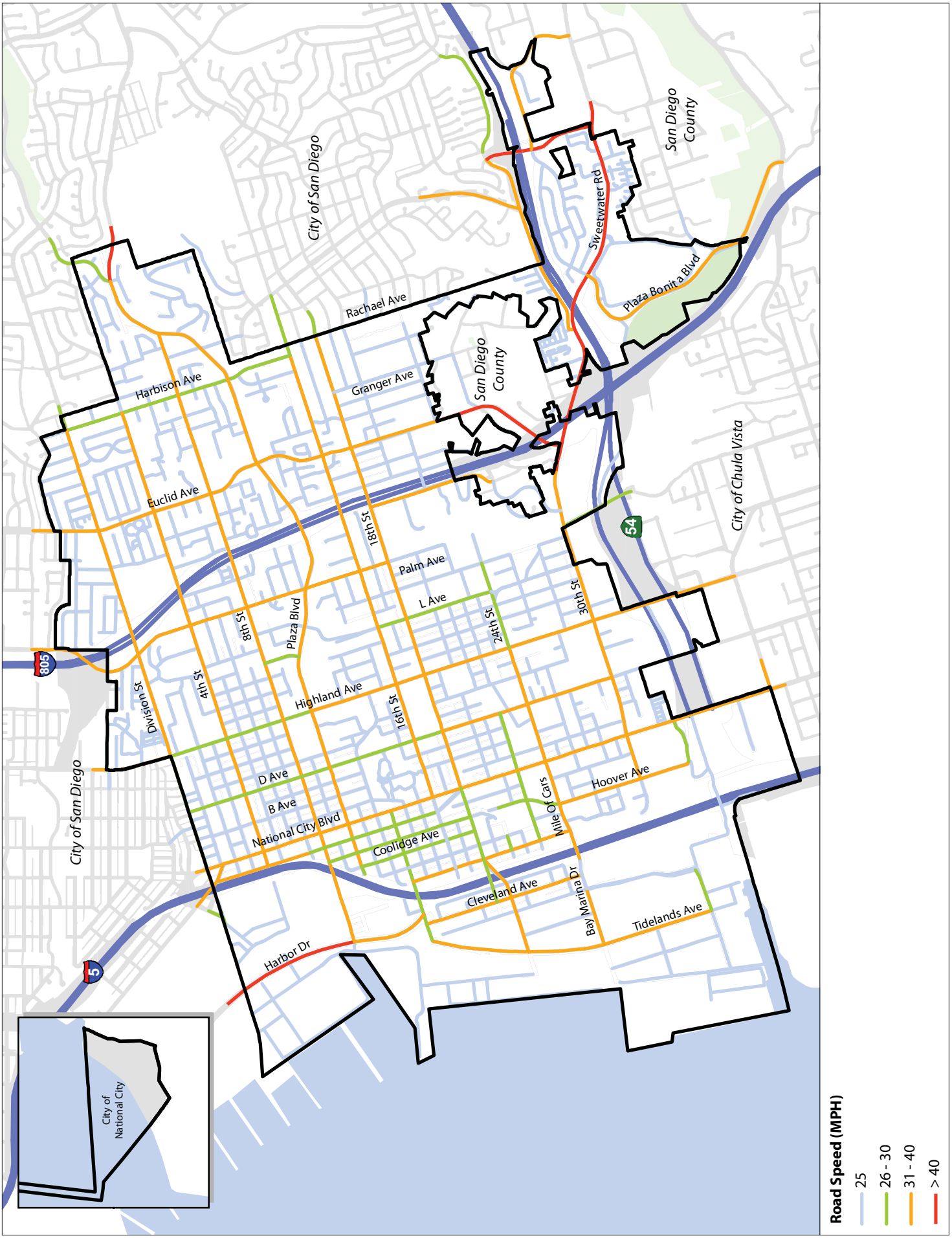


Figure 2-18: Average Daily Trips (ADTs)

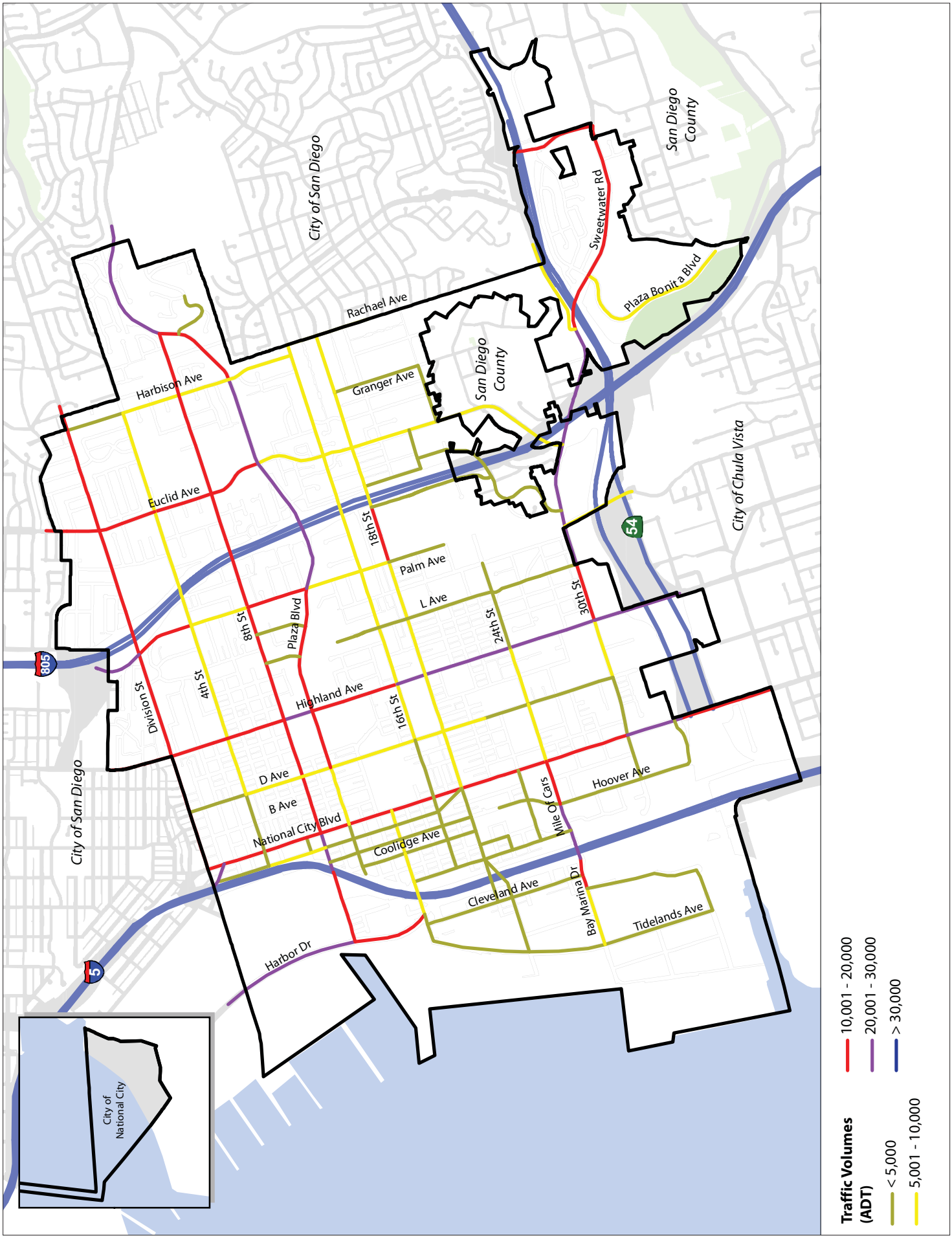


Figure 2-19: Roadway Classification

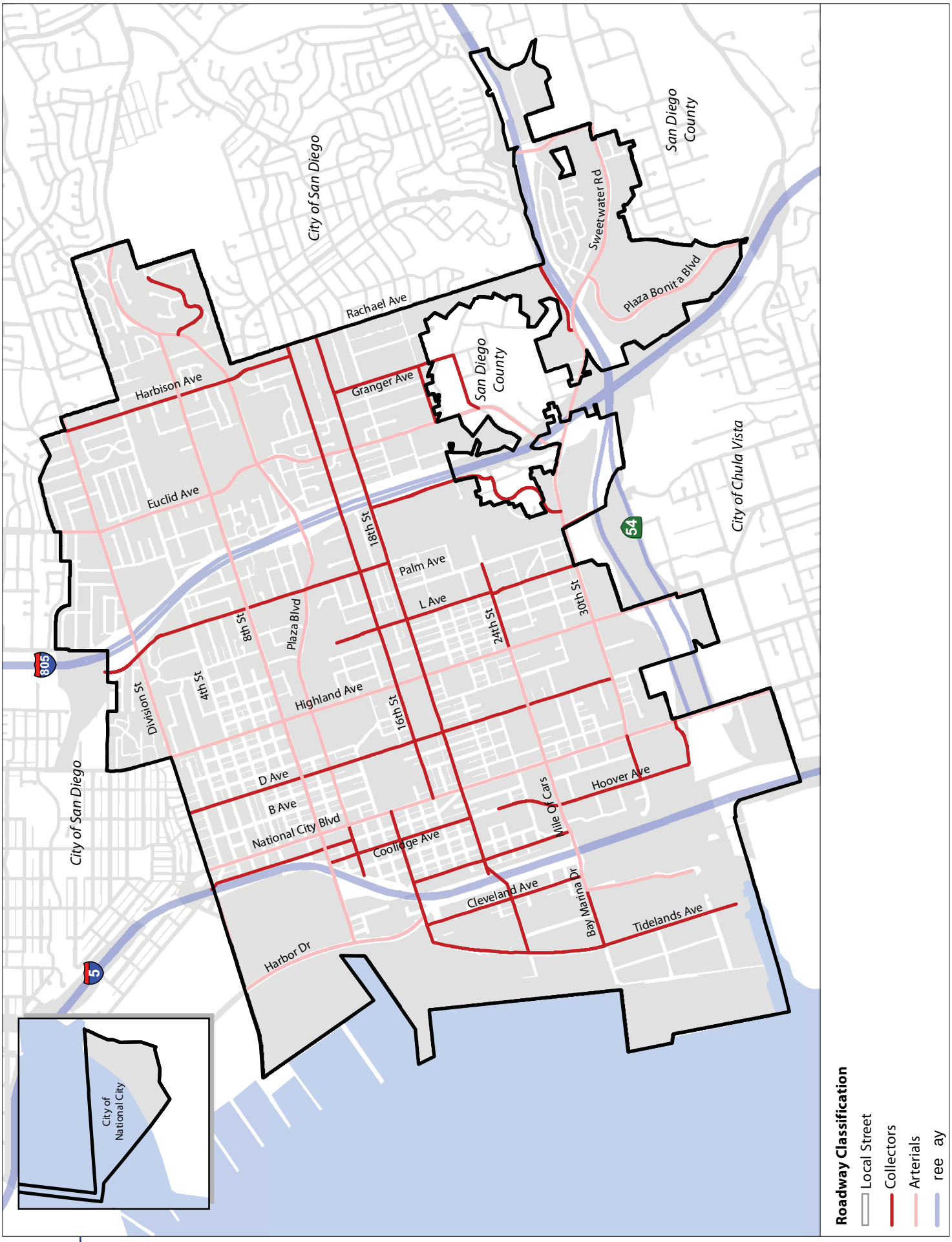
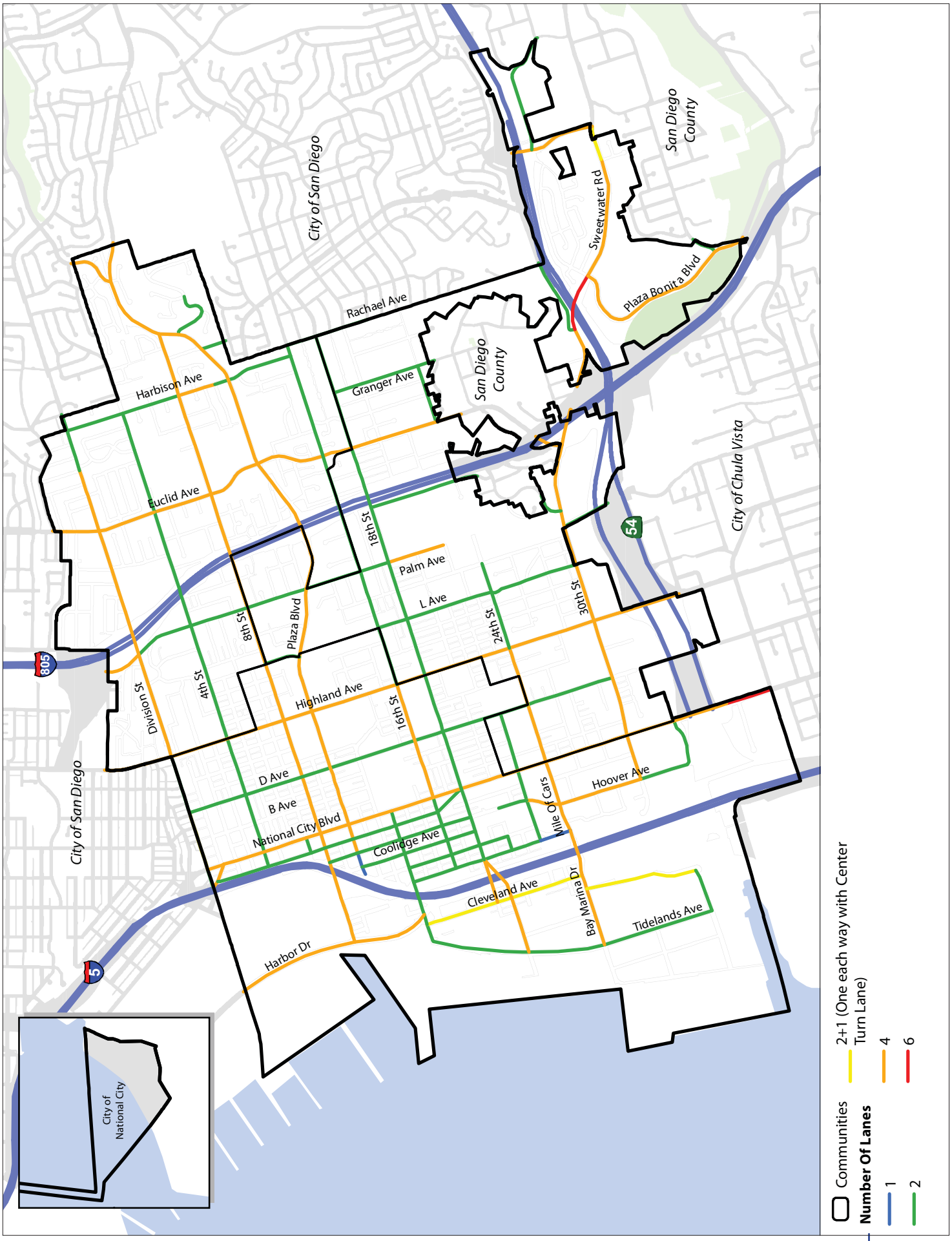


Figure 2-20: Number of Travel Lanes



Public Transit

San Diego Metropolitan Transit System (MTS) serves the regional transit system with nine bus routes and a total of 211 bus stops. Additionally, the planning area includes two MTS Trolley stations, which are located on the Blue Line Trolley running from Old Town and Downtown San Diego to the US-Mexico border. The 8th Street Trolley Station is located near the intersection of 8th Street and Harbor Drive, and the 24th Street Trolley Station is located near the intersection of 22nd Street and Wilson Avenue. One transit hub located at the Westfield Plaza Bonita Mall and is part of bus routes 963.

The City also will soon be served by the South Bay Bus Rapid Transit (BRT) project. The 21-mile BRT will provide high-speed transit connections between downtown San Diego and the Otay Mesa Border Crossing along the future I-805 managed lanes and a dedicated transitway through eastern Chula Vista. The new BRT will ultimately include 15 stations providing access to regional employment centers in downtown San Diego, the Otay Mesa Business Park, and the future Eastern Urban Center, as well as serving residential communities in Chula Vista and National City.

Table 2-8 shows the highest volume public transit stops being used. This also includes the trolley stations, transit centers and bus stops.

Table 2-8: Top Public Transit Stops

Rank	Station/Stop	Total
1	24th St Trolley Station	6,791
2	8th Street Station	6,290
3	Plaza Bonita Transit Center	1,290
4	Euclid Av / Plaza Bl	712
5	18th St / Highland Av	674
6	Plaza Bl / Highland Av	649
7	30th St / Highland Av	574
8	Highland Av / 8th St	364
9	43rd St / Delta St	337
10	Highland Av / E 12th St (Walmart)	289
11	Highland Av / 16th St	272
12	Euclid Av / Division St	265
13	Highland Av / Eta St	232
14	8th St / National City Bl	206
15	8th St / E Av	157

Source: MTS 2011

Figure 2-21: Bus Routes

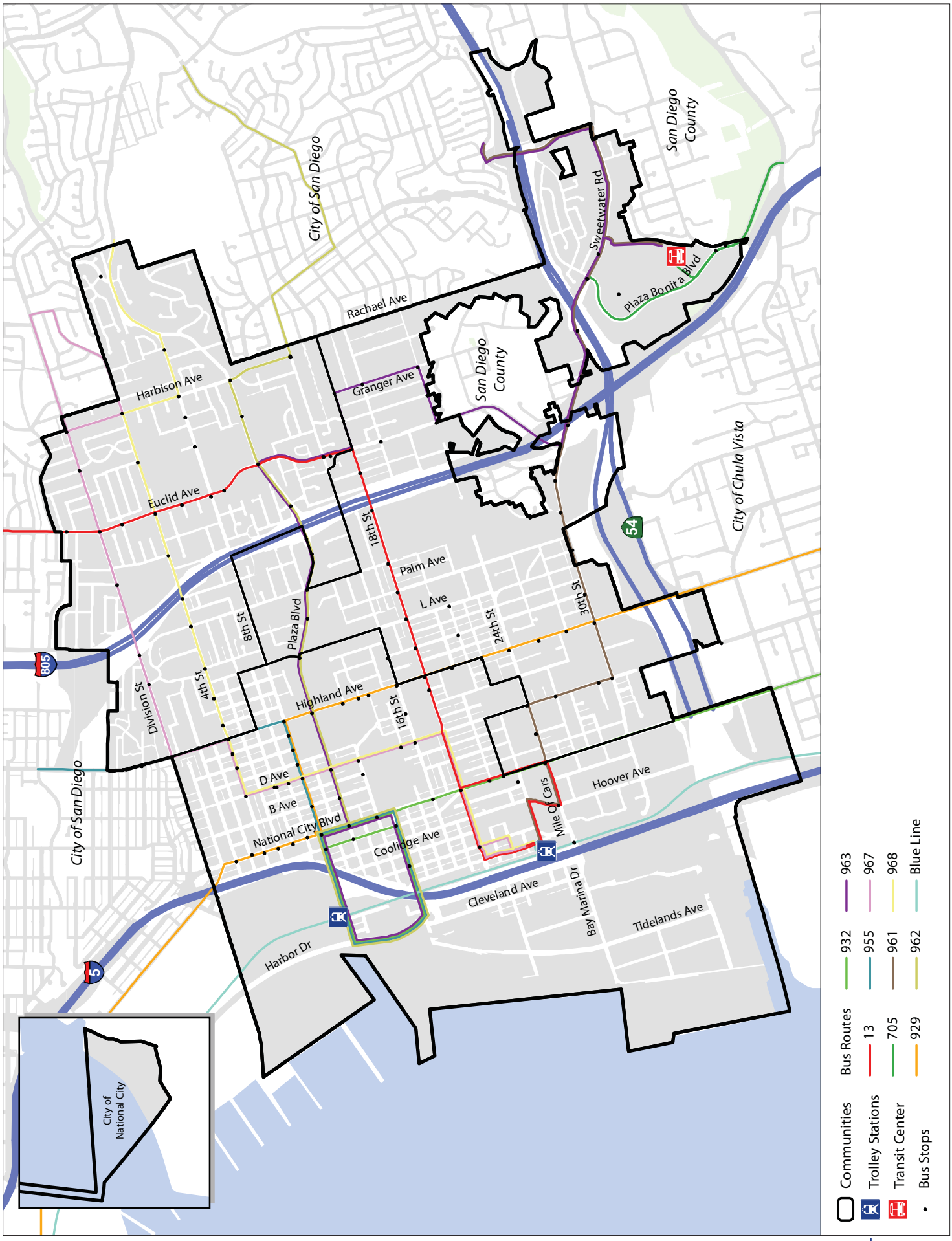
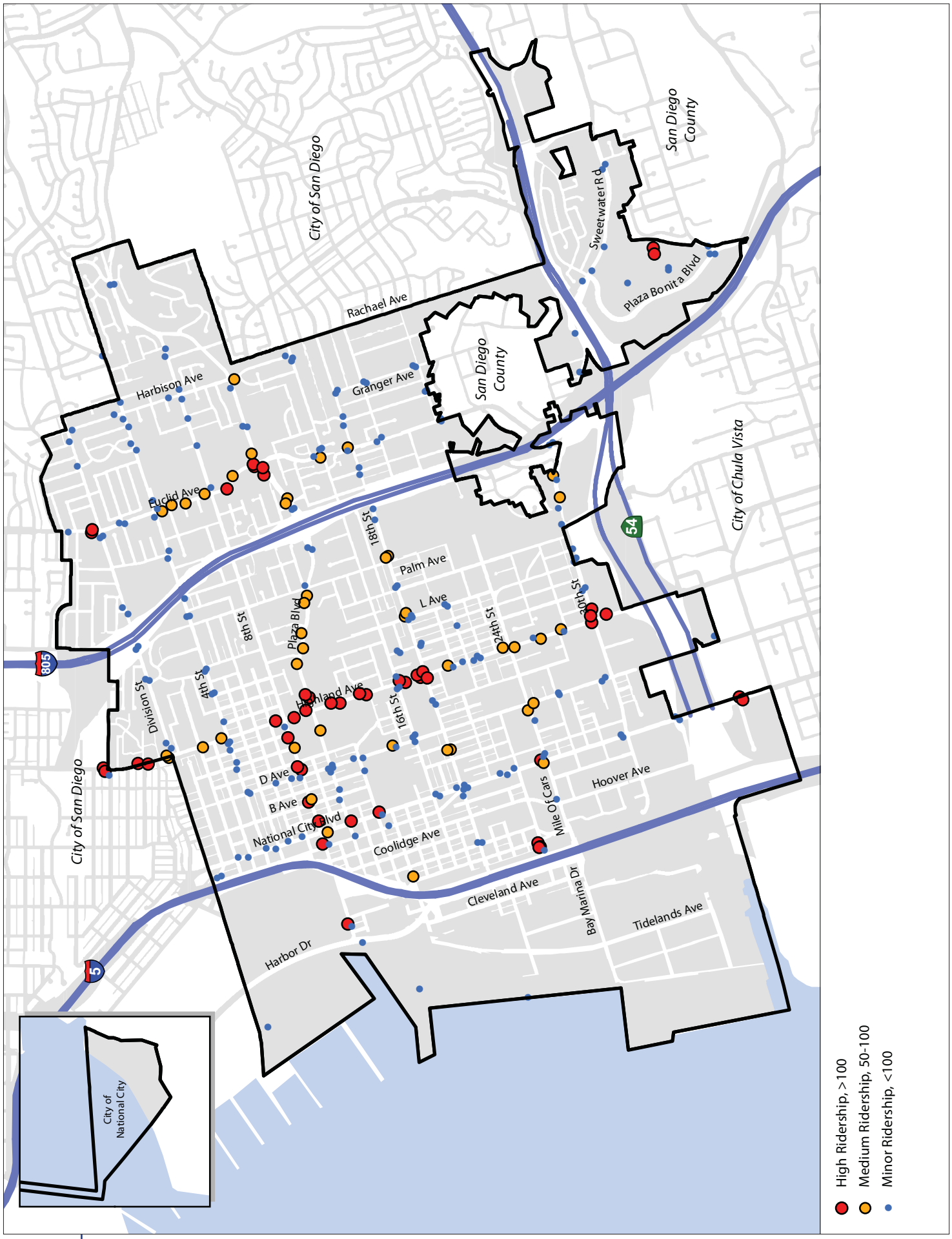


Figure 2-22: Public Transit Boardings and Alightings



Bicycle Facilities

In 2012, the City completed it's Bicycle Master Plan which was developed to provide strategies and actions to improve conditions for bicycling within the City. The plan outlines existing bicycle facilities, recommendations for additional facilities and programs to increase ridership, safety and public awareness. Recommendations include expanding the existing network, improving existing facilities, closing gaps, ensuring greater local and regional connectivity. Design guidelines for bikeways and was also included, along with programs for education, encouragement, enforcement and evaluation. The Bicycle Master Plan will allow the City to apply for grant funding from Caltrans and other funding sources.

Implementation of bicycle education and encouragement is a good way to promote awareness of bicycling as a viable mode of transportation. In particular, short trips to school or work and for recreation. In 2010, the Kimberlee's Bikes for Kids distributed 150 bikes, helmets and locks to children in the non-profit foundation's first bicycle giveaway. In addition, the children received safety and riding instruction from the San Diego County Bicycle Coalition, bike maintenance tips and door prizes.

On Halloween of 2013, the City hosted the National City Walk to School Day at Kimball Elementary School where students could enter raffle for a free bike and safety gear. The prizes were provided by Wal-Mart and the UCSD School of Medicine.

Implementing and improving upon existing bicycle facilities increases the likelyhood of more residents choosing the bicycle as a mode of transportation. The majority of people are not comfortable with sharing the road with faster moving vehicular traffic , even when bike lanes are present. Providing the programs and facilities are important in changing the perception that bicycling is a dangerous mode of transportation.

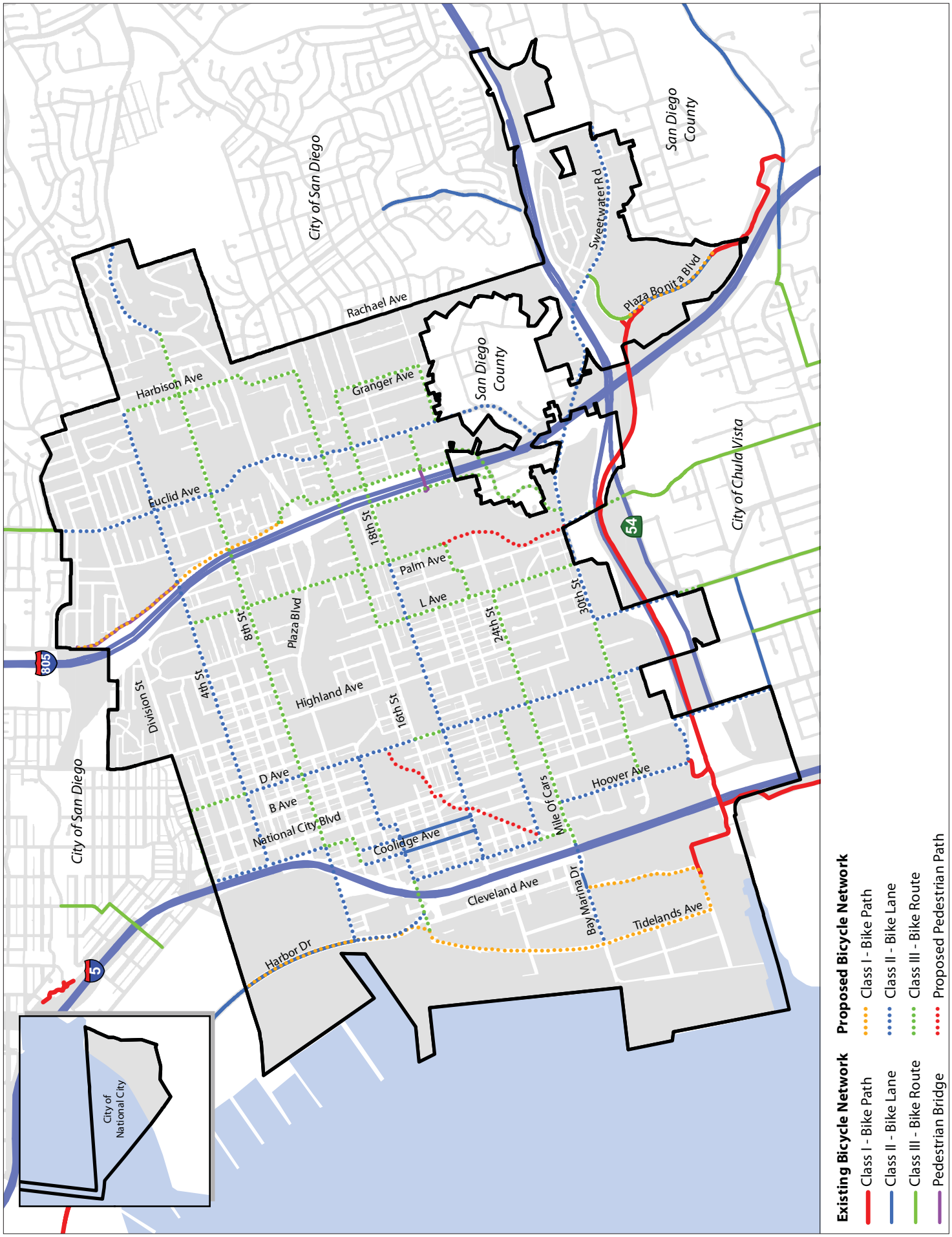
According to the Bicycle Master Plan, there are 4.7 miles of existing bikeways and 34 miles of proposed bikeways. Table 2-9 summarizes the mileage of bikeways from the plan.

Table 2-9: Current and Proposed Bicycle Network

	Current Mileage	Proposed Mileage	Total Mileage
Class 1: Bicycle Path	2.4	4.3	6.7
Class 2: Bicycle Lane	1.7	16.1	17.8
Class 3: Bicycle Route	0.6	13.5	14.1
Total	**4.7**	**33.9**	**38.6**

Source: National City Bicycle Master Plan, 2012

Figure 2-23: Existing Bicycle Facilities



Pedestrian Facilities and Walk Audit Results

Existing infrastructure data was collected from the City to develop base maps for additional data collection. Walk audits were conducted through a team of volunteers, city council members and consultant staff on three consecutive Saturdays in April, originating at each of the City's regional parks.

At each of these parks, volunteers went through a brief training session and discussion on how the walk audits were to conducted and the purpose of them. The volunteers, led by staff, then walked to predetermined neighborhoods to conduct the audits. Maps and photos were provided to take down notes and modify curb ramp and sidewalk data that needed to be changed. These walk audits also allowed the volunteers to have discussion with staff on recommendations they would like to see to improve the City's walking and bicycling environment.

While staff and volunteers were conducting the walk audits, some staff remained at the parks to pass out surveys and collect additional feedback from park patrons. The following list identifies the deficiencies that were collected on the walk audit maps which can be found in Appendix A. They are categorized by deficiency type.

Walkways
A. Missing walkways
B. Walkways are broken
C. Walkways blocked by utilities or poles leaving less than 3' walkway width
D. Walkways interrupted by steep sloping & frequent driveways
E. Dirt/unpaved side paths created by foot traffic

Street Crossings
F. Marginal ramps at corners (ramps with no truncated domes & with lip at bottom)
G. Roadway is very wide for crossing with no median refuge.
H. No marked crosswalk
I. Long distance between safe crossing points; midblock crossing needed.

Safety
J. No separation between sidewalk & traffic such as trees or parked cars
K. Multiple lanes to cross without stop signals stopping traffic
L. Blind spots at roadway intersections that block visibility of pedestrians
M. High vehicular speeds

Bicycling
N. No bike facility such as paint striping to indicate lanes
O. People riding on the sidewalk
P. No secure bike parking

Comfort and Appeal
Q. No shade from street trees
R. Limited lighting at night
S. Graffiti
T. Lacking amenities (signage, trash receptacles, benches)
U. Overgrown landscaping blocking the walkway.

Walk audit volunteers at El Toyon Park

The following maps show the results of the walk audits by community and deficiency category.

Table 2-10: El Toyon Community Deficiency Count

Walkways	Count
Missing walkways	20
Private road or walkway	3
Walkways broken	27
Walkways blocked by utilities or poles	38
Narrow sidewalks	3
Walkways interrupted by steep sloping driveways	5
Street Crossings	
Ramps with no truncated domes	55
Roadway too wide for crossing	8
No marked crosswalk	36
Long distance between safe crossing points	18
Safety	
No separation between sidewalk and traffic	10
Multiple lanes to cross without stop signals	4
Blind spots at roadway intersections	9
High vehicular speeds	27
Bicycling	
People riding on the sidewalk	3
Comfort and Appeal	
No shade from street trees	18
Limited lighting at night	7
Graffiti	2
Lacking amenities such as signage and trash bins	10
Overgrown landscaping blocking the walkway	22
Landscape maintenance needed	1
Unsightly objects such as trash	1
Loud and scary pets	6
Badly placed or constructed structures	1
Total	**334**

Table 2-11: Kimball Community Deficiency Count

Walkways	Count
Missing walkways	14
Private road or walkway	7
Walkways broken	36
Traffic becomes too congested	1
Walkways blocked by utilities or poles	31
Narrow sidewalks	1
Walkways interrupted by steep sloping driveways	35
Street Crossings	
Ramps with no truncated domes	60
Roadway too wide for crossing	3
No marked crosswalk	38
Long distance between safe crossing points	2
Safety	
No separation between sidewalk and traffic	6
Blind spots at roadway intersections	4
High vehicular speeds	20
Bicycling	
No bike facilities	1
Comfort and Appeal	
No shade from street trees	11
Limited lighting at night	8
Graffiti	3
Lacking amenities such as signage and trash bins	9
Overgrown landscaping blocking the walkway	16
Landscape maintenance needed	4
Unsightly objects such as trash	4
Loud and scary pets	2
Homeless encampment	1
Badly placed or constructed structures	15
Total	**332**

Table 2-12: Las Palmas Community Deficiency Count

Walkways	Count
Missing walkways	10
Walkways broken	47
Walkways blocked by utilities or poles	21
Narrow sidewalks	2
Walkways interrupted by steep sloping driveways	10
Street Crossings	
Ramps with no truncated domes	80
Roadway too wide for crossing	1
No marked crosswalk	34
Long distance between safe crossing points	1
Safety	
No separation between sidewalk and traffic	14
Blind spots at roadway intersections	2
High vehicular speeds	18
Bicycling	
No bike facilities	4

Comfort and Appeal	Count
No shade from street trees	33
Limited lighting at night	11
Graffiti	3
Lacking amenities such as signage and trash bins	7
Overgrown landscaping blocking the walkway	17
Landscape maintenance needed	1
Unsightly objects such as trash	2
Loud and scary pets	4
Badly placed or constructed structures	12
Total	**334**

Table 2-13: Sidewalk Summary

Community	Miles	% of Total per Community
El Toyon		
Existing	55.07	82%
Missing	12.31	18%
Total	**67.37**	
Kimball		
Existing	64.83	68%
Missing	31.14	32%
Total	**95.97**	
Las Palmas		
Existing	56.07	71%
Missing	23.35	29%
Total	**79.43**	

Source: SANDAG and KTU+A

Note: *Sidewalk data was provided by SANDAG and field verified during the walk audits. These totals include sidewalk son both sides of the street.*

The following photos are examples of the data collected during these walk audits.

Broken walkway in the Kimball Community

Utilities blocking the sidewalk on Palm Ave and Division St

Lack of sidewalk maintenance on 21st St

Uneven sidewalk pavement on Highland Ave

Pedestrian crossing sign without a crosswalk on Euclid Ave in front of the Paradise Valley Hospital

Planning Context

The following are relevant City of National City goals and policies with the potential to affect components of this project. The numbering system is not sequential, but is related to the General Plan numbering system

Existing General Plan

The General Plan identifies a preferred future for National City and steers land use and development policies in that desired direction. It serves as the foundation for all planning decisions in National City. Under California law, no specific plan, zoning, subdivision map, or public works project may be approved unless the City finds that it is consistent with the adopted general plan. The current general plan was adopted in June 2011 and the previous General Plan was adopted in 1996. One of the main objectives of this comprehensive update is to create a dynamic and durable document that describes the connectivity of key urban planning issues; respond to the needs of a diverse citizenry; identify realistic implementing actions; and establishes evaluation criteria to track National City's progress towards reaching its goals and policies.

General Plan Elements

State law requires every general plan to address seven specific topics, known as "elements," to the extent that they are locally relevant. The city must ensure that the general plan and its elements form an integrated, internally consistent and compatible statement of development policies. These topics include the Land Use Element, Circulation Element, Housing Element, Safety Element, Noise Element, Open Space Element and Conservation Element. Additionally, state law allows cities to include optional elements that best fit its unique circumstances. Optional elements National City has chosen to include are Community Character, Agriculture, Sustainability, Nuisances, Health and Environmental Justice and Education and Public Participation.

Summarized Relevant Policies

Each element of the General plan includes goals and policies to guide the city through the decision making process. Goals and policies that are relevant to the S.M.A.R.T. Foundation project have been extracted from the Land Use, Open Space and Circulation Elements.

Goal – A general direction-setter and a description of the general desired result that the City seeks to create through implementation of the General Plan.
Policy – A specific statement that guides decision making. A policy is carried out by Implementation measures.

Goal LU-1: Smart growth that is consistent with statewide and regional transportation and planning goals and policies.

- Policy LU-1.1: Use SANDAG's Smart Growth Opportunity Areas map as a guide for identifying appropriate locations to direct future growth and development within the planning area.
- Policy LU-1.2: Concentrate commercial, mixed-use, and medium to high density residential development along transit corridors, at major intersections, and near activity centers that can be served efficiently by public transit and alternative transportation modes.

Goal LU-2: A mix of land uses including residential, commercial, employment, service, agricultural, open space, and recreational uses that accommodate the needs of persons from all income groups and age levels.

- Policy LU-2.4: Provide additional recreational open space areas and connect these areas to trails, bikeways, pedestrian corridors and other open space networks, where feasible.
- Policy LU-4.4: Establish policies and implementation programs specific to the unique needs of each neighborhood.
- Policy LU-4.5: Support and encourage the involvement of resident volunteers in the implementation of actions for the betterment of their neighborhoods.

Goal LU-4: Complete neighborhoods that meet the community's needs for sustainable and high-quality living environments.

- Policy LU-4.2: Promote the design of complete neighborhoods that are structured to be family-friendly, encourage walking, biking and the use of mass transit, foster community pride, enhance neighborhood identity, ensure public safety, improve public health, and address the needs of all ages and abilities.

Goal LU-9: Enhanced community character and identity through good urban design that considers function, form, pedestrian scale, amenities, and aesthetics.

- Policy LU-9.1: Design developments along mixed-use and "community corridors" for the comfort and enjoyment of pedestrians and bicyclists. This includes features such as street trees, placing buildings close to the street, deemphasizing parking lots and garages, limited driveway cuts, traffic-calming features, clearly defined street crossings, adequate lighting, and street furnishings where appropriate.

- Policy LU-9.4: Encourage an overall high quality streetscape design, where feasible, that promotes narrow roadways; bike lanes; on-street parking; minimal curb cuts; enhanced crosswalks; appropriate sidewalk widths; landscaped medians and parkways; street trees, planters, and wells; street lighting; street furniture; wayfinding; enhanced paving; public art; and other features that contribute to the desired character for National City, where appropriate.

Goal OS-7: A well-maintained system of recreational trails and related facilities throughout the city that enhance and connect open space lands, parks and recreational facilities.

- Policy OS-7.2: Encourage the creation of connected paseos and trails between community activity areas and schools and consider opportunities to enhance them with kiosks and rest stations.

Goal C-1: Coordinated land use and circulation planning.

- Policy C-1.1: Allow, encourage, and facilitate transit-oriented development, mixed-use, and infill projects in appropriate locations that reduce vehicular trips, especially near the 8th Street and 24th Street trolley stops, the future South Bay Bus Rapid Transit Station (BRT), and along major transportation corridors such as 8th Street, Highland Avenue, Plaza Boulevard, and 30th Street/Sweetwater Road.
- Policy C-1.2: Require new development to provide and enhance connectivity to existing transportation facilities via the provision of key roadway connections, sidewalks and bicycle facilities.
- Policy C-1.3: Require new development and redevelopment to provide good internal circulation facilities that meets the needs of walkers, bicyclists, children, seniors, and persons with disabilities.
- Policy C-1.5: Work with state, regional, and local transportation entities to improve and expand transportation facilities and services that link residents to important land use destinations such as workplaces, schools, community and recreation areas, and shopping opportunities.

Goal C-2: A comprehensive circulation system that is safe and efficient for all modes of travel.

- Policy C-2.1: Develop and maintain an interconnected, grid- or modified grid-based transportation system that sustains a variety of multi-modal transportation facilities.
- Policy C-2.2: Enhance connectivity by eliminating gaps and barriers in roadway, bikeway, and pedestrian networks.
- Policy C-2.3: Strive to attain an automobile Level of Service (LOS) of D or better (or an equivalent standard under another analytical methodology). An automobile LOS of E or F may be acceptable under the following circumstances:

  1) Improvements necessary to attain a automobile LOS of D or better would decrease the effectiveness of the nonautomotive components of the multimodal circulation system (i.e. pedestrians, bicyclists, mass/public transit, etc.), or
  2) improvements necessary to increase the effectiveness of the non-automotive components of the multimodal transportation system result in a decrease in automobile LOS.

- Policy C-2.6: Enhance the quality of life in the City's neighborhoods and minimize impacts on schools, hospitals, convalescent homes and other sensitive facilities through the implementation of traffic calming measures in these areas to reduce vehicle speeds and discourage cut-through traffic.
- Policy C-2.8: Implement road diets, where appropriate, as a means to improve safety, increase efficiency of pick-up and drop-off operations at schools, and provide greater separation between pedestrians and vehicles.

Goal C-4: Increased use of alternative modes of travel to reduce peak hour vehicular trips, save energy, and improve air quality.

- Policy C-4.3: Require new uses to provide adequate bicycle parking and support facilities.
- Policy C-4.5: Encourage the use of alternative transportation modes.
- Policy C-4.6: Prioritize attention to transportation issues around schools to reduce school related vehicle trips.

Goal C-7: Increased use of public transit systems.

- Policy C-7.2: Improve bus stop and shelter facilities to increase the comfort of users.
- Policy C-7.3: Provide multi-modal support facilities at transit stops for bicyclists and pedestrians, including children and youth, the seniors, and persons with disabilities.

Goal C-8: A universally accessible, safe, and convenient pedestrian system that encourages walking.

- Policy C-8.1: Provide connectivity of wide, well-lit walking environments with safety buffers between pedestrians and vehicular traffic, when feasible.
- Policy C-8.2: Require new development and redevelopment to incorporate pedestrian-oriented street designs that provide a pleasant environment for walking.
- Policy C-8.3: Identify and implement necessary pedestrian improvements with special emphasis on providing safe access to schools, parks, community and recreation centers shopping districts, and other appropriate facilities.
- Policy C-8.4: Promote walking as the primary travel mode to schools.
- Policy C-8.5: Improve pedestrian safety at intersections and mid-block crossings.
- Policy C-8.6: Reduce architectural barriers that restrict full movement and access by less mobile segments of the population consistent with the Americans with Disabilities Act.
- Policy C-8.7: Apply universal design standards to the pedestrian system.
- Policy C-8.8: Provide a continuous pedestrian network within and between neighborhoods to facilitate pedestrian travel free from major impediments and obstacles.

Goal C-9: A safe, comprehensive and integrated bikeway system that encourages bicycling.

- Policy C-9.1: Expand and improve the bikeway system and facilities by establishing bike lanes, separated paths, and bicycle storage facilities at major destinations.
- Policy C-9.2: Require new development and redevelopment to provide safe, secure bicycle parking facilities.
- Policy C-9.3: Require new development and redevelopment to provide connections to existing and proposed bicycle routes, where appropriate.
- Policy C-9.4: Encourage existing businesses and new development or redevelopment projects to promote bicycling by providing bike rack facilities, personal lockers, and shower rooms.
- Policy C-9.5: Encourage bicycling through education and promotion programs in conjunction with the local school districts.
- Policy C-9.6: Keep abreast of bicycle facility innovations in other cities and regions, and seek to incorporate these into the bicycle network.

Previous Studies

Bicycle Master Plan (2012)

The National City Bicycle Master Plan provides a broad vision, strategies and actions to improve conditions for bicycling in National City. The plan outlines a range of recommendations to increase the number of people who bike and frequency of bicycle trips, improve safety for bicyclists, and increase public awareness and support for bicycling. The plan provides direction for expanding the existing bikeway network, connecting gaps, and ensuring greater local and regional connectivity. In addition to providing recommendations and design guidelines for bikeways and support facilities, the plan offers recommendations for education, encouragement, enforcement, and evaluation programs. The plan accommodates National City residents with various skill levels and incentives for bicycling.

Plan goals:

- A city where bicycling is a viable travel choice for users of all abilities,
- A safe and comprehensive local and regionally connected bikeway network,
- Environmental quality, public health, recreation and mobility benefits through increased bicycling.

These goals are supported by the National City General Plan policies that will help bicycling become a more viable transportation mode for localized trips, connection to transit, commuting, and recreation.

Westside Specific Plan (2010)

In March 2010, the City adopted the Westside Specific Plan with associated General Plan Amendment and Zoning Designation Changes. The Westside area, also known as Old Town, is an area bordered on the west by Interstate 5 and the east by Roosevelt Avenue stretching from W. Plaza Boulevard south to W. 24th Street. Auto services, light manufacturing, and warehouses are interspersed throughout the residential community. The goal of the Westside Specific Plan is to comprehensively address environmental and land use issues, leading to a plan that reflects residents' interest to resolve the conflicting land uses. The plan states that "a successful neighborhood also relies on a safe and efficient pedestrian environment where people enjoy walking from their homes to community activity centers, schools, shopping, parks, and transit."

Guiding principles:

- Respect and encourage single-family homes and small residential development.
- Improve environmental health conditions for residents in the area.
- Limit uses adjacent to Paradise Creek to restoration, passive recreation, and open space.
- Enhance pedestrian safety and promote the walkability of the community.

Chapter 5 defines the "Community Corridors" as focused roadway and pedestrian improvements that address neighborhood circulation and traffic safety correlated with neighborhood centers, parks, and transit.

Paradise Creek Revitalization Plan

The Paradise Creek Revitalization Plan (PCRP) incorporates two City Specific Plans, the Downtown Specific Plan and the Westside Specific Plan. PCRP includes 6,425 new residential units at full buildout with 20 percent being affordable. PCRP is compact mixed use, transit oriented redevelopment. This transit-oriented community development project will remediate existing underground contamination, and build 201 affordable rental homes and a public park. Active transportation and recreation amenities include a community park, playground, access to walking and bike paths and trails. The development received a Silver Catalyst Award for California's Sustainable Strategies Pilot Program and was selected as one of five federal Sustainable Communities Partnership Pilots in the country by the Environmental Protection Agency in partnership with HUD and the Department of Transportation.

Downtown Specific Plan (2005)

The Downtown Specific Plan (February 2005) calls for reinforcing downtown as the heart of the City. The central theme of the revitalization effort is to create a momentum of new development that will generate a mix of office, retail, entertainment, educational, and high-density residential uses. Significant new activity is planned around National City Boulevard and 8th Street, envisioned as downtown's "grand boulevards." Civic life – anchored by Kimball Park, the Education Village, Brick Row, and the new City Library – plays an important role in downtown's future. Buildout of 9,448 residential units are recognized in the Specific Plan. Overall, these proposed projects range in height from 5 stories to 22 stories and, when completed, will create a strong skyline for National City.

The National City Downtown Specific Plan amends the adopted General Plan and serves as a refinement of the goals of the General Plan by affixing precise design and land use standards to development and redevelopment proposals within Downtown National City. This plan includes substantial and well-considered street improvements that will serve to weave together the diverse elements of the downtown with a streetscape of unified design and enhanced character.

Relevant Pedestrian Goals

- Create and maintain a continuous, convenient network of pedestrian facilities throughout the downtown to reduce dependence on the automobile.
- Provide pedestrian amenities, including street furniture, landscaping, lighting, and trash receptacles, to make walking more attractive and convenient.
- Design and locate pedestrian facilities and amenities to promote the uninterrupted flow of pedestrian traffic.
- Create pedestrian links to transit and bicycle facilities to increase the convenience of transit and bicycle travel.

The plan includes general design guidelines that apply to pedestrian facilities and amenities on pages VI-11 through VI-18.

Relevant Recommendations

The City of National City is considering various improvements to their downtown area, including:

- Construction of various improvements, including raised, landscaped medians along National City Boulevard between 7th and 12th Streets
- Reconfiguring/reorienting the Main Street/National City Boulevard at Division Street intersection to eliminate the diagonal, creating a standard intersection

- Enhancing pedestrian crossings at A Street at Civic Center and A Avenue at 8th Street
- Addition of a third lane cross section on 7th Street between National City Boulevard and D Avenue
- Removal of on-street parking along Plaza Boulevard from the 1-5 freeway to D Avenue (to allow for wider sidewalks)
- Addition of two traffic signals on A Avenue at 8th Street and Plaza Boulevard

The impact of the proposed improvements was evaluated for the surrounding street system. The improvements were found to improve traffic at all locations and not create any impacts to the roadways, except for the intersection of Main Street and Division Street. For this location, the following improvement is recommended.

- Installation of a traffic signal at the intersection of Main St. and Division St.

Westside Infill Transit Oriented Development
National City is developing the Westside Infill Transit-Oriented Development Project (WITOD) as part of its larger Paradise Creek Revitalization Plan (PCRP). WITOD will include 201 affordable units in four residential buildings and will expand and existing Adult Education Center. WI-TOD is adjacent to the 24th Street Trolley Station with trolley and transit access located within one-quarter mile of residential development and employment opportunities.

Old Town Action Plan (2010)
The Old Town Action Plan is a Neighborhood Action Plan (OT-NAP). It is an action-oriented document developed as a way to implement long-range planning goals found in the Westside Specific Plan (WSP). The OT-NAP provides a list of steps for neighborhood participants to follow in order to achieve desired outcomes. Several actionable items that pertain to bicycle and pedestrian mobility can be found on page 7 of the OT-NAP. Page 10 of the plan lists steps to increase access to parks, open space, and neighborhood gardens.

Safe Routes to Schools
Rady Children's Hospital and National City are working together to bring Safe Routes to School initiatives to all of the elementary schools in National City. The city and hospital hope to improve health, safety and activity levels of the students in National City through an extensive outreach and encouragement program. Three sites have been selected for this program as the primary focus of education and outreach efforts. This model mirrors the plan adopted under the National City General Plan, which breaks the City into three communities named after the three community parks.

Within this grant, one park, and the associated schools, will be addressed per year over a three year work plan. All community-focused education events (i.e., pedestrian and bicycle rodeos/trainings, gang awareness workshops, etc.) will be held at these sites. Education and encouragement activities will also be scheduled at each of the schools. Additionally, incentive programs will be implemented at each school, which will be paired with opportunities to educate students on the health, economic, and environmental benefits of choosing active transportation.

Harbor District Specific Area Plan (1998)
The Community Development Commission of the City of National City has prepared this specific area plan for the City's Harbor District to fulfill the requirement of the certified National City Local Coastal Program. This documentprovides a detailed, resource-based, environmental implementation plan to establish site specific conservation and development standards in the OSR (Open Space Reserve), CT (Tourist Commercial), MM (Medium Industrial), and OS (Open Space) districts.

The Harbor District Specific Area Plan Objectives are:
(a) The conservation of Paradise Marsh, adjacent delineated wetlands, and associated plant and animal species, in coordination with the USFWS, CDFG and interested non-governmental organizations and persons.

(b) The design and implementation of permanent functional habitat buffers around Paradise Marsh and adjacent wetlands, in cooperation with the National Wildlife Refuge.

(c) Attractive, convenient, environmentally sustainable, and safe multimodal public access to existing, approved, or planned recreational facilities within the Harbor District, and in adjacent Port Planning Subareas 58 and 59, including through the extension of the Harrison Avenue Public Access Corridor and appropriate linkages with the San Diego Bayshore and Sweetwater River Bikeway systems.

(d) Site- and development-specific conservation and development standards that protect coastal habitat, public access, recreational, visual, and cultural resources, contribute to high quality appearance and design, and provide for economically feasible commercial recreational facilities and uses.

(e) Appropriately sized and located infrastructure, including traffic circulation and parking, to support permitted density and intensity of uses within the Harbor District and adjacent priority uses.

(f) Participation by the CDC in specific area planning, inter-agency coordination, property acquisition, and pre-project feasibility analyses to lead and assist in achieving the objectives and standards of the plan.

Final Climate Action Plan

This Climate Action Plan (CAP) addresses the major sources of greenhouse gas (GHG) emissions in National City and sets forth a detailed and long-term strategy that the City and community can implement to achieve GHG emissions reduction target. Implementation of this climate action plan will guide National City's actions to reduce its contribution to global climate change and will support the State of California's ambitious emission reduction targets. The CAP serves as the CEQA threshold of significance within the City for climate change, by which all applicable developments within the City will be reviewed. National City has adopted a reduction target of 15 percent below 2005/2006 baseline emission levels by the year 2020, with additional reductions by the year 2030, for both community-wide and government operations.

The following list is a selection of project relevant greenhouse gas (GHG) emission reduction measures that the City of National City will implement in order to achieve the emission reduction target for the year 2020 and additional reductions by the year 2030.

• A2.b.2 Implement bicycle corridor improvements and supportive infrastructure.

• A2.b.5 Encourage employers to institute programs that provide financial incentives for commuters to reduce their vehicle trips and use alternative transportation modes like walking, bicycling, public transit and carpooling, often as an alternative to subsidized employee parking.

• A2.d.1 Implement neighborhood traffic calming projects (e.g., replace stop controlled intersections with roundabouts).

AB 32 Global Solutions Act (2006)

AB 32 requires California to lower greenhouse gas emissions to 1990 levels by 2020, the equivalent of taking approximately 15 million cars off the nation's roads. To meet reduction targets, the California Air Resources Board (CARB), the lead agency responsible for implementing the act, is following a blueprint known as the AB 32 Climate Change Scoping Plan. The plan lays out the strategy and a comprehensive set of actions including the establishment of targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve these targets. Because transportation accounts for 38% of the state's GHG levels, lowering transportation related GHGs is a primary focus. Increasing active transportation levels is one of the key strategies for lowering transportation related GHGs.

SB 375 Sustainable Communities and Climate Protection Act (2008)

Senate Bill 375, authored by Senate President Pro Tem Darrell Steinberg, was signed into law on September 30, 2008. SB 375 is an ambitious attempt by the State to forge a closer link between transportation investments and land use decisions. The bill integrates planning processes that are currently disjointed for transportation, land use, and housing, with the goal of reducing the amount that people have to drive, along with associated GHG emissions. Highlights of SB375 include:

- Created regional targets for GHG emissions reductions from cars and light trucks.
- Required regional planning agencies to create a land use and transportation plan, Sustainable Communities Strategy (SCS), to meet the GHG targets. An SCS for the San Diego region was adopted in 2011 as part of the 2050 Regional Transportation Plan.
- Reforms the Regional Housing Needs Allocations (RHNA) and Housing Element law to match regional planning processes.

- Made new California Environmental Quality Act (CEQA) exemptions and streamlining for certain projects consistent with a regional plan that meets the targets.

The first Sustainable Communities Strategy for the San Diego region was adopted in 2011 by the San Diego Association of Governments (SANDAG) as part of its 2050 Regional Transportation Plan. Goals and actions listed to implement the SCS included the provision of health principles in evaluation criteria for existing grant programs, encouragement of development patterns that promote walking, bicycling and access to public transit – especially in existing and emerging smart growth areas, and development of a regional complete streets policy. Technical data for the SCS and GHG target reductions included, among others, strategies to increase bicycling and walking in the region.

AB 1358 California Complete Streets Act (2008)
The Complete Streets Act of 2007, Assembly Bill 1358, requires the legislative body of a city or county, upon revision of the circulation element of their general plan, to identify how the jurisdiction will provide for the routine accommodation of all users of the roadway including motorists, pedestrians, bicyclists, individuals with disabilities, seniors, and users of public transportation.

For as much as the bill is about making streets safer and more convenient for everyone, other stated goals are to improve public health through increased physical activity, make efficient use of urban infrastructure, and reduce Green House Gas emissions.

In order to fulfill the commitment to reduce greenhouse gas emissions, make the most efficient use of urban land and transportation infrastructure, and improve public health by encouraging more physical activity, transportation planners must find innovative ways to reduce vehicle miles traveled and to shift from short trips in the automobile to biking, walking and use of public transit. [1]

National City created a Complete Streets policy and other supportive policies in the adoption of their updated General Plan (2011).

[1] Assembly Bill 1358, Chapter 657, Statutes 2008.

SB 97 CEQA Directives for GHG (2007)
Known as a "companion" bill to AB 32 and SB 375, SB 97 affects how cities evaluate climate change in traffic impact studies and environmental documents. The bill required the Governor's Office of Planning and Research (OPR) to develop amendments to CEQA to address GHG emissions. These recommended amendments were then sent to the California Natural Resources Agency, the agency responsible for the CEQA Guidelines, for inclusion into the updated CEQA Guidelines that became effective March 18, 2010. As a result of SB 97, projects are now required to analyze and disclose whether they "generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment." The appropriate methodology for describing, calculating or estimating the amount of GHG emissions resulting from a project is left to the discretion of the lead agency.

Capital Improvement Project List

Table 2-14: Capital Improvement List

	Project	Project Limits	Project Description	Project Status	Total Cost
1	Kimball Park	Kimball Park	Upgrades and expansion of facilities at Kimball Park include: • Shade structures for Kimball Bowl amphitheater; • Indoor-style soccer court; • Skate park; • Upgrades to the ball fields; • Playgrounds and picnic areas; • New restrooms; • Improved lighting; • Walking paths and ADA improvements; • Traffic circulation and parking improvements.	Preliminary design complete • Final design schedule: June 2012 – February 2013 • Construction schedule: April 2013 – December 2013	$3,130,000
2	4th Street Community Corridor	Roosevelt Ave and Harbison Ave	The project includes installation of bike lanes, enhanced signing and striping, traffic calming measures such as corner bulb-outs, ADA improvements, lighting and landscaping.	Preliminary design in progress • Final design schedule: September 2012 – June 2013 • Construction schedule: August 2013 – April 2014	$400,000
3	8th St Corridor Safety Enhancements	J Avenue and Palm Ave	The project includes the following traffic safety enhancements to calm traffic, reduce collisions and improve access for pedestrians: • Reduce travel lanes from four lanes to three lanes (two eastbound and one westbound) • Install left-turn pockets and a traffic signal at M Avenue to reduce rear-end and left turn vs. opposing thru traffic collisions, and provide positive protection for pedestrians at the school crossing; • Provide traffic signal modifications and ADA improvements at Palm Avenue; • Construct retaining walls for slope stabilization between K Avenue and L Avenue to enhance pedestrian safety and access by preventing soil from sluffing over the sidewalk	Final design in progress • Construction schedule: Currently underway, 2013	$430,000
4	8th St Corridor Smart Growth Revitalization	8th Street Trolley Station and K Avenue	Phase I of the project includes undergrounding overhead utilities between National City Boulevard and Highland Avenue, and replacing the sewer between the 8th Street Trolley Station and K Avenue, just east of Highland Avenue. Phase II of the project includes traffic calming, pedestrian and streetscape enhancements between the 8th Street Trolley Station and Highland Avenue.	Phase I – Utility Undergrounding and Sewer Replacement • Final design complete • Construction contract awarded • Construction schedule: April 2012 – June 2013 Phase II – Streetscape Revitalization • Final design in progress • Construction schedule: April 2013 – June 2014	$2,300,000

	Project	Project Limits	Project Description	Project Status	Total Cost
5	"A" Avenue Green Street and Pedestrian Pathway Project	8th Street and 16th Street	The primary objectives of the project are as follows: 1) Create a "Green Street" that implements Low-Impact Development (LID) infiltration measures to improve water quality of urban runoff. 2) Create a safe, environmentally friendly walking path along "A" Avenue to connect Historic Brick Row, Morgan Square and the 8th Street Revitalization District to City Hall, National City Public Library and Kimball Park. 3) Provide educational opportunities through implementation of interpretative signage and creek themed art."	Final design, environmental, and public outreach for the project are scheduled to start in Spring 2013.	$3,300,000
6	Aquatic Center	Pepper Park	This 4,663 square foot public facility will be owned by the City of National City upon leased premises (10,000 square feet) in Pepper Park, National City, under the jurisdiction of the San Diego Unified Port District. The structure will include: • Two multi-purpose classrooms that can be opened as one larger room; • Office for facility staff; • Storefront for National City Police and/or Harbor Police; • Locker, shower and restroom spaces; • Boat and equipment storage; • Decorative lighting, landscaping and Public Art."	• Final design complete • Construction schedule: November 2012 – July 2013	$3,500,000
7	Coolidge Ave Community Corridor	W. 18th Street and Plaza Boulevard	The project will deliver pedestrian enhancements and traffic calming measures to improve walkability, reduce cut-through traffic, vehicle speeds and collisions, and provide a safer environment to encourage more children from the Old Town Neighborhood to walk to and from Kimball Elementary School.	• Final design in progress • Construction schedule: October 2012 – June 2013	$1,253,663
8	D Avenue Community Corridor - Roundabout	Division Street and E. 30th Street	The project includes installation of bike lanes, signing and striping enhancements, ADA improvements, reverse angle parking adjacent to Kimball Park, lighting and landscaping to convert D Avenue into a "Community Corridor".	• Final design in progress • Construction schedule: December 2012 – August 2013	$600,000

	Project	Project Limits	Project Description	Project Status	Total Cost
9	Highland Avenue Safety Improvements	Division Street and E. 8th Street	The project includes the following traffic safety enhancements within the public right of way to calm traffic, reduce collisions and improve access for pedestrians: 1) Reduce travel lanes from four lanes to two lanes with protected left-turn pockets at intersections to reduce rear-end and left-turn vs. opposing thru traffic collisions; 2) Provide ADA improvements, enhanced signing and striping, corner bulb-outs and refuge islands to calm traffic and reduce pedestrian crossing distances at intersections; 3) Construct landscaped islands mid-block to calm traffic and beautify the corridor; 4) Convert parallel parking to angled parking on the east side of the street to provide more parking and improve access to local businesses.	• Preliminary design in progress • Final design schedule: September 2012 – June 2013 • Construction schedule: August 2013 – April 2014	$850,000
10	Las Palmas Park Improvements	Las Palmas Park	Three alternative concepts have been prepared based on funding opportunities. The list of proposed improvements is based on the most comprehensive alternative. • New YMCA Center; • Renovations to Community Pool and Camacho Gym; • Indoor-style soccer court; • Skate park; • Batting cages; • Playgrounds and picnic areas; • New restrooms; • Improved lighting; • Walking paths and ADA improvements; • Traffic circulation and parking improvements.	• Preliminary design complete • Final design schedule: June 2012 – February 2013 • Construction schedule: April 2013 – December 2013	$6,185,000
11	SR2S	Citywide	Types of safety enhancements include in-roadway warning lights at crosswalks, flashing beacons, radar speed feedback signs, traffic calming bulb-outs and pedestrian refuge islands at school crosswalks, new sidewalks and ADA curb ramps, and enhanced school zone signing and striping. Grant funding has also been used to provide outreach, education and training for students and parents to encourage more families to participate in walk to school activities.	Amount awarded over the past five years.	$3,700,000
12	Citywide Bus Shelter Project	Citywide	Installation of shelters, benches and trash receptacles • Shelters are solar powered • City logo to be installed on each shelter	• Construction complete	$129,147

Safety Analysis

3

Safety Analysis Overview

Bicycle and pedestrian collision data were obtained from the National City Police Department. These data sets represent all reported bicycle/vehicle-related and pedestrian/vehicle related and bicycle/pedestrian related collisions occurring in National City from January 2007 through June 2013. Collisions that occurred on off-street paths are not included in the data. Collisions involving cyclists, whether they involve vehicles, other cyclists, or pedestrians, are generally under-reported, so bicycle collisions are likely to have occurred that were not included as part of this data.

During this 5 1/2 year period, there were 94 bicycle/vehicle-related collisions. There were over twice the amount for the pedestrian related collisions with 236. Of these reported collisions, 8 were fatal. The data was reviewed in terms of volume of collisions that occurred at intersections and on road segments. This data will assist in prioritizing projects in later phases. Bicycling and walking collisions were also summarized to identify other trends that may help to determine where and what kind of physical treatment can be recommended.

Table 3-1: Bicycle Collisions by Community

Community	Collisions
Kimball	43
Las Palmas	27
El Toyon	24
Total	**94**

Table 3-2: Bicycle Collisions by Year

Year	Collisions
2007	15
2008	16
2009	5
2010	10
2011	13
2012	25
2013*	10
Total	**94**

* Partial Year: January-June

Table 3-3: Bicycle Collisions by Neighborhood

Neighborhood	Collisions
Central	14
John Otis	11
Olivewood	11
Kimball	10
Rancho De La Nacion	10
Las Palmas	9
Palmer Way	7
Harbor District	7
Lincoln Acres	7
Ira Harbison	6
El Toyon	2
Total	**94**

Table 3-4: Bicycle Collisions by Road Segment

Road Segment	Collisions
Highland Ave	22
Plaza Bonita Rd	4
National City Blvd	4
Cleveland Ave	4
D Ave	4
Euclid Ave	3
Grove St	3
Plaza Blvd	3
L Ave	3

Note: The high rate of bicycle collisions in the Kimball Community correlates with the bicycle commuters density, and households without vehicles.

Table 3-5: Bicycle Collisions by Intersection

Intersection	Collisions
24th St and F St	2
B Ave and 16th St	2
Cleveland Ave and Civic Center Dr	2
Euclid Ave and 16th St	2
Grove St and Sweetwater Rd	2
Highland Ave and 12th St	2
Highland Ave and 30th St	2
Highland Ave and 7th St	2
Intersection with at least one collision	56
Total	**74**

Note: 79% of bicycle collisions occurred at intersections

Table 3-6: Bicycle Collisions by Bicyclist Age Group

Age Group	Collisions
< 16	27
17-64	63
65+	4
Total	**94**

Table 3-7: Bicycle Collisions by Vehicle Code Violations

Vehicle Code Violation	Collisions
Turning Movements and Required Signals	11
Entering Hwy from Private Road or Driveway	9
Misc Hazardous Violations of the Vehicle Code	8
Bicycle Driving on Wrong Side of Road	7
Bicyclist, Failure to use Right Edge Road	6
Driving on Sidewalks	4
Failure to Drive on Right Side of Roadway	4
Pedestrian Not to Suddenly Enter Path, etc	4
Red or Stop, Vehicles Stop and Limit Line	4
Left Turn Yield Until Safe or U-Turn	3
Private Road or Driveway	3
Drive the Wrong Way on a Divided Highway	2
Entrance from stop through highway, yield until reasonably safe	2
Overtake and pass to left	2
Riding bicycle while under influence of alcohol drugs	2
Starting parked vehicles or backing	2
Stop requirements state stop line	2
Violation of basic speed law, speed unsafe for conditions	2
Yield right-of-way to pedestrians	2
Bicycle to use bicycle lane	1
Bicyclist, hitching ride with other vehicle	1
Disobeying traffic direction by authorized personnel	1
Entrance through highway, yield until reasonably safe	1
Failure to yield, turning vehicle having yielded	1
Hit and run	1
Left turn yield until safe	1
Left turn at intersections	1
Misc non-hazardous violations of the vehicle code	1
Opening and closing doors	1
Passing on right, when unlawful	1
Pedestrian traffic, red light	1
Selling bicycle without approved reflectors	1
Uncontrolled intersection, yield to first vehicle within	1
Vehicular traffic, green light	1
Total	**94**

Note: Many of these violations occur from incorrect roadway positioning or not following the proper rules of the road while riding a bicycle.

Figure 3-1: Bicycle Collisions

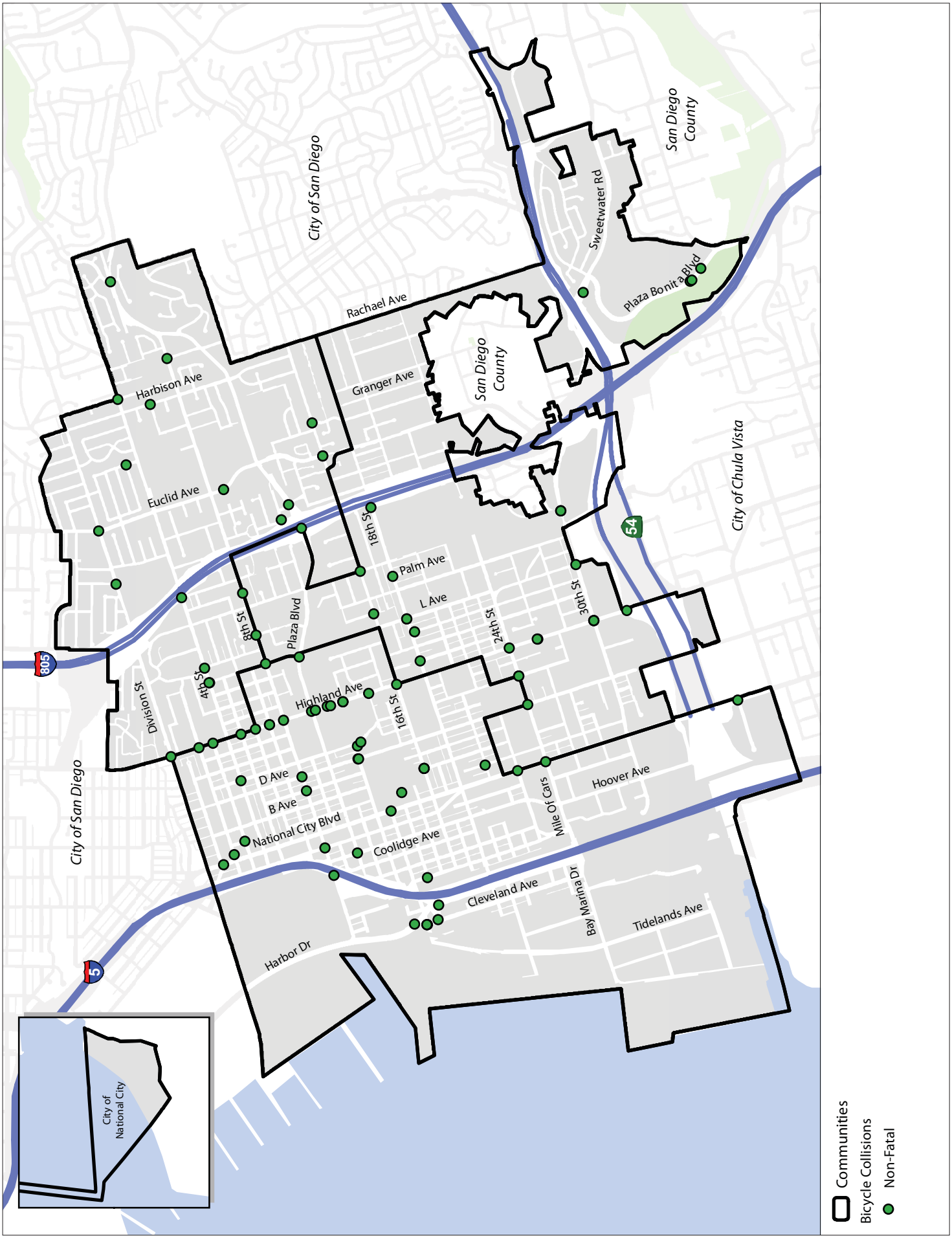


Figure 3-2: Bicycle Collision Density

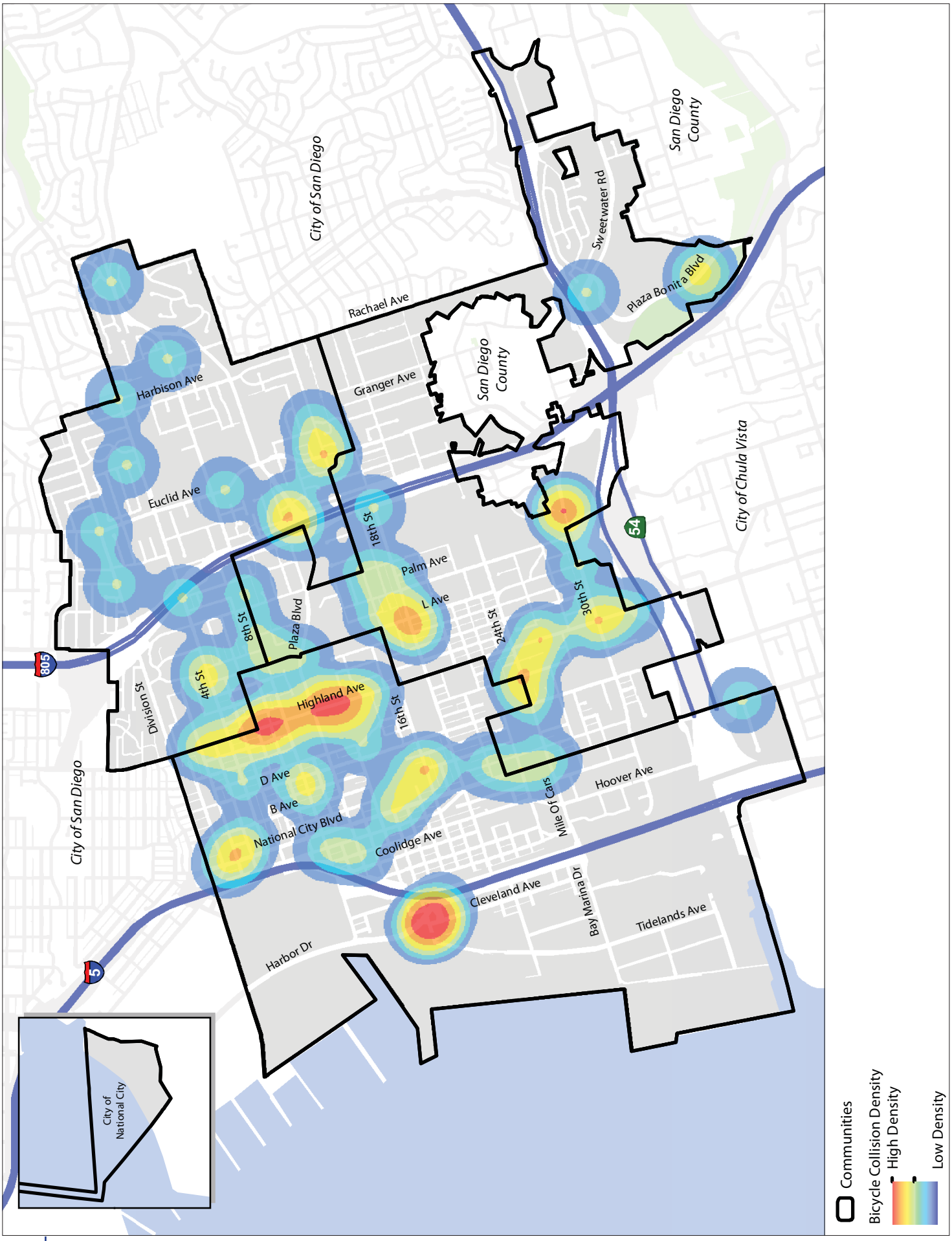


Table 3-8: Pedestrian Collisions by Community

Community	Collisions
Kimball	95
Las Palmas	74
El Toyon	67
Total	**236**

Note: The high rate of pedestrian collisions in the Kimball Community correlates with the high propensity for walking in the neighborhood, as well as the high number of households without vehicle ownership and more households without vehicles.

Table 3-9: Pedestrian Collisions by Year

Year	Collisions
2007	34
2008	39
2009	34
2010	34
2011	43
2012	34
2013*	18
Total	**236**

* Partial Year: January-June

Table 3-10: Pedestrian Collisions by Neighborhood

Neighborhood	Collisions
Central	41
John Otis	33
Las Palmas	31
Olivewood	23
Palmer Way	23
Ira Harbison	20
Lincoln Acres	20
Rancho De La Nacion	15
El Toyon	14
Kimball	14
Harbor District	2
Total	**236**

Table 3-11: Pedestrian Collisions by Road Segment

Road	Collisions
Highland Ave	57
East 8th St	14
Euclid Ave	14
Plaza Blvd	12
Division St	12
Plaza Bonita Rd	10
L Ave	8
National City Blvd	8
D Ave	7
East 18th St	5

Table 3-12: Pedestrian Collisions by Intersection

Intersection	Collisions
Highland Ave and Division St	5
Highland Ave and 24th St	5
Highland Ave and Plaza Blvd	5
Euclid Ave and Plaza Blvd	4
Plaza Blvd and L St	4
8th St and Roosevelt	3
8th Ave and A Ave	3
Euclid Ave and 4th St	3
Highland Ave and 4th St	3
Highland Ave and 16th St	3
Highland Ave and 18th St	3
Highland Ave and 30th St	3
Mile of Cars Way and Wilson Ave	3
Other intersections with two collisions	18
Total	**83**

Note: 35% of pedestrian collisions occurred at intersections

Table 3-13: Pedestrian Collisions by Pedestrian Age Group

Age Group	Collisions
< 16	62
17-64	135
65+	39
Total	**236**

Table 3-14: Pedestrian Collisions by Vehicle Code Violations

Vehicle Code Violation	Collisions
Yield right-of-way to pedestrians	72
Misc non-hazardous violations of the vehicle code	41
Misc non-hazardous violations of the vehicle code	20
Pedestrian Not to Suddenly Enter Path, etc	19
Starting parked vehicles or backing	11
Crossing between controlled intersections	9
Unknown/invalid charge	8
Right of Way on sidewalk	7
Pedestrian traffic, "Wait" Sign	6
Violation of basic speed law, speed unsafe for conditions	6
Pedestrian on Roadway	5
Turning Movements and Required Signals	5
Red or Stop, Vehicles Stop and Limit Line	3
DUI alcohol and/or drugs	2
DUI alcohol drugs/death causing bodily injury	2
Fail to obey traffic control device	2
Hit and run death or injury	2
Obedience to traffic control signals	2
Property damage accidents	2
Vehicular traffic, green light	2
Disobey traffic control construction site	1
Drive w/o license	1
Driving on Sidewalks	1
Entering Hwy from Private Road or Driveway	1
Evade peace officer with wanton disrergard for safety	1
Obedience to official traffic control device (pedestrian)	1
Reckless driving w/injury	1
Stop requirements state stop line	1
Tunnel of overhead crossing	1
Yield signs, yield until reasonably safe	1
Total	**236**

Figure 3-3: Pedestrian Collisions

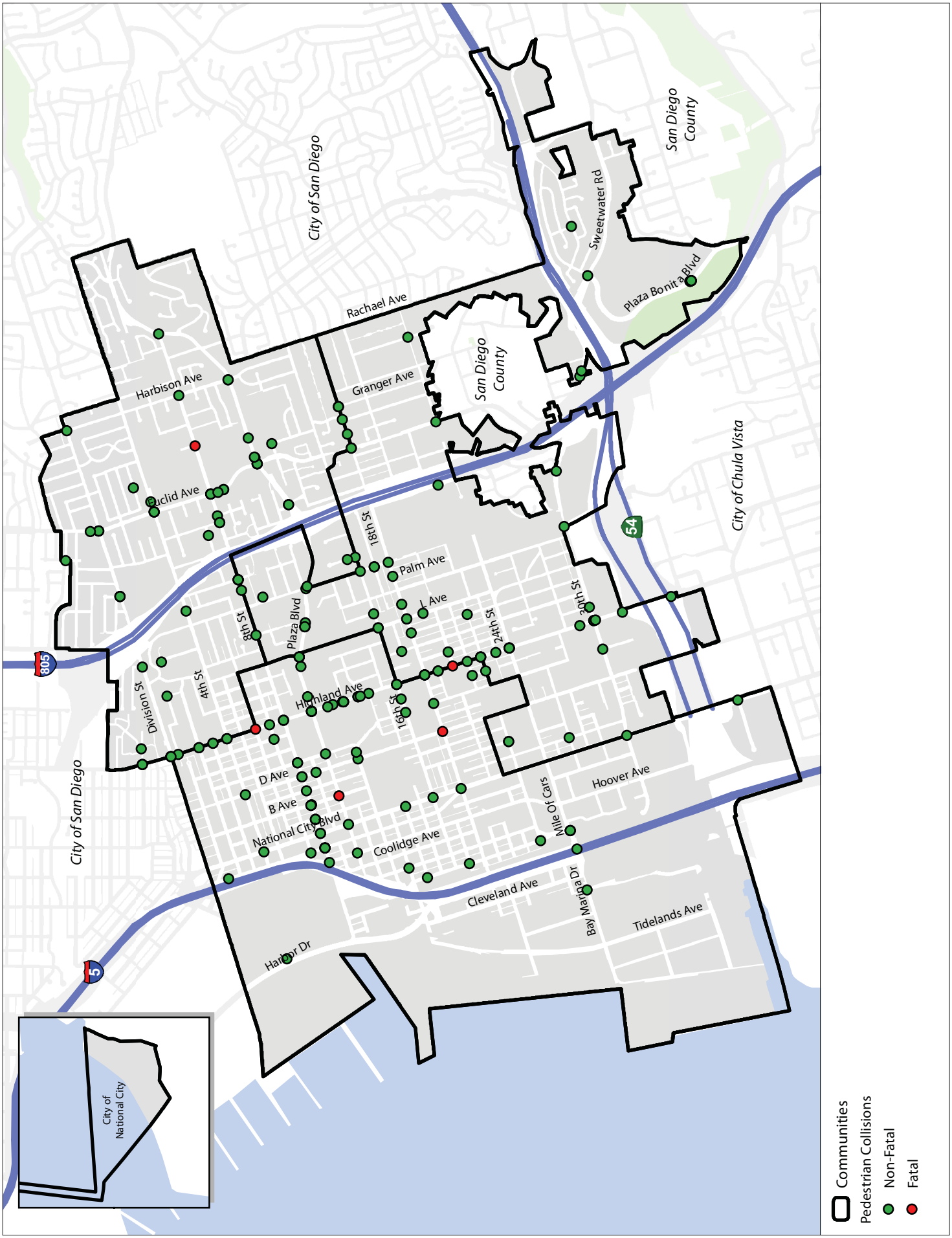
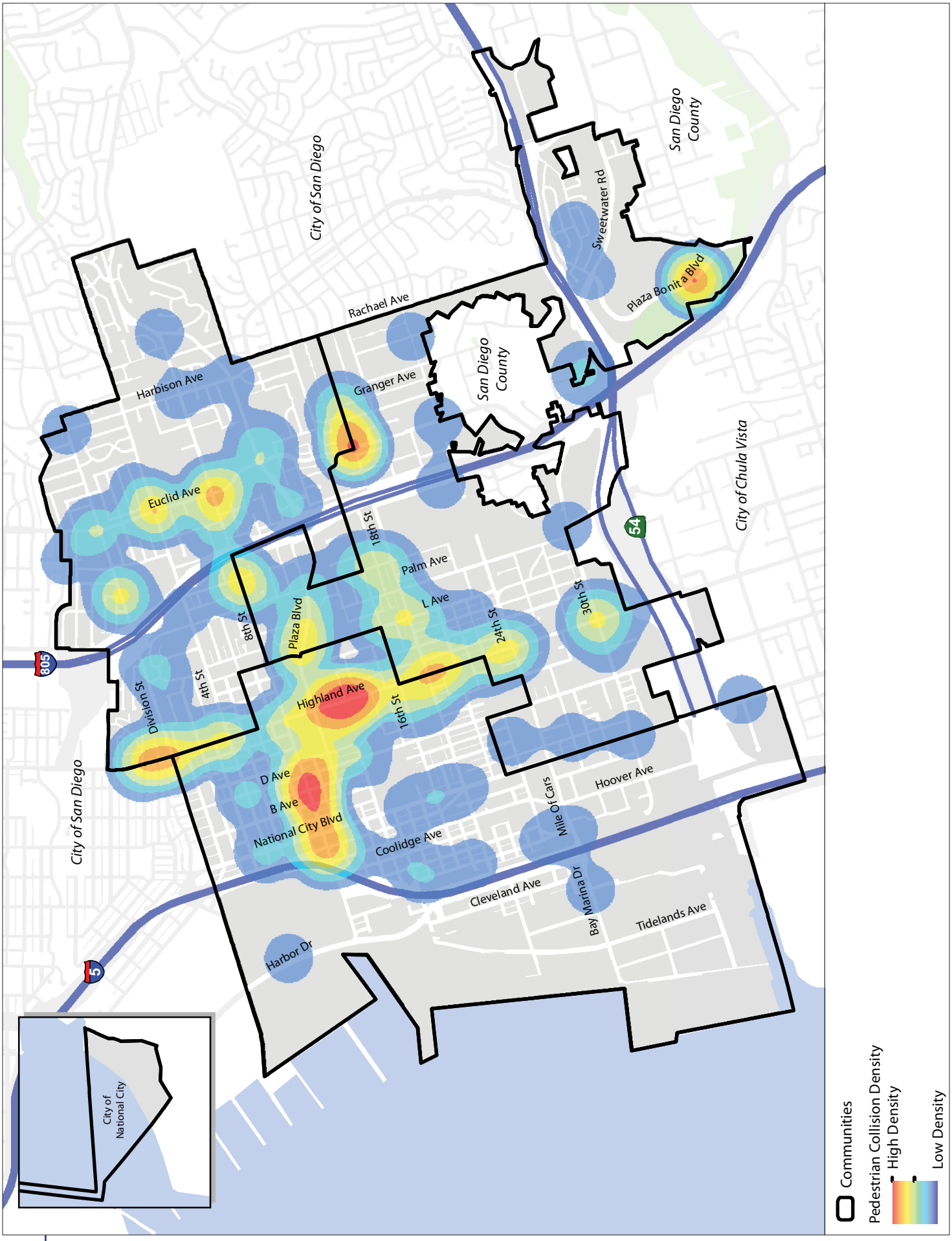


Figure 3-4: Pedestrian Collision Density



Safety Analysis Near Schools and Parks

The SMART Foundation Plan is working in conjunction with Rady Children's Hospital's *Safe Routes To School* program. The following analysis identifies the bicycle and pedestrian collisions near schools and parks. This information can help those efforts in identifying the schools where improvements, outreach and education can be increased to reduce collision rates.

A quarter mile walking distance from each school and park was created and intersected with the collision data to tabulate total collisions near the schools and parks. The tables indicate collisions by age and most common road segment. Age will help identify the volume of children involved. Road segment will assist in the upcoming recommendations phases.

The following tables and maps show the schools where at least one collision occurred. The schools where no collisions were identified have been excluded.

Table 3-15: Bicycle Collisions Near Schools

Schools	Total Bicycle Collisions	Victim Age		
		< 16	16-64	> 64
Central Elementary	7	3	4	
National City Junior High	4	2	1	1
Olivewood Elementary	4	2	2	
Sweetwater High	3	1	2	
El Toyon Elementary	2		2	
John Otis Elementary	1		1	
Las Palmas Elementary	1		1	
Ira Harbinson Elementary	1		1	
Total	**23**	**8**	**14**	**1**

Table 3-16: Pedestrian Collisions Near Schools

Schools	Total Pedestrian Collisions	Victim Age		
		< 16	16-64	> 64
Central Elementary	16	4	7	5
John Otis Elementary	12	5	6	1
Sweetwater High	7	2	5	
National City Junior High	6	1	5	
El Toyon Elementary	6	2	3	1
Olivewood Elementary	5	1	3	1
Palmer Way Elementary	2		2	
Kimball Elementary	2	1	1	
Las Palmas Elementary	1		1	
Granger Junior High	1	1		
Lincoln Acres Elementary	1	1		
Ira Harbinson Elementary	1		1	
Total	**60**	**18**	**34**	**8**

Table 3-17: Bicycle Collisions by Street Near Schools

	Central Elementary	National City Junior High	Olivewood Elementary	Sweetwater High	El Toyon Elementary	John Otis Elementary	Las Palmas Elementary	Ira Harbinson Elementary	Total Bike Collisions by Street
24th St			4						**4**
B Ave		3							**3**
Division St					2				**2**
East 18th St						1	1		**2**
East 8th St								1	**1**
Highland Ave	5	1		3					**9**
Kimball Way	2								**2**
Total by School	**7**	**4**	**4**	**3**	**2**	**1**	**1**	**1**	

Table 3-18: Pedestrian Collisions by Street Near Schools

Road Segment	Central Elementary	John Otis Elementary	Sweetwater High	National City Junior High	El Toyon Elementary	Olivewood Elementary	Palmer Way Elementary	Kimball Elementary	Las Palmas Elementary	Granger Junior High	Lincoln Acres Elementary	Ira Harbinson Elementary	Total Pedestrian Collisions by St
16th St				1									**1**
17th St		1						1					**2**
18th St		1											**1**
20th St		1											**1**
24th St											1		**1**
D Ave	2			1									**3**
Division St					6								**6**
E Ave	3												**3**
East 30th St			1										**1**
East 8th St	1											1	**2**
Plaza Blvd	2						2						**4**
F Ave		1	1	1									**3**
Highland Ave	8	8	5	3		5							**29**
National City Blvd								1					**1**
Newell St									1				**1**
Van Ness Ave										1			**1**
Total by School	**16**	**12**	**7**	**6**	**6**	**5**	**2**	**2**	**1**	**1**	**1**	**1**	

Figure 3-5: Pedestrian Collisions Near Schools

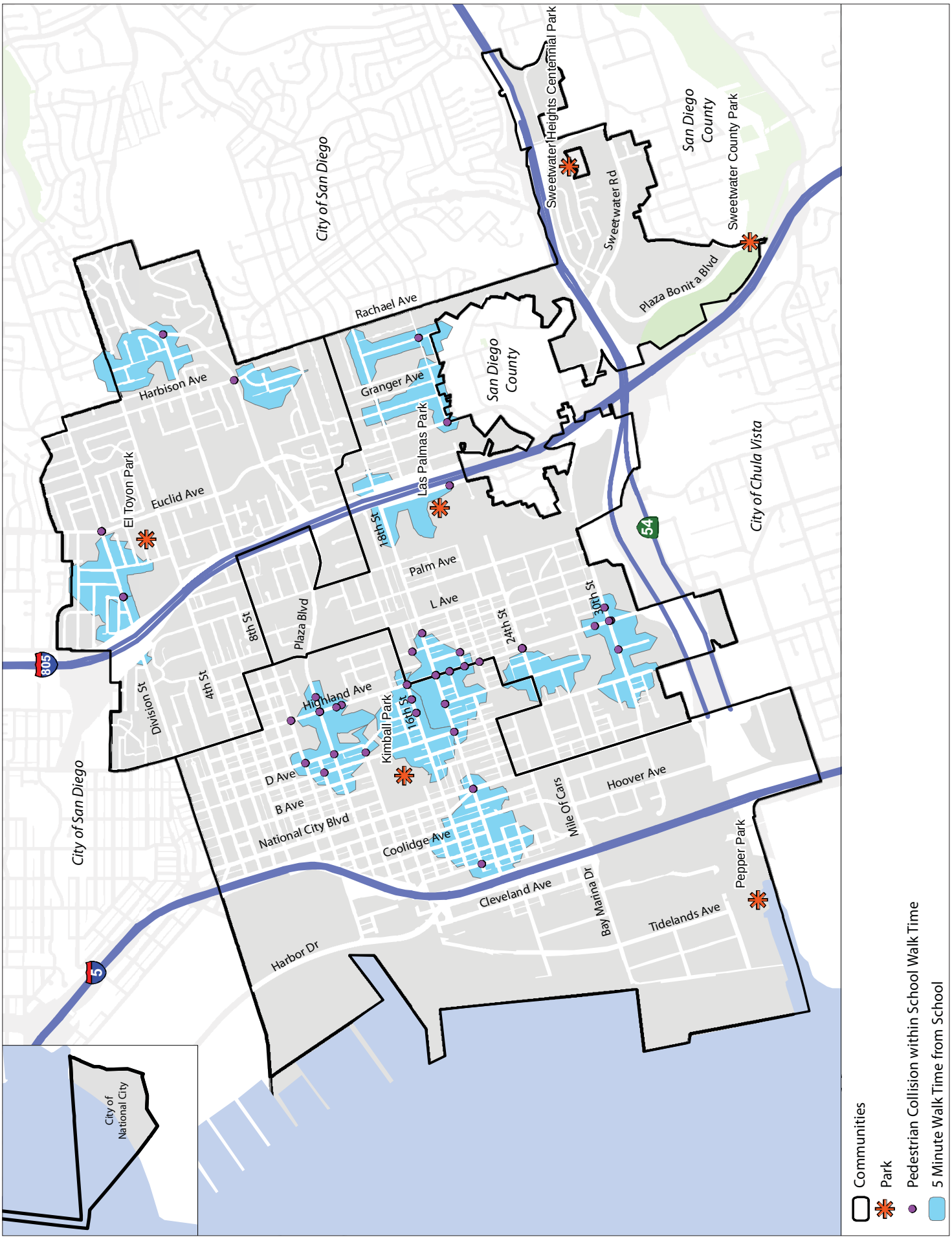


Figure 3-6: Bicycle Collisions Near Schools

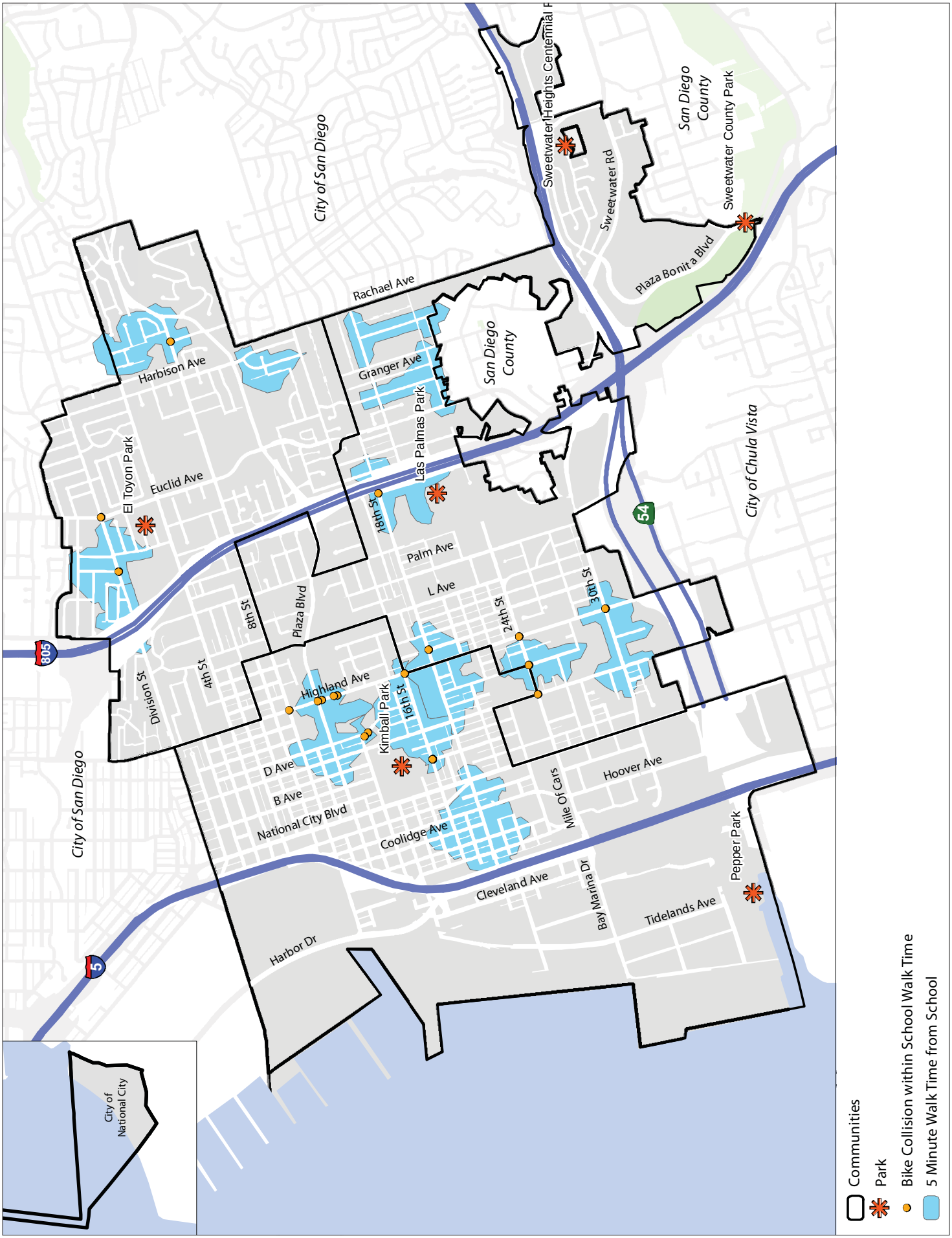


Table 3-19: Bicycle Collisions Near Parks

Parks	Total Bicycle Collisions	Victim Age		
		< 16	16-64	> 64
Kimball Park	6	2	4	
Sweetwater County Park	3		3	
Total by Age	**9**	**2**	**7**	

Table 3-20 Bicycle Collisions by Street Near Parks

Parks	Kimball Park	Sweetwater County Park	Total Bike Collision by Street
B Ave	4		4
D Ave	2		2
Plaza Bonita Rd		3	3
Total by Park	**6**	**3**	

Table 3-21: Pedestrian Collisions Near Parks

Parks	Total Pedestrian Collisions	Victim Age		
		< 16	16-64	> 64
El Toyon Park	4	1	3	
Kimball Park	2	2		
Las Palmas Park	1		1	
Sweetwater County Park	9	3	3	3
Total by Age	**16**	**6**	**7**	3

Table 3-22: Pedestrian Collisions by Street Near Parks

Parks	El Toyon Park	Kimball Park	Las Palmas Park	Sweetwater County Park	Total Collision by Street
D Ave		1			1
East 4th St	1				1
Euclid Ave	3				3
Newell St			1		1
Plaza Bonita Rd				9	9
National City Blvd		1			1
Total by Park	**4**	**2**	**1**	**9**	

Figure 3-7: Pedestrian Collisions Near Parks

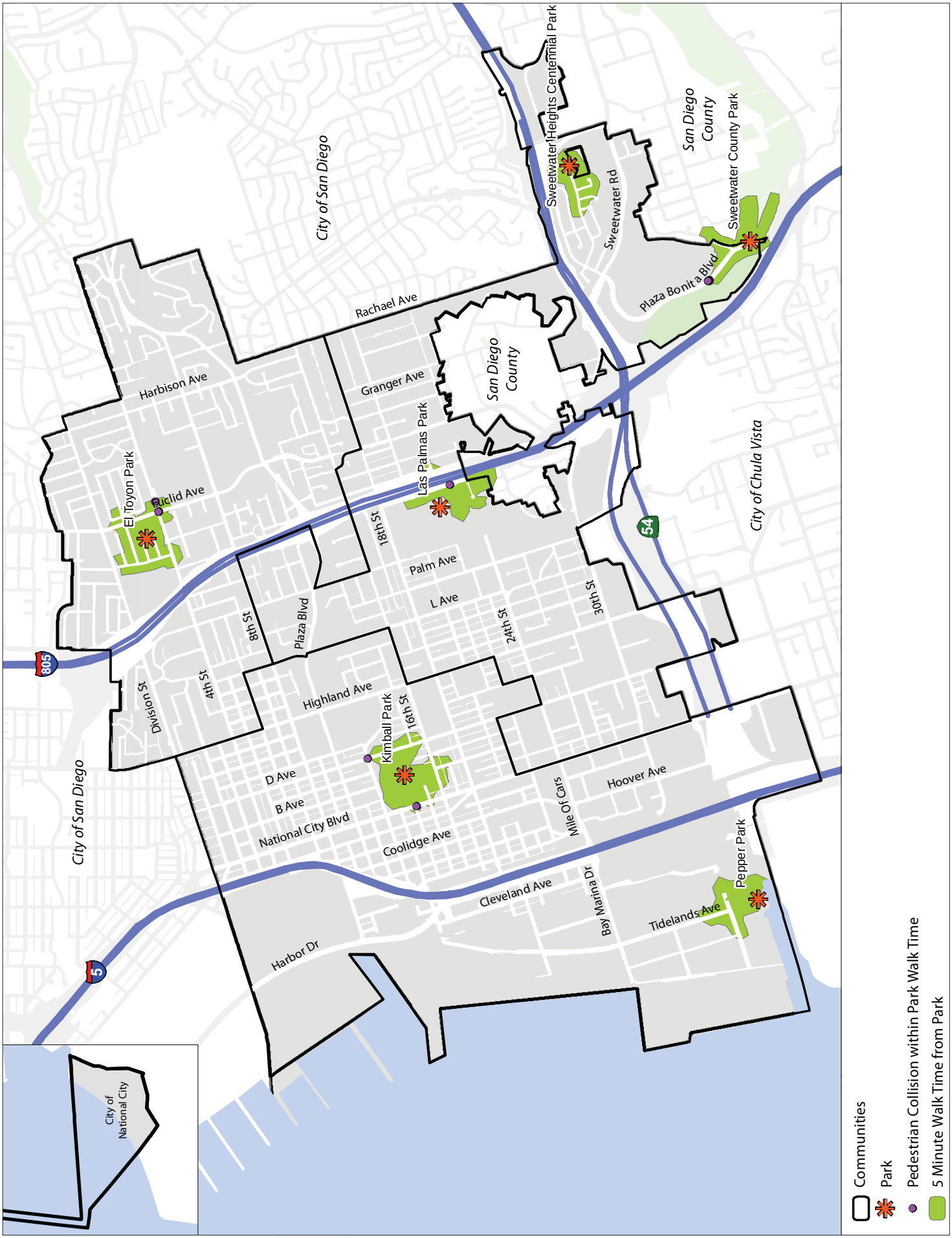
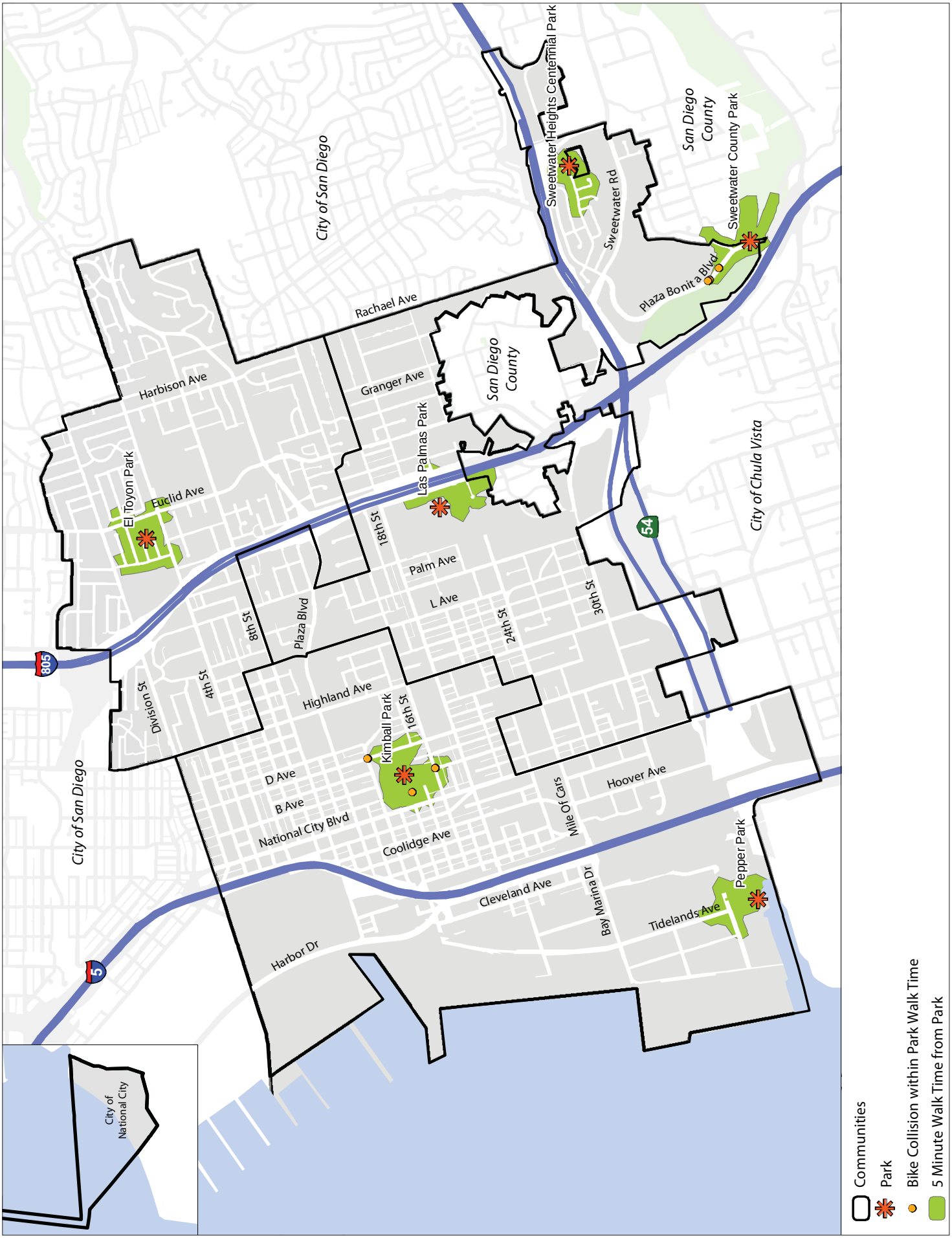


Figure 3-8: Bicycle Collisions Near Parks



Crime Analysis

Crime data was collected to identify areas within the City where volumes and levels of crime are occurring. It's important to include crime data as part of this analysis due to the nature of the projects and their locations. Since the projects will be studied at a small scale, identifying crime trends near a recommended project can help in improving the perceived and actual safety by including countermeasures in the design. Some examples of safety countermeasure may include additional street lighting or limiting access and egress in a certain area.

Crime Prevention Through Environmental Design (CPTED)

Crime Prevention Through Environmental Design is based on the theory that the proper design and effective use of the built environment can lead to a reduction in the incidence and fear of crime and in an improvement in the quality of life. The City has complete four CTPED projects to date:

1. National City Municipal Pool

The CPTED assessment only addresses public space around the exterior of the National City Pool and the immediate interior of the lobby. It is not meant to constitute an overall crime prevention survey of Las Palmas Park or the pool area.

2. Butterfly Park

This report seeks to incorporate CPTED strategies and concepts at the initial stages of the development process regarding Butterfly Park.

3. Kimball Park Lighting

This report seeks to incorporate CPTED lighting strategies and concepts in reference to the Proposed Phase I Photometric Plan for Kimball Park.

4. National City Library (Exterior Only)

The CPTED assessment only addresses public space around the exterior of the National City Library and is not meant to constitute an overall crime prevention survey of Kimball Park or the interior of the city library.

There are four key concepts in CPTED which are all interrelated:

Natural Surveillance: The placement of physical features, activities and people in such a way as to maximize visibility.

Natural Access Control: The physical guidance of people coming and going from a space by the judicial placement of entrances, exits, fencing, landscaping and lighting.

Territorial Reinforcement: The use of physical attributes that express ownership such as fencing, pavement treatments, signage and landscaping.

Maintenance: Allows for the continued use of a space for its intended purpose. It also serves as an additional expression of ownership.

The National City General Plan identifies Natural Surveillance, Natural Access Control and Territorial Reinforcement as the most common and those will be studied further in the recommendations phase.

Crime Level Classification

This section summarizes crime data collected between 2007-2012 from the National City Police Department. Due to the volume of crime data that has been collected, the data has been subdivided into three levels of violation. Feedback was provided by the City's Crime Analyst to determine the subcategories that are appropriate for this project.

Level one are the non-physical violent crimes which include, amongst others, robbery, vandalism, disorderly conduct, loitering, indecent exposure, possession of firearms, gang activity, and disturbing the peace.

Level two crimes are more physical and related to children such as assault, battery, child cruelty, possession of a deadly weapon, lewd and lascivious acts, sexual battery, annoying children, crimes against children, firearm discharge and unlawful sexual intercourse.

Level three are the serious crimes which include murder, rape and kidnapping.

This following table summarizes the collected crime data by community. While Figure 35 shows the locations of the crimes, the following density maps show where the high concentrations of crime are occurring. During the recommendations phase, the crime data will be analyzed in greater detail.

Crime Analysis Near Schools and Parks

Table 3-23: Crime Levels by Community

Community	Level 1	Level 2	Level 3
El Toyon	732	466	45
Kimball	1,570	680	70
Las Palmas	1,076	650	44
Total	**3,378**	**1,796**	**159**

Source: Automated Regional Justice Information System (ARJIS) 2007-2012

Figure 3-9: Crime Analysis

Figure 3-10: Level One Crime Density

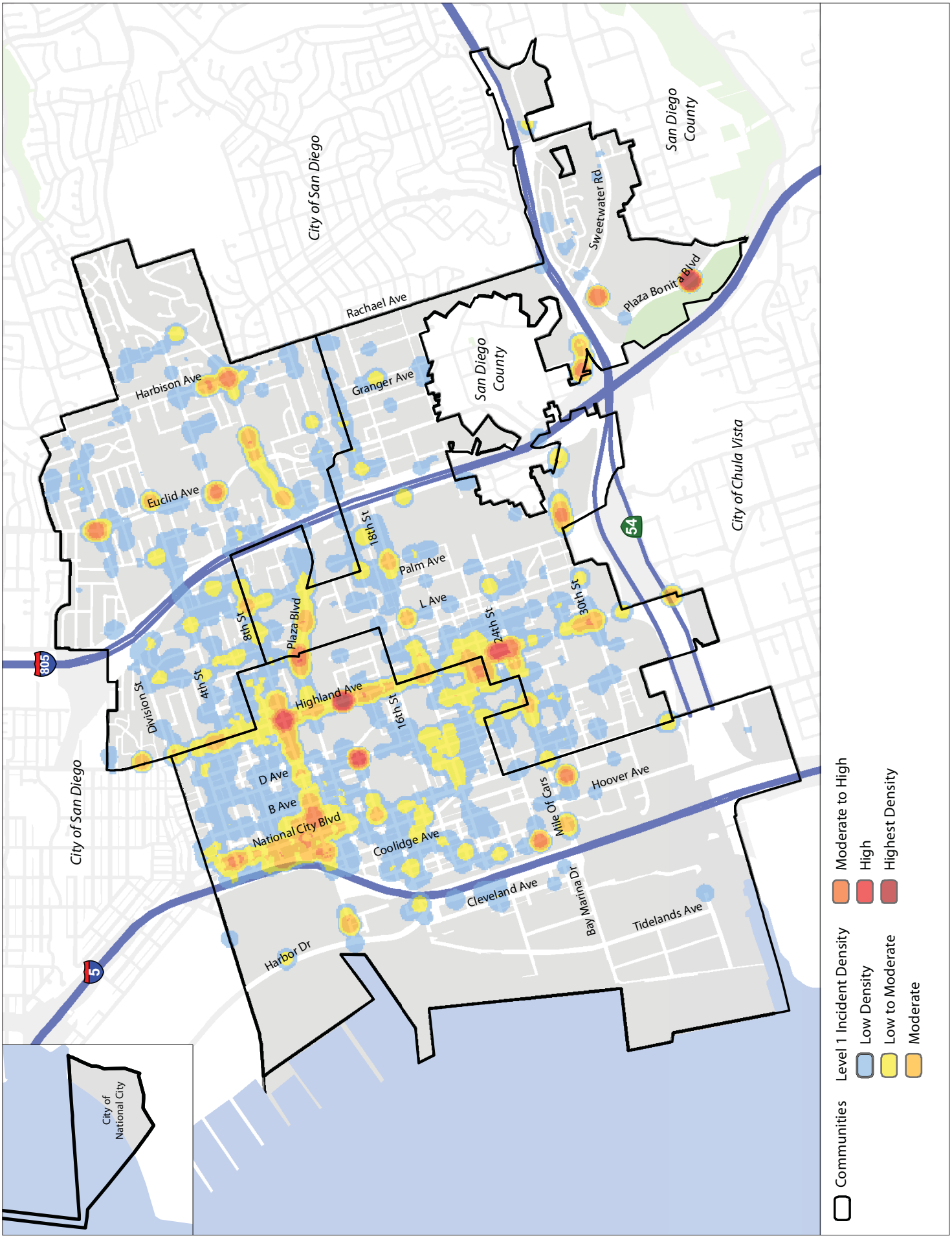


Figure 3-11: Level Two Crime Density

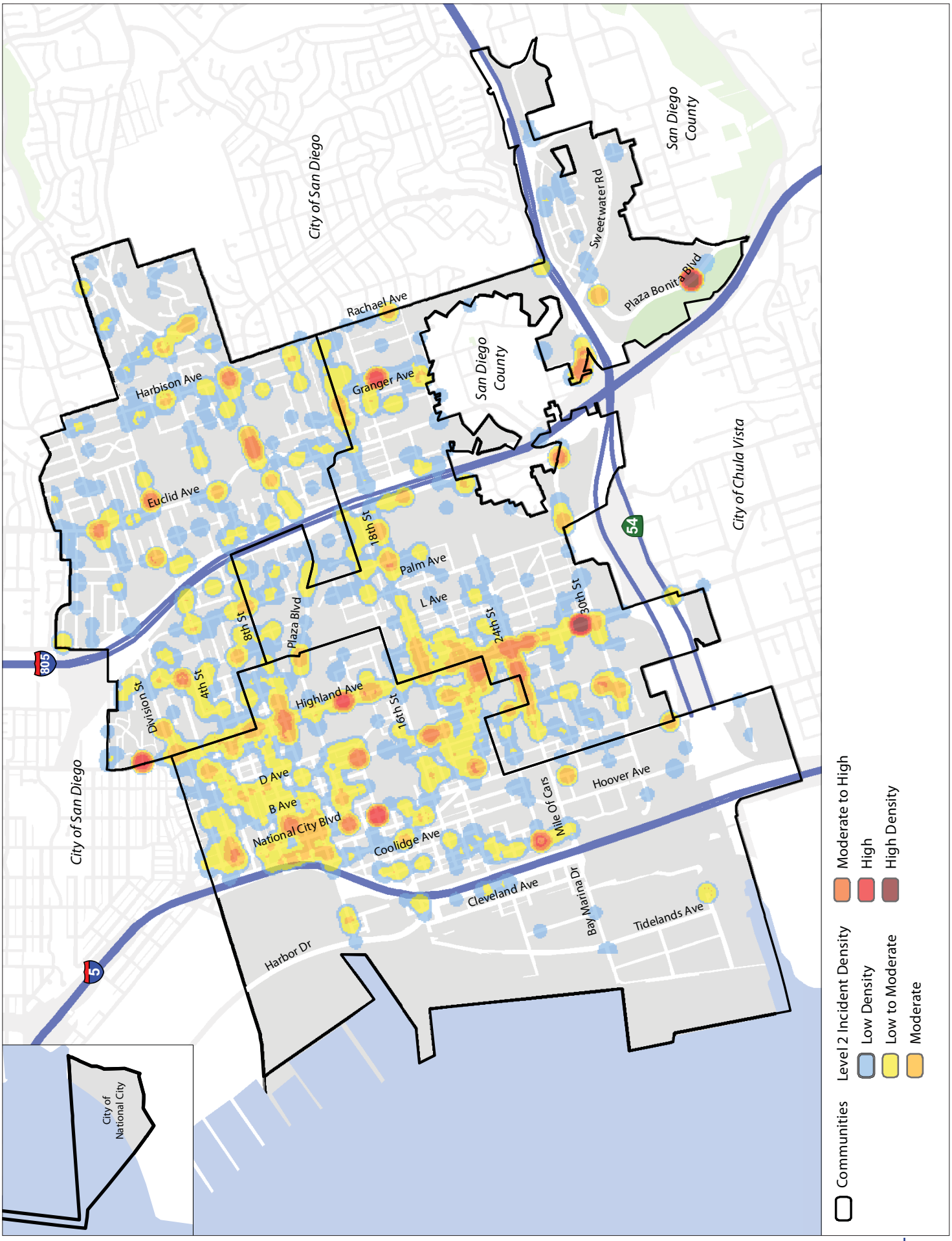
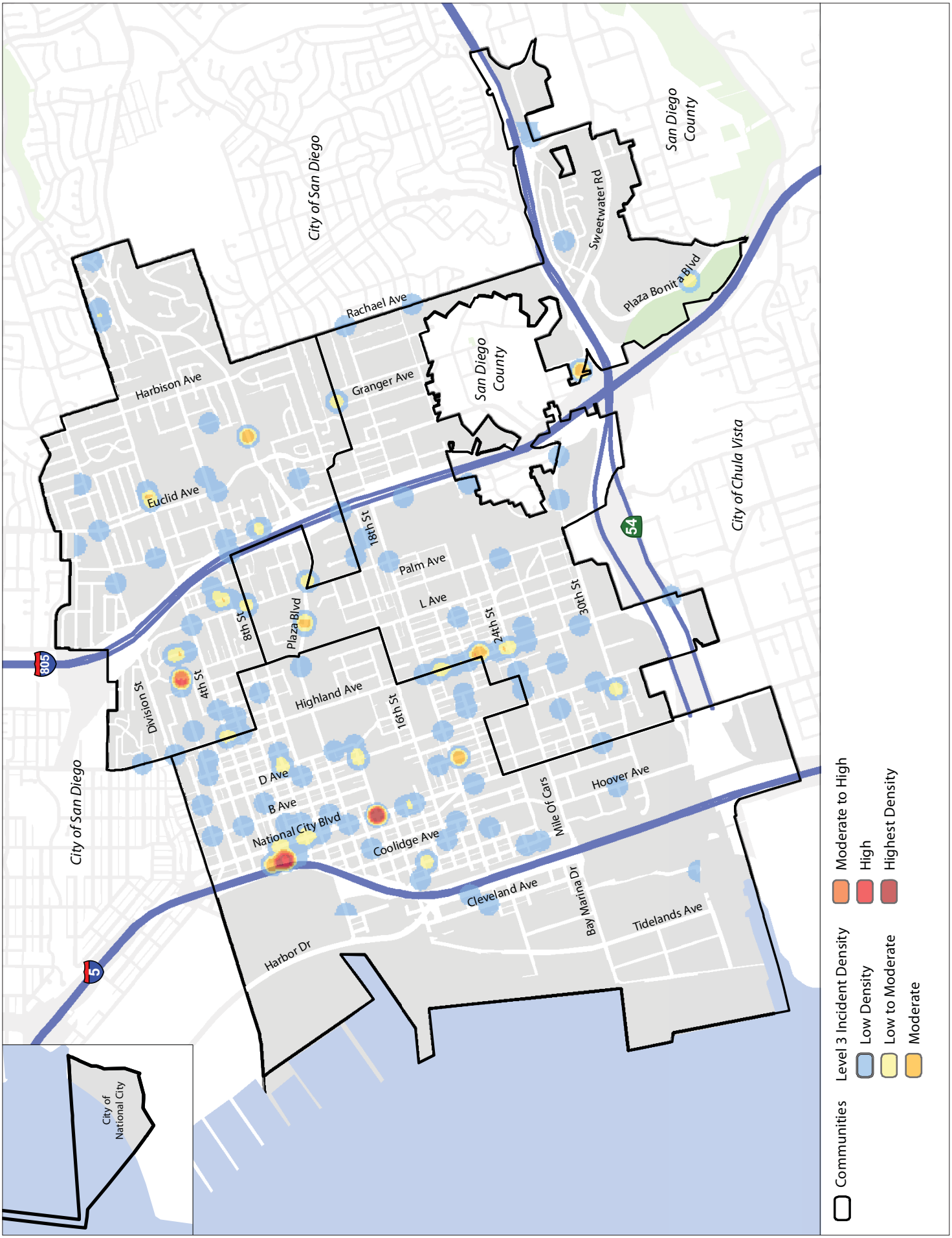


Figure 3-12: Level Three Crime Density



The following analysis looks at the different levels of crime within a quarter mile from each school and park. They are categorized by the different levels developed for this project. The schools and parks closer to the City's business districts in the Kimball neighborhood tended to have higher crime rates that the other neighborhoods.

Table 3-24 Crimes Near Schools

Schools	Severity Level			
	Level 1	Level 2	Level 3	Total
Central Elementary	140	41	2	**183**
El Toyon Elementary	16	14	2	**32**
Granger Junior High	4	2	0	**6**
Ira Harbinson Elementary	17	16	0	**33**
John Otis Elementary	105	59	5	**169**
Kimball Elementary	60	16	4	**80**
Lincoln Acres Elementary	8	19	0	**27**
Las Palmas Elementary	22	26	1	**49**
National City Junior High	64	37	1	**102**
Olivewood Elementary	88	51	5	**144**
Palmer Way Elementary	40	15	0	**55**
Rancho De La Nacion Elementary	8	2	0	**10**
Sweetwater High	56	89	4	**149**
Total	**628**	**387**	**24**	**1,039**

Table 3-25: Crimes Near Parks

Parks	Severity Level			
	Level 1	Level 2	Level 3	Total
El Toyon Park	39	30	3	**72**
Kimball Park	87	31	5	**123**
Las Palmas Park	16	17	2	**35**
Pepper Park	3	5	0	**8**
Sweetwater County Park	120	62	2	**184**
Sweetwater Heights Centennial Park	3	3	0	**6**
Total	**268**	**148**	**12**	**428**

Figure 3-13: Crime Near Schools

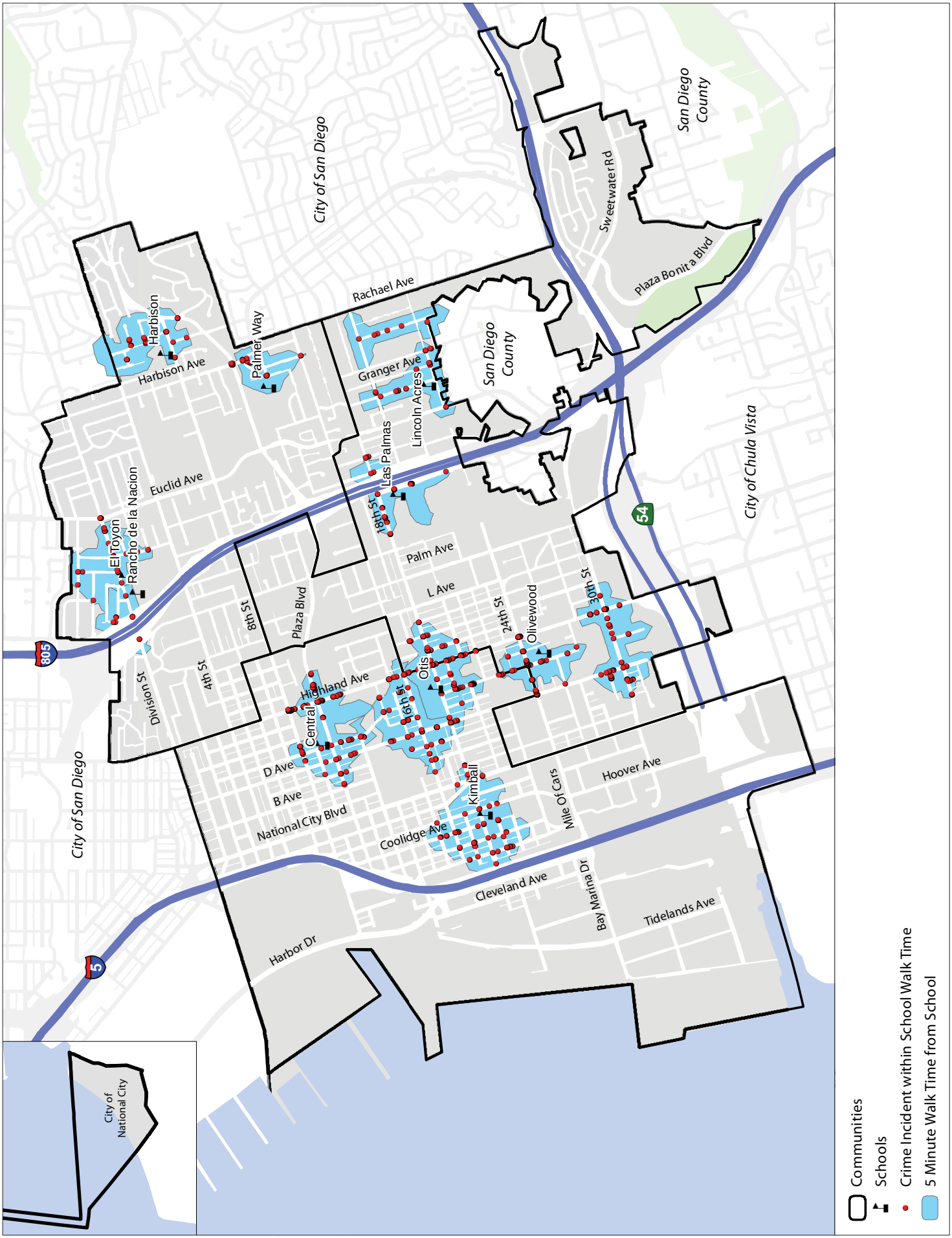
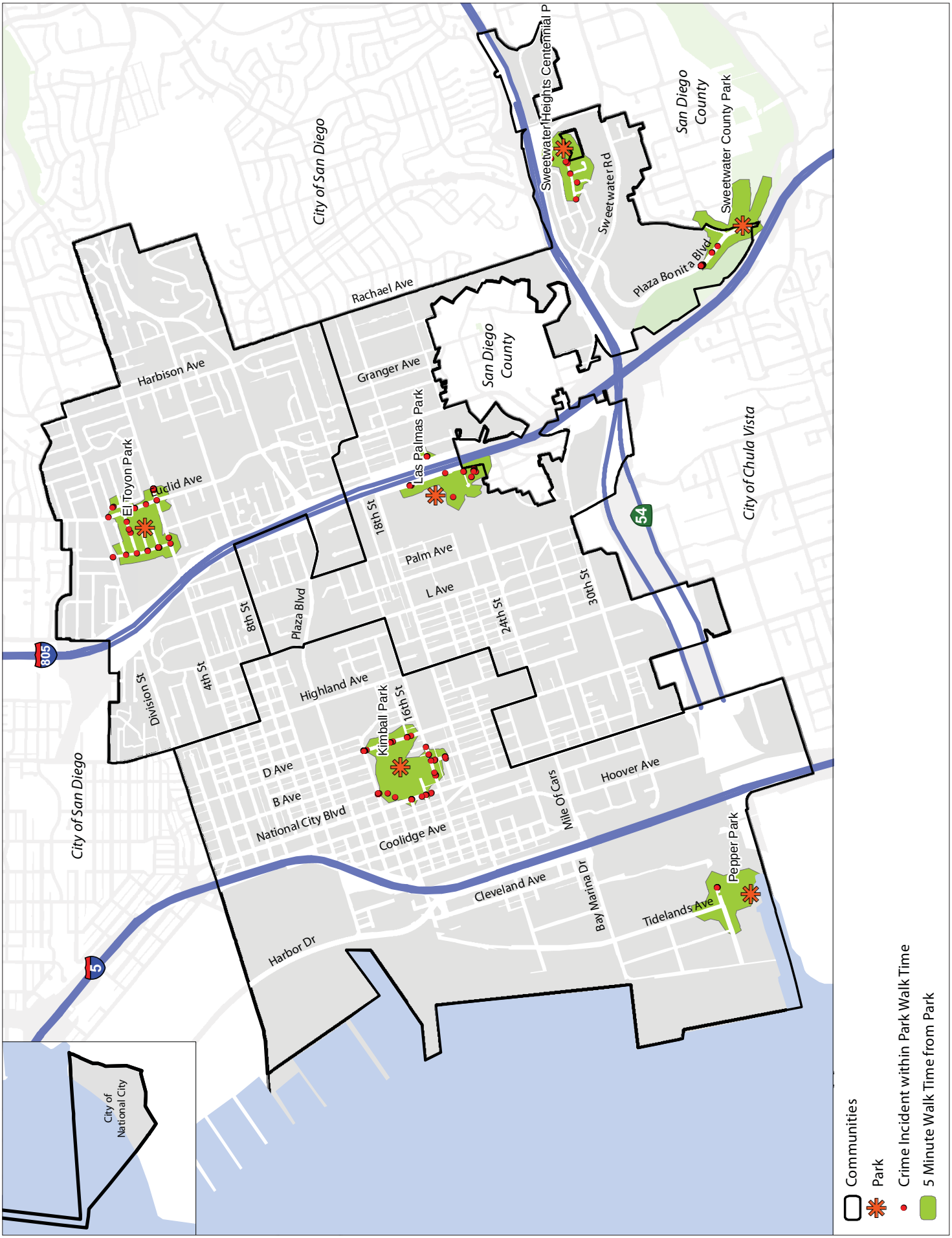


Figure 3-14: Crime Near Parks



SMART...
SAFE, MULTI-MODAL, ACCESSIBLE ROUTES TO... TRANSIT, WORK, SCHOOL, SERVICES & RECREATION
FOUNDATION

Public Outreach Summary

4

Making the Connections

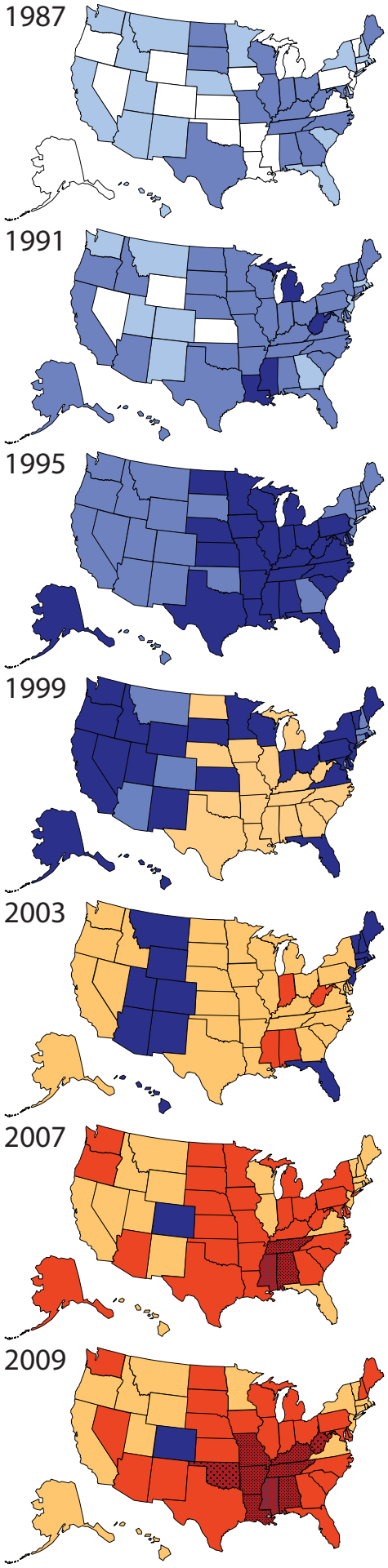
Public and personal health are impacted in two ways. First, existing policies impact economic, social, and built environments that result in effects on health, for good or bad. For example, "Why are new developments built the way they are?" and "Why are grocery stores and shoe stores located where they are?" These are impacted directly by city and state policies.

The second way our health is impacted is through the built environment, which we interact with directly. Our built environment directly determines our behaviors and the types of things we do on a daily basis. This includes the amount of physical activity we attain as well as the time we spend driving and walking. It also determines our access to different types of food and levels of health care, possible pollution levels we are exposed to, and the amount of pollution impacts we may receive from this environment. Ultimately, it is our built environment, along with the way we react to this environment, that dictates health outcomes. What we do in our daily lives impacts our short term and long term health.

The cycles work in reverse too. Current health outcomes can inform us about our health indicators/behaviors. If we see changes in our heath indicators/behaviors, then we can choose to impact the economic, social, and political environment around us. Most importantly, when we commit to making these changes in our lives and in our environment, we can then make better policy decisions regarding our health.

In twenty years, this country has gone from 36 states with an obesity rate less than 10% to 50 states with an obesity rate of 20% or more.

Body Mass Index ≥30 or 30 lbs. overweight for 5' 4"



Public Outreach Strategy

Creating Awareness

The public outreach strategy focused on creating awareness for National City residents and stakeholders regarding the significance of the SMART Foundation and effects it could have on National City policies and built environment.

The public input strategy for the SMART Foundation focused on reaching out to the three previous identified community areas: Kimball, El Toyon, and Las Palmas. The public outreach strategies focused on five goals to maximize input from the community.

Goal 1: *Relate complete streets and mobility to people's lives.*

Goal 2: *Use active outreach strategies that are interactive and engaging*

Goal 3: *Connect through National City organizations and ambassadors*

Goal 4: *Reach people multiple times through multiple mediums. Outreach through social media - especially social networks.*

Goal 5: *Communicate why participation matters and how that input will be used*

Outreach Process

The public outreach process was established in the beginning of the project with a strong focus on spreading the word about the SMART Foundation. The City of National City connected the Rady's Children's Hospital Safe Routes to School Program (SRTS) and the National City SMART Foundation so the two teams could coordinate and provide a larger outreach network.

While the Rady's SRTS program began outreach in each of the schools in National City, the National City Smart Foundation began with flyers, posters, Facebook, Twitter, and web presence to spread the word about the project. The outreach also included community involvement through walk audits and workshops.

Walk Audits

The walk audits for the existing conditions assessment in each of the three community areas focused on drawing as much community participation as possible to identify problems and issues in each neighborhood. Walk audits were conducted at each of the major parks in National City.

Focus Groups and Workshops

While the project team worked on the existing conditions and data input from the community, the public outreach process focused on creating community awareness and involvement from a variety of different ages and residents. The public input process included targeted workshops focusing on the following:

- One City-wide workshop
- Two school and parent/child workshops in cooperation with Rady's SRTS
- Three workshops for seniors at the Paradise Retirement Center, City Hall and Granger Jr High
- Workshops for young professionals at Southwest College
- Hispanic engagement workshops with various community organizations

These focus groups were established to gain a broad range of input from community residents and stakeholders.

Workshop Results

The walk audit and workshop results created a geographically linked database of problem areas in National City. Problems ranging from missing sidewalks to barking dogs were documented and tagged in a database for the City's use in the future. This information has directly fed into this SMART Foundation.

Community Survey

One of the tools used in the community outreach process was a series of surveys regarding general population information and multi-modal connectivity.

The survey included nine questions regarding mobility and access in National City. This information, in addition to census data and information from the County of San Diego, Health & Human Services Agency, Public Health Services, Community Health Statistics Unit was used to create the National City Connectivity profile.

National City Connectivity Profile

National City has ten neighborhoods that contribute to the population of 56,522.

Quick Facts about National City

- There are 38,504 households
- The median household income is $43,620 compared to $62,771 in the City of San Diego
- Average people in a household: 3.4 people versus 2.64 in City of San Diego
- Less than 50% of children in grades K to 5 in the National Elementary School District can pass four of out six fitness standards compared to 67% of kids in the San Diego Unified District

National City's survey response included approximately 594 surveys.

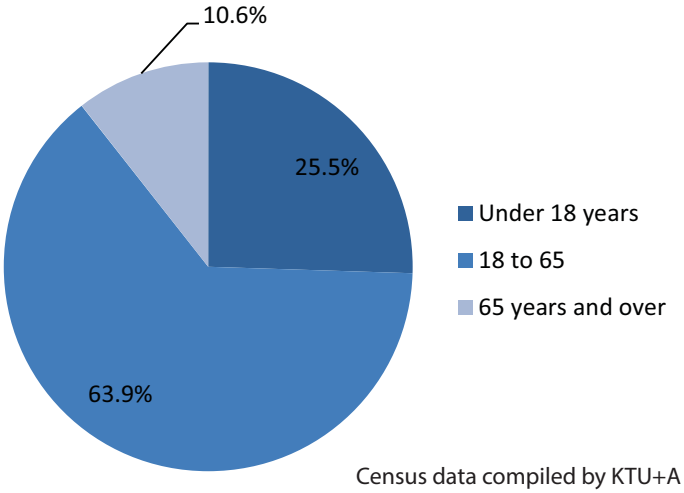
- 4% of surveys came from respondents under 18
- 92% of surveys came from the ages of 18-65
- 1% of surveys came from the respondents aged 65 and older

This is representative of the population based on age. Approximately 10.6% percent of the population is over the age of 65, 25.5 % is under the ages of 18, and 63.9% are between the ages of 18 to 65.

The neighborhoods with the highest level of responses were Central, Kimball, John Otis and Olivewood. This is representative of the four schools in which the survey was distributed and where Safe Route to School outreach efforts have been concentrated. Survey respondents prioritized the following safety improvements and maintenance issues:

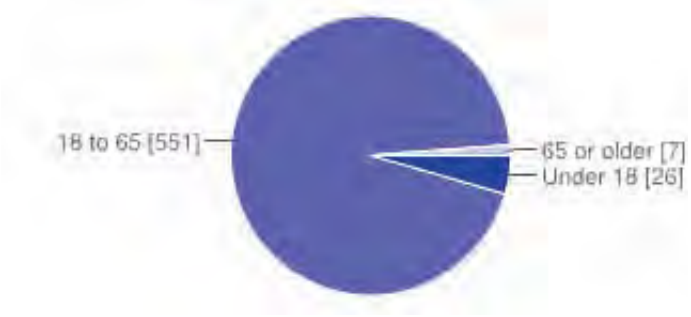
- Safer crossings
- Better street lighting
- Sidewalk maintenance
- Graffiti removal

Census 2012: Population Based on Age

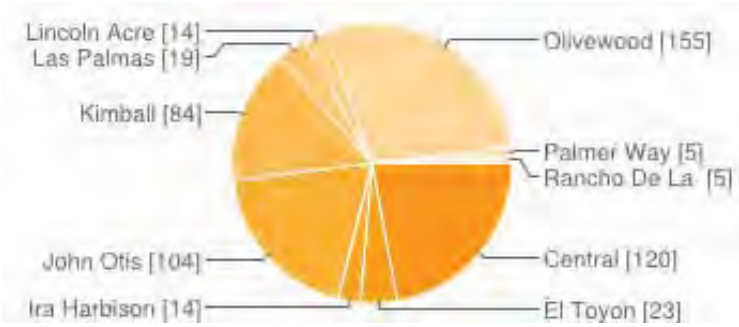


Census data compiled by KTU+A

Survey Results: Population Based on Age



What neighborhood do you live in?



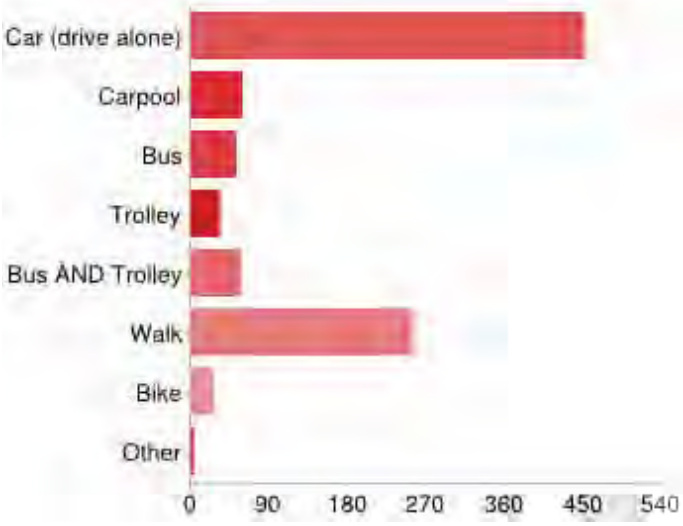
Central	**120**	22%
El Toyon	**23**	4%
Ira Harbison	**14**	3%
John Otis	**104**	19%
Kimball	**84**	15%
Las Palmas	**19**	3%
Lincoln Acres	**14**	3%
Olivewood	**155**	29%
Palmer Way	**5**	1%
Rancho De La Nacion	**5**	1%

Getting around National City

When National City residents were asked two questions, "How do you get around?" and "Which of the primary ways you get around do you use most often?" 48% of respondents said they drive alone and 74% of people said that was their primary way of getting around. The second most common means of getting around was walking at 27%, but only 13% said that was their primary way of getting around.

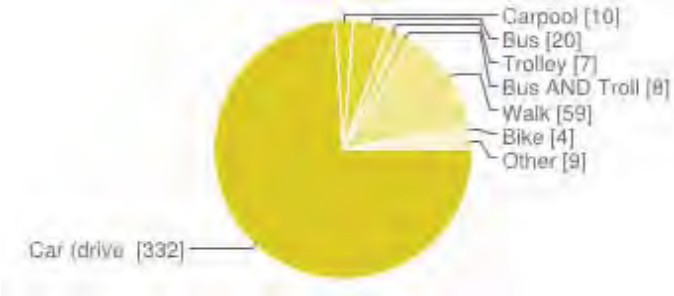
Transit use including buses and trolleys are limited. However, it is anticipated that these numbers may increase with the Plaza Blvd BRT station.

How do you get around?



Car (drive alone)	**451**	48%
Carpool	**59**	6%
Bus	**52**	6%
Trolley	**33**	4%
Bus AND Trolley	**57**	6%
Walk	**255**	27%
Bike	**26**	3%
Other	**3**	0%

Which of the primary ways you get around do you use most often?



Car (drive alone)	**332**	74%
Carpool	**10**	2%
Bus	**20**	4%
Trolley	**7**	2%
Bus AND Trolley	**8**	2%
Walk	**59**	13%
Bike	**4**	1%
Other	**9**	2%

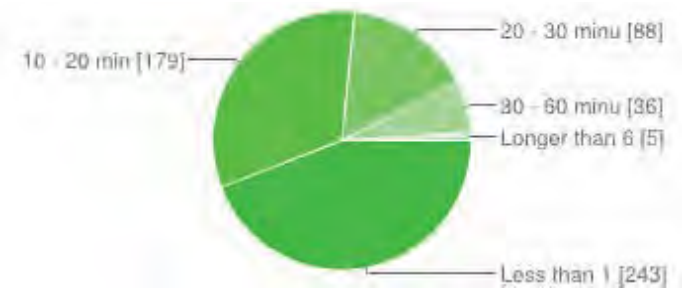
Getting to School and Work

National City is 9.2 square miles with thirteen schools. At a five minute radius from each school, only 2.6 square miles of National City is walkable to a school. This leaves 71% of National City's residents without walkable access to schools.

In addition, 43% of students go home without an adult presence and only 5% go home alone. The rest of these children are walking to parks, recreation centers, church groups, after-school programs, tutoring or somewhere else. That translates to as many as 15,000 kids and teenagers going somewhere besides their homes after school on foot, on bikes, or bus and trolley.

The time it takes to get to work is a key concern as well because 48% of National City uses a car to get around. According to this survey, the highest percentage of travel time is less than 10 minutes to get to work or school. It is assumed that this is heavily weighted due to a larger number of parent respondents. According to census data, the average travel time to work for workers in National City is 25 minutes. This means that at a regional scale, a large percentage of people who live in National City are losing about 50 minutes a day to commute.

How long does it take you to get to work or school?



Less than 10 minutes	**243**	44%
10 - 20 minutes	**179**	32%
20 - 30 minutes	**88**	16%
30 - 60 minutes	**36**	7%
Longer than 60 minutes	**5**	1%

Pedestrian and Bicycle Facilities

During the walk audits in National City, residents identified over 400 existing condition challenges that deter children and people from walking and biking.

Walking and bicycling can be a critical link in reducing obesity rates. Both activities can help children and seniors become more physically active and reduce their risk of obesity. However, children may not walk or bike in their neighborhood if they or their parents think the neighborhood is unsafe. In a study by Active Living Research, Hispanic mothers perceived their neighborhoods as more dangerous than their children did. The mothers' major concerns regarding neighborhood safety were traffic volume and speed. They were least concerned with lack of lighting. In contrast, the children's major concerns were encountering strangers and stray dogs. Like the mothers, the children were least concerned with lack of lighting. (Hispanic Maternal and Children's Perceptions of neighborhood Safety Related to Walking and Biking Summary)

When asked the question, "To be more active, which of the following would persuade you or your child to be more active?" There were eight answers provided for respondents. They are listed below in the order highest percentage of selection:

1. Safe access to parks
2. More bicycle facilities
3. Expanded park programs
4. Traffic calmed streets
5. More park facilities close to where I live
6. Continuous walkways with no missing segments
7. Community gardens
8. Trails through canyons and open space

Of these answers, the top three most common were safe access to parks, expanded park programs, and more bicycle facilities. Following closely was traffic calmed streets. This reinforces the idea that perceived safe pedestrian and bicycle access is correlated to use for parents and children.

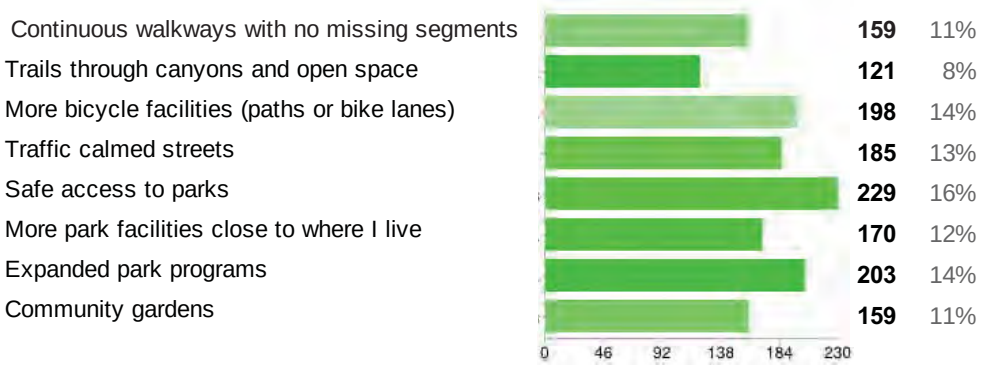
Pedestrian Activity

When asked "What pedestrian facilities would encourage your or your child to walk more?", the number one answer was safe crossing with marked crosswalks and bulb-outs. This answer received 27% of responses when compared to seven alternative answers including wider walkways, more separation between sidewalks and motor vehicles, increased street lighting, and well maintained walkways, more street trees, and continuous walkways with no gaps.

The survey shows that pedestrian facilities can impact activity through perceived safety. Some important pedestrian facilities that enhance safety in the street environment include:

- Crossings, crosswalks, signing and striping
- Medians and refuges
- Mid-block crosswalks
- Skewed intersections
- In roadway warning lights, countdown signals
- Pedestrian activated signals and flashing beacons
- Minimum six foot sidewalk widths with a continuous, unobstructed walkway of four feet

To be more active, which of the following would persuade you or your child to be more active?



"Benefits of new and improved pedestrian facilities – before and after studies." NZ Transport Agency research report 436. May 2011
"Hispanic maternal and children's perceptions of neighborhood safety related to walking and cycling." Health & Place, 18(1), 71-75. 2012
"National Survey of Bicyclist and Pedestrian Attitudes and Behavior." National Highway Traffic Safety Administration. August 2008
"Pedestrian and Bicycle Facilities in California A Technical Reference and Technology Transfer Synthesis for Caltrans Planners and Engineers." Caltrans. July 2005

- Root protection from trees and maintenance to provide a safer walking environment
- Traffic calming for cars could include chicanes, chokers, curb extensions, gateways monuments, full or half closures, raised intersections, roundabouts, and textured/colored pavement (Caltrans)

Bicycling Activity

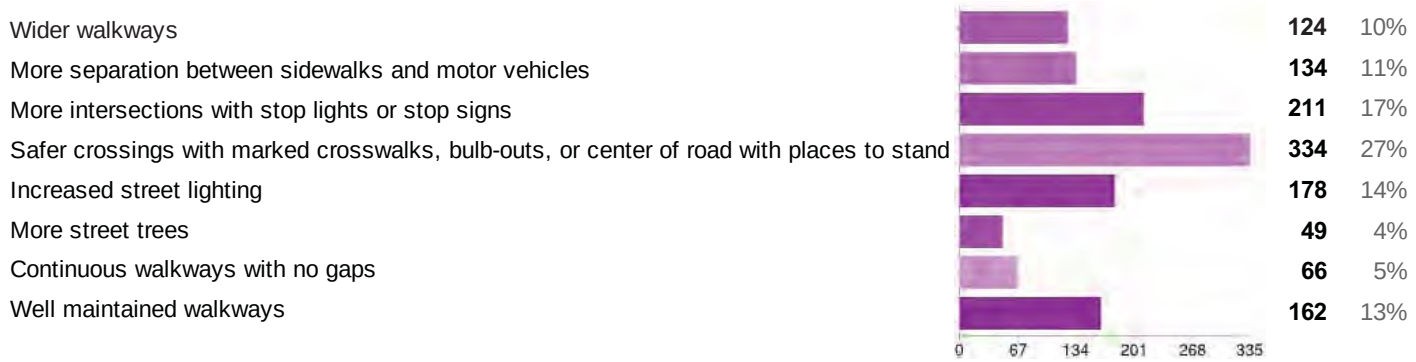
Bicycle facilities are critical to continued bicycle use. In a study by the National Highway Traffic Safety Administration, results showed that 50% of the time, bicycle paths (paths away from street) were available, but 73% of bicyclists use on-street bicycle facilities. The number one reason for not using a bicycle path or lane at 50% was due to a lack of availability or connected routes. Only 20% of cyclists said they did not feel safe using them. This data highlights the fact that a regionally connected bicycle system is needed to increase bicycle activity.

When asked "What bicycle facilities would encourage you and/or your child to bike more?", there were a number of answers that were ranked consistently high. These answers included: multi-use bike paths away from streets, car separated cycle track on street, bike lanes on streets, traffic calmed streets with reduced speeds, and secure bike parking. There was no clear preference for a facility type to encourage more cycling. However, it was made clear that facilities that were shared with motorists were the least favored and separated facilities were preferred. The exception to this trend was support for traffic calmed streets with reduced speeds. Some important bicycle facilities that could increase bicycle activity include (Caltrans):

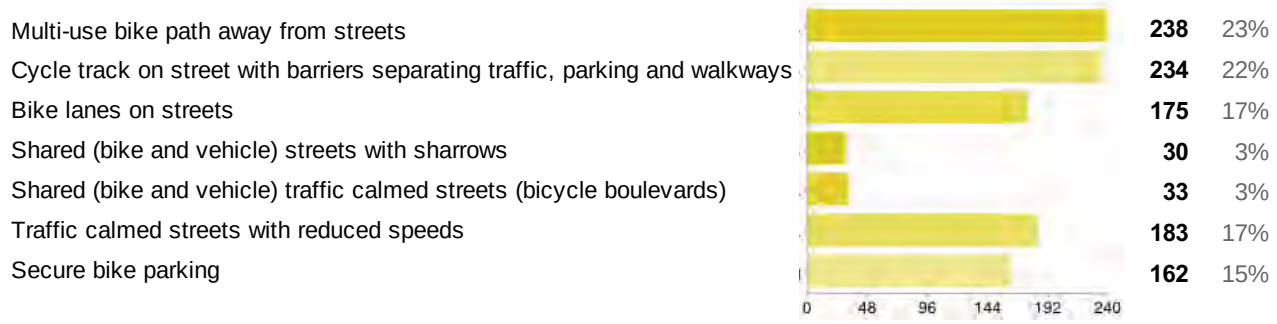
- Bike lockers, stations, and racks
- Class 1 bike lanes and paths that include crossings
- Class 2 bike paths, lanes, routes that include on street parking, right turn lanes
- Class 3 bike routes that include bicycle boulevards, wide curb lane, and "sharrow" markings
- A system of connected Class I, II, and III bike facilities for continuous access
- Bicycle signals and loop detectors
- Roadway design for cars can include freeway ramp design, retrofitting streets for bicycles, reducing travel lane widths (lane diet), removing parking, removing travel lanes (road diet), and resurfacing to provide a continuous surface

The City's Bicycle Master Plan was recently adopted and recommends a comprehensive network throughout the City. Additional amenities such as those mentioned above are also included.

What pedestrian facilities would encourage you and/or your child to walk more?



What bicycle facilities would encourage you and/or your child to bike more?



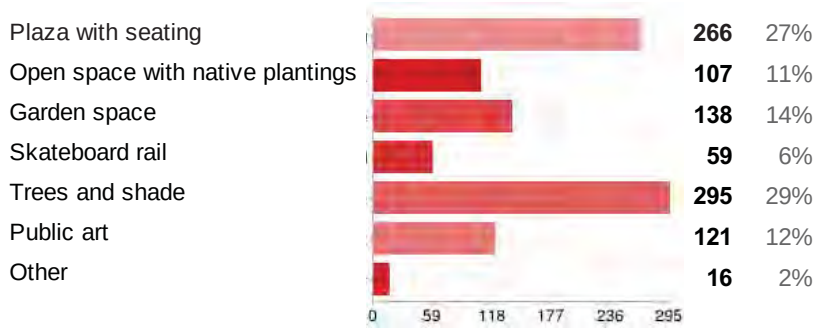
Open Space and Public Space Access

One of the most common answers to pedestrian and bicycle activity in the neighborhoods was having safe access to parks. This indicates that parents and kids would walk or bike more if they felt that they could safely access parks. National City, like many urban centers, has a significant deficit of parks and open space. There are only three major parks and the majority of residents are outside a walkable and bikeable distance from these parks.

When asked about desirable features of a public space next to a street, the most common answers were trees and shade followed by a plaza with seating. Open space alone was not as desirable as open space that incorporates garden space, seating, and shade.

Because National City is built out, there are limited opportunities for large parks or open space. However, there are numerous opportunities for street reclamation (taking back public space) to increase parklets and pocket parks in neighborhoods.

If there was a public space next to a street, what features would be important to you?

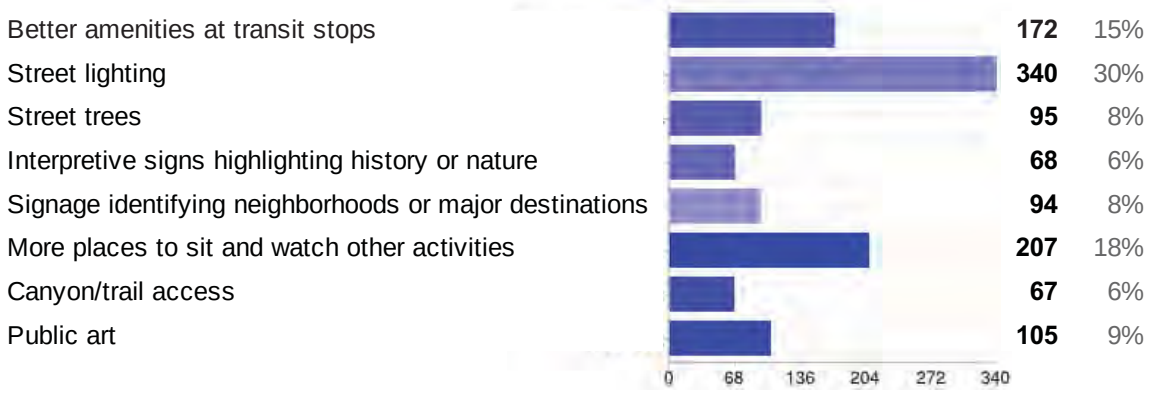


Urban Amenities

Urban amenities include any enhancement that could activate a neighborhood. Urban amenities are key because they can impact the economic values of property by 20%. Attractive parks and public spaces can increase property values by as much as 20%, which in turn increase tax bases for cities. In commercial areas, well lit, attractive street streets can increase revenues for businesses by increasing foot traffic and access to the storefronts by 15%.

One of the key concerns for National City residents included street lighting. This is a key amenity for visibility and perceived safety for residents. The second most desirable amenity are more places to sit and watch other activities. The presence of a community is another factor in safety.

What urban amenities would you like to see more of in your neighborhood?



Maintenance

Maintenance is a key part of safety and an attractive street environment. Maintenance has many different parts including maintenance of the street, sidewalks, waste removal, tree management and care, as well as graffiti and stormwater infrastructure.

Below are a few constructions costs and longevity when properly maintained:

Sidewalk	$5.19/SF	40 years
Curbs	$17.25/SF	50 years
Street	$4.33/SF	35 years
Stormwater System	$11.55/SF	25 years
Native Plants	$0.10/SF	100 years
Trees	$275.00/EA	32 years
Tree Box Filter	$222.20/SF	40 years
Planter Box	$8.00	25 years
Planting Strip	$31/CY	25 years

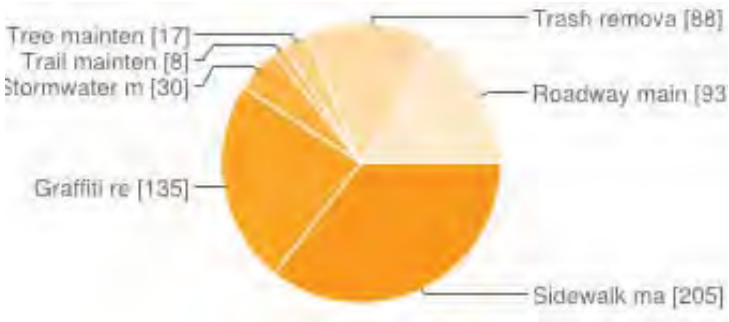
A typical 400 foot block can cost approximately $208,931 to construct but it can last an average of 40 years. However, when a street environment is not properly maintained, the lifespan of a product is significantly reduced. This reduction maintenance level is common in National City and the San Diego region. The reality is that there is not enough money to maintain everything as it needs to be maintained.

There are opportunities for residents to get involved in their communities through volunteer intern and paid positions. Organizations like Urban Corps hire and train youth to plant and maintain trees. This is a huge savings to cities and creates a hands on learning opportunity that can translate into a job opportunity.

When asked in National City regarding the priority of maintenance, the most common answer was sidewalk maintenance at 36%. In walk audit results, this is largely attributed to trees lifting sidewalk areas, as well as limited continuous widths. This is a challenge in National City due to the age of the street system.

A second concern to respondents was the presence of graffiti in National City. Other communities have addressed this pro-actively by establishing graffiti artist areas and by creating a self monitored index of graffiti styles. It is possible that graffiti art can be incorporated into the ARTS Center.

What type of maintenance is important to you?



Sidewalk maintenance	**205**	36%
Graffiti removal	**135**	23%
Stormwater management	**30**	5%
Trail maintenance	**8**	1%
Tree maintenance	**17**	3%
Trash removal	**88**	15%
Roadway maintenance	**93**	16%

SMART...
SAFE, MULTIMODAL, ACCESSIBLE ROUTES TO... TRANSIT, WORK, SCHOOL, SERVICES & RECREATION
FOUNDATION

Future Analysis

5

Future Analysis

This chapter summarizes the development of neighborhood based guidelines and GIS analysis for future planning efforts including Smart Growth analysis.

Identify Future Initiatives

This section identifies guidelines specific to neighborhood improvements through various topics set forth by the City's General Plan. These guidelines have been developed specific to the SMART Foundation project to provide residents the opportunity to implement and take initiative with assistance from the City. The goals of each guideline have been excerpted from the City's General Plan and built upon to develop action items. The guidelines have been divided into short-term, mid-term and long-term goals.

Table 5-1: Active Transportation Guidelines

Goal C-8 and C-9: Develop a universally accessible, safe and convenient pedestrian and bicycle system that encourages walking and bicycling.

Action #	Actions and Action Steps	Responsible Parties
SHORT TERM		
AT-1	Coordinate with the city to conduct regular bicycle and pedestrian counts.	Community, NC-DS-E
AT-2	Participate in city-wide active transportation committee meetings.	Community, NC-DS-E
AT-3	Organize a neighborhood level walk or bike-to-school education and outreach event.	Community, SD-NSD
AT-4	Establish a method for noting and reporting needed repairs, lighting or graffiti removal to the appropriate contact.	Community, NC-PW
AT-5	Organize a neighborhood clean-up event.	Community
AT-6	Organize a neighborhood fitness walking group that meets to walk in the neighborhood.	Community
AT-7	Look for opportunities to fill in gaps in sidewalks.The width of new sidewalks should be appropriate to the level and type of pedestrian traffic the sidewalk is expected to accommodate.	NC-DS-E
AT-8	Enhance connectivity by eliminating gaps and barriers in roadway, bikeway, and pedestrian networks.	NC-DS-E
AT-9	Implement traffic calming measures in areas near schools, parks and other sensitive facilities to reduce vehicle speeds and discourage cut-through traffic.	NC-DS-E
AT-10	Prioritize attention to transportation issues around schools to reduce school-related vehicle trips and increase safety around pick-up and drop-off zones.	NC-DS-E
MID TERM		
AT-11	Enhance community character and identity through innovative urban design that considers function, form, pedestrian scale, amenities, and aesthetics.	NC-DS-P
AT-12	Provide connectivity of wide, well-lit walking environments with safety buffers between pedestrians and vehicular traffic, when feasible.	NC-DS-E
AT-13	Develop and maintain an interconnected grid or modified grid-based transportation system that sustains a variety of multi-modal transportation facilities.	NC-DS-E
LONG TERM		
AT-14	Promote the design of complete neighborhoods that are structured to be family-friendly, encourage walking, biking and the use of mass transit, foster community pride, enhance neighborhood identiity, ensure public safety, improve public health, and address the needs of all ages and abilities.	NC-DS-P, NC-DS-E

Table 5-2: Access to Parks and Open Space Guidelines

Goal OS-7: A well-maintained system of recreational trails and related facilities throughout the city that enhance and connect open space lands, parks and recreational facilities.		
Action #	**Actions and Action Steps**	**Responsible Parties**
SHORT TERM		
PO-1	Establish a regular schedule of neighborhood clean-up events at nearby parks.	Community, NC-PW
PO-2	The neighborhood can work with the city to coordinate park beautification and maintenance projects.	Community, NC-CS
PO-3	Fill in missing links and correct barriers to walking or biking to neighborhood parks.	NC-DS-E
MID TERM		
PO-4	Encourage the creation of connected paseos and trails between community activity areas and schools and consider opportunities to enhance them with kiosks and rest stations.	NC-DS-E
PO-5	Provide a well-maintained system of recreational trails and related facilities throughout the city that enhance and connect open space lands, parks and recreational facilities.	NC-DS-E
LONG TERM		
PO-6	Provide additional recreational open space areas and connect these areas to trails, bikeways, pedestrian corridors, and other open space networks, where feasible.	NC-DS-P, NC-DS-E

Table 5-3: Access to Transit Guidelines

Goal C-7: Increase use of transit systems		
Action #	**Actions and Action Steps**	**Responsible Parties**
SHORT TERM		
T-1	Improve bus stop and shelter facilities to increase the comfort of all users.	NC-DS-E
T-2	Promote neighborhood involvement in keeping transit stops clean and safe with clean-up events and public outreach.	Community, NC-DS-E
T-3	Coordinate with MTS to learn how the neighborhood can be more involved with maintenance and beautification projects around stops.	Community, MTS
MID TERM		
T-4	Provide multi-modal support facilities near and to/ from transit stops for bicyclists and pedestrians, including children and youth, seniors, and persons with disabilities.	NC-DS-E
LONG TERM		
T-5	Allow, encourage, and facilitate transit-oriented development, mixed-use and infill projects in appropriate locations to reduce vehicular trips	NC-DS-P, NC-DS-E

Table 5-4: Access to Healthy Food Guidelines

Goal HEJ-4: Convenient access to fresh and healthy foods, water, fruits and vegetables for all segments of the community.		
Action #	**Actions and Action Steps**	**Responsible Parties**
SHORT TERM		
H-1	Encourage the establishment of community farms and gardens.	Community, NC-DS-P
H-2	Encourage the development of community gardens in conjunction with school sites as an educational resource.	Community, SD-NSD
H-3	Ensure healthy food outlets are included as destinations in Safe Routes efforts.	NC-DS-P, NC-DS-E
MID TERM		
H-4	Identify potentially feasible site locations for urban agriculture, including locations for street conversions, and identify links between them in need of bicycle, pedestrian or transit faiclities.	NC-DS-P, NC-DS-E
LONG TERM		
H-5	Encourage farmer's markets, mobile vendors of healthy foods and healthy offerings in local stores.	NC-DS-P

Responsible Parties:
NC-PW - City of National City- Public Works
NC-DS-E - City of National City- Development Services- Engineering
NC-DS-P - City of National City- Development Services- Planning
SD-NSD - Sweetwater Unified School District- National School District
MTS - San Diego Metropolitan Transit System

Future Conditions Through Computer Modeling

Smart Growth means developing urban, suburban and rural communities with a compact and efficient development pattern that places housing and transportation choices near jobs, retail and schools. The primary focus is on the efficient use of existing infrastructure to preserve open space and natural resources.

SANDAG has characterized smart growth areas as more compact higher density development in key areas throughout the region that is walkable, bikeable, near public transit and promotes good community design. The results of smart growth are increased housing and transportation choices for those who live and work in these smart growth areas.

SANDAG has developed a Smart Growth Concept Map which identifies location in the San Diego region that can support smart growth and transit. The concept map is for planning purposes and for use in the TransNet Smart Growth Incentive Program. National City has three Smart Growth Concept areas as shown in Figure 1. These concept areas are described as:

Urban Center

- Subregional business, civic, commercial, and cultural centers
- Mid- and high-rise residential, office, and commercial buildings
- Medium to high levels of employment
- Draws from throughout the region, with many from the immediate area
- Served by transit lines and local bus services

Town Center

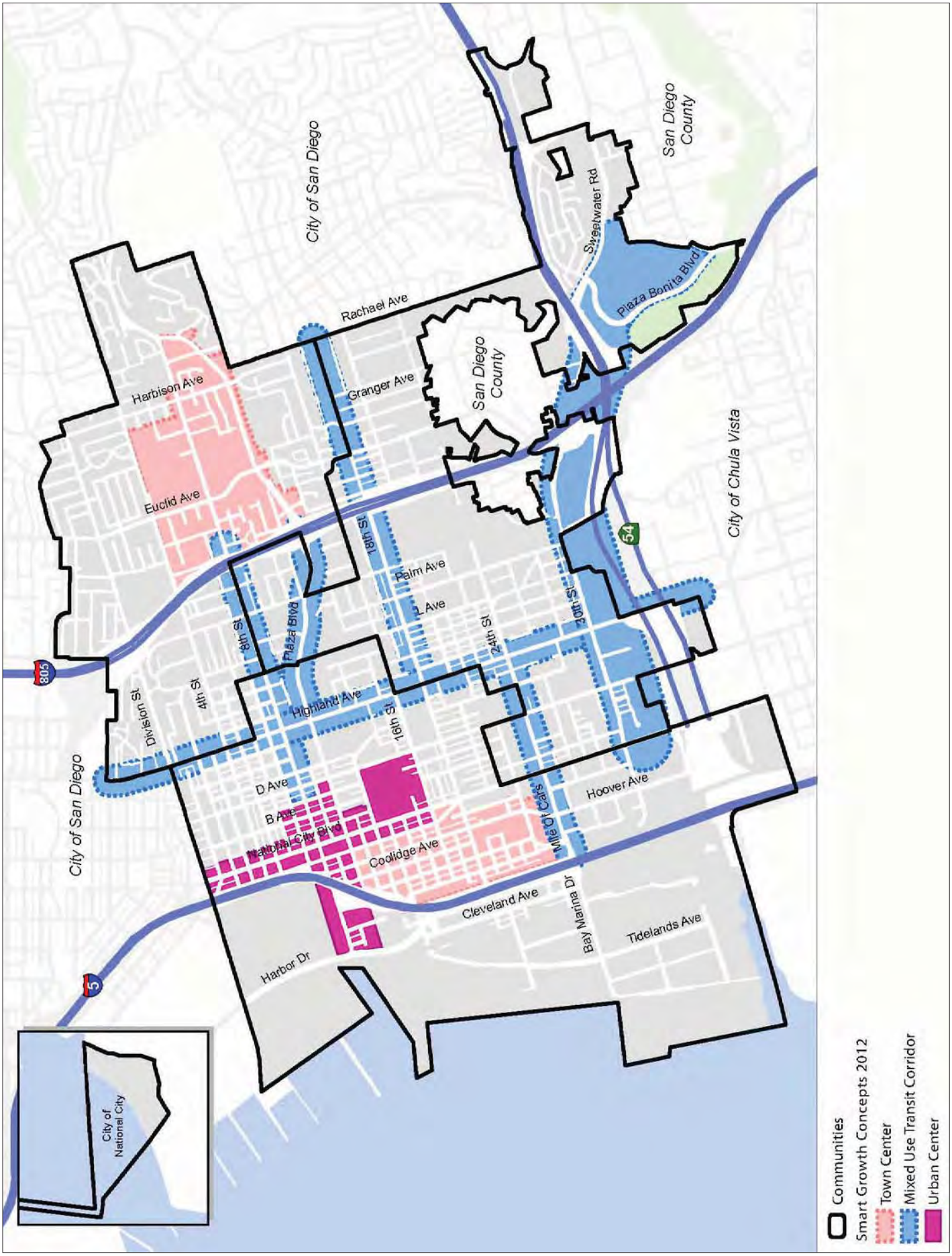
- Suburban downtowns within the region
- Low- and midrise residential, office, and commercial buildings
- Some employment
- Draws from the immediate area
- Served by corridor/regional transit lines and local services or shuttle services

Mixed Use Transit Corridor

- Areas with concentrated residential and mixed use development along a linear transit corridor
- Variety of low-, mid- and high-rise buildings, with employment, commercial and retail businesses
- Draws from nearby communities

In order to confirm these concept areas are suitable to accommodate smart growth, two separate GIS exercises were performed. These exercises consisted of a City-wide Bicycle and Pedestrian suitability model and an Attractor Element Model. This analysis was also used to identify areas for project prioritization because of the density of population and attractions. These exercises are described in the following sections.

Figure 5-1: SANDAG Smart Growth Concept Areas



Pedestrian and Bicycle Suitability Model Overview

The Pedestrian and Bicycle Suitability Model was developed to determine the routes within National City used by pedestrians and bicyclists that are most likely to be active. The model allows decision makers to prioritize those areas and projects which will benefit the largest number of non-motorized travelers. The Pedestrian and Bicycle Suitability Model identifies both existing and potential areas of pedestrian/cyclist activity using spatial data within a GIS database. This model was used as part of an overall project prioritization process in Chapter 6.

Pedestrian and Bicycle Suitability Model Description

The overall Pedestrian and Bicycle Suitability Model is comprised of three basic models: the attractor, generator and detractor models. When these three interim models are combined, they create the Pedestrian and Bicycle Suitability Model.

The model identifies the characteristics of each particular area in geographic space and assigns it a numeric value based on those characteristics. The assigned score allows the area to be ranked, with the highest scores being areas of highest priority.

Attractor Model Methodology

Features or places within National City to which pedestrians and cyclists are likely to visit are considered "attractors." The attractor model identifies areas of high pedestrian/cyclist activity based on an evaluation of proximity to these attractors.

Typical bicycle and pedestrian commuter trips to nearby shopping centers, restaurants and work are very short, usually between two and five miles each way. School age children will normally ride or walk to school no more than a few miles round trip. Only the more avid cyclists will likely commute longer distances (~20 miles round trip). Thus, the closer attractors are to residents, the more likely the attractors are to inspire trips by bike or walking. Areas within close proximity to attractors are given a higher score then those farther from attractors. A one mile maximum distance in the model was given to encompass the majority of the shorter bicycle trips and maximum pedestrian trips.

Table 5-5: Mobility Attractors

Mobility Attractors	Weighting Points	Distance Multiplier				Max Points
Mobility Distance Multipliers		5 Min (2)	10 Min (1.5)	15 Min (1)	20 Min (.5)	
Elementary Schools	5	10	7.5	5	2.5	25
Regional Commercial and Retail	4	8	6	4	2	20
Transit Station	4	8	6	4	2	20
Middle Schools	4	8	6	4	2	20
Neighborhood Commercial (Strip malls, local retail)	3	6	4.5	3	1.5	15
High volume Bus Stops (>100)	3	6	4.5	3	1.5	15
Parks and Recreation (excludes non-useable open space)	3	6	4.5	3	1.5	15
Moderate Stops (50-100)	2	4	3	2	1	10
Neighborhood Civic Facilities (Libraries, Post Office & Religious Facilities)	2	4	3	2	1	10
Low volume Bus Stops (<50)	1	2	1.5	1	0.5	5
High Schools and Colleges	1	2	1.5	1	0.5	5

Figure 5-2: Attractors

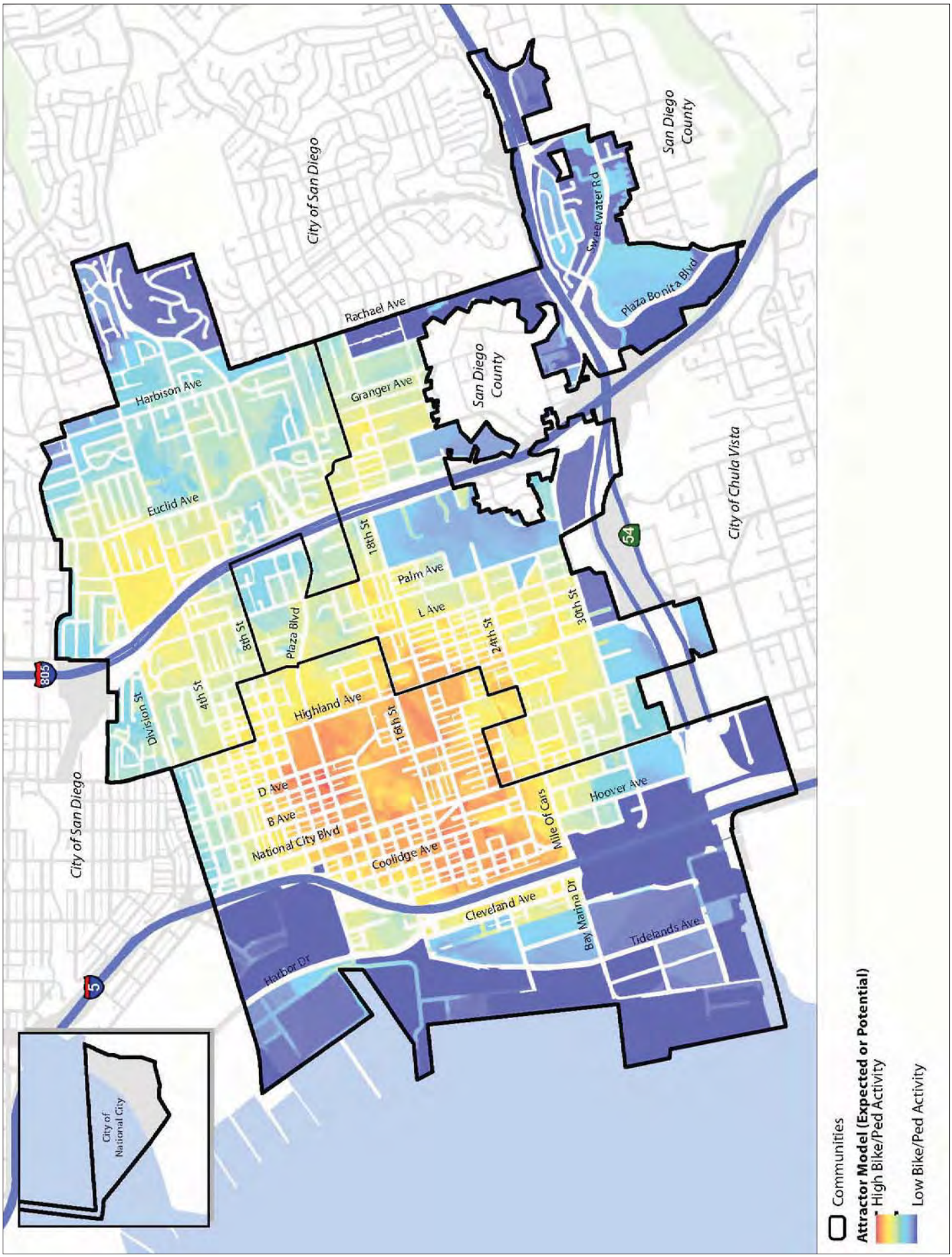
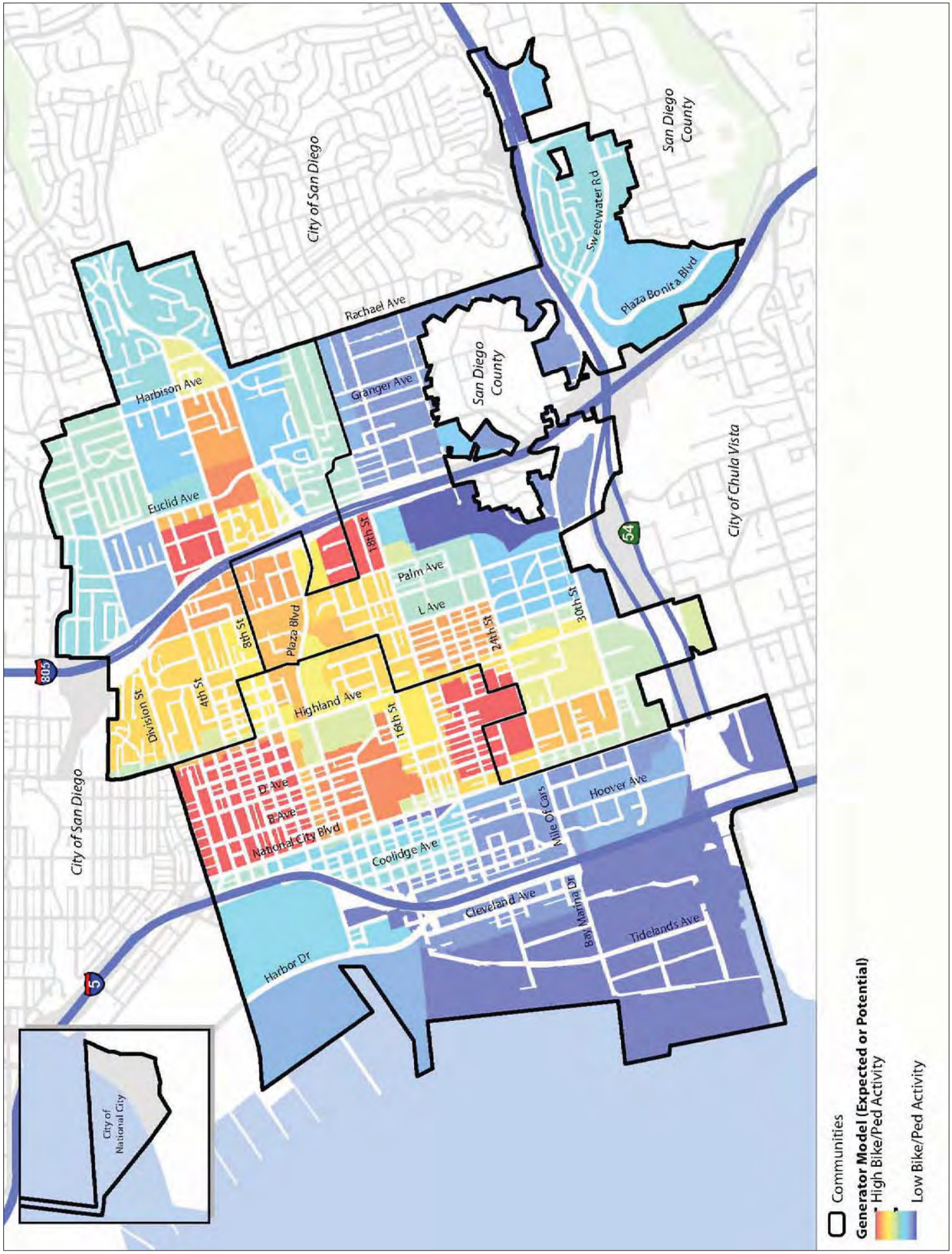


Figure 5-3: Generators



The attractor model considers the different attractor types with individualized weighted scores. For example, all schools were considered as attractors, including elementary schools, middle schools, high school and colleges. However, it is assumed that more elementary school aged children walk or rely on their bicycle as a mode of transportation to get to school compared to high school students who hold a drivers license. Therefore, proximity to an elementary school is given a higher weighted score than proximity to a high school. The point system and weighted score multipliers were derived from City input, public input through previous surveys, past applications of the model and available City data. The attractors categories considered are listed in Table 6.

Generator Model Methodology

While the attractor model considers where pedestrians and cyclists are likely to travel to, the generator model considers those areas where pedestrians and cyclists are likely to travel from. Areas from which non-motorized travelers are likely to originate are referred to as "generators."

Table 5-6: Mobility Generators

Mobility Generators	Points	Weighted Multiplier	Final Score
Cycling Mobility: People who bike to work (1)			
> .6%	2	2	4
< .6%	1		2
Non-Vehicular Transportation: People who use public transportation to work (1)			
> 3%	2	2	4
< 3%	1		2
Walking Mobility: People who walk to work (1)			
> 3%	2	2	4
< 3%	1		2
No Vehicle Ownership (2)			
> 172	3	2	6
65 - 172	2		4
< 65	1		2
Median Income (5)			
> $23,500	3	2	6
$23,500 - $50,040	2		4
> $50,040	1		2
Age Density: Children per Acre (3)			
> 5	3	2	6
3-5	2		4
< 3	1		2
Age Density: Seniors per Acre (3)			
> 3	3	2	6
1-3	2		4
< 1	1		2
2010 Population (4)			
> 24	3	1	3
12-23	2		2
<12	1		1
Current Employment Estimates (4)			
>12	3	1	3
6-12	2		2
<6	1		1

Table 5-6: Mobility Generators (cont.)

Mobility Generators	Points	Weighted Multiplier	Final Score
2030 Population (4)			
> 30	3	1	3
16-29	2		2
< 16	1		1
2030 Employment (4)			
> 14	3	1	3
6-13	2		2
< 6	1		1

The generator model utilizes demographic data as indicators of potential sources of non-motorized travelers. Existing and projected total population and employment are used, as well as other demographic data such as age and use of public transportation.

Each generator was assigned an individualized weighted score derived from City staff and public input, previous applications of the model and the factors that most influence bicycle and walking trips within the City. The data analyzed by the generator model includes SANDAG-defined Transportation Analysis Zones (TAZs) and U.S. Census Bureau Census Block Groups. The generator categories considered are listed in the Table 5-6.

Detractor (Barrier) Model Methodology

Detractors discourage or deter people from walking or riding their bikes. Relevant factors used in the model are related to the vehicular intensity and the perceived safety along a route. Streets with high traffic volumes and high speeds tend to deter people from cycling and walking due to the amount of traffic related stress experienced while traveling along the route. Known areas of high crime and high bicycle and pedestrian related collisions are also deterrents since these issues may reduce the traveler's perceived safety in the environment. These deterrents may cause people to choose alternative routes to avoid certain streets and intersections where safety may be a concern. A weighted score was assigned to each detractor category, derived from City input, public input through previous surveys, past applications of the model, and available City data.

Final Composite Model

The Pedestrian and Bicycle Suitability Model is a summed composite of the generator, attractor and detractor models.

The combined grid cells of the generator, attractor, and detractor models were added together to provide a total composite value for each cell. The cells with a higher composite value indicate areas that are likely to have higher pedestrian/cycling activity or value. In some cases, the areas that have a high pedestrian/cycling activity score are areas that already have facilities, but further improvement can be made to enhance the non-motorized traveling environment.

Overlaying the SANDAG Smart Growth Concept Areas in Figure 5-5 shows that propensity of walking and bicycling does coincide with these areas. The Urban and Town Centers show the most coincidence, making their case strong as a Smart Growth Concept Area.

Figure 5-4: Barriers

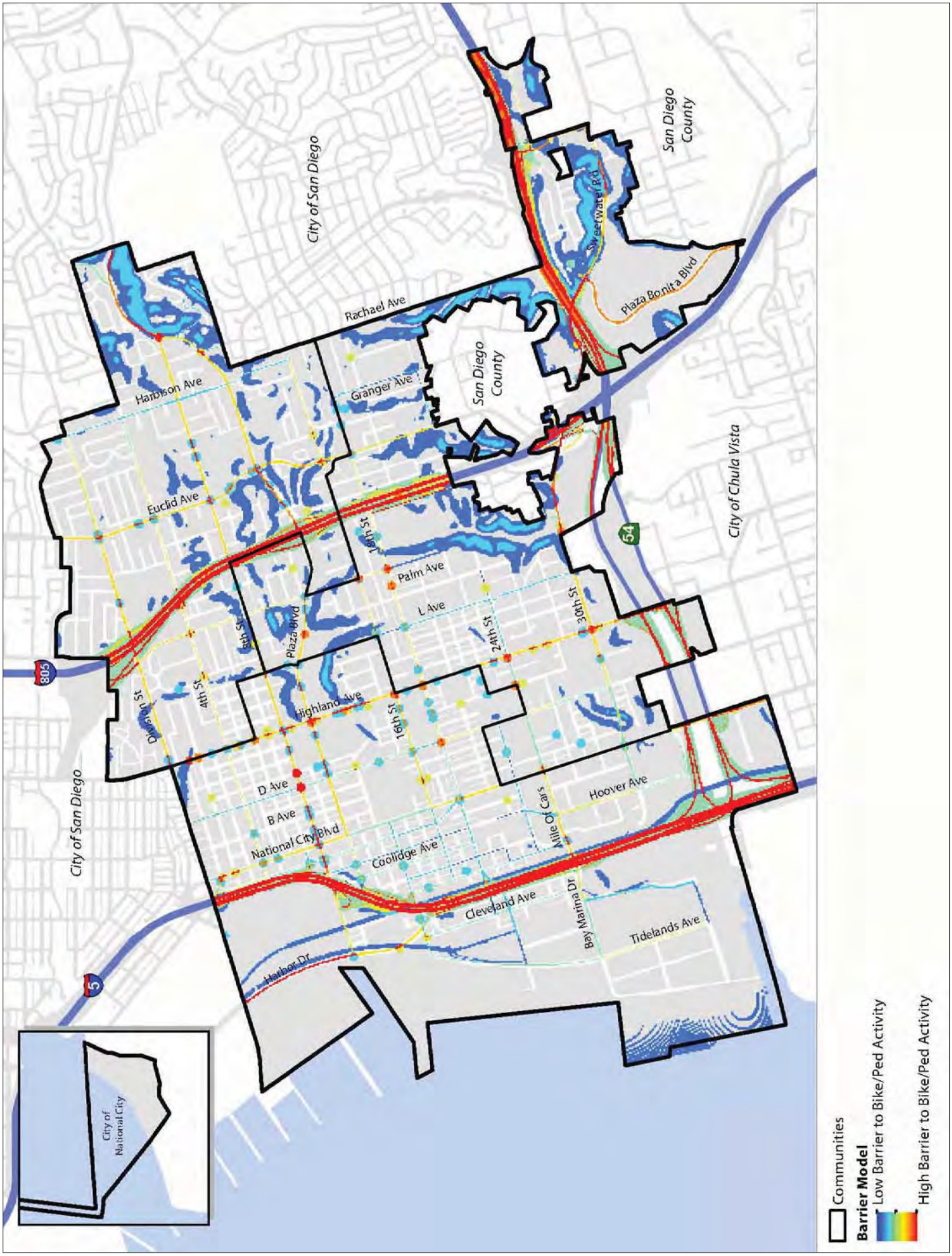


Table 5-7: Mobility Barriers

Mobility Barriers	Points	Weighted Multiplier	Final Score
Bicycle Related Collisions			
>= 2	-3	2	-6
1	-2		-4
Pedestrian Related Collisions			
>= 3	-3	2	-6
2-3	-2		-4
1	-1		-2
Freeway Crossings related to Cycling Travel			
	-3	1	-3
Traffic Volumes			
>20,000	-4	1	-4
10,000 - 20,000	-3		-3
5,000 - 10,000	-2		-2
1,000 - 5,000	-1		-1
Speed Limits			
45+	-3	1	-3
35-45	-2		-2
25-35	-1		-1
< 25 mph	0		0
Railroads and Light Rail			
	-1	1	1
Slope & Canyons as Barriers to Cycling Travel			
Landform Feature with Slope > 25%	-3	1	-3
Landform, Walkway or Street Slope 10-25%	-2		-2
Slope < 10%	0		0

Figure 5-5: Composite Model

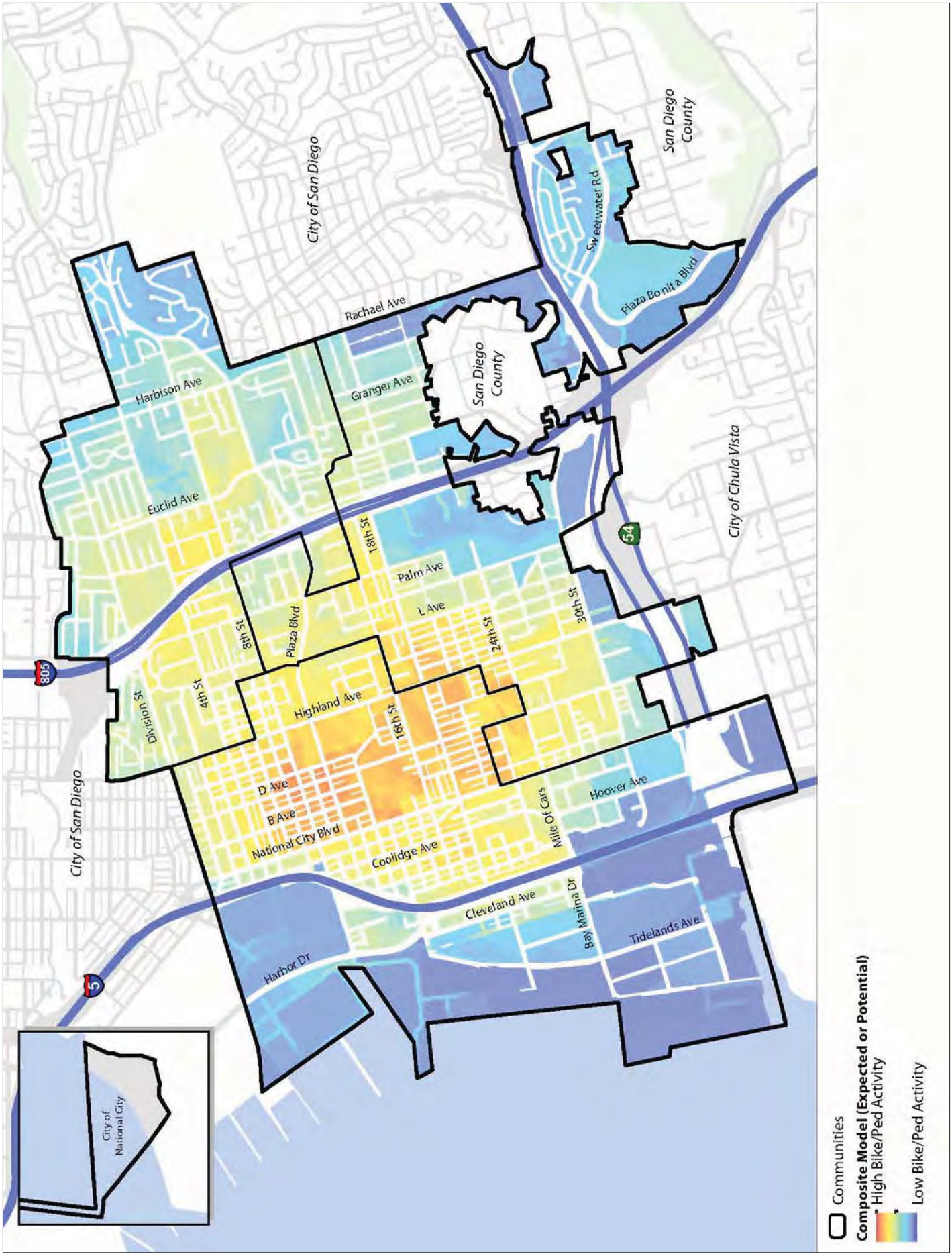
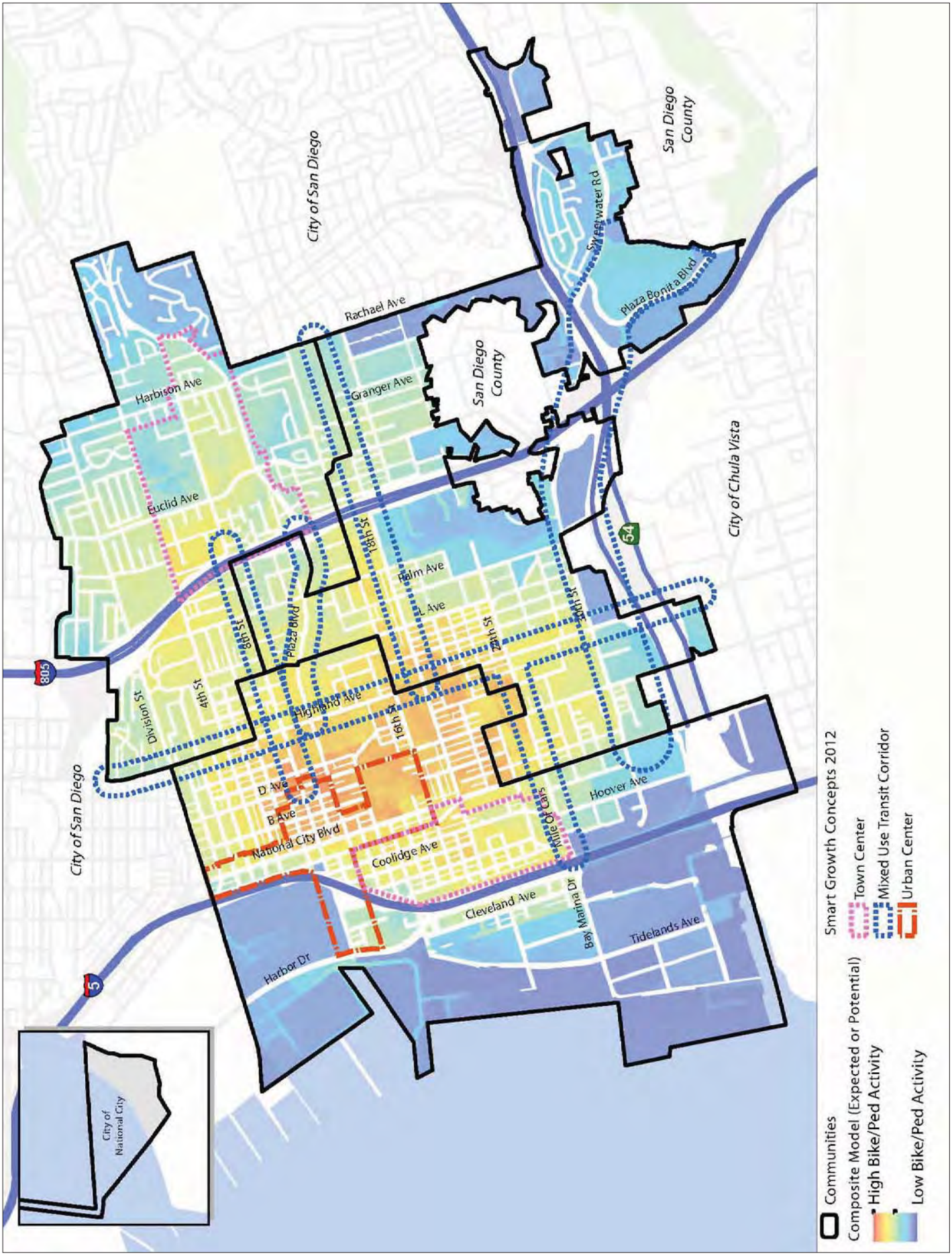


Figure 5-6: Composite Model with Smart Growth Concept Areas



Existing and Future Attractor Elements

The second model consists of developing five-minute, more compact walk sheds from the following existing and future attractors:

- Schools
- Parks
- Transit
- Retail
- Mixed use

This exercise looks at the proximity of each attractor to one another, similar to the Bicycle and Pedestrian Attractor Model.

Other inputs that were modified include adding future attractors where land use changes from a non-attractor, such as industrial land use, to an attractor, such as retail or mixed use areas. This helps identify where increases in land use density and walking destinations are likely to occur in the future. Identifying these future destinations provides foresight to improvements that will support these land uses from a pedestrian, bicycling and transit use.

To compare changes in land use for future planning efforts, zoning land use layers were compared with existing land use to identify areas where there were increases in commercial and mixed use land uses. These attractors are an important component of future smart growth areas and project prioritization. Projected increase in population change is another criteria used for the development of various smart growth areas.

Figure 5-7 identifies the attractor land use changes between existing and planned land use. Identifying where residential density changes has also been identified. The primary land use from residential to commercial occurrs along Wilson Avenue and National City Blvd between 18th Street and the City's southern limit.

Figure 5-8 Identifies the areas where population density increases between SANDAG's 2010 and 2030 estimates. The highest increases in population density occur along the northern end of National City Blvd and within the Urban Center Smart Growth Concept Area. Other pockets of growth are estimated to occur near the city's community parks.

Figure 5-9 is the five-minute walk sheds from existing attractors using an average three MPH walking speed. The densest areas of attractor overlap occur west of Highland Ave, between 8th St. and 18th St. and east of National City Blvd. Small pockets of dense attractors can be found along 8th St. near Euclid Ave and around Sweetwater High School.

Figure 5-10 is the five-minute walk sheds from future attractors using an average three MPH walking speed. Pockets of dense attractors are similar to the existing attractor element, including future mixed use planned in the Westside Specific Plan.

Figure 5-11 is the composite of the existing and future walk sheds identifying dense areas of attractors.

Figure 5-12 overlays the SANDAG Smart Growth Concept Areas over the composite of future and existing attractors.

This attractor exercise strengthens the Smart Growth Concept Areas that have been identified by SANDAG. Utilizing just pedestrian accessibility also shows the areas where pedestrian improvements should be prioritized.

Utilizing two different analysis methods still showed similar results for where Smart Growth Concept Areas should likely occur in regards to Urban and Town Center designations. Not only are these areas good locations for future smart growth, they should also be looked at as areas of prioritized pedestrian, bicycle and transit improvements and maintenance priorities

Identifying projects within these areas because of the immediate use from a larger user group will assist the City in grant funding efforts. The opportunities for funding can assist in conceptual design to construction of non-motorized improvements.

Figure 5-7: Land Use Change

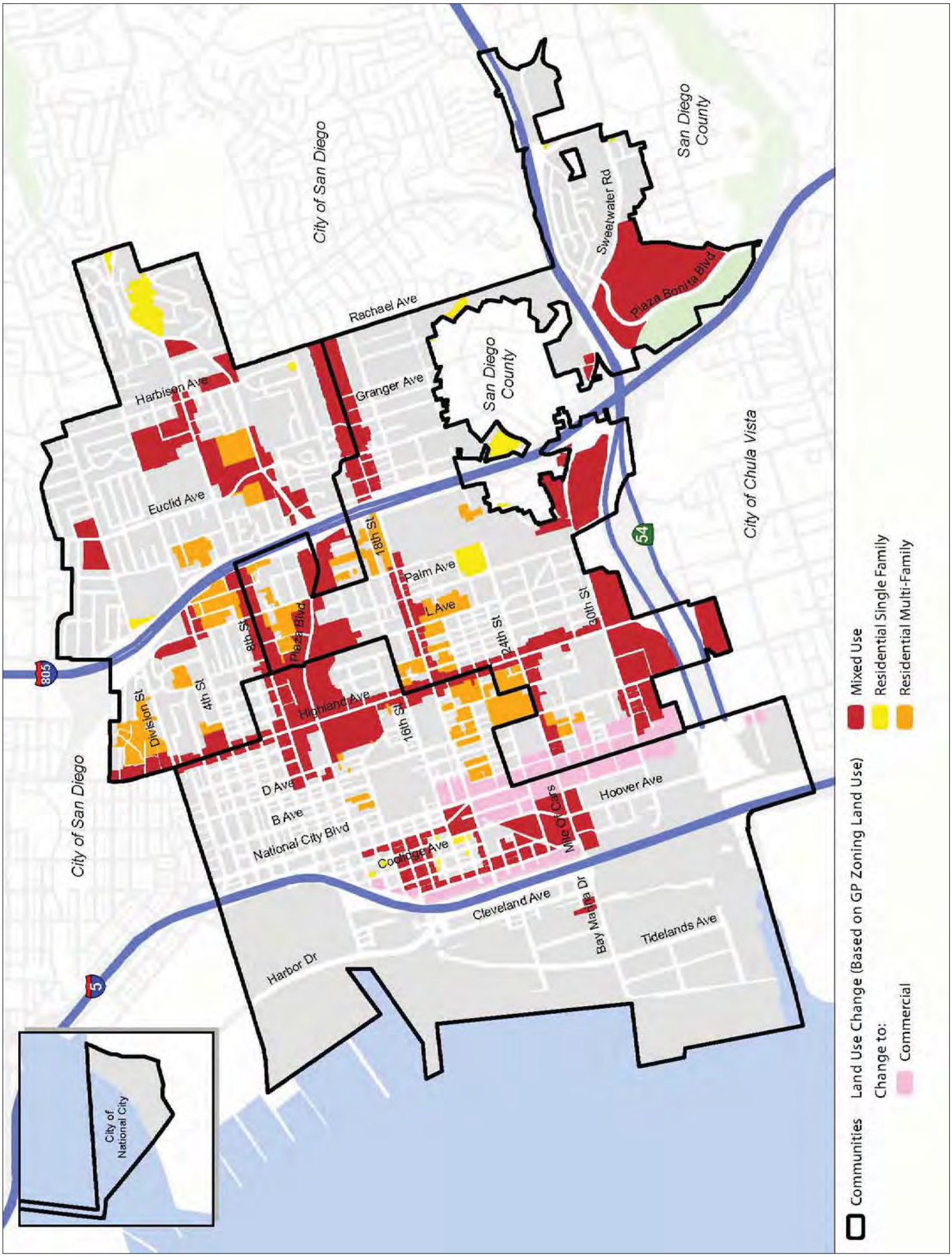


Figure 5-8: Population Growth

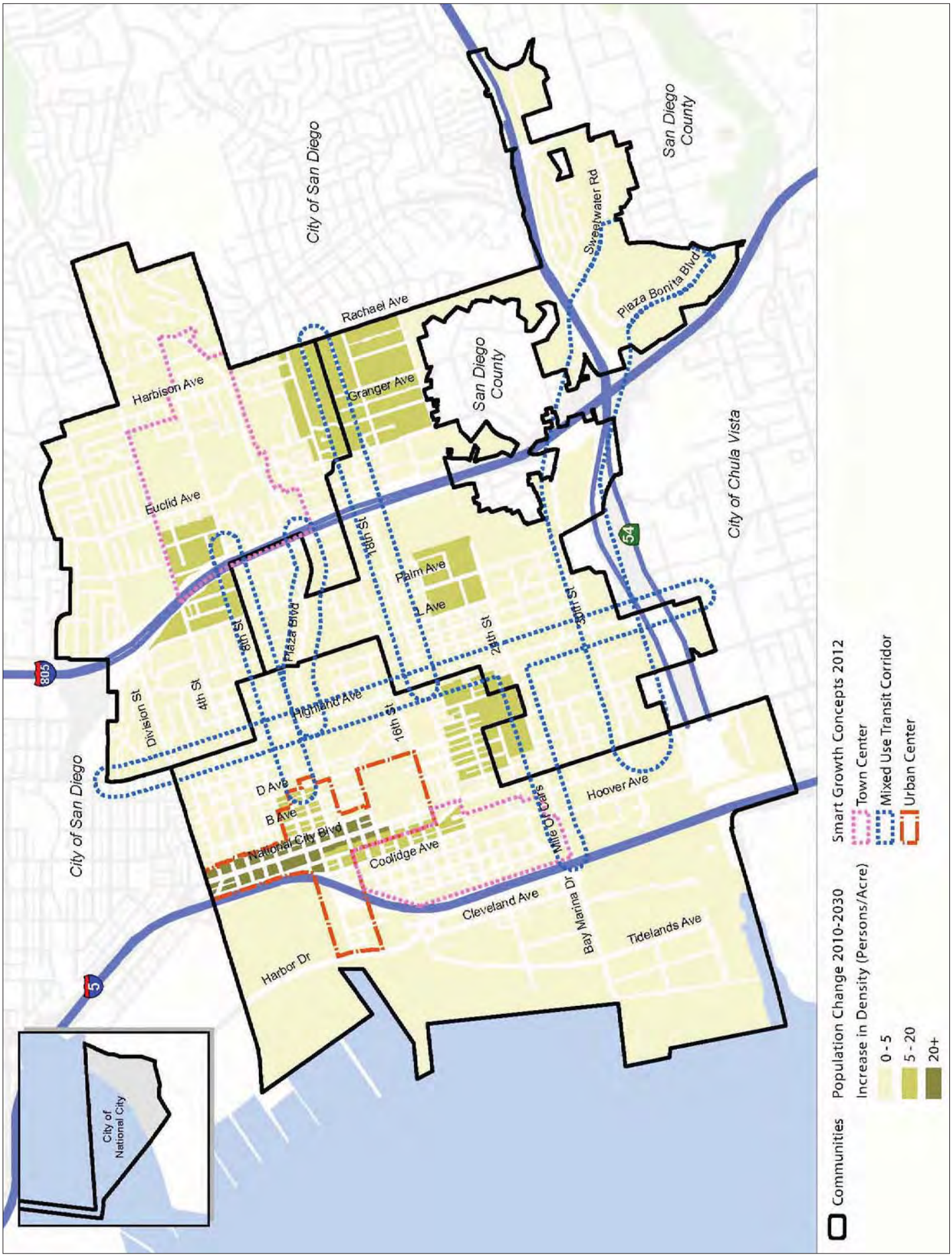


Figure 5-9: Existing Attractor Elements: Compact Walk Sheds

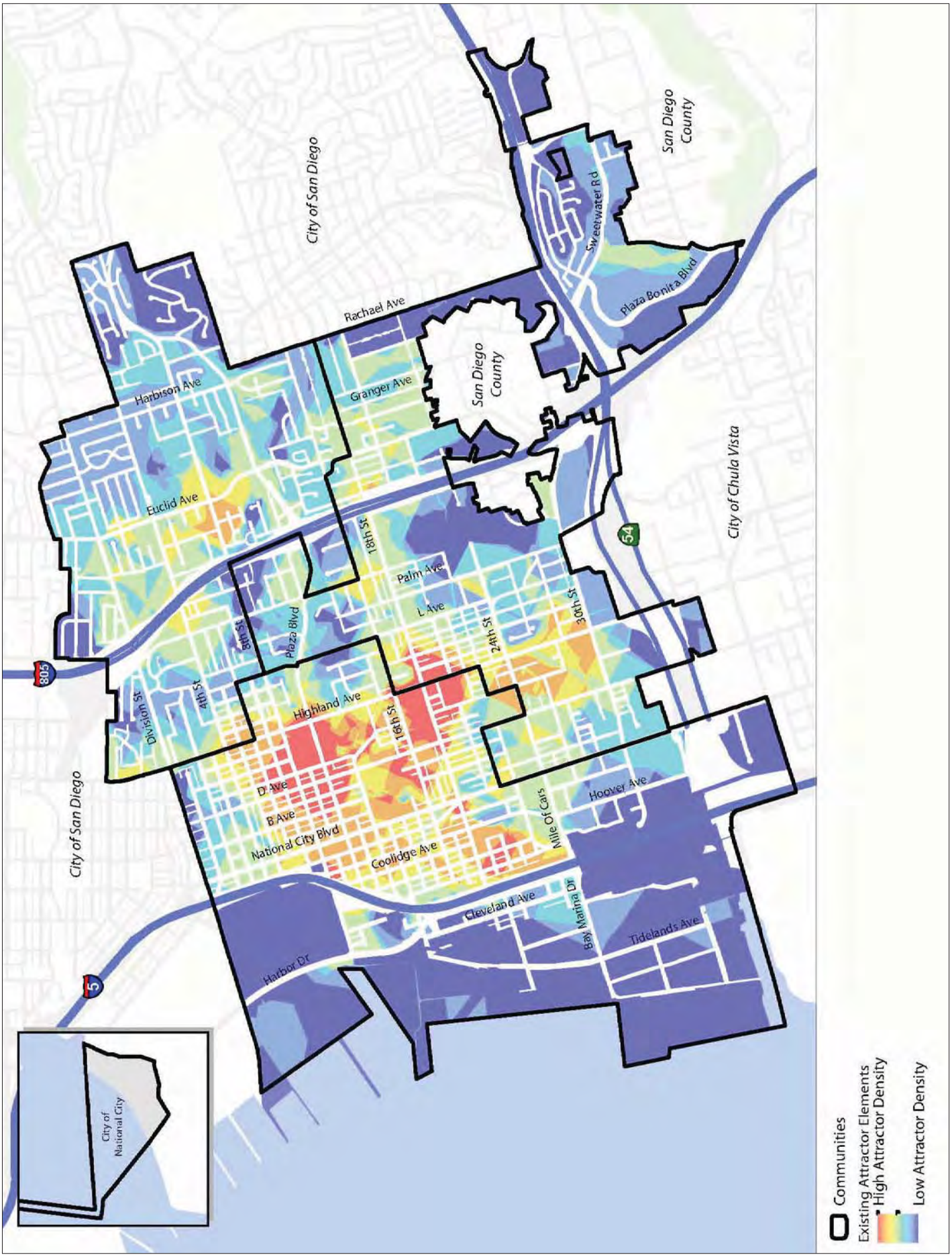


Figure 5-10: Future Attractor Elements: Compact Walk Sheds

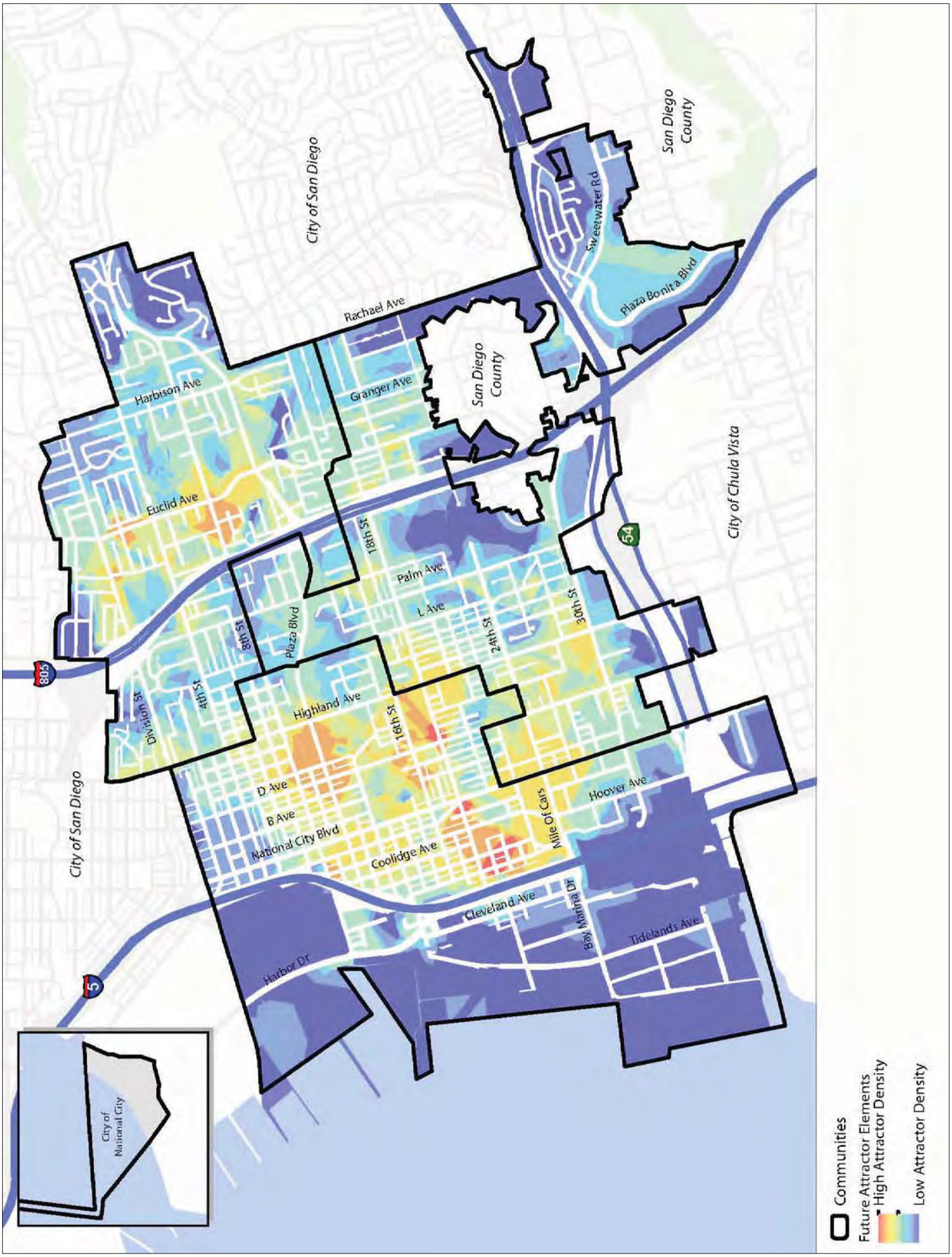


Figure 5-11: Composite Attractor Elements

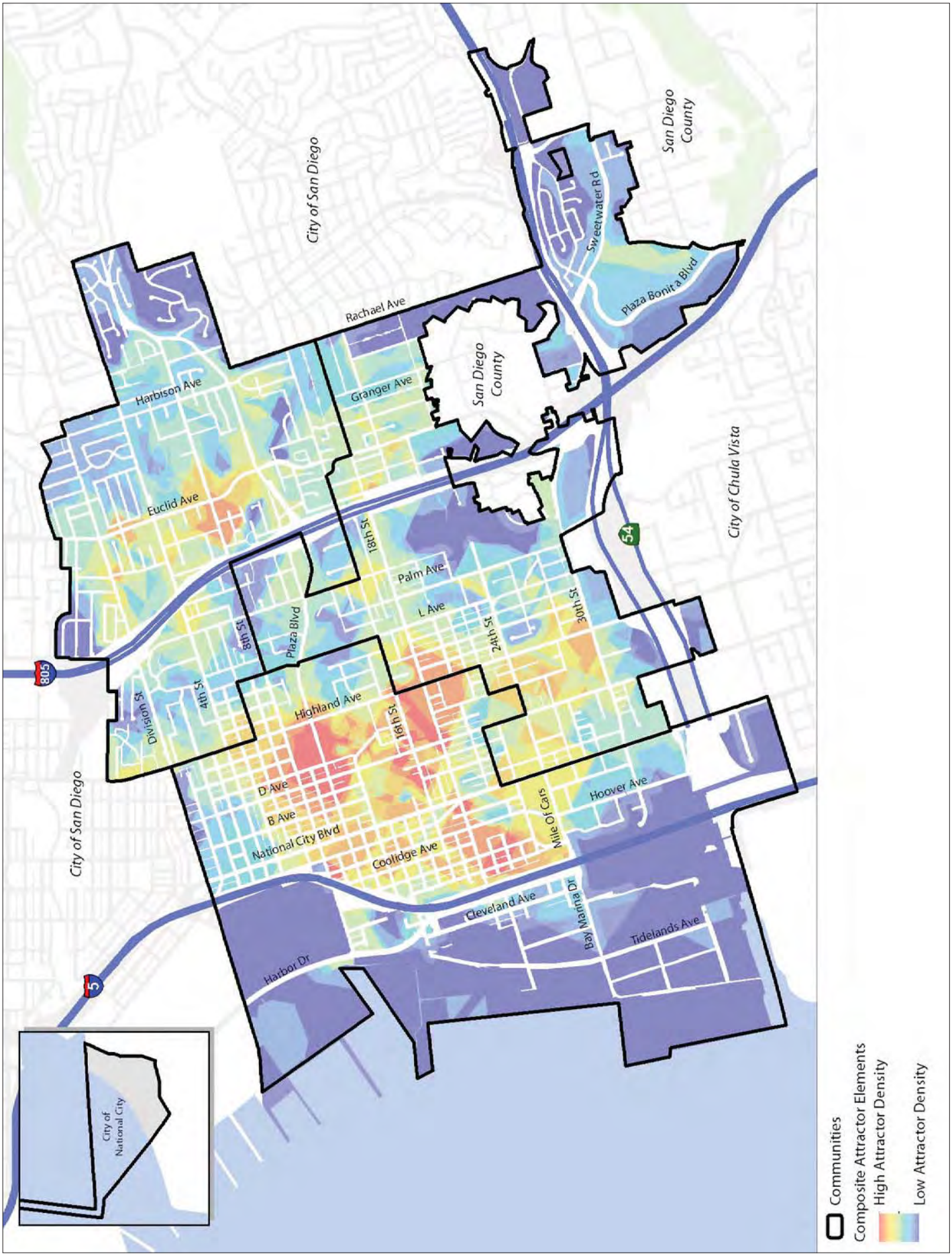
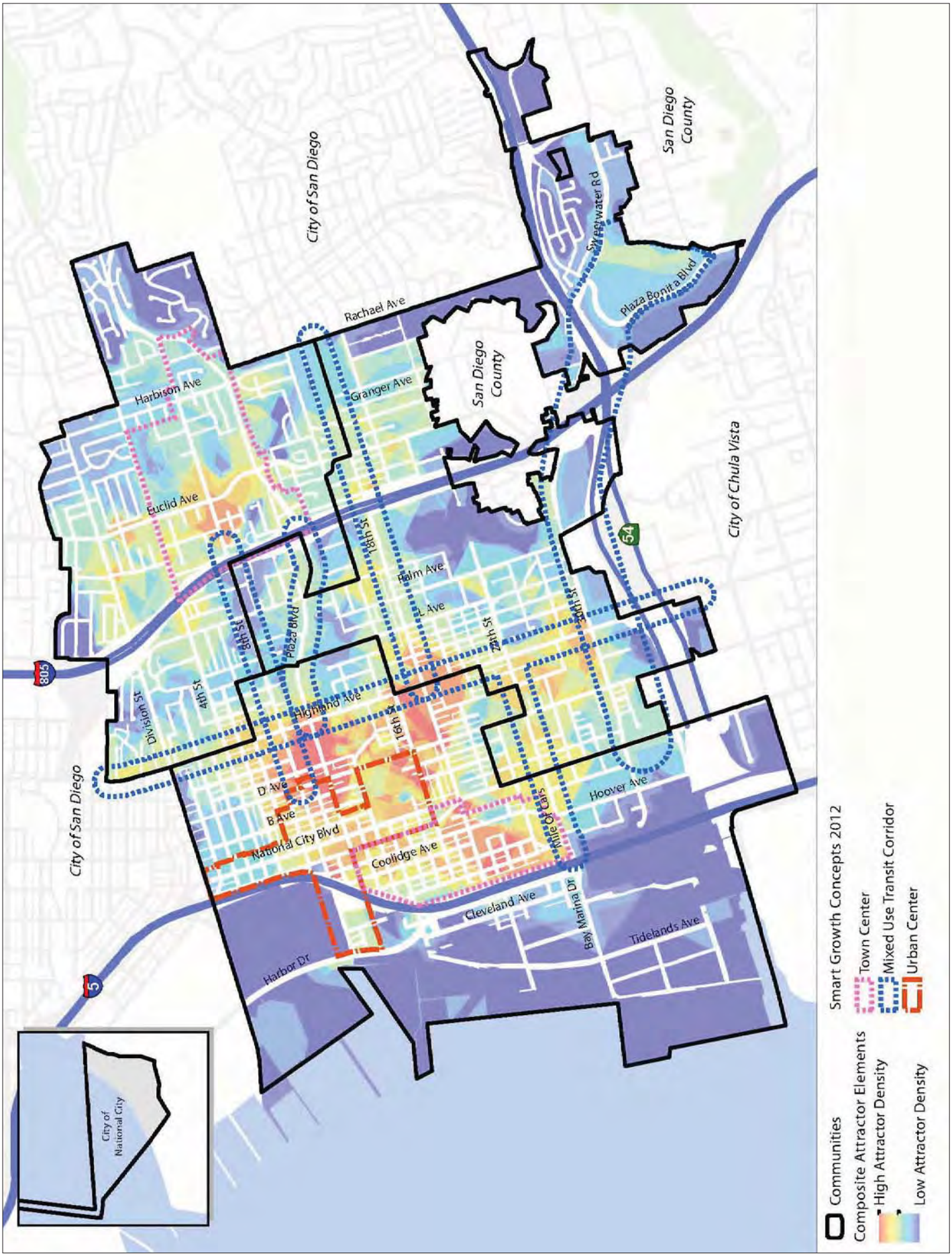


Figure 5-12: Composite Attractor Elements with Smart Growth Concept Areas



SMART...

FOUNDATION

Recommended Projects

6

SMART Foundation Projects

The data gathered from workshops and surveys was compiled to identify the most commented locations and issues. The projects were narrowed down by eliminating those that have already been completed during the duration of this project and those that have already been analyzed. Some projects have either received grant funding or are in the process of applying for grants for these improvements. An added benefit of this process was that it confirmed what the residents commented on in correlation with what the City currently is or is planning to improve.

SMART Foundation projects are categorized into Tier One Tier Two and Tier Three.

- Tier One projects were identified at high priority projects and moved forward with conceptual designs. These conceptual designs will allow the City to immediately apply for grant funding to further study and install these improvements.
- Tier Two projects are secondary priorities with recommendations identified and located on maps along with planning level-cost estimates.
- Tier Three projects range from widening or improving sidewalks to installing crosswalks or maintenance. While not high priority projects, they provide the framework to identify improvements when/if other improvements are made in the area.

Example Tier 3 Project: Widen sidewalk or move utility for ADA accessibility

A few projects that did stand out was improving the pedestrian connections along Euclid Ave between 4th Street and Plaza Boulevard and improving Joe's Pocket Farm/ Mundo Gardens in northeast National City. These projects were identified as Tier 1 from the level of public input gathered and priority ranking found in Chapter Five. From input gathered, residents wanted to improve pedestrian crossing Euclid Avenue near Paradise Valley Hospital between 4th Street and 8th Street. Other input suggested improving crossing Euclid Avenue near Windmill Plaza Shopping Center between 8th Street and Plaza Boulevard.

Project Prioritization

The methodology used to select projects for the National City SMART Foundation proposed project list will consider the relative need and input we have received at the various public outreach events to ensure investment reflects the needs of the community. The Project Priority Index (PPI) will use index measures for accessibility, safety, ongoing projects and public comments.

Accessibility addresses the fact that the closer needed infrastructure improvement projects are located to various important trip generators and transportation facilities, the higher should be their priority. The Bicycle/Pedestrian Suitability Model score will be used to help prioritize improvements.

The individual scoring factors are as follows:

Bicycle and Pedestrian Suitability Model

A range of spatial index measures will be addressed to identify and quantify critical bicycle and pedestrian access issues. Access at bicycle and pedestrian trip ends (origins and destinations) and to critical transportation system features (bus stops and arterial streets) will be developed based on currently available relevant data (City of National City, SANDAG and US Census).

- Schools, Parks and Open Space
- Bus Stops and Trail Heads
- Major Streets and Roadway Speeds
- Civic Buildings and other Public Facilities
- Mobility-Impaired and Lower-Income Residential Density
- Barriers
- Population and Employment Densities

Safe Routes to School Corridors

The sidewalks and roads along a Safe Route to School are given a higher priority than those not on a route. These routes are selected by their proximity and use by children traveling to and from school. Projects including improvements that can make these routes safer receive a high score as this is a high priority for the National City SMART Foundation project.

Collisions

Pedestrian and bicycle collisions occurring in an area signifies that an area is likely to have a safety problem that could be corrected by a project improvement. A roadway segment or sidewalk near an area with two or more collisions receives a higher score to incorporate the goal of safety improvement in the ranking.

Existing CIP Plan

The City of National City has a list of several projects that have been designed, approved and sometimes funded. These projects already include solutions for the area that include bicycle and pedestrian improvements. In an effort to avoid duplicative efforts and to distribute investments throughout the City, projects that are in an area already existing on the City's CIP list receive a lower priority value.

Missing Sidewalks and Curb Ramps

An area missing sidewalks and curb ramps is prioritized over an area that is not because missing sidewalks and curb ramps are a safety concern. These gaps are scored high to prioritize efforts to fill in gaps in National City's pedestrian network.

Composite Priority Project Index

A Composite Project Priority Index will be calculated for each project based on the total scores from each factor. The potential projects with the highest Composite PPI score should have the highest priority for future projects.

Table 6-1: Project Priority Index Criteria

Criteria	Points	Weighted Multiplier	Final Score
Public Comments			
> 5	3	3	9
1-5	2		6
Bicycle/Pedestrian Demand Model Score			
High (75-100)	3	2	6
Moderate (50-75)	2		4
Low (0-50)	1		2
Safe Routes to School			
Part of Safe Route to School route	2	2	4
Not Part of a Safe Route to School route	0		0
Pedestrian Collisions			
>= 2	2	2	4
1-2	1		2
0	0		0
Bicycle Collisions			
>= 2	2	2	4
1-2	1		2
0	0		0
Existing CIP Plan			
No	2	2	4
Yes	0		0
Missing Sidewalks			
Yes	2	1	2
No	0		0
Missing Curb Ramps			
Yes	2	1	2
No	0		0

Figure 6-1: Total Public Comments by Street Segment

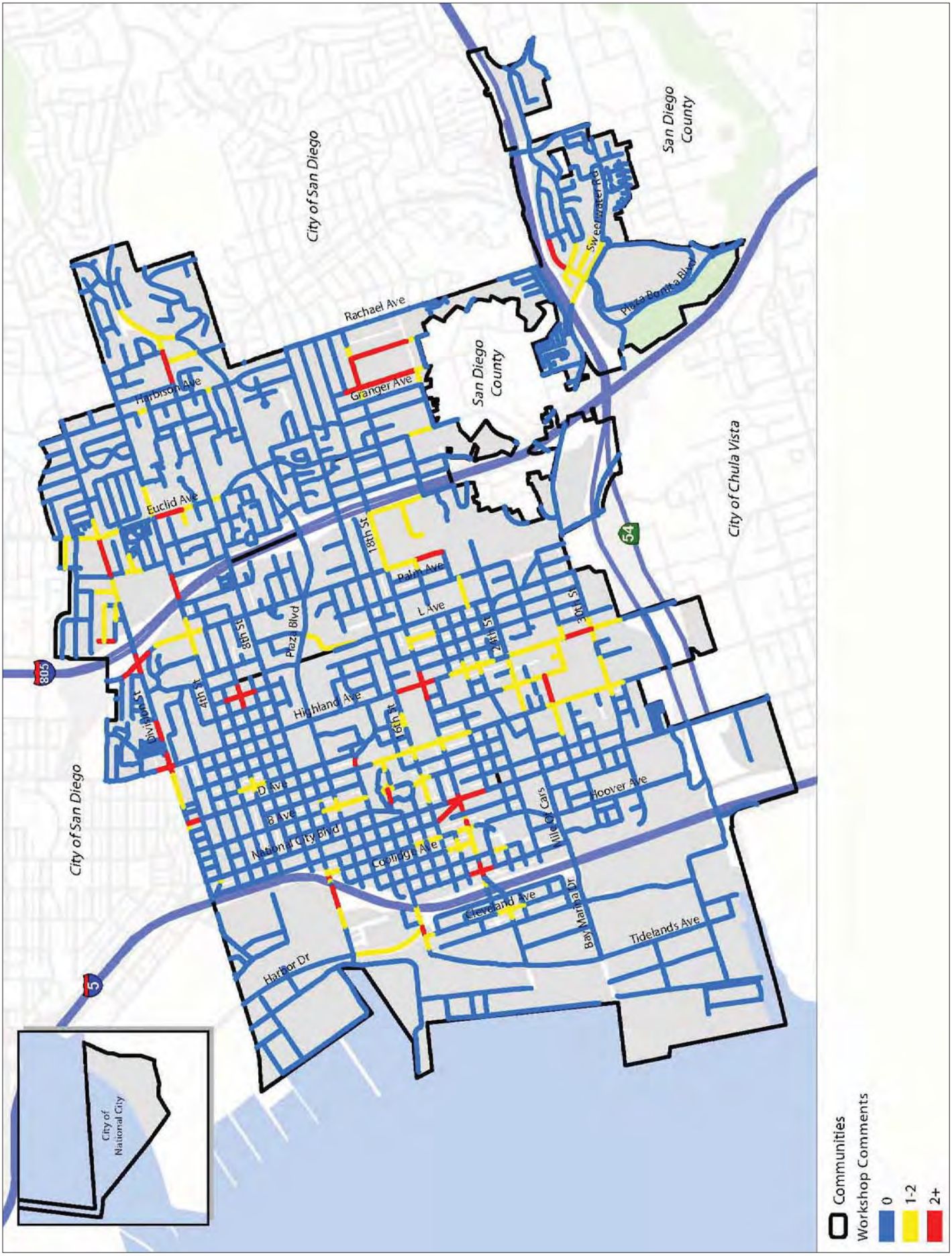
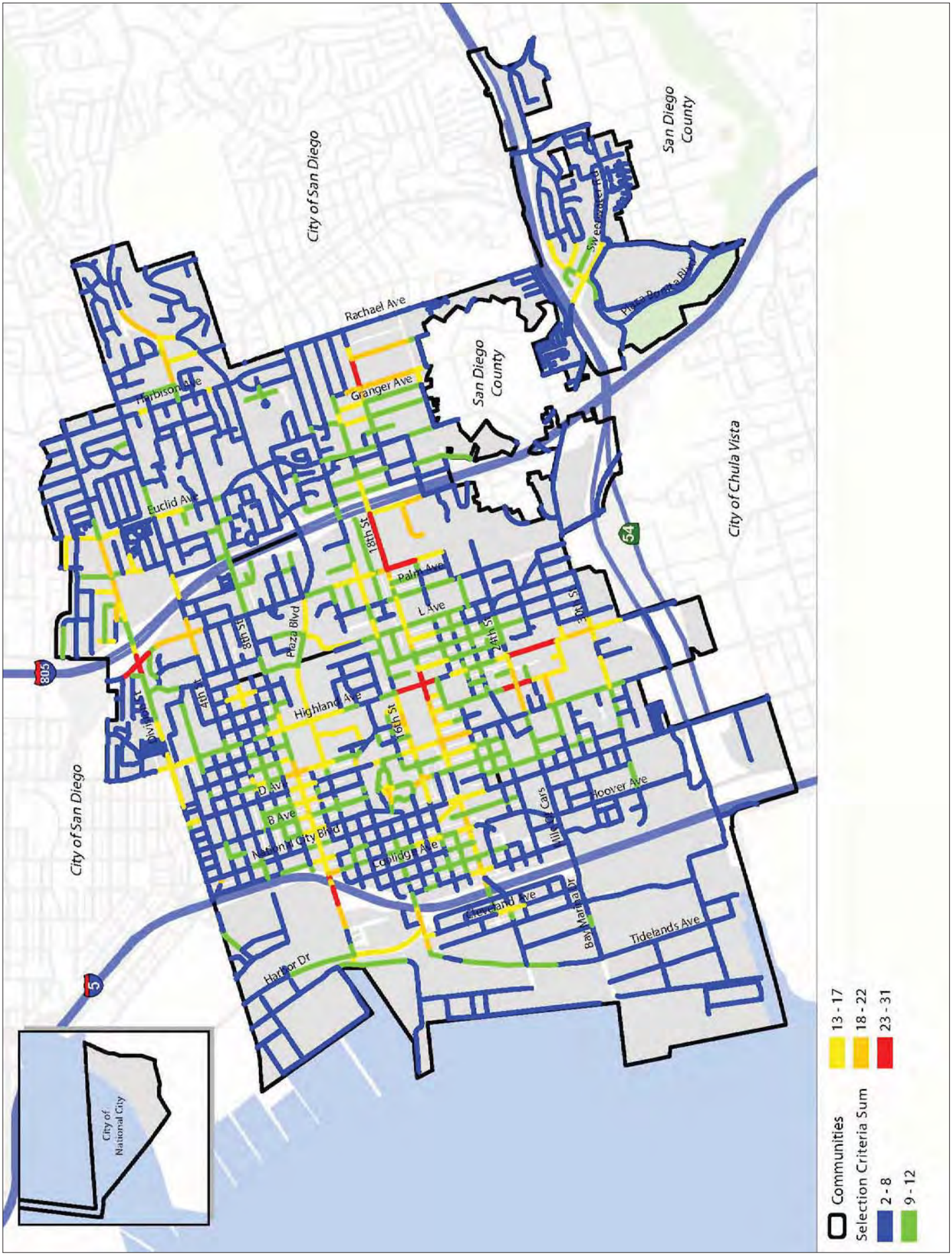


Figure 6-2: Project Priority Index Model



Recommended Projects

Below is a list of projects compiled through the surveys, workshops and walk audits. Figure 6-3 shows their location. Comments from outreach efforts are listed in the General Comments sections along with maintenance comments. The projects below have been ranked within their Tiers through the project prioritization process previously discussed. When funding becomes available for improvements, the highest priority project should be considered for the amount of the allocated funds. Funding allocations vary greatly so if funds for a Tier 2 project become available before a Tier 1, then the City should move forward with completing that Tier 2 project.

Table 6-2: Tier One Projects

Rank	Street	Limits	Location	Public Comments
1	Euclid Avenue	4th Street and 8th Street	Corridor	Don't feel safe crossing
				Safe crossing at 5th, 6th and 7th on Euclid
				Paradise Valley Hospital patients cross heavily; need midblock crossing
2	Euclid Avenue	8th Street and Plaza Blvd	Corridor	Safe crossing to Windmall Plaza Shopping Center
				People cross illegally toward the transit station
3	Division St	Palm Ave and Euclid Ave	Corridor	Underpass should be brightened with murals and Native Plants, cars turn without caution, high vehicular speeds, more crosswalks
				Too fast! Unpleasant to walk to the market on Euclid
				Traffic calming needed
				Crossing has lots of kids and traffic, needs to be made safer
4	El Toyon-Las Palmas Bicycle Corridor	Beta Street and East 22nd Street	Corridor	Better pedestrian crossing at Plaza Blvd and Grove Street
				Widen sidewalk along Division
				Bike path between Beta Street and Division Street
5	North Q Avenue and Delta Avenue	Community Garden	n/a	Light up victory garden, water source needed, trash bins needed, fence the garden (Joe's Pocket Farm), graffiti problem, beautification needed

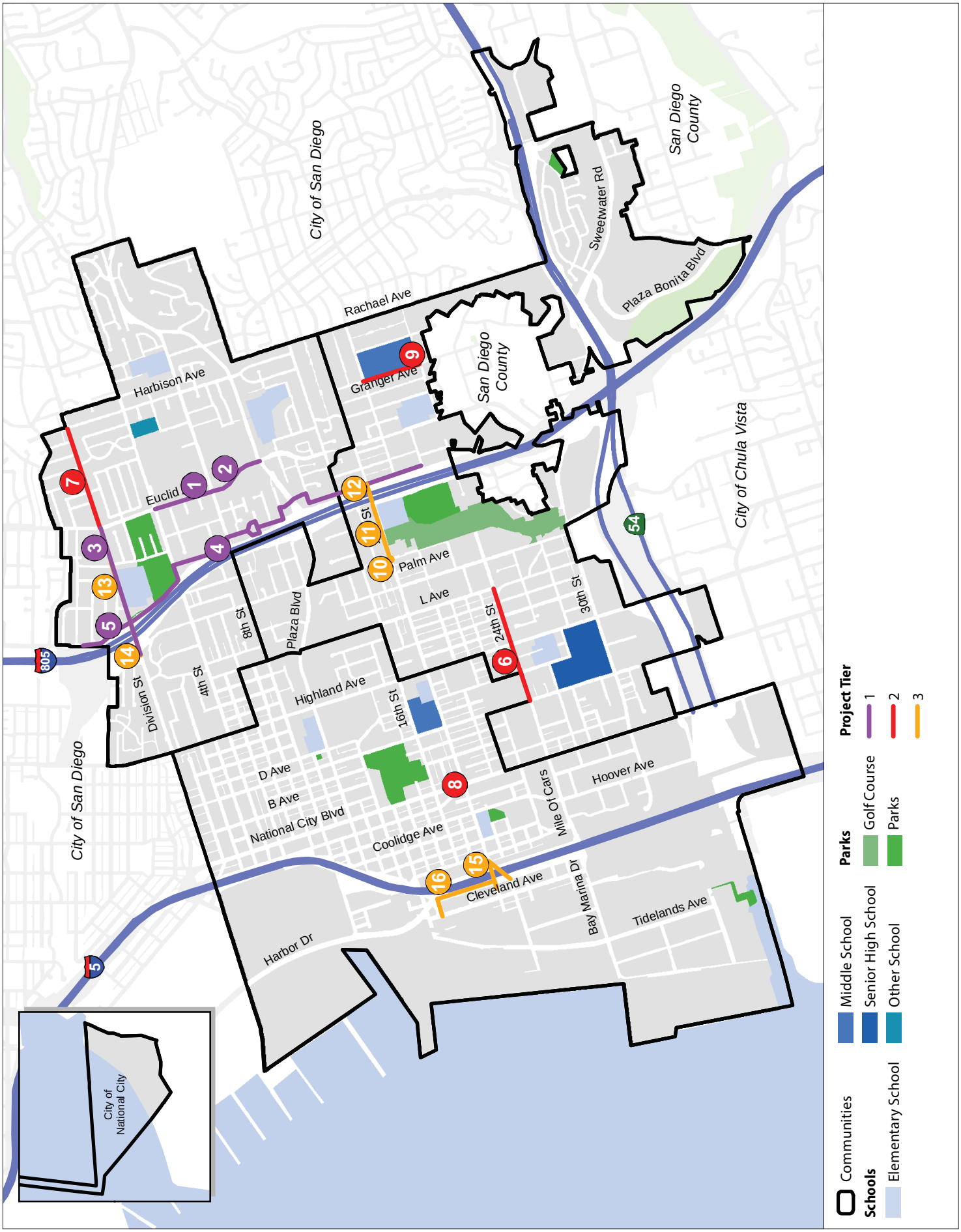
Table 6-3: Tier Two Projects

Rank	Street	Limits	Location	Public Comments
6	24th Street	D Ave and L Ave	Corridor	Improved pedestrian crossing at Laurel and Highland
				Traffic Calming needed
				Uneven pavement, need more lighting
7	Division Street	Euclid Ave and Harbinson Blvd	Corridor	Traffic calming needed
				High vehicular speeds throughout
8	West Avenue	National City Blvd & W 18th St	Intersection	Pedestrians cannot cross West Ave
				Difficult for school children to cross
9	Granger Avenue	20th St and 24th St	Corridor	Overgrown bushes, over sidewalk, Benches should be installed (in front of school); kids waiting for parents just sit on sidewalk
				More lights & more prominent crosswalk markings

Table 6-4: Tier Three Projects

Rank	Street	Limits	Location	Public Comments
10	18th Street	Palm Ave	Intersection	Improve pedestrian crossing
				Drivers do not yield to pedestrian crossing
11	18th Street	Palm Ave and I-805	Corridor	Bike Lane along Las Palmas Park
				Utilities blocking the sidewalk
12	18th Street	Newell St and Grove St	Corridor	Lack of street lighting
				Widen sidewalks
13	Division Street	T Ave and U Ave	Corridor	Pedestrian flashers removed at T St
				Narrow Sidewalk (Between R Ave and U Ave)
14	Division Street	Palm Ave and I-805	Corridor	High downhill speeds towards I-805
				Add trails, native plants and murals (805 and Division)
				Too fast! Unpleasant to walk to Market (805 to Euclid)
				Underpass should be brightened with murals and Native Plants, cars turn without caution, high vehicular speeds, better crosswalk (Division and Palm)
15	18th Street	Wilson Ave and McKinley Ave	Corridor	Traffic calming
				High vehicular speeds
				Better pedestrian crossings
16	McKinley Ave	14th and 19th	Corridor	Lack of street lighting
				High vehicular speeds

Figure 6-3: Project Locations



Tier 1 Projects

Euclid Avenue between 4th Street and 8th Street

This segment was identified at the El Toyon Walk Audits and Senior Focus meetings as a segment that needed pedestrian crossing improvements. Currently, a pedestrian crossing sign is located between 5th and 6th Streets without a crosswalk. The City's Bicycle Master Plan recommends bike lanes through this corridor so they are included in the recommendations. Not only so the bike lanes close a gap in the bicycle network, they also serve as traffic calming.

Pedestrian and vehicular counts were conducted between 4th Street and 8th Street. These counts were meant to validate if necessary warrants could be met to install enhanced pedestrian crossings such as Rectangular Rapid Flashing Beacons (RRFB) or High-Intensity Activated Crosswalks (HAWK) in these sections.

Peak counts were conducted between 7:15-8:15am and 4:15-5:15pm on November 21, 2013 at Euclid Ave at 6th St and 7th St. Pedestrians totals are:

Euclid Ave and 6th St: 14
Euclid Ave and 7th St: 35

Currently, pedestrian and vehicular traffic volumes do not meet any CA MUTCD warrants for the options below. However, to provide a safe crossing and for all users, multiple options have been explored in case future warrants and/or City Council decided to implement one of the options.

Detailed count summaries can be found in Appendix B. Data collected includes:

- Pedestrian crossings data
- ROW, lane, sidewalk widths
- On-street parking
- Turning Movement Counts
- Segment Counts
- Other existing conditions (e.g. signs and utilities)

Three options were developed to provide a safe and enhanced crossing to Paradise Valley Hospital with the medical offices on the west side of Euclid Avenue. These options are in no particular order. Overall recommendations include:

- Provide bicycle lanes on both sides of the road
- Narrow travel lanes to 11 ft and narrow Two-way Left Turn Lane (TWLTL) to 10 ft
- Install traffic calming pavement markings and signs
- Provide high visibility crosswalks and ADA accessible ramps

Option One: Traffic Signal at Euclid Ave and 6th Street
Provide pedestrian access to the hospital along with a traffic signal at Euclid Ave & 6th St (when warranted or when approved by the City Council)

Option Two: HAWK crossing at 6th Street
Provide High Intensity Activated Crosswalk between 6th and 7th Street (when warranted or when approved by the City Council)

Option Three: Traffic Signal at Euclid Ave and 7th Street
Provide traffic signal at Euclid Ave and 7th St (when warranted or approved by the City Council)

Table 6-5: Euclid Avenue between 4th Street and 8th Street Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-4 - Euclid Ave: 4th to 6th St

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	A.C. Slurry Seal (Please see notes below)	38000	$0.99	$37,620.00
528	Median - Stamped Concrete (SF)	1000	$13.20	$13,200.00
			Subtotal:	$50,820.00
	Signing and Striping			
454	Install Stripe - Paint (LF)	3600	$1.00	$3,600.00
452	Install Pavement Legend - Thermoplastic (SF)	400	$6.00	$2,400.00
404	Install Roadside Sign - One Post	4	$350.00	$1,400.00
			Subtotal:	$7,400.00
			BASE LINE COST:	**$58,220.00**
			CONSTRUCTION COST	
			Contingency: 20%	$11,644.00
			Bonding / Mobilization / Contractor Internal Management: 7.5%	$4,366.50
			TOTAL CONSTRUCTION COST:	**$16,010.50**
			DESIGN / MANAGEMENT / PERMITTING / ENGINEERING	
			Engineering / Design: 20%	$11,644.00
			Permitting: 2%	$1,164.40
			Bid Support Services: 5%	$2,911.00
			Project Management: 5%	$2,911.00
			Traffic Management Services: 10%	$5,822.00
			TOTAL SOFT COST:	**$24,452.40**
			TOTAL COST:	**$98,682.90**

Notes:
-Slurry Seal is a pavement preservation method consisting of an asphalt emulsion, sand and rock which is applied to the street surface at an average thickness of ¼ inch. This cost effective maintenance treatment extends the life of streets already in good condition. This is not required, but is recommended for aesthetic purposes.
- Cost does not include the cost to continue improvements from 4th Street to Cervantes Avenue

Table 6-6: Euclid Avenue between 4th Street and 8th Street: Option #1 Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-5a - Option 1: Traffic Signal at Euclid Ave and 6th St

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	A.C. Slurry Seal (Please see note below)	55000	$0.99	$54,450.00
528	Median - Stamped Concrete (SF)	300	$13.20	$3,960.00
510	Pedestrian Ramp	3	$3,000.00	$9,000.00
			Subtotal:	$67,410.00
	Signing and Striping			
454	Install Stripe - Paint (LF)	5000	$1.00	$5,000.00
452	Install Pavement Legend - Thermoplastic (SF)	300	$6.00	$1,800.00
X	Install High Visibility Crosswalk (EA)	6	$2,540.00	$15,240.00
404	Install Roadside Sign - One Post	6	$350.00	$2,100.00
403	Remove Sign	1	$100.00	$100.00
			Subtotal:	$24,240.00
	Traffic Signal Modfication			
X	Install Traffic Signal	1	$200,000.00	$200,000.00
			Subtotal:	$200,000.00
			BASE LINE COST:	**$291,650.00**
			CONSTRUCTION COST	
			Contingency: 20%	$58,330.00
			Bonding / Mobilization / Contractor Internal Management: 7.5%	$21,873.75
			TOTAL CONSTRUCTION COST:	**$80,203.75**
			DESIGN / MANAGEMENT / PERMITTING / ENGINEERING	
			Engineering / Design: 10%	$29,165.00
			Permitting: 2%	$5,833.00
			Bid Support Services: 5%	$14,582.50
			Project Management: 5%	$14,582.50
			Traffic Management Services: 3%	$8,749.50
			TOTAL SOFT COST:	**$72,912.50**
			TOTAL COST:	**$444,766.25**

Note: Slurry Seal is a pavement preservation method consisting of an asphalt emulsion, sand and rock which is applied to the street surface at an average thickness of ¼ inch. This cost effective maintenance treatment extends the life of streets already in good condition. This is not required, but is recommended for aesthetic purposes.

Table 6-7: Euclid Avenue between 4th Street and 8th Street: Option #2 Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-5b - Option 2: HAWK on Euclid Ave

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	A.C. Slurry Seal (Please see note #1 below)	55000	$0.99	$54,450.00
528	Median - Stamped Concrete (SF)	1000	$13.20	$13,200.00
510	Pedestrian Ramp	4	$3,000.00	$12,000.00
			Subtotal:	$79,650.00
	Signing and Striping			
454	Install Stripe - Paint (LF)	5000	$1.00	$5,000.00
452	Install Pavement Legend - Thermoplastic (SF)	300	$6.00	$1,800.00
X	Install High Visibility Crosswalk (EA)	4	$2,540.00	$10,160.00
404	Install Roadside Sign - One Post	12	$350.00	$4,200.00
			Subtotal:	$21,160.00
	Traffic Signal Modfication			
X	High Intensity Activated Crosswalk (Please see note #2 below)	1	$100,000.00	$100,000.00
			Subtotal:	$100,000.00
		BASE LINE COST:		**$200,810.00**
		CONSTRUCTION COST		
		Contingency:	20%	$40,162.00
		Bonding / Mobilization / Contractor Internal Management:	7.5%	$15,060.75
		TOTAL CONSTRUCTION COST:		**$55,222.75**
		DESIGN / MANAGEMENT / PERMITTING / ENGINEERING		
		Engineering / Design:	10%	$20,081.00
		Permitting:	2%	$4,016.20
		Bid Support Services:	5%	$10,040.50
		Project Management:	5%	$10,040.50
		Traffic Management Services:	3%	$6,024.30
		TOTAL SOFT COST:		**$50,202.50**
		TOTAL COST:		**$306,235.25**

Note:
1. Slurry Seal is a pavement preservation method consisting of an asphalt emulsion, sand and rock which is applied to the street surface at an average thickness of ¼ inch. This cost effective maintenance treatment extends the life of streets already in good condition. This is not required, but is recommended for aesthetic purposes.
2. Cost includes signs and pavement markings

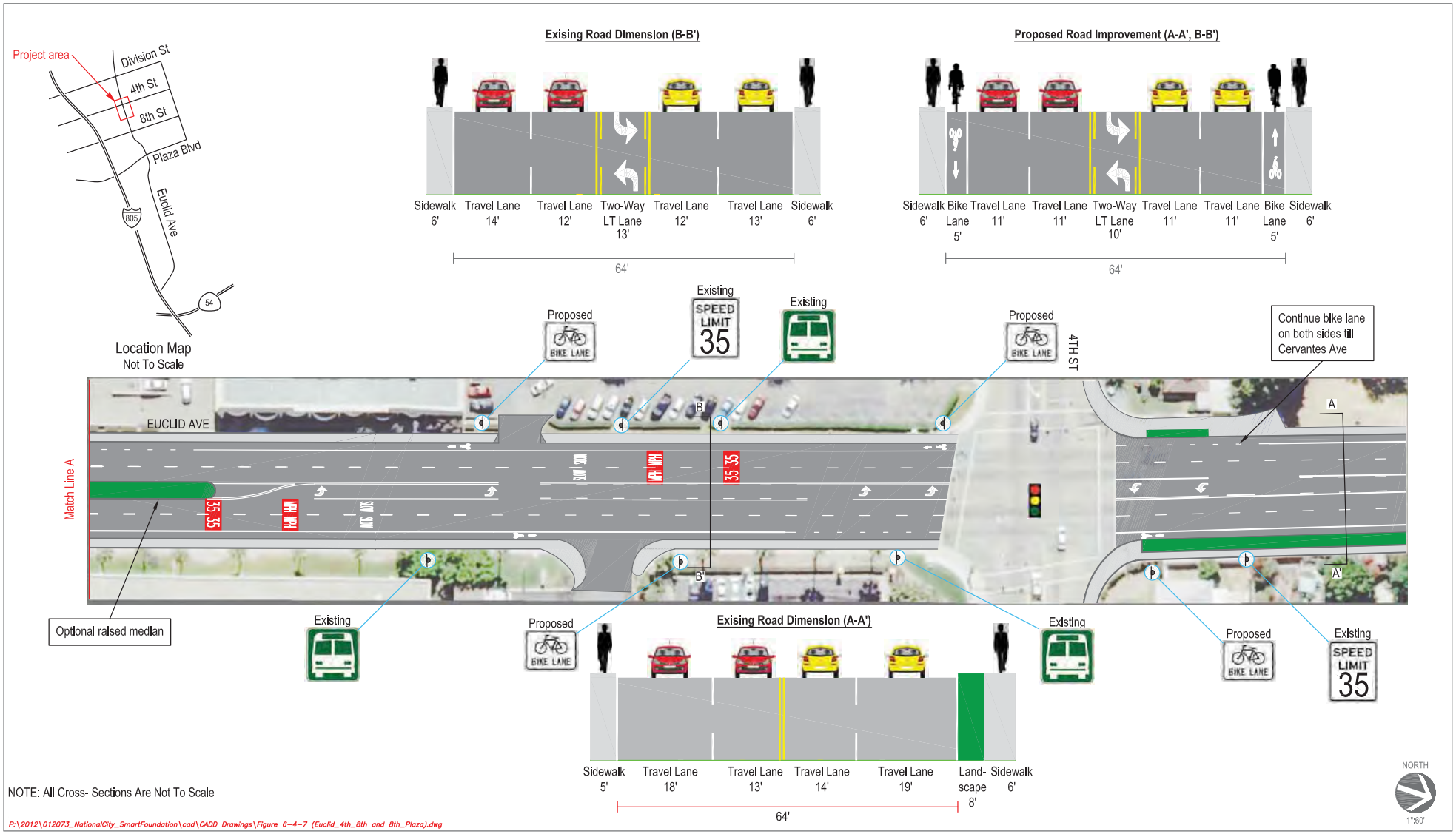
Table 6-8: Euclid Avenue between 4th Street and 8th Street: Option #3 Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-5c - Traffic Signal at Euclid Ave and 7th St

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	A.C. Slurry Seal (Please see note below)	55000	$0.99	$54,450.00
528	Median - Stamped Concrete (SF)	300	$13.20	$3,960.00
			Subtotal:	$58,410.00
	Signing and Striping			
454	Install Stripe - Paint (LF)	5000	$1.00	$5,000.00
452	Install Pavement Legend - Thermoplastic (SF)	300	$6.00	$1,800.00
455	Install Stripe - Thermoplastic (LF)	200	$2.00	$400.00
X	Install High Visibility Crosswalks	6	$2,540.00	$15,240.00
404	Install Roadside Sign - One Post	6	$350.00	$2,100.00
403	Remove Sign	1	$100.00	$100.00
			Subtotal:	$24,640.00
	Traffic Signal Modfication			
X	Install Traffic Signal	1	$200,000.00	$200,000.00
			Subtotal:	$200,000.00
			BASE LINE COST:	**$283,050.00**
			CONSTRUCTION COST	
			Contingency: 20%	$56,610.00
			Bonding / Mobilization / Contractor Internal Management: 7.5%	$21,228.75
			TOTAL CONSTRUCTION COST:	**$77,838.75**
			DESIGN / MANAGEMENT / PERMITTING / ENGINEERING	
			Engineering / Design: 10%	$28,305.00
			Permitting: 2%	$5,661.00
			Bid Support Services: 5%	$14,152.50
			Project Management: 5%	$14,152.50
			Traffic Management Services: 3%	$8,491.50
			TOTAL SOFT COST:	**$70,762.50**
			TOTAL COST:	**$431,651.25**

Note: Slurry Seal is a pavement preservation method consisting of an asphalt emulsion, sand and rock which is applied to the street surface at an average thickness of ¼ inch. This cost effective maintenance treatment extends the life of streets already in good condition. This is not required, but is recommended for aesthetic purposes.



NOTE: All Cross- Sections Are Not To Scale

P:\2012\012073_NationalCity_SmartFoundation\cad\CADD Drawings\Figure 6-4-7 (Euclid_4th_8th and 8th_Plaza).dwg

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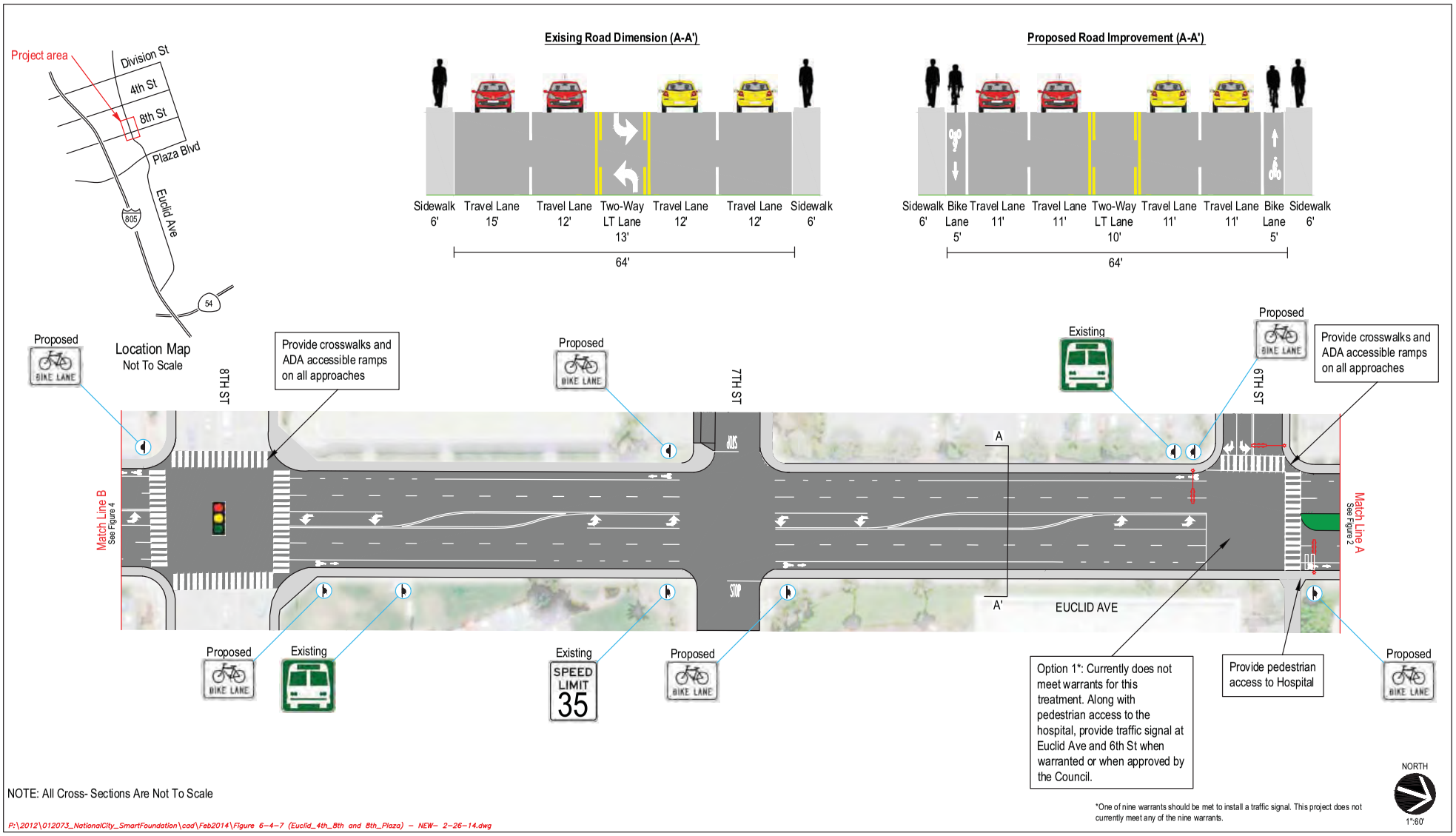
Figure 6-4
Euclid Ave: 4th St to 6th St



NOTE: All Cross- Sections Are Not To Scale

*One of nine warrants should be met to install a traffic signal. This project does not currently meet any of the nine warrants.

P:\2012\012073_NationalCity_SmartFoundation\cad\Feb2014\Figure 6-4-7 (Euclid_4th_8th and 8th_Plaza) - NEW- 2-26-14.dwg

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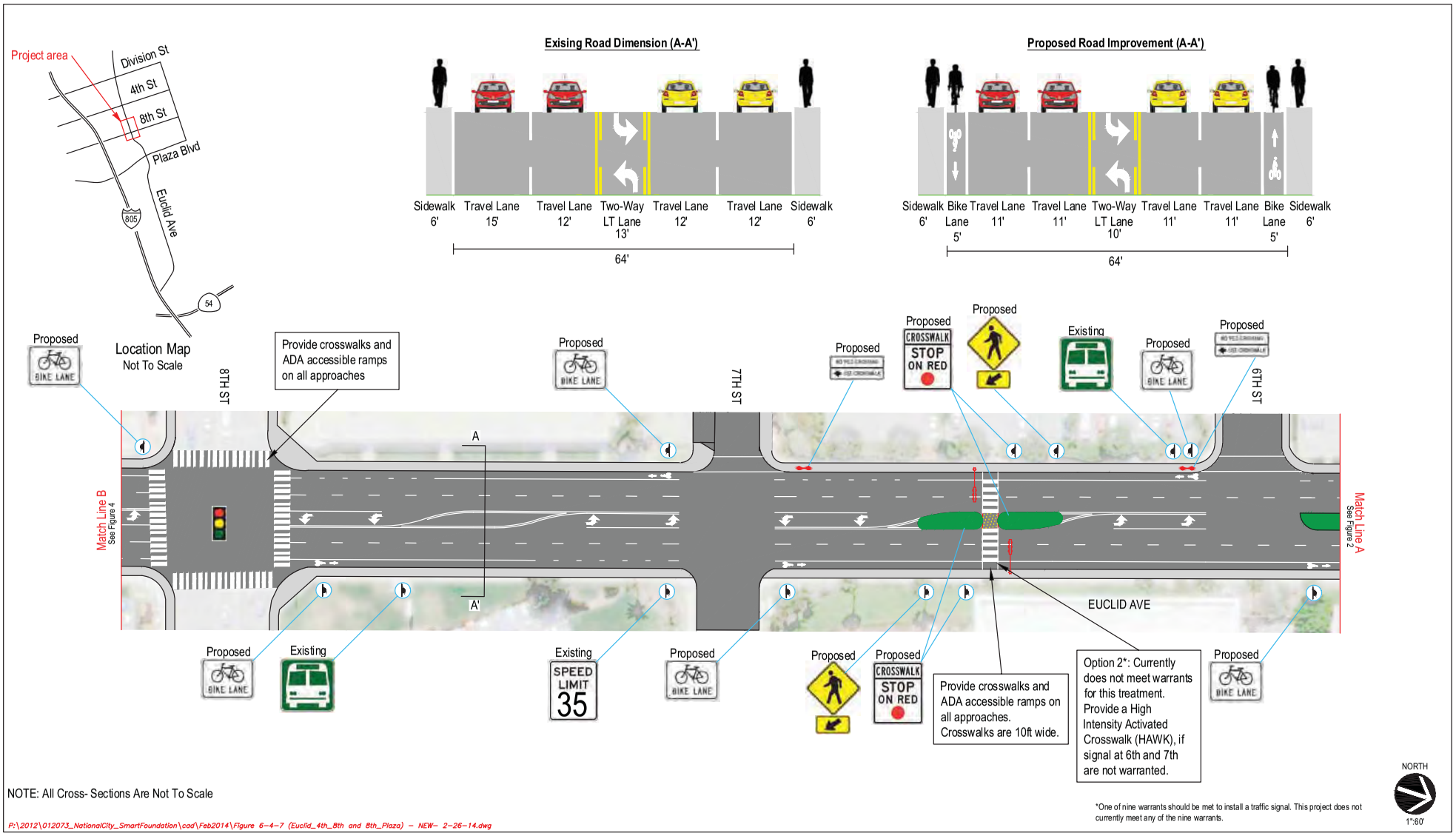
Figure 6-5a
Option 1: Traffic signal at Euclid Ave and 6th St
Euclid Ave: 6th St to 8th St



NOTE: All Cross- Sections Are Not To Scale

*One of nine warrants should be met to install a traffic signal. This project does not currently meet any of the nine warrants.

P:\2012\012073_NationalCity_SmartFoundation\cad\Feb2014\Figure 6-4-7 (Euclid_4th_8th and 8th_Plaza) - NEW- 2-26-14.dwg

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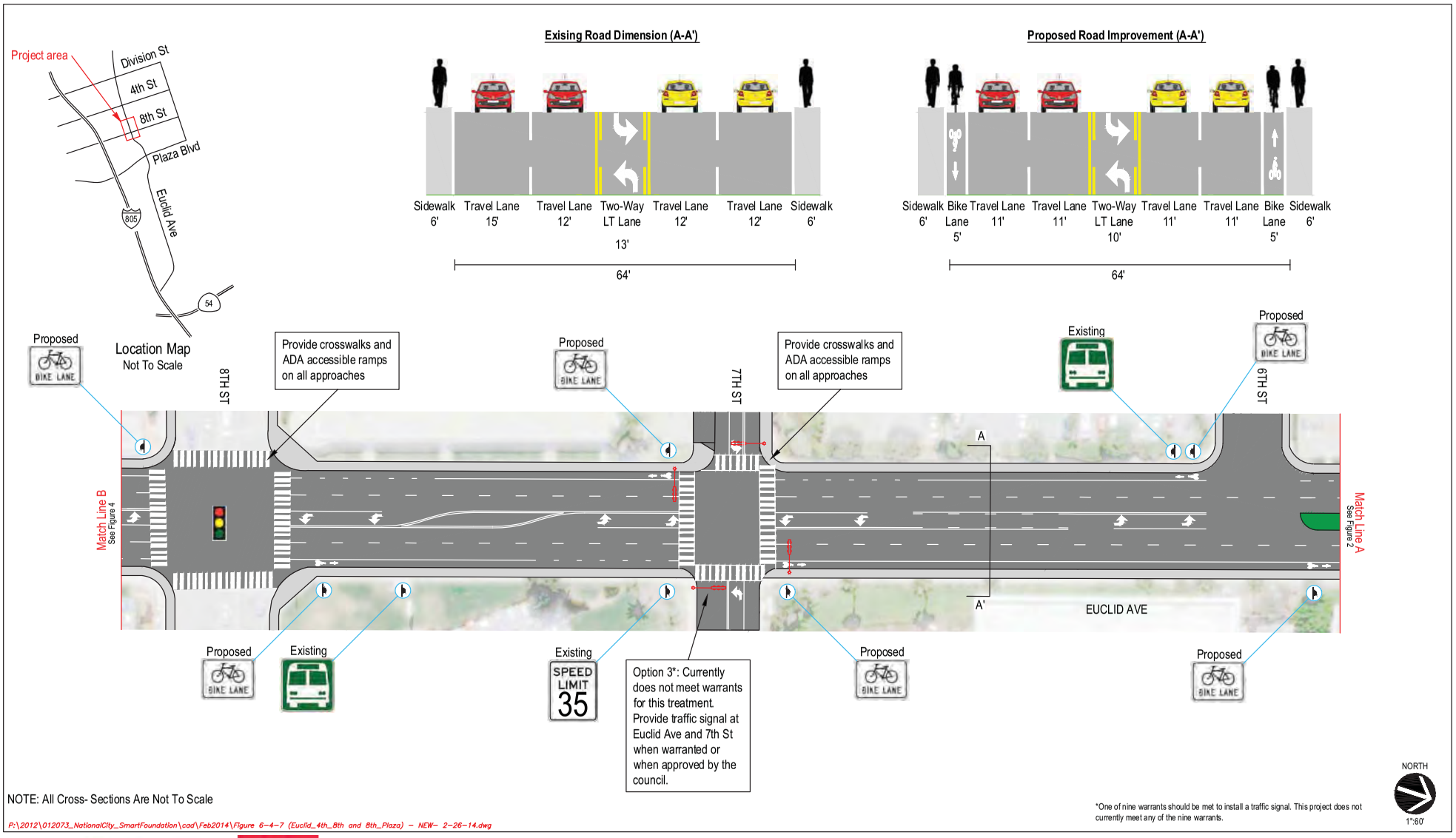
KTUA Planning + Landscape Architecture

Figure 6-5b
Option 2: HAWK on Euclid Ave
Euclid Ave: 6th St to 8th St



NOTE: All Cross- Sections Are Not To Scale

*One of nine warrants should be met to install a traffic signal. This project does not currently meet any of the nine warrants.

P:\2012\012073_NationalCity_SmartFoundation\cad\Feb2014\Figure 6-4-7 (Euclid_4th_8th and 8th_Plaza) - NEW- 2-26-14.dwg

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Figure 6-5c
Option 3: Traffic signal at Euclid Ave and 7th St
Euclid Ave: 6th St to 8th St

Euclid Avenue between 8th Street and Plaza Boulevard

Issues along this stretch of Euclid Ave was noted, and observed regarding pedestrians crossing Euclid Ave just south of 8th Street between the existing transit station south of the Windsor Heights Apartment driveway and Windmill Plaza Shopping Center. This was a concern from the public, especially transit users who frequent the bus stop and the shopping center. The City's Bicycle Master Plan recommends bike lanes through this corridor so they are included in the design. Not only do the bike lanes close a gap in the bicycle network, they also serve as traffic calming.

Pedestrian and vehicular counts were conducted between 8th Street and Plaza Blvd along with a bicycle and pedestrian collision analysis. These counts were meant to see if warrants could be met to install enhanced pedestrian crossings such as Rectangular Rapid Flashing Beacons (RRFB) or High-Intensity Activated Crosswalks (HAWK) or signalize an intersection. Based on the vehicular peak count count data and street geometry, three of nine warrants from the CA MUTCD were met for installation of a traffic signal. For pedestrian enhancements, high visibilty corsswalks are recommended.

Peak counts were conducted between 7:15-8:15am and 4:15-5:15pm on November 21, 2013 at Euclid Ave at 6th St and 7th St. Pedestrians totals are:

Euclid Ave and Windsor Heights Apartment Driveway: 49
Euclid Ave and Windmill Plaza Shopping Center: 19

Detailed count summaries can be found in Appendix B. Data collected includes:

- Pedestrian crossings data
- ROW, lane, sidewalk widths
- On-street parking
- Turning Movement Counts
- Segment Counts
- Other existing conditions (e.g. signs and utilities)

Two options were developed to provide a safe and enhanced crossing to the Windmill Plaza Shopping Center. Overall recommendations include:

- Provide bicycle lanes on both sides of the road
- Narrow travel lanes to 11 ft and narrow Two-way Left Turn Lane (TWLTL) to 10 ft
- Install traffic calming pavement markings and signs
- Provide high visibility crosswalks and ADA accessible ramps

The following describes each option.

Option 1: Traffic Signal at Windsor Heights Apartments driveway
- Relocate driveway and signalize new intersection

Option 2: Offset Intersection and Signal at Windsor Heights Apartments driveway
- Retain existing driveway location and signalize the intersection with off-set driveways

Table 6-9: Euclid Avenue between 8th Street and Plaza Blvd New Driveway Alignment Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-6a - Option 1: Relocate existing driveway and signalize intersection

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	A.C. Slurry Seal (Please see note below)	40000	$0.99	$39,600.00
X	Pavement Structure, Clearing, Grubbing (SF)	2500	$15.00	$37,500.00
X	Relocate Backflow Preventors, Irrigation System, Water Meter	1	$8,000.00	$8,000.00
509	Sidewalk Removal (SF)	325	$2.01	$653.25
X	Sidewalk (LF)	190	$150.00	$28,500.00
510	Pedestrian Ramp	6	$3,000.00	$18,000.00
			Subtotal:	$132,253.25
	Signing and Striping			
454	Install Stripe - Paint (LF)	4000	$1.00	$4,000.00
451	Install Pavement Legend - Paint (SF)	300	$4.00	$1,200.00
455	Install Stripe - Thermoplastic (LF)	600	$2.00	$1,200.00
404	Install Roadside Sign - One Post	3	$350.00	$1,050.00
			Subtotal:	$7,450.00
	Traffic Signal Modfication			
X	Install Traffic Signal	1	$200,000.00	$200,000.00
			Subtotal:	$200,000.00
		BASE LINE COST:		**$339,703.25**
		CONSTRUCTION COST		
		Contingency:	20%	$67,940.65
		Bonding / Mobilization / Contractor Internal Management:	7.5%	$25,477.74
		TOTAL CONSTRUCTION COST:		**$93,418.39**
		DESIGN / MANAGEMENT / PERMITTING / ENGINEERING		
		Engineering / Design:	10%	$33,970.33
		Environmental Clearance:	4%	$13,588.13
		Permitting:	2%	$6,794.07
		Bid Support Services:	5%	$16,985.16
		Project Management:	5%	$16,985.16
		Traffic Management Services:	3%	$10,191.10
		TOTAL SOFT COST:		**$98,513.94**
		TOTAL COST:		**$531,635.59**

Note: Slurry Seal is a pavement preservation method consisting of an asphalt emulsion, sand and rock which is applied to the street surface at an average thickness of ¼ inch. This cost effective maintenance treatment extends the life of streets already in good condition. This is not required, but is recommended for aesthetic purposes.

Table 6-10: Euclid Avenue between 8th Street and Plaza Blvd Intersection Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-6b - Option 2: Retain existing driveway and signalize intersection and signalize intersection

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	A.C. Slurry Seal	40000	$0.99	$39,600.00
510	Pedestrian Ramp	3	$3,000.00	$9,000.00
			Subtotal:	$39,600.00
	Signing and Striping			
454	Install Stripe - Paint (LF)	4000	$1.00	$4,000.00
452	Install Pavement Legend - Thermoplastic (SF)	300	$6.00	$1,800.00
455	Install Stripe - Thermoplastic (LF)	300	$2.00	$600.00
404	Install Roadside Sign - One Post	3	$350.00	$1,050.00
			Subtotal:	$7,450.00
	Traffic Signal Modfication			
X	Install Traffic Signal	1	$200,000.00	$200,000.00
			Subtotal:	$200,000.00
		BASE LINE COST:		**$247,050.00**
		CONSTRUCTION COST		
		Contingency:	20%	$49,410.00
		Bonding / Mobilization / Contractor Internal Management:	7.5%	$18,528.75
		TOTAL CONSTRUCTION COST:		**$67,938.75**
		DESIGN / MANAGEMENT / PERMITTING / ENGINEERING		
		Engineering / Design:	10%	$24,705.00
		Permitting:	2%	$4,941.00
		Bid Support Services:	5%	$12,352.50
		Project Management:	5%	$12,352.50
		Traffic Management Services:	3%	$7,411.50
		TOTAL SOFT COST:		**$61,762.50**
		TOTAL COST:		**$376,751.25**

Note: Slurry Seal is a pavement preservation method consisting of an asphalt emulsion, sand and rock which is applied to the street surface at an average thickness of ¼ inch. This cost effective maintenance treatment extends the life of streets already in good condition. This is not required, but is recommended for aesthetic purposes.

Table 6-11: Euclid Avenue between 8th Street and Plaza Blvd

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-7 - 8th St to Plaza Blvd

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	A.C. Slurry Seal (Please see note below)	40000	$0.99	$39,600.00
509	Sidewalk Removal (SF)	350	$2.01	$653.25
	Pavement Structure, Clearing, Grubbing (SF)	2500	$15.00	$37,500.00
	Relocate Backflow Preventors, Irrigation System, Water Meter	1	$8,000.00	$8,000.00
510	Pedestrian Ramp	2	$3,000.00	$6,000.00
			Subtotal:	$91,753.25
	Signing and Striping			
454	Install Stripe - Paint (LF)	4000	$1.00	$4,000.00
451	Install Pavement Legend - Paint (SF)	300	$4.00	$1,200.00
404	Install Roadside Sign - One Post	4	$350.00	$1,400.00
			Subtotal:	$6,600.00
			BASE LINE COST:	**$98,353.25**
			CONSTRUCTION COST	
			Contingency: 20%	$19,670.65
			Bonding / Mobilization / Contractor Internal Management: 7.5%	$7,376.49
			TOTAL CONSTRUCTION COST:	**$27,047.14**
			DESIGN / MANAGEMENT / PERMITTING / ENGINEERING	
			Engineering / Design: 10%	$9,835.33
			Environmental Clearance: 4%	$3,934.13
			Permitting: 2%	$1,967.07
			Bid Support Services: 5%	$4,917.66
			Project Management: 5%	$4,917.66
			Traffic Management Services: 6%	$5,901.20
			TOTAL SOFT COST:	**$31,473.04**
			TOTAL COST:	**$156,873.43**

Note: Slurry Seal is a pavement preservation method consisting of an asphalt emulsion, sand and rock which is applied to the street surface at an average thickness of ¼ inch. This cost effective maintenance treatment extends the life of streets already in good condition. This is not required, but is recommended for aesthetic purposes.

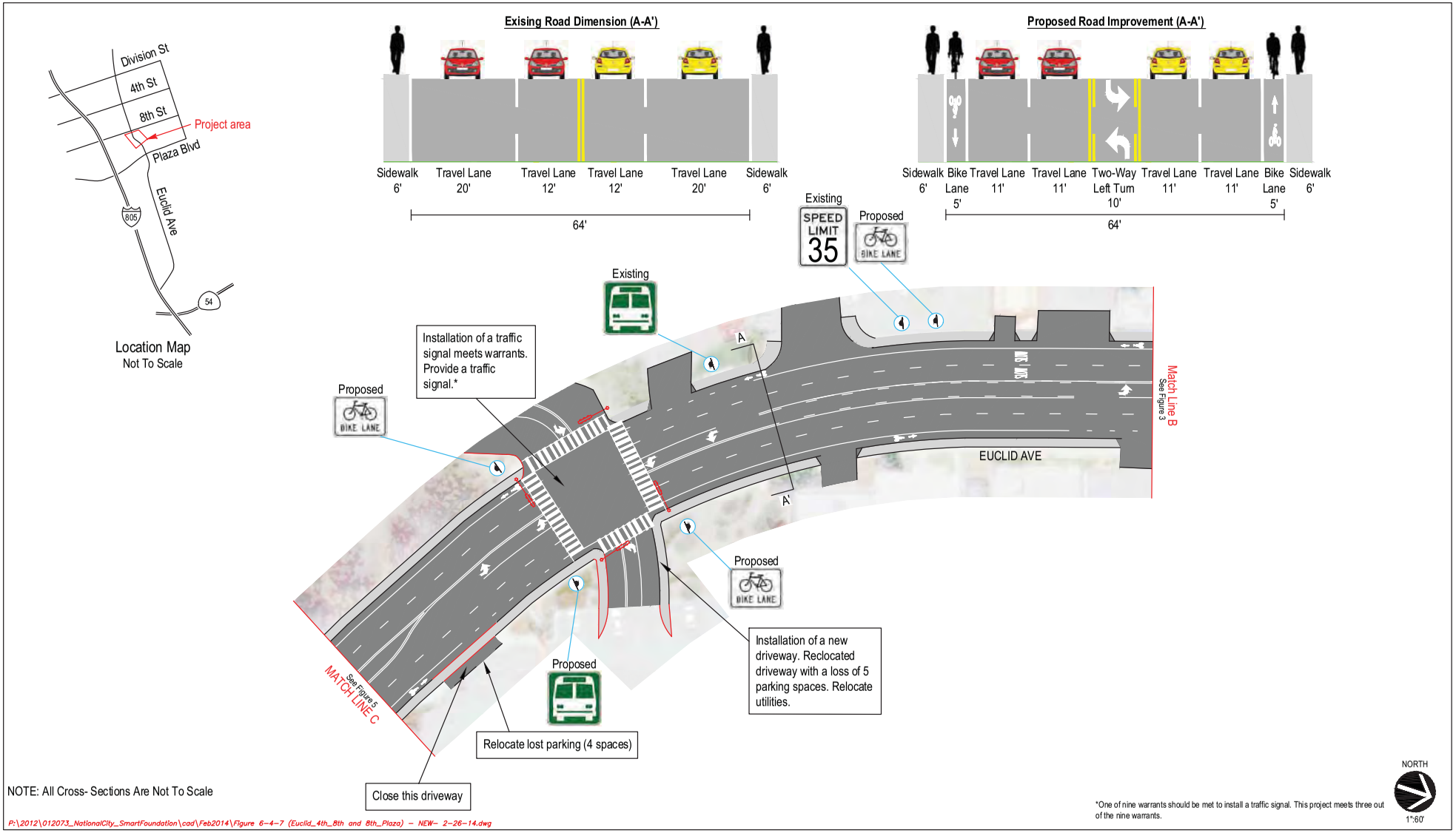

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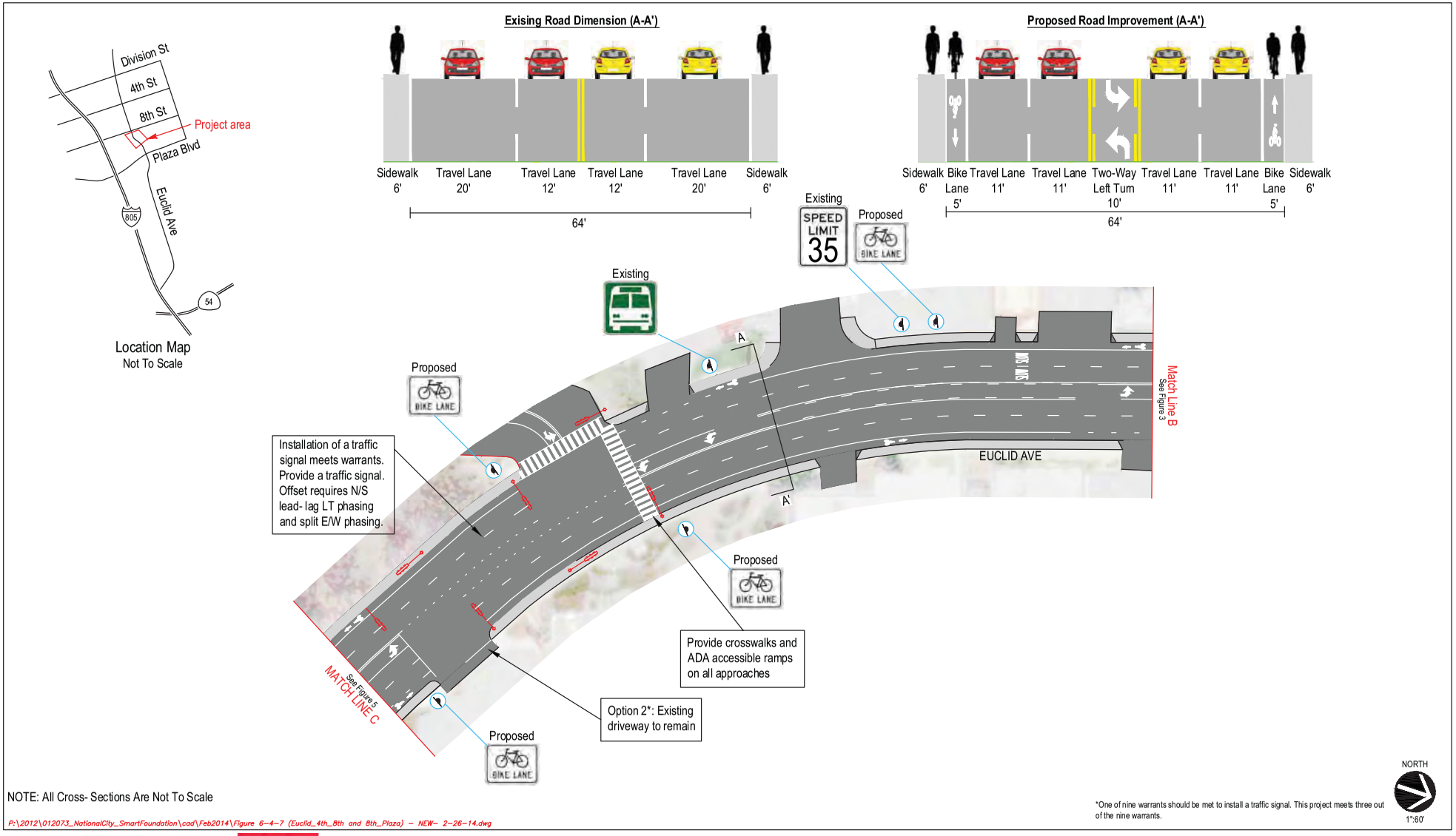
Figure 6-6a
Option 1: Relocate driveway and signalize new intersection
Euclid Ave: 8th St to Plaza Blvd



NOTE: All Cross- Sections Are Not To Scale

*One of nine warrants should be met to install a traffic signal. This project meets three out of the nine warrants.

P:\2012\012073_NationalCity_SmartFoundation\cad\Feb2014\Figure 6-4-7 (Euclid_4th_8th and 8th_Plaza) - NEW- 2-26-14.dwg

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Figure 6-6b

Option 2: Retain existing driveway location and signalize intersection

Euclid Ave: 8th St to Plaza Blvd

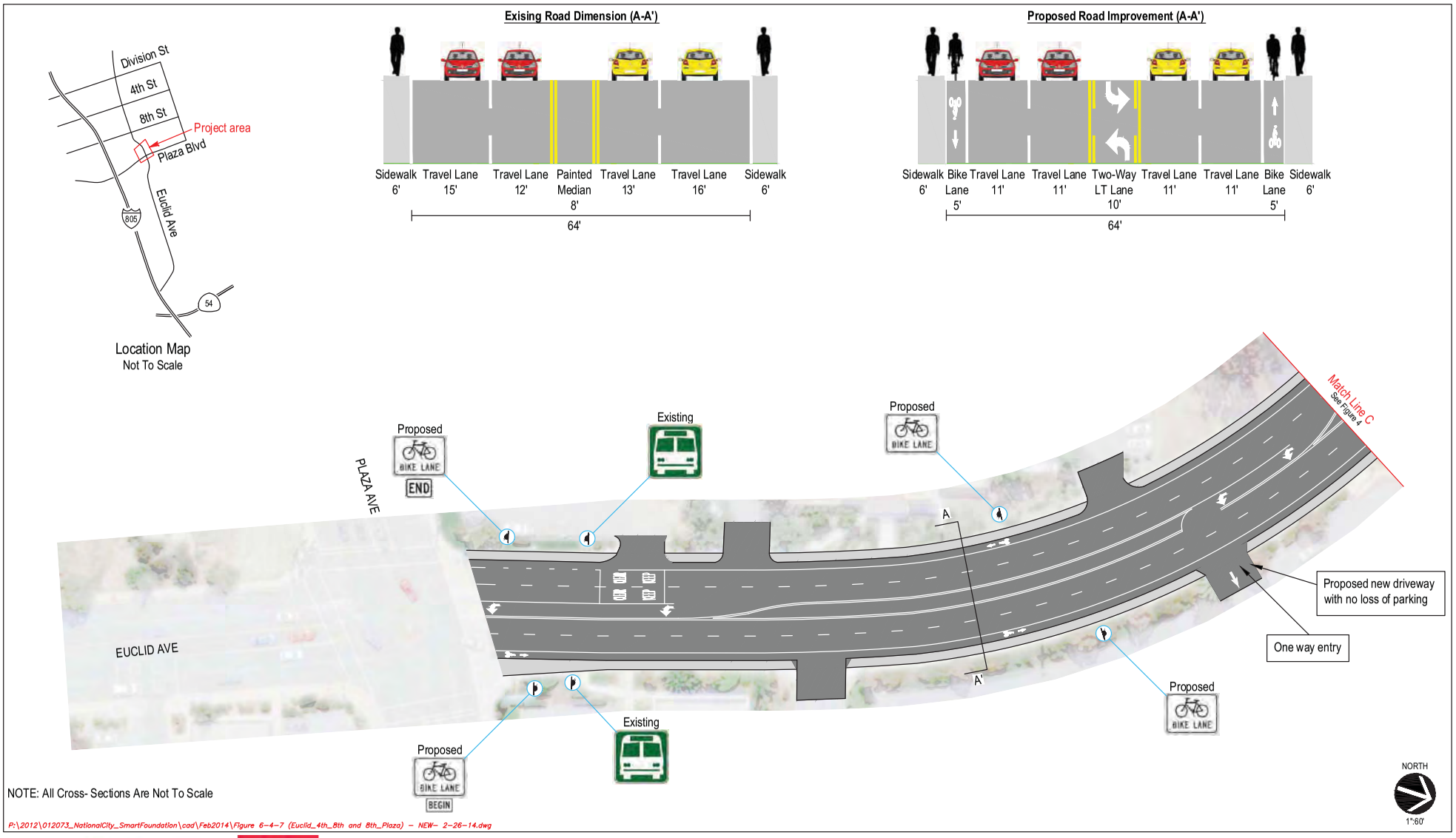


Figure 6-7
Euclid Ave: 8th St to Plaza Blvd

Division Street between Palm Avenue and Euclid Avenue

Division Street is an east-west corridor on the City's northernmost boundary. It begins and terminates at the City of San Diego and crosses beneath I-805. The project length is one mile between Palm Avenue and Euclid Avenue. Division Street is a four lane divided road with a center turn lane and a mix of commercial, school and residential land use. Two Elementary schools, El Toyon and Rancho De La Nacion are within this project's boundary. Input from the public workshop, El Toyon neighborhood meeting and walk audits, brought forth the need to provide traffic calming on Division Street for the elementary schools and its residents.

Traffic volume was referenced from the City's General Plan Circulation Element Technical Report which conducted an analysis of future traffic volumes throughout the City. According to this report, Division Street between Palm Ave nue and Euclid Avenue has projected average daily traffic volumes around 16,400. Additionally, traffic counts were conducted in 2011 along this segment where volumes averaged 17,369.

Based on future and existing traffic volume projections, Division Street is a candidate for a road diet and could be reduced from four lanes, to three lanes. Two lanes would remain for westbound traffic and one lane for eastbound traffic based on the directional traffic volumes from the 2011 traffic counts. The center-turn-lane and on-street parking would remain and buffered bike lanes installed. These bike lanes would now add a bicycle connection between the proposed El Toyon-Las Palmas Bicycle Corridor and the proposed bike lanes on Euclid Avenue. Added benefits include:

- Reducing the crossing distance on Division Street at the El Toyon-Las Palmas Bicycle Corridor
- Reduced vehicular speeds

The following figures show a road diet design from four lanes to three lanes and a cost estimate. This project should be coordinated with efforts of the El Toyon-Las Palmas Bicycle Corridor for the enhanced crossing on Division Street.

Recommendations include:

- Provide bicycle lanes on both sides of the road with 2 ft buffers between bike lane and parking lane
- Narrow travel lanes to 11 ft and narrow Two-way Left Turn Lane (TWLTL) to 11 ft. One section, lanes are reduced to 10 feet.
- Provide high visibility crosswalks and ADA accessible ramps
- Offset crosswalk, median refuge and enhanced pedestrian crossing west of Rancho De La Nacion Elementary

This improvement already has a precedent within the City on Fourth Street at El Toyon Park with an enhanced pedestrian crossing and median refuge.

Table 6-12: Division Street Road Diet Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Division Street Road Diet

ITEM NO.	DESCRIPTION	QUANTITY **	UNIT COST	ITEM COST
	Civil Improvement			
528	Median - Stamped Concrete (SF)	587	$13.20	$7,748.40
511	Pedestrian Ramp	4	$3,000.00	$12,000.00
X	Bulb-outs	1	$20,000.00	$20,000.00
			Subtotal:	$39,748.40
	Signing and Striping			
454	Install Stripe - Paint (LF)	18,727	$1.00	$18,727.00
452	Install Pavement Legend - Thermoplastic (EA)	42	$125.00	$5,250.00
X	Install High Visibility Crosswalk (EA)	4	$2,540.00	$10,160.00
404	Install Roadside Sign - One Post	17	$350.00	$5,950.00
X	High Intensity Activated Crosswalk (Please see note below)	1	$100,000.00	$100,000.00
			Subtotal:	$140,087.00
		BASE LINE COST:		**$179,835.40**
		CONSTRUCTION COST		
		Contingency:	20%	$35,967.08
		Bonding / Mobilization / Contractor Internal Management:	7.5%	$13,487.66
		TOTAL CONSTRUCTION COST:		**$49,454.74**
		DESIGN / MANAGEMENT / PERMITTING / ENGINEERING		
		Engineering / Design:	10%	$17,983.54
		Environmental Clearance:	4%	$7,193.42
		Permitting:	2%	$3,596.71
		Bid Support Services:	3%	$5,395.06
		Project Management:	3%	$5,395.06
		Traffic Management Services:	3%	$5,395.06
		TOTAL SOFT COST:		**$44,958.85**
		TOTAL COST:		**$274,248.99**

Note: Cost includes signs and pavement markings

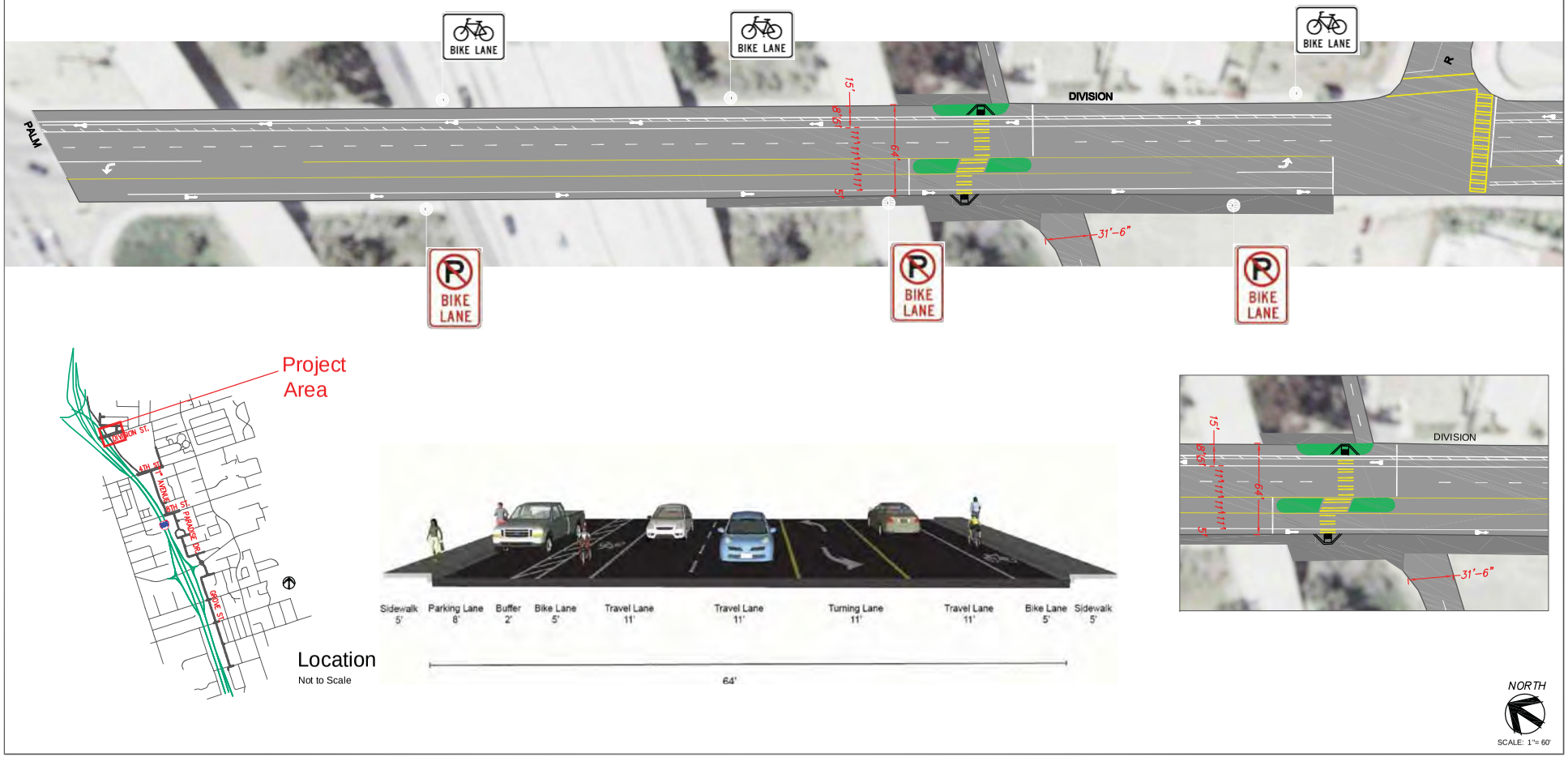


Figure 6 - 8a

Division Street Road Diet

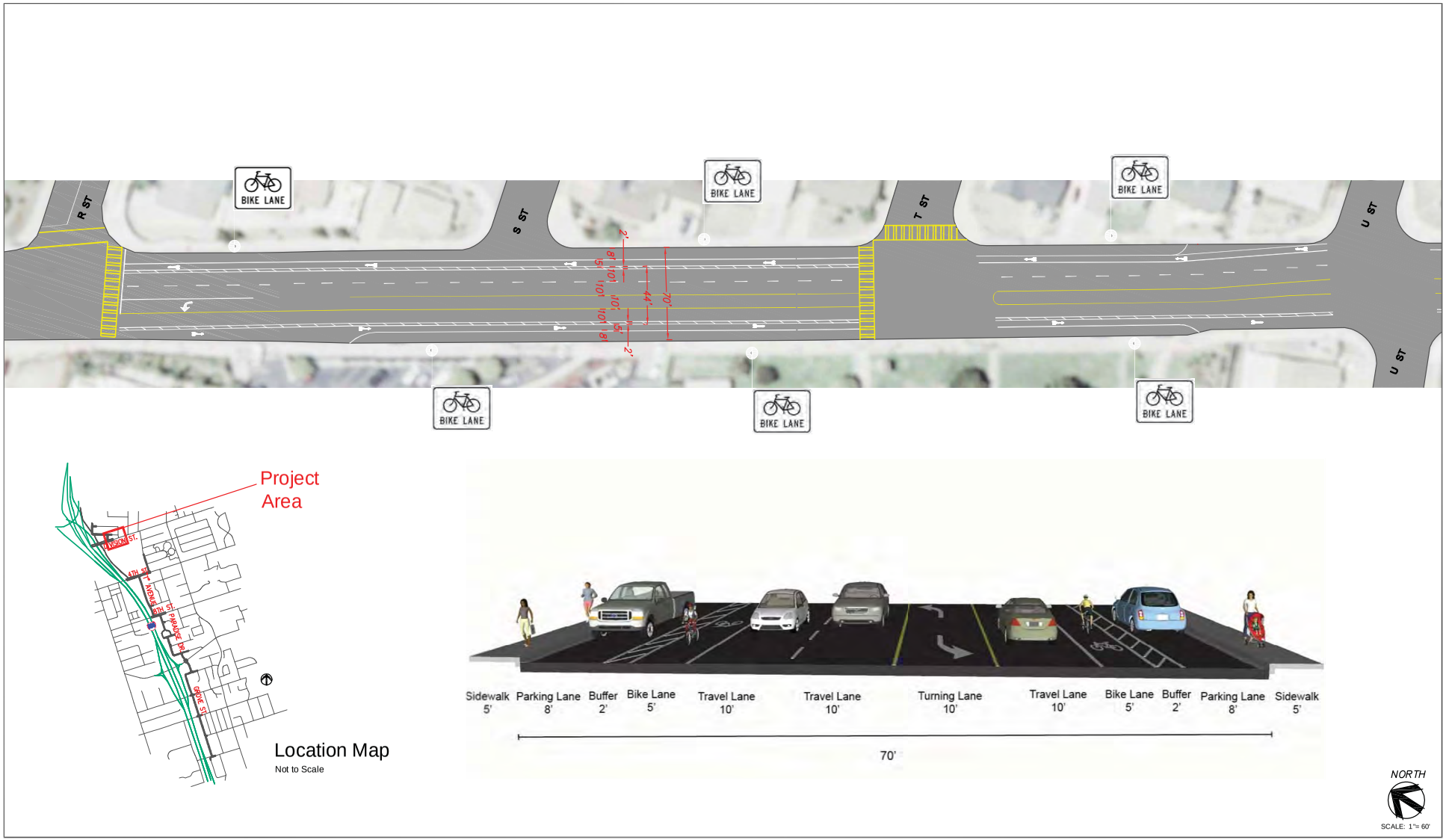
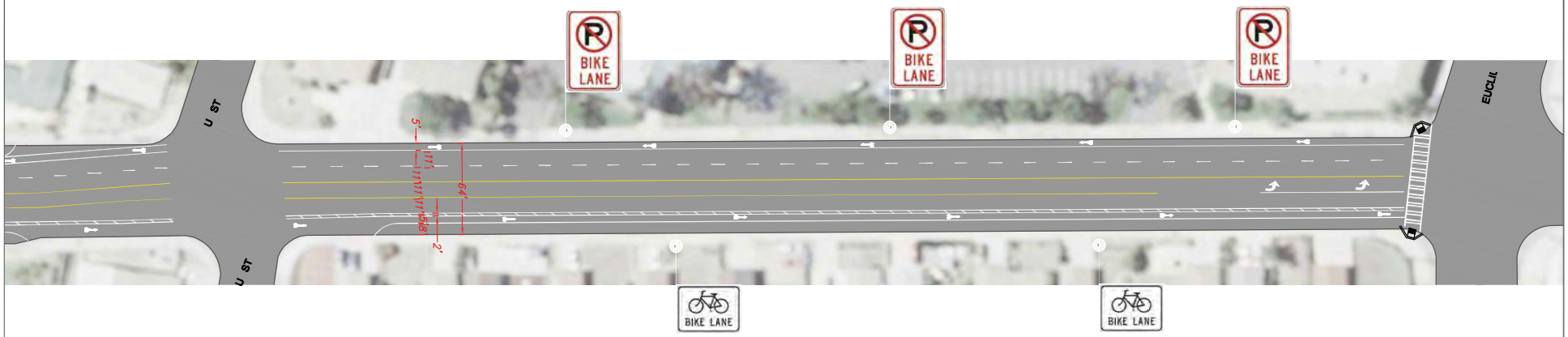


Figure 6 - 8b

Division Street Road Diet


BIKE LANE
BIKE LANE
BIKE LANE
U ST
EUCLID
5'
11'
11'
11

El Toyon-Las Palmas Bicycle Corridor

The El Toyon-Las Palmas Bicycle Corridor Project is one of several projects recommended for the National City SMART Foundation's study to improve the pedestrian and bicycling environment in National City. This corridor project is outcome of previous efforts to improve walkability and bikeability in the El Toyon and Las Palmas neighborhoods. The proposed project runs along the east side of the I-805 corridor from Beta Street at its northern terminus to the 22nd Street pedestrian bridge to Las Palmas Park at its southern terminus. This project builds upon a recommendation of the 2011 Bicycle Master Plan to enhance the current Class I facility starting at Beta Street and extend it southward to East 12th Street. Additionally, it links four elementary schools, and therefore constitutes an important Safe Routes to Schools connection. These four elementary schools include El Toyon, Rancho De La Nacion, Palmer Way and Las Palmas. Though the aforementioned Class I project has since been deemed infeasible, the SMART Foundation still wanted to provide pedestrian and bicycle enhancements along the corridor.

The El Toyon-Las Palmas Bicycle Corridor could be considered a Bicycle Boulevard: a low-stress, preferred route for cyclists (and pedestrians) and especially for children. Bicycle Boulevards are typically sited on neighborhood streets with low vehicular volumes and speeds; physical separation from vehicular traffic is preferred, where possible. If a candidate street experiences higher than desired speeds and volumes, traffic calming and volume reduction strategies may be employed. Bicycle Boulevards are often not the most direct route, but, through a combination of low-stress conditions and wayfinding signage, advisory signage, landscaping and public art, come to be known as "preferred routes."

The multi-use path portion of the corridor, between Beta Street and Division Street provides an ideal bicycle and pedestrian connection, particularly for school-age children. Improvements for this section include resurfacing the path, removing excess vegetation and installing lighting. The on-street portion of the corridor has relatively low volume and low speed and requires minimal volume and speed reduction measures. Enhancements include Shared Lane Markings or "sharrows," signage highlighting the corridor as a Bicycle Boulevard and traffic calming such as bulb-outs. While the corridor itself is relatively "quiet," it crosses several higher volume and higher speed streets. To address the challenges presented by these crossings, a mixture of enhanced crossings (including bulb-outs, median refuges, high visibility crosswalks and signage), green bicycle boxes, a two-way cycle track and bicycle/pedestrian actuated signals are proposed.

Wayfinding is recommended to provide route and directional information and distance to points of interest along the entire length of the corridor. Sample street murals that include the mascots of adjacent schools have been designed to provide ideas for the City and the Arts Center to collaborate and implement. Murals are recommended to help brand the route, reinforce community identity and offer possible benefits of traffic calming and neighborhood ownership.

Other amenities such as lighting, street trees and paving accents can highlight this corridor and other corridors throughout the City. The bicycle, pedestrian and artistic concepts of this bicycle corridor can be emulated for other corridors to highlight safe routes to schools, parks and transit. Following the design concepts of this corridor, sample lighting features, street furnishings and school pavement accents and banners were created to begin the artistic process of highlighting this corridor. This particular project can serve as a blueprint for other ideas and future projects throughout the City.

Additional details maps including wayfinding for this corridor can be found in Appendix B.

Table 6-13: El Toyon-Las Palmas Bicycle Corridor Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
El Toyon-Las Palmas Bicycle Corridor

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	Pavement Structure, Clearing, and Grubbing (SF)	30000	$15.00	$450,000.00
528	Median - Stamped Concrete (SF)	2200	$13.20	$29,040.00
511	Pedestrian Ramp	31	$3,000.00	$93,000.00
X	Bulb-outs	9	$20,000.00	$180,000.00
X	Relocate Drain Inlet	1	$15,000.00	$15,000.00
			Subtotal:	$767,040.00
	Signing and Striping			
454	Install Stripe - Paint (LF)	2500	$1.00	$2,500.00
452	Install Pavement Legend - Thermoplastic (EA)	82	$125.00	$10,250.00
X	Install High Visibility Crosswalk (EA)	11	$2,540.00	$27,940.00
404	Install Roadside Sign - One Post	70	$350.00	$24,500.00
X	High Intensity Activated Crosswalk (Please see note below)	3	$100,000.00	$300,000.00
X	Traffic Signal Modification	1	$125,000.00	$125,000.00
			Subtotal:	$490,190.00
		BASE LINE COST:		**$1,257,230.00**
		CONSTRUCTION COST		
		Contingency:	20%	$251,446.00
		Bonding / Mobilization / Contractor Internal Management:	7.5%	$94,292.25
		TOTAL CONSTRUCTION COST:		**$345,738.25**
		DESIGN / MANAGEMENT / PERMITTING / ENGINEERING		
		Engineering / Design:	10%	$125,723.00
		Environmental Clearance:	4%	$50,289.20
		Permitting:	2%	$25,144.60
		Bid Support Services:	3%	$37,716.90
		Project Management:	3%	$37,716.90
		Traffic Management Services:	3%	$37,716.90
		TOTAL SOFT COST:		**$314,307.50**
		TOTAL COST:		**$1,917,275.75**

Note: Cost includes signs and pavement markings

Location Map
Not to Scale

Multi-use Path
10'

NORTH
SCALE: 1"= 150'

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Figure 6 - 9a

Bicycle Corridor: Beta Street and Division Street

Location Map

Not to Scale

Multi-use Path
12'

NORTH

SCALE: 1"= 150'

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Figure 6 - 9b

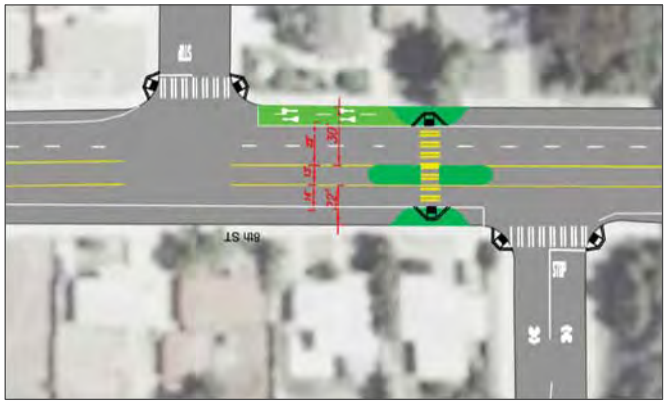
Bicycle Corridor: Division Street to 4th Street

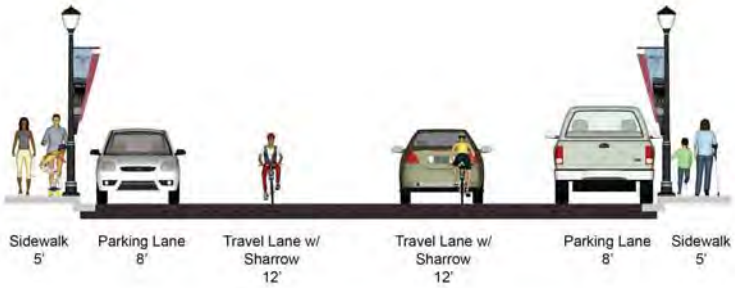
Location Map

Not to Scale

See: Detail 1

Detail 1





NORTH

SCALE: 1"= 150'

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Figure 6 - 9c

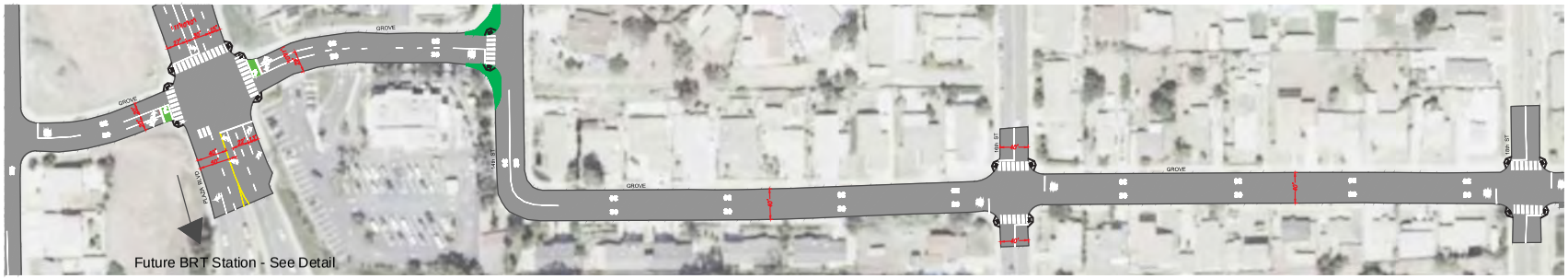
Bicycle Corridor: 4th Street and 8th Street

Project Area

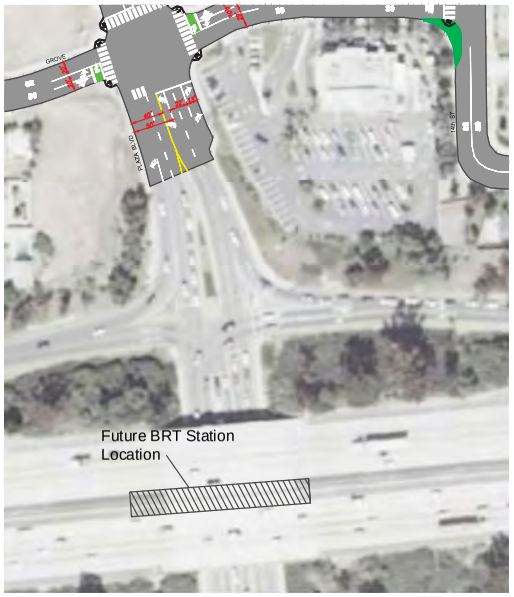
Location Map

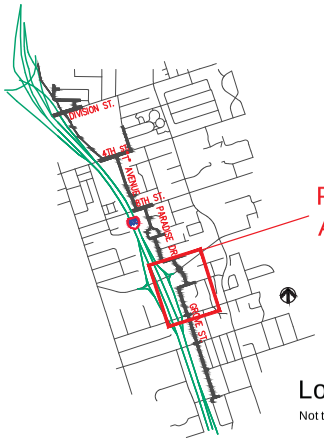
Not to Scale

PARADISE DR
8th ST
11th ST
40'
12'
12'
12'
40'
12'
12'
12



Detail - Future BRT Station Location

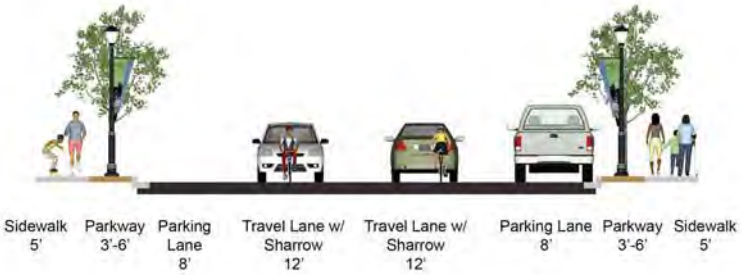




Project Area

Location Map

Not to Scale



NORTH

SCALE: 1"= 150'

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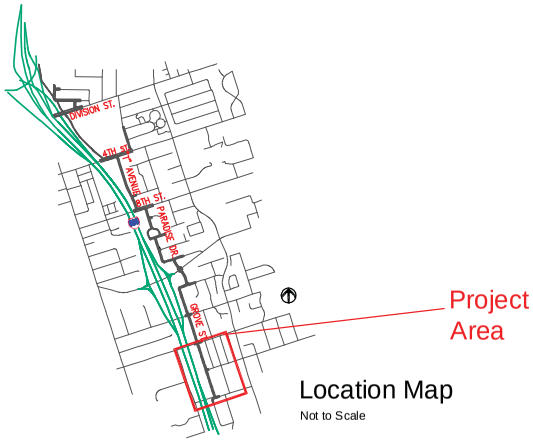
LINSCOTT LAW & GREENSPAN engineers

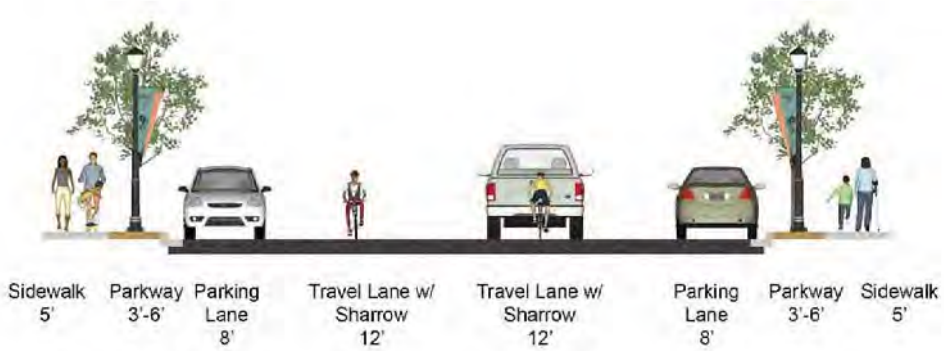
Figure 6 - 9e

Bicycle Corridor: Grove Street and 18th Street



Location Map

Not to Scale



NORTH

SCALE: 1"= 150'

Figure 6 - 9f

Bicycle Corridor: 18th Street and 22nd Street

Primary Light Features

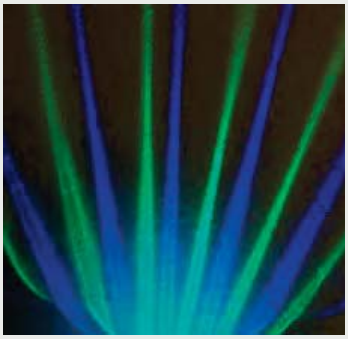
Double "acorn" lights are in medians to provide more visibility

Single "acorn" lights are designed to a pedestrian scale and are used in sidewalks to enhance visibility

National City Double and Single Light Pole

- These light standards are used currently in the City of National City
- The lights will have a cap on the top to direct light towards the street demonstrating a more intimate and safe setting.
- The lamp incorporates LED lighting for energy efficiency and better coloring on the light spectrum

Accent Lighting Features



Cafe Lighting

- Cafe lighting can be strung between light poles along a sidewalk to create additional ambient light

Spotlighting

- A collar lighting directed into the palms are durable and enhance visibility with amient light.
- Bullet lighting can be either LED or halogen lighting and increase light in the pedestrian zone.

Projectors

- Creates color and mural opportunities on walls while increasing visibility

Bollards

- LED lit bollards can physically and visually protect the pedestrian zone

Paving Accents

Thermoplastic process allows brighter, more durable logos

Paint fades over time but is inexpensive and allows for changing designs

Sandblasting is permanent although color in design may fade depending on what the sandblasted part is filled with

Safe Routes to Schools: Branding and Logos

- Sandblasting can be used to permanently place logos into existing sidewalks. The process can be done by children and residents and the Art Center.
- Permanent paint can be used to create pathways. Paint would need to be refreshed as it wears.
- Thermoplastic process is more costly but has much longer life and color compared to apint.

Street Trees and Plants

Medjool Date Palm
Phoenix dactylifera var. medjool can reach heights of up to 40 feet when mature. The open and majestic canopy provide shade without blocking signs for businesses.

Queen Palm
Syagrus romanzoffiana can grow to maximum height of about 50 feet. This palm has a smooth straight grey trunk and lacy dark green fronds

Brisbane box
Tristania conferta is a very durable in coastal conditions. The canopy grows upright until maturity then the crown broadens to 60 feet.

Tree Grates
Tree grates are in a radiant layout and will be utilized in a square shape. These tree grates are also ADA compliant.

Swans neck agave
(Agave attenuata)
This Agave is spineless, drought tolerant, and produces a dramatic flower.

Kangaroo paw
(Anigozanthos manglesii)
This plant exhibits shoots of red that extend up from the plant, giving it an airy colorful display.

Treasure flower
(Gazania spp.)
Gazania's are a drought tolerant ground cover that does well in coastal conditions .

Torch lily *(Kniphofia uvaria)*
The torch lily is drought tolerant and displays vibrant two-tone flower clusters.

Street Furnishings

Dumor® Bench & Receptacle
Receptacles and Benches are coated with zinc epoxy then finished with polyester powder coating allowing maximum resilience to weathering.

CLEAN Receptacles
CLEAN (Collection Logistics Efficiency And Notification) technology tracks all self-compaction and collection activity at each solar powered compactor.

Maglin® Bikeloop

- Durable metal with a rust free powdercoat finish
- Easy bike system that can be incorporated in groups or just individually.
- Install bike racks designed and built by the Arts Center

The Urban Environment:
Strengthening Communities and Safety Through Art

Many of today's issues in our neighborhood streets revolve around the lack of comfort, "sense of place", pride and safety. These issues can be minimize and many times solved through the use of art in unique and fun ways. Intersection murals, painted/stenciled/sandblasted sidewalks, street signage and lighting can all improve our streets as well as inject the community with new fun energy, increased safety and comfort. Above all, these techniques help community members gain a sense of ownership and pride that inevitably results in long lasting results.

In National City, the El Toyon-Las Palmas Bicycle Corridor has been identified as an excellent location in the city where the above discussed techniques can be used to improve the street environment.

The following images are examples of using art and unique wayfinding signage in our neighborhood streets:

Example Intersection Murals (Portland, OR)

Unique Wayfinding

WSISIGN Systems, LTD

WSISIGN Systems, LTD

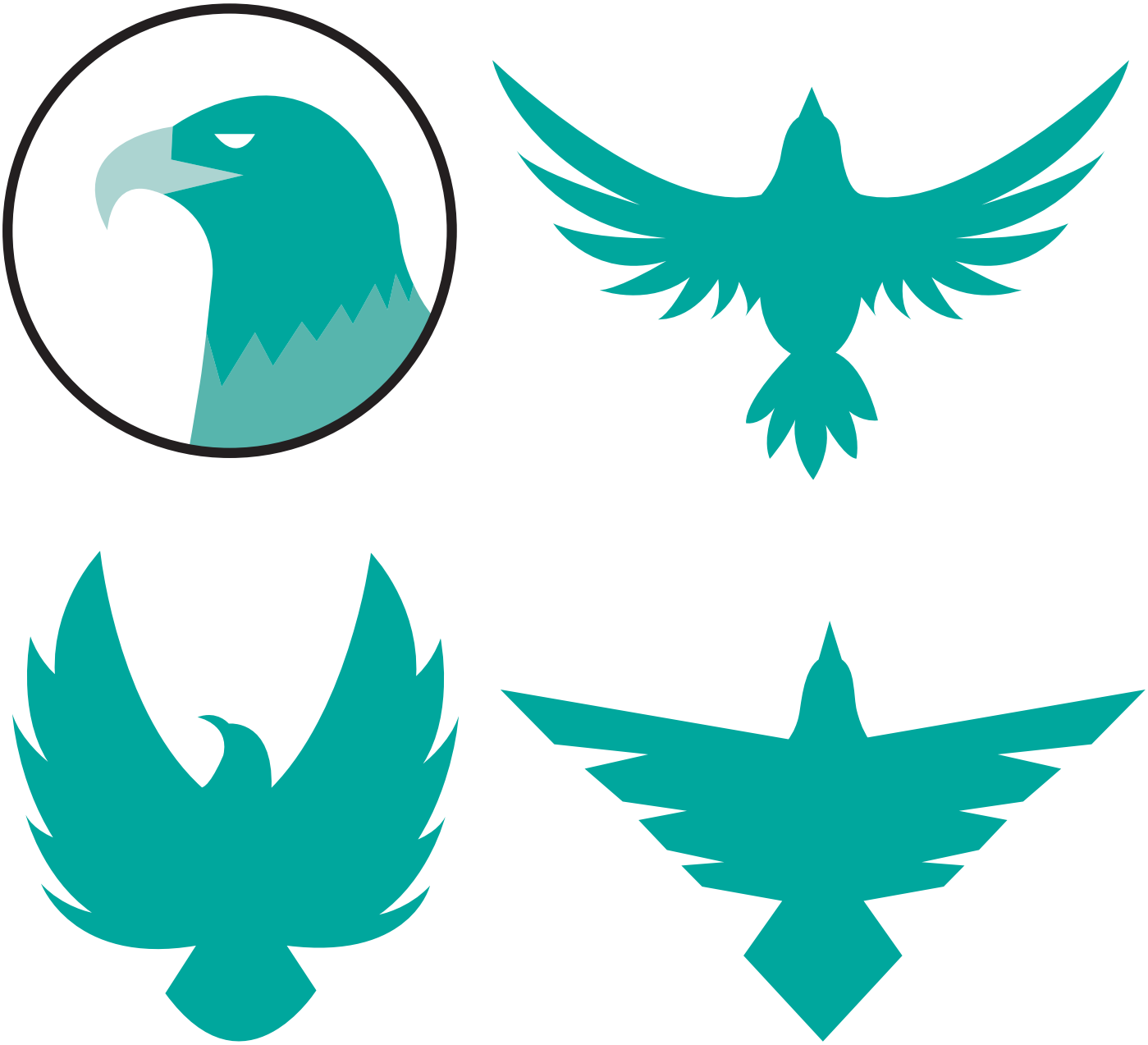
Neighborhood greenway (Seattle, WA)

El Toyon-Las Palmas Bicycle Corridor: Neighborhood Intersection Murals

Neighborhood intersections with low traffic speed and congestion can be excellent candidates for intersection murals. These images represent the mascots of the elementary schools that are within the proposed bicycle corridor. Each would be created at an appropriate intersection where the El Toyon/Rancho De La Nacion and Palmer Way school boundaries and the Palmer Way and Las Palmas school boundaries meet.

El Toyon-Las Palmas Bicycle Corridor: El Toyon Elementary School

El Toyon Eagles



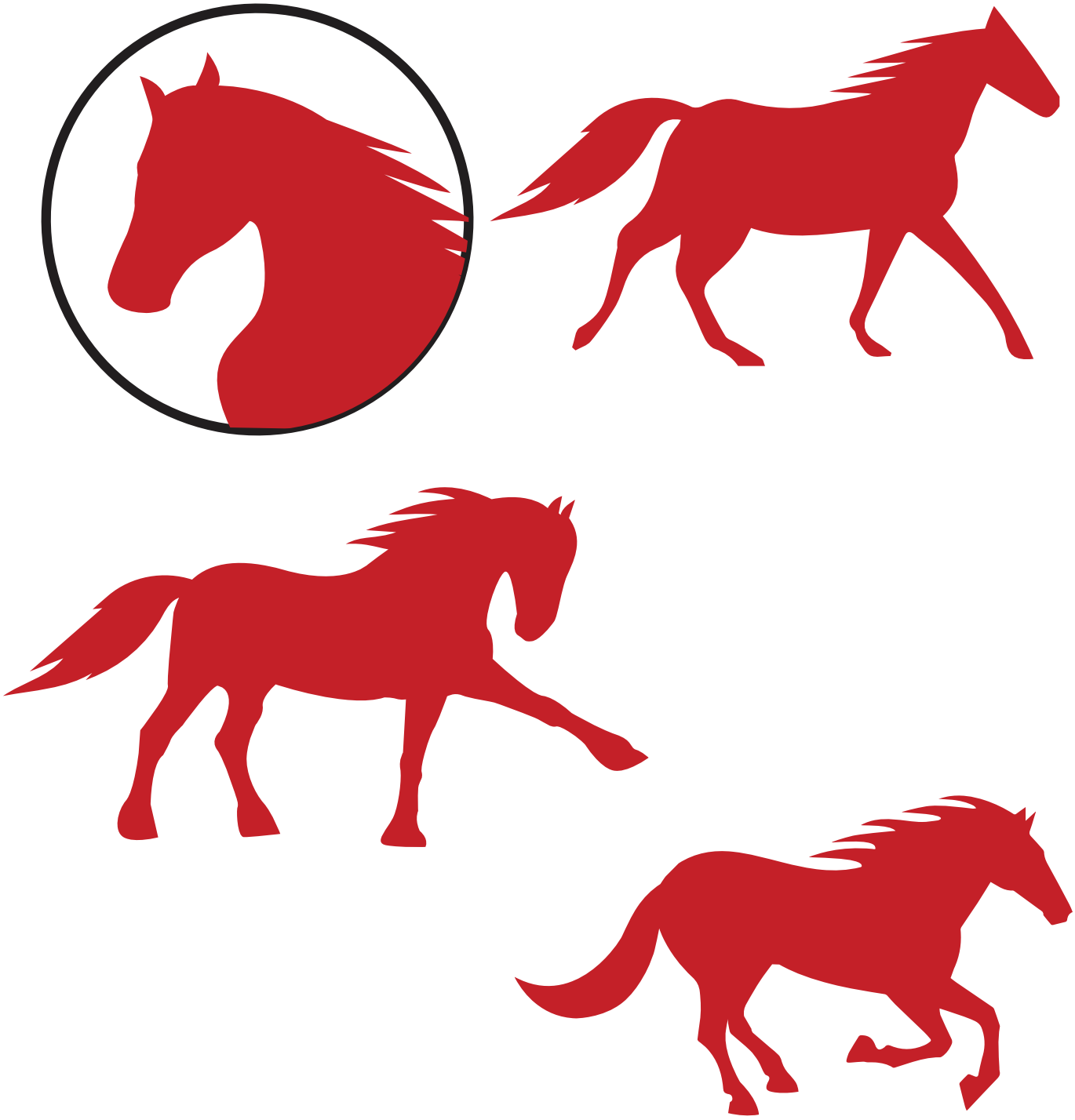
The El Toyon Elementary School boundary is located at the northern end of the proposed bicycle corridor. The school's mascot is the "Eagle" and it is represented in four different fun and exciting ways. These eagles will not only energize the community members but also serve as excellent way-finding tools along the northern end of the corridor.

El Toyon-Las Palmas Bicycle Corridor: El Toyon Elementary School

This section of the bicycle corridor will also feature decorative banners that can be coordinated to include a variety of images. In the example above, El Toyon School is depicted as well as their mascot the Eagle.

El Toyon-Las Palmas Bicycle Corridor: Las Palmas Elementary School

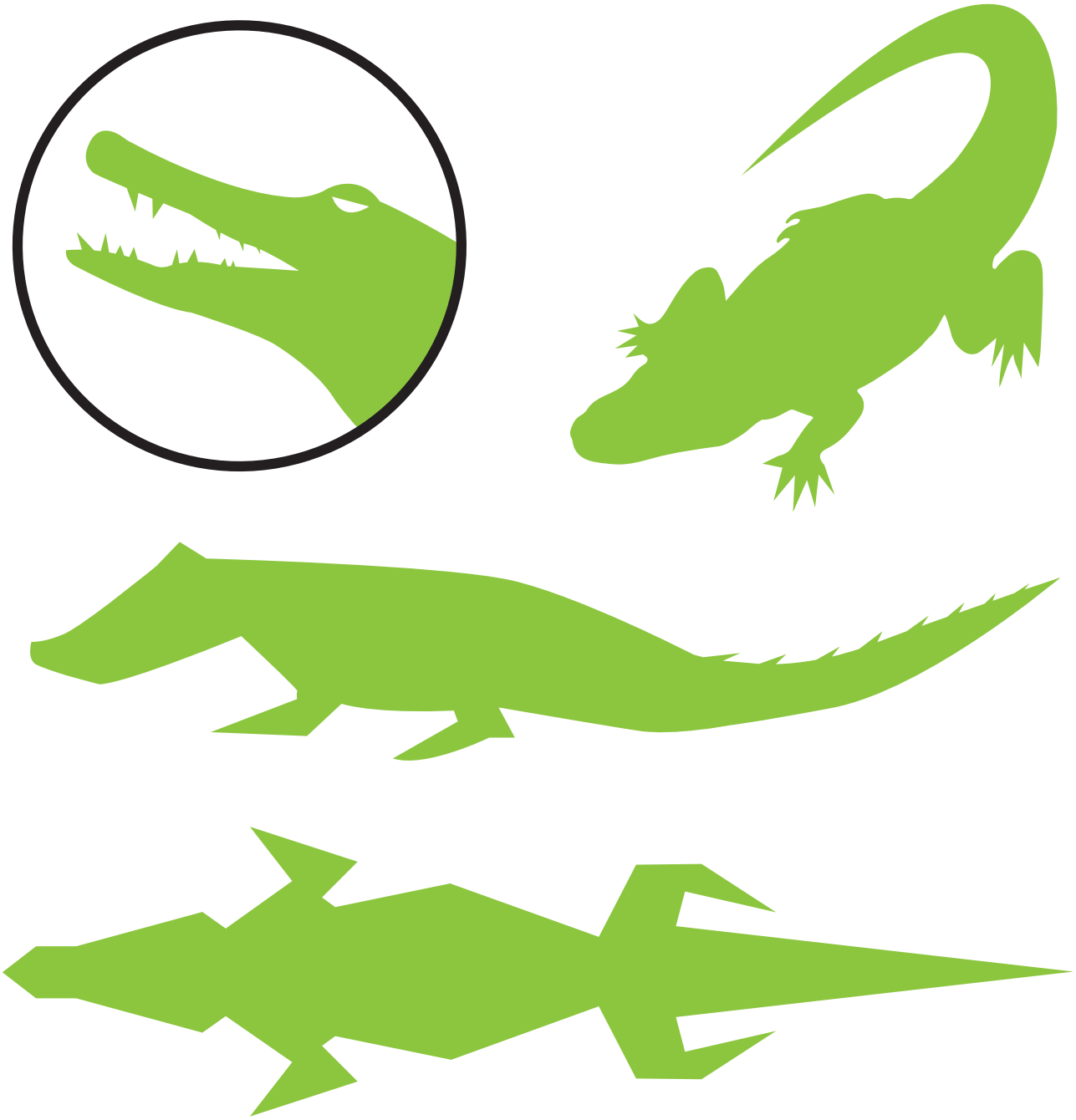
Rancho De La Nacion Mustangs



The Rancho De La Nacion Elementary School boundary is located at the northern end of the proposed bicycle corridor and is directly adjacent to El Toyon Elementary. The school's mascot is the "Mustang" and it is represented in four different fun and exciting ways.

El Toyon-Las Palmas Bicycle Corridor: Las Palmas Elementary School

Las Palmas Gators



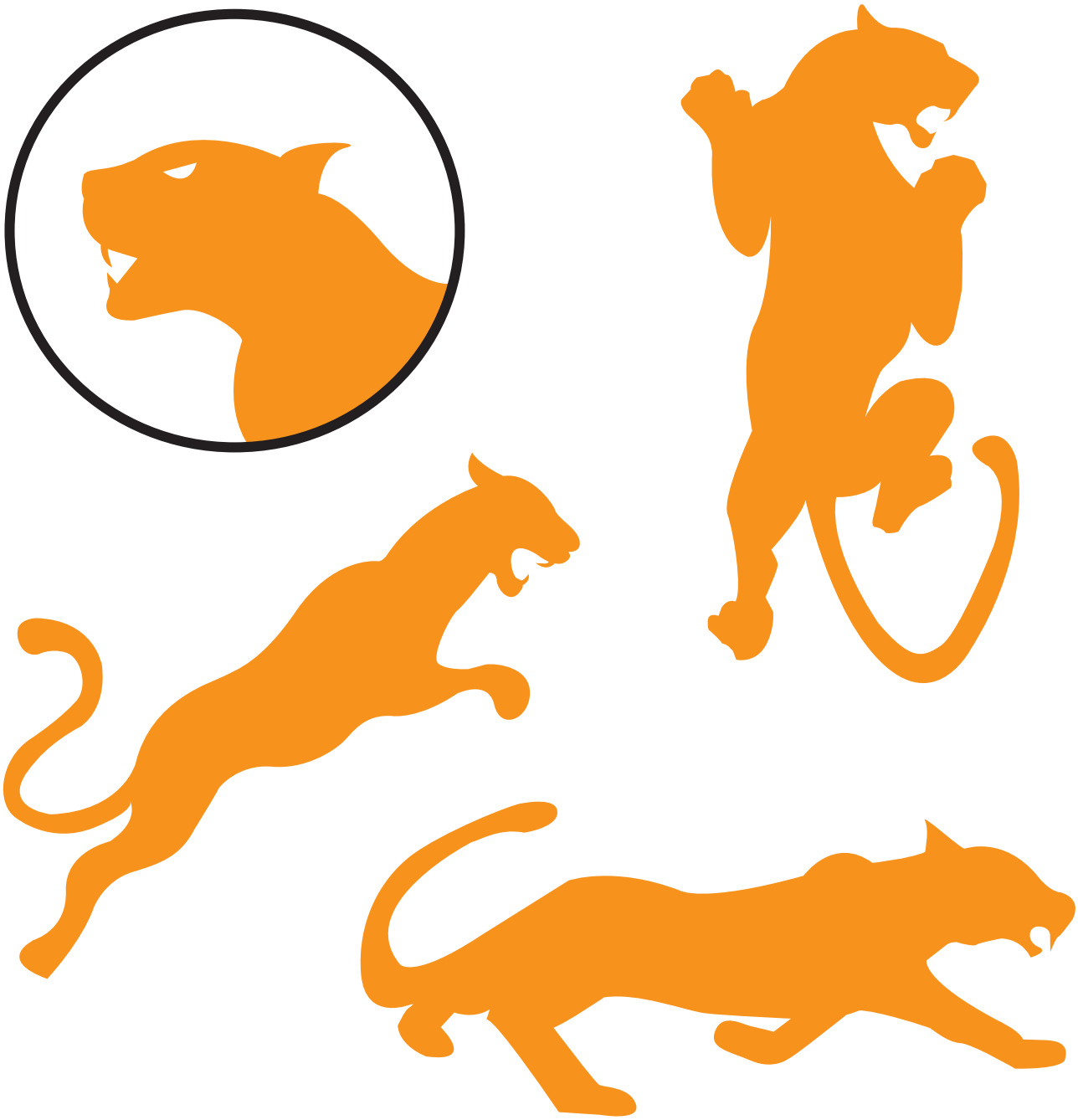
The Las Palmas Elementary School boundary is located at the southern end of the proposed bicycle corridor. The school's mascot is the "Gator" and it is represented in four different fun and exciting ways. These gators will not only energize the community members but also serve as excellent way-finding tool along the southern end of the corridor.

El Toyon-Las Palmas Bicycle Corridor: Las Palmas Elementary School

This section of the bicycle corridor will also feature decorative banners that can be coordinated to include a variety of images. In the example above, Las Palmas Elementary School is depicted as well as their mascot the Gator.

El Toyon-Las Palmas Bicycle Corridor: Las Palmas Elementary School

Palmer Way Panthers



The Palmer Way Elementary School boundary is located at the center of the proposed bicycle corridor. The school's mascot is the "Panther" and it is represented in four different fun and exciting ways. These panthers will not only energize the community members but also serve as excellent way-finding tools along the central portion of the bicycle corridor.

El Toyon-Las Palmas Bicycle Corridor: Las Palmas Elementary School

This section of the bicycle corridor will also feature decorative banners that can be coordinated to include a variety of images. In the example above, Palmer Way Elementary School is depicted as well as their mascot the Panther.

Joe's Pocket Farm/Mundo Gardens

National City is almost completely developed and does not have any designated agricultural land. Because the city has no large remaining open spaces for agricultural uses, it must rely on urban agriculture to increase local food production. Urban agriculture may be integrated into the urban fabric in several ways, including, but not limited to, the development of community gardens, fruit-tree planting in the public right-of-way, and the creation of private gardens for personal food production.

Several examples of urban agriculture exist within the planning area, including the Stein Family Farm, the International Community Foundation (ICF) Center Garden, and the ICF Olivewood Garden. One site that is currently being used a community garden is Joe's Pocket Farm/Mundo Gardens on North Q Avenue in the El Toyon neighborhood. This .2 acre plot is owned by the City and maintained by Janice Reynoso and the adjacent neighborhood. Amenities in this garden include a utility shed, stage and compost bins. A variety of fruits and vegetable are planted throughout the site alongside drought tolerant plants. On occasion, this community garden hosts musical performances and educational gardening sessions. However, being able to consistently and efficiently host these events has been a challenge due to the lack of amenities such as a water source and electricity.

Throughout the various workshops, residents consistently addressed the improvements they would like to see at this community farm, such as an area for seating, raised planters, shade and a water source. In 2011, the design of this community garden was student project at the New School of Architecture. Those designs were reviewed to begin the design process with the City and the garden's caretakers. The final design, just to name a few, adds rows of raised planters, fencing, a succulent garden and stormwater demonstration gardens. Not only does this garden provide the community with fresh and healthy produce, but it also serves education and stainability practices which can be emulated around the City.

Joe's Pocket Farm/Mundo Gardens is adjacent to the El Toyon-Las Palmas Bicycle Corridor and two elementary schools - Rancho de la Nacion and El Toyon - and an easy destination for both local residents and students.

Cost estimates for materials and sample images are included. The cost estimate breaks down the costs per item so the caretakers and/or City can incrementally install amenities depending on available funds. Grant funding sources to apply for purchase of materials can be found in Chapter 8.

Table 6-14: Joe's Pocket Farm/Mundo Gardens Cost Estimate

Item	Description	Est. Quantity	Unit	Unit Cost	Total Cost
1	Three Stage Compost Bins with Removable Wood Slats	1	EA	$400	$400
2	Raised Planter Beds with Amended Topsoil and Soaker Hose	15	EA	$550	$8,250
3	Potting Table	1	EA	$300	$300
4	Expand Storage Shed and Install Gutters to connect to existing Cistern	1	LS	$5,000	$5,000
5	Prefabricated Chicken Coop	1	EA	$1,000	$1,000
6	Post and Three Rail Fence	109	LF	$45	$4,905
7	Trellis with entry Signage and Grape Vine Planting (15 Gallon)	1	LS	$2,000	$2,000
8	Vehicular Gate (post and 3 rail)	1	LS	$1,600	$1,600
9	Portable Produce Stand	1	EA	$2,000	$2,000
10	Teepee with Bean Vines	1	LS	$50	$50
11	Outdoor Music Instruments	4	EA	$500	$2,000
12	Garden Maze (Decorative Concrete 12" wide band)	187	SF	$9	$1,683

Item	Description	Est. Quantity	Unit	Unit Cost	Total Cost
13	New Vine Plantings (15 Gallons) on Existing Fence	6	EA	$85	$510
14	6' Tall CMU Wall with Community Mural	564	SF	$60	$33,840
15	Vehicular gate with cane bolt for Pedestrian Gate Access (post and 3 rail)	1	EA	$3,000	$3,000
16	Pedestrian Chainlink Gate	1	EA	$750	$750
17	Vertical Kitchen Garden on Fence	1	LS	$2,000	$2,000
18	Herb Pots	8	EA	$100	$800
19	Decomposed Granite Paving	3,511	SF	$40	$140,440
20	Fruit Trees (24" Box)	6	EA	$350	$2,100
21	Turf at Learning Lawn and Maze Area (sod)	1,000	SF	$0.35	$350
22	Outdoor Chalkboard and Chalk Bucket	1	LS	$100	$100
23	Succulent Garden (5 gallon plants)	1	LS	$1,250	$1,250
24	Boulders for Informal Seating	7	EA	$250	$1,750
25	Recycled Concrete Pavers with Planting in Voids	1	LS	$12,000	$12,000
26	Educational Signage for Site	1	LS	$4,000	$4,000
27	Stormwater Demonstration Garden and new Bulb-out	2	EA	$3,000	$6,000

Construction Costs		
Base line costs:		**$238,078**
Contingency:	20%	$47,616
Bonding / Mobilization / Contractor Internal Management:	10%	$23,808
Total Construction Budget:		**$309,501**

Design / Management / Permitting / Engineering		
Engineering / Design:	10%	$23,808
Environmental Clearance:	3%	$7,142
Permitting:	2%	$4,762
Bid Support Services:	5%	$11,904
Project Management:	5%	$11,904
Total Soft Costs:		**$59,520**

Total Project Cost	**$369,021**

Note: These costs are only preliminary and do not reflect the level of refinement the final plan will require. Further adjustments are required once more detailed design, engineering, and utility research has been completed. In addition, these costs only take into account material costs and exclude labor costs.

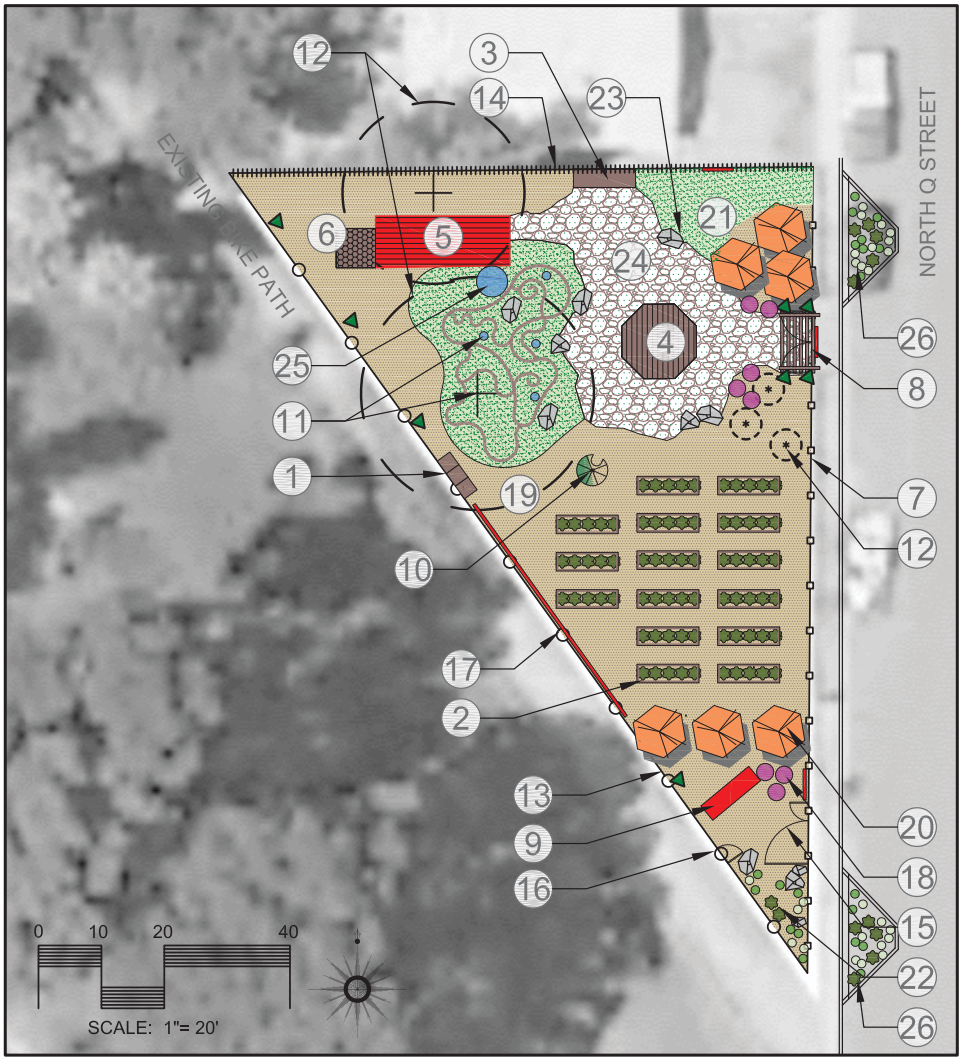


Figure 6-10: Joe's Pocket Farm/Mundo Gardens

LEGEND:

DESCRIPTION:

1. THREE STAGE COMPOST BINS WITH REMOVABLE WOOD SLATS
2. RAISED PLANTER BEDS WITH AMENDED TOPSOIL AND SOAKER HOSE
3. POTTING TABLE
4. EXISTING STAGE TO REMAIN
5. EXISTING STORAGE SHED TO REMAIN, EXPAND STORAGE SHED
6. PREFABRICATED CHICKEN COOP
7. POST AND THREE RAIL FENCE
8. TRELLIS WITH ENTRY SIGNAGE AND GRAPE VINE PLANTING
9. PORTABLE PRODUCE STAND
10. TEEPEE WITH BEAN VINES
11. EXISTING MULBERRY TREE WITH OUTDOOR MUSIC INSTRUMENTS AND GARDEN MAZE
12. EXISTING TREES TO REMAIN
13. EXISTING CHAINLINK FENCE TO REMAIN WITH NEW VINE PLANTINGS
14. 6' TALL CMU WALL WITH COMMUNITY MURAL
15. VEHICULAR GATE WITH CANE BOLT FOR PEDESTRIAN GATE ACCESS
16. PEDESTRIAN CHAINLINK GATE
17. VERTICAL KITCHEN GARDEN ON CHAINLINK FENCE
18. HERB POTS
19. DECOMPOSED GRANITE PAVING
20. FRUIT TREES (24" BOX)
21. LEARNING LAWN WITH CHALKBOARD WALL AND CHALK BUCKET
22. SUCCULENT GARDEN
23. BOULDERS FOR INFORMAL SEATING
24. RECYCLED CONCRETE PAVERS WITH PLANTING IN VOIDS
25. WATER CISTERN WITH EDUCATIONAL SIGNAGE
26. STORMWATER DEMONSTRATION GARDEN AT BULB-OUT

Fencing

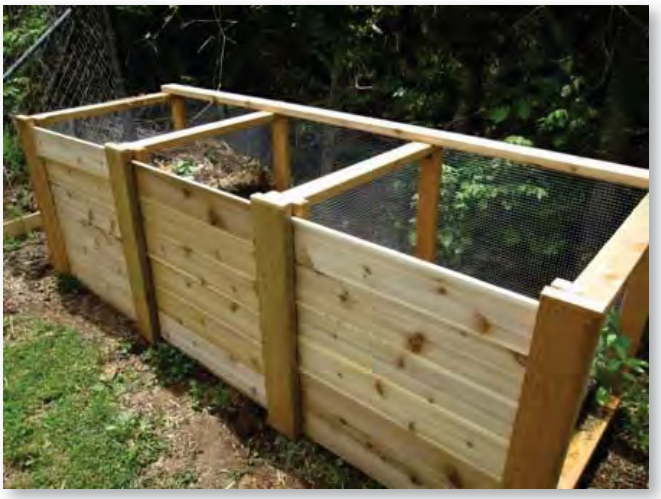
Fencing and gates are in a ranch style three rail and post system made from wood. Vinyl fencing would provide a low maintenance alternative. These are used at the front of the garden along North Q Street to maintain the open feeling of the garden. The gates are for either vehicular access or are a combination of vehicular gate with pedestrian access with a cane bolt.

Entry Gates / Trellis Monuments

Entry gate / trellis monument identifying the garden name with vines growing on the trellis.

Potting Benches and Compost Bins

Potting Bench used for storage, educational purposes and seed propagation and germination.



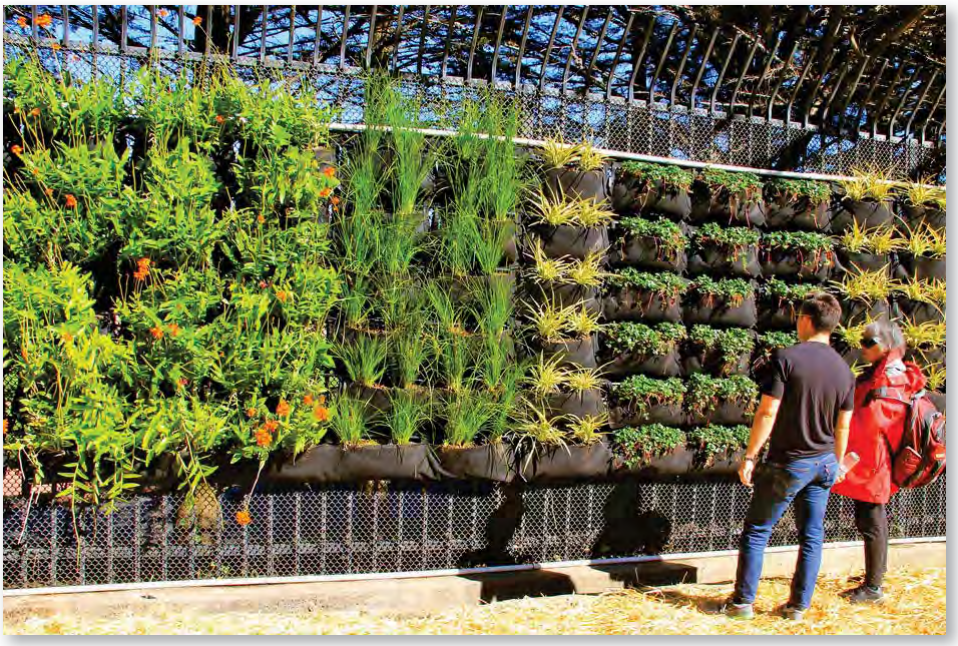
Three stage compost bin for green waste with removable wood slats.

Raised Planters

Upcycling is the process of converting waste materials or useless products into new materials or products of better quality or for better environmental value. Raised planters and herb pots can be a combination of upcycled items or newly constructed planters.

Examples of upcycled products include using old tires and even unused culvert piping.

Vertical Gardens



Vertical garden on chainlink fence to maximize garden space and reduce noise from adjacent freeway.

Portable produce stand.

Bean teepee.

Prefabricated Chicken Coop

Recycled Materials

Recycled concrete pieces with thyme growing between cracks for the entry plaza and walk.

Decomposed granite paving throughout the site.

Garden maze under Mulberry tree and around outdoor musical instruments.

A variety of upcycled and manufactured outdoor musical Instruments under the existing Mulberry Tree.

Upcycling pipes, kitchen pots and pans and even unused construction materials can be used to create musical instruments.

Art Opportunities

Outdoor chalkboard on wall for educational opportunities.

Community mural on CMU wall to create a sense of community pride.

Examples of chalkboards, murals and banners designed by local children is a good way for kids to have a sense of ownership in their community gardens.

Tier 2 Projects

Tier Two projects are secondary priorities with recommendations identified and located on maps along with planning level-cost estimates.

Table 6-15: Summary of Tier 2 Project Recommendations

Figure	Street	Limits	Notes from the City	Data Collected	Recommendations
6-11	24th Street	D Ave and L Ave	• Installed speed feedback signs and pedestrian actuator at F Street	• ROW, lane, sidewalk widths • Lighting conditions • On-street parking • Sidewalk obstructions • Other existing conditions (e.g. signs and utilities)	• Install traffic calming signing and pavement markers • Stripe curbside parking • Enhance crosswalk with additional flashing beacons • Install Bulb-outs to shorten walking distance • Provide additional crosswalks on D Avenue • Conduct period speed surveys to evaluate traffic calming effectiveness
6-12					• Install traffic calming signing and pavement markers • Stripe curbside parking • Provide crosswalks on L Ave • Construct pocket park & realign the intersection at J Ave • Conduct period speed surveys to evaluate traffic calming effectiveness
6-13	Division Street	Euclid Ave and Harbinson Blvd	• Check for traffic calming options	• ROW, lane, sidewalk widths • Lighting conditions • On-street parking • Sidewalk obstructions • Other existing conditions (e.g. signs and utilities)	• Install traffic calming signing and pavement markers • Stripe curbside parking • Provide crosswalks on Euclid Ave • Conduct period speed surveys to evaluate traffic calming effectiveness
6-14					• Install traffic calming signing and pavement markers • Stripe curbside parking • Conduct period speed surveys to evaluate traffic calming effectiveness

Figure	Street	Limits	Notes from the City	Data Collected	Recommendations
6-15	West Avenue	National City Blvd & W 18th St	• None	• Intersection turning movements • ROW, lane, sidewalk widths • Lighting conditions • On-street parking • Sidewalk obstructions • Other existing conditions (e.g. signs and utilities)	• Provide additional regulatory signs • Provide additional crosswalks • Narrow lane by widening island/channelization stripping
6-16	Granger Avenue	20th St and 24th St	• Consider raised crosswalks • Conduct bike/pedestrian counts around the school to identify where kids are accessing the school and crossing streets • Check pedestrian level lighting and signing	• ROW, lane, sidewalk widths • Lighting conditions • On-street parking • Sidewalk obstructions • Other existing conditions (e.g. signs and utilities)	• Provide raised crosswalks • Provide an In-Road Warning Light (IRWL) along with flashing beacons • Stripe curbside parking

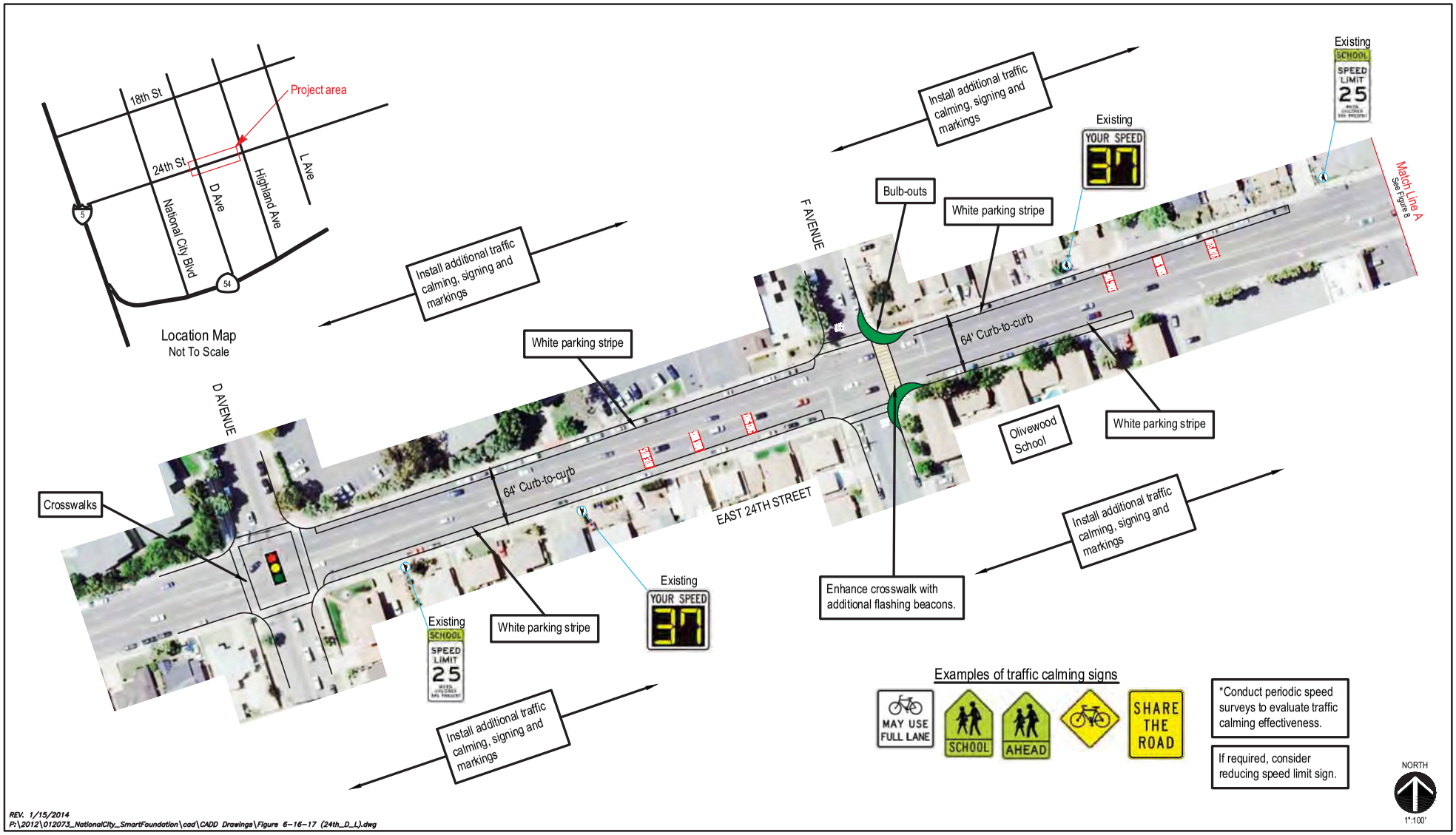


Figure 6-11
24th St: Between D Ave and L Ave

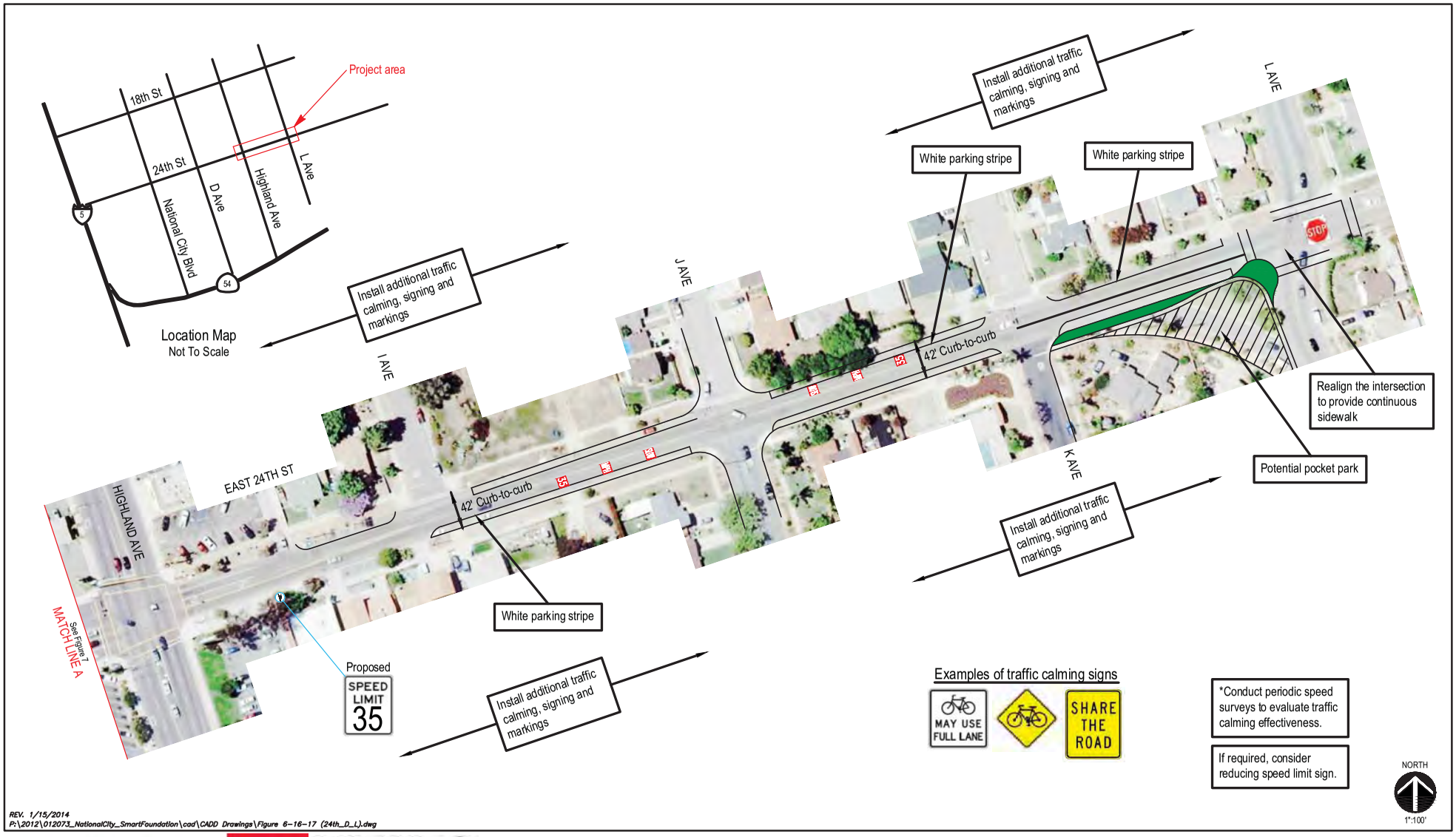


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Figure 6-12
24th St: Between D Ave and L Ave

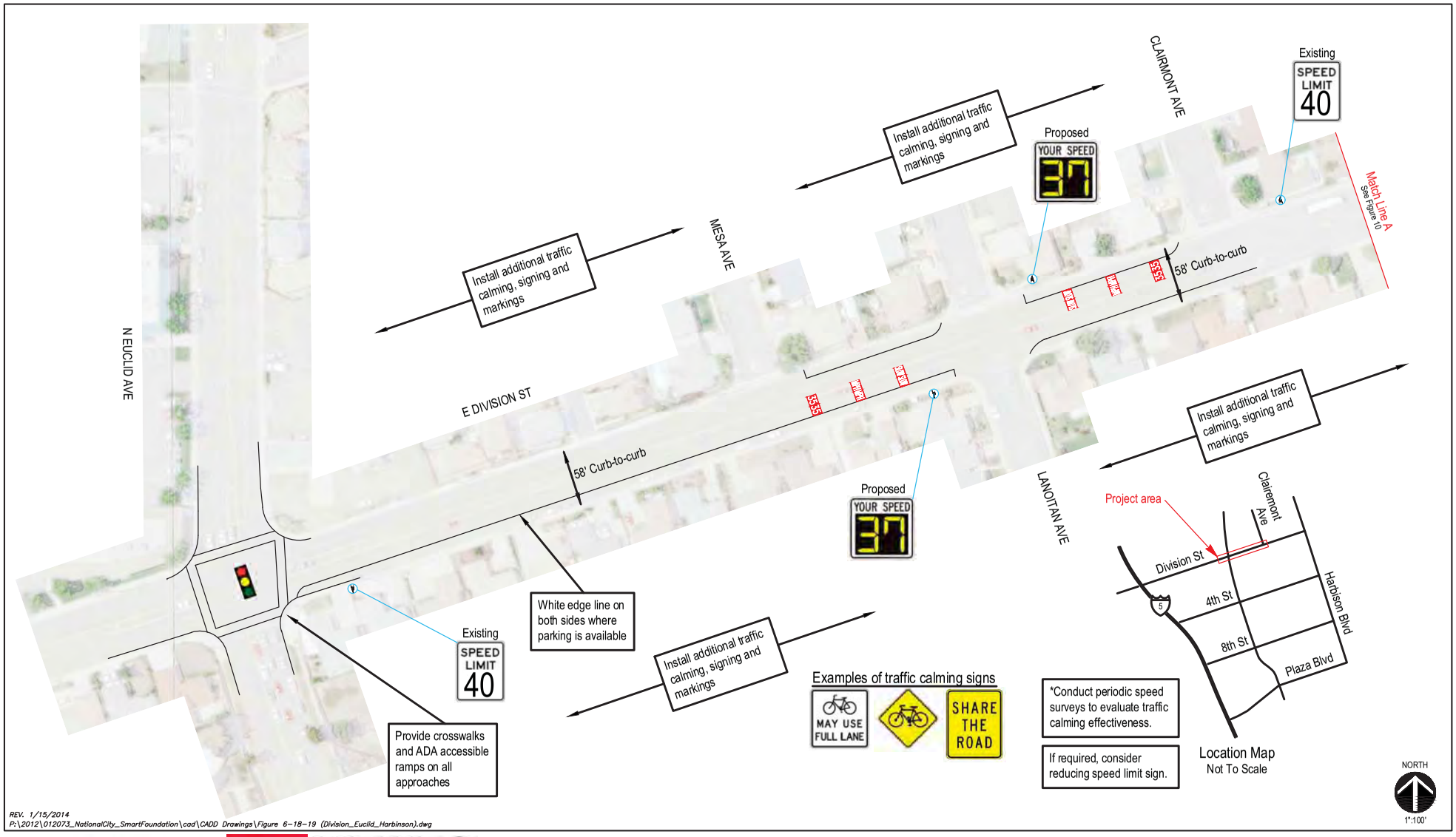

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Figure 6-13
Division St: Between Euclid Ave and Harbison Ave

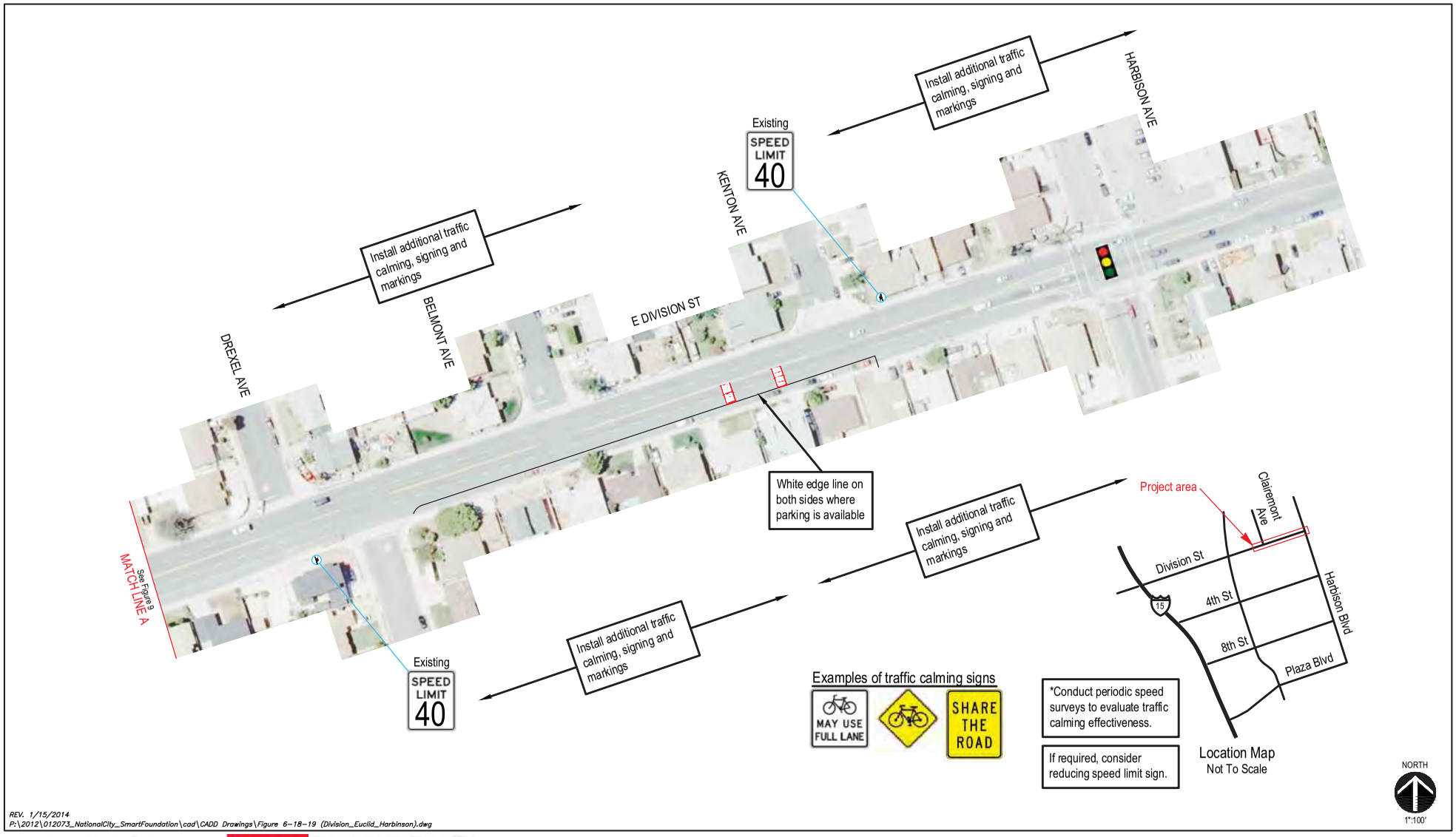

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Figure 6-14
Division St: Between Euclid Ave and Harbison Ave

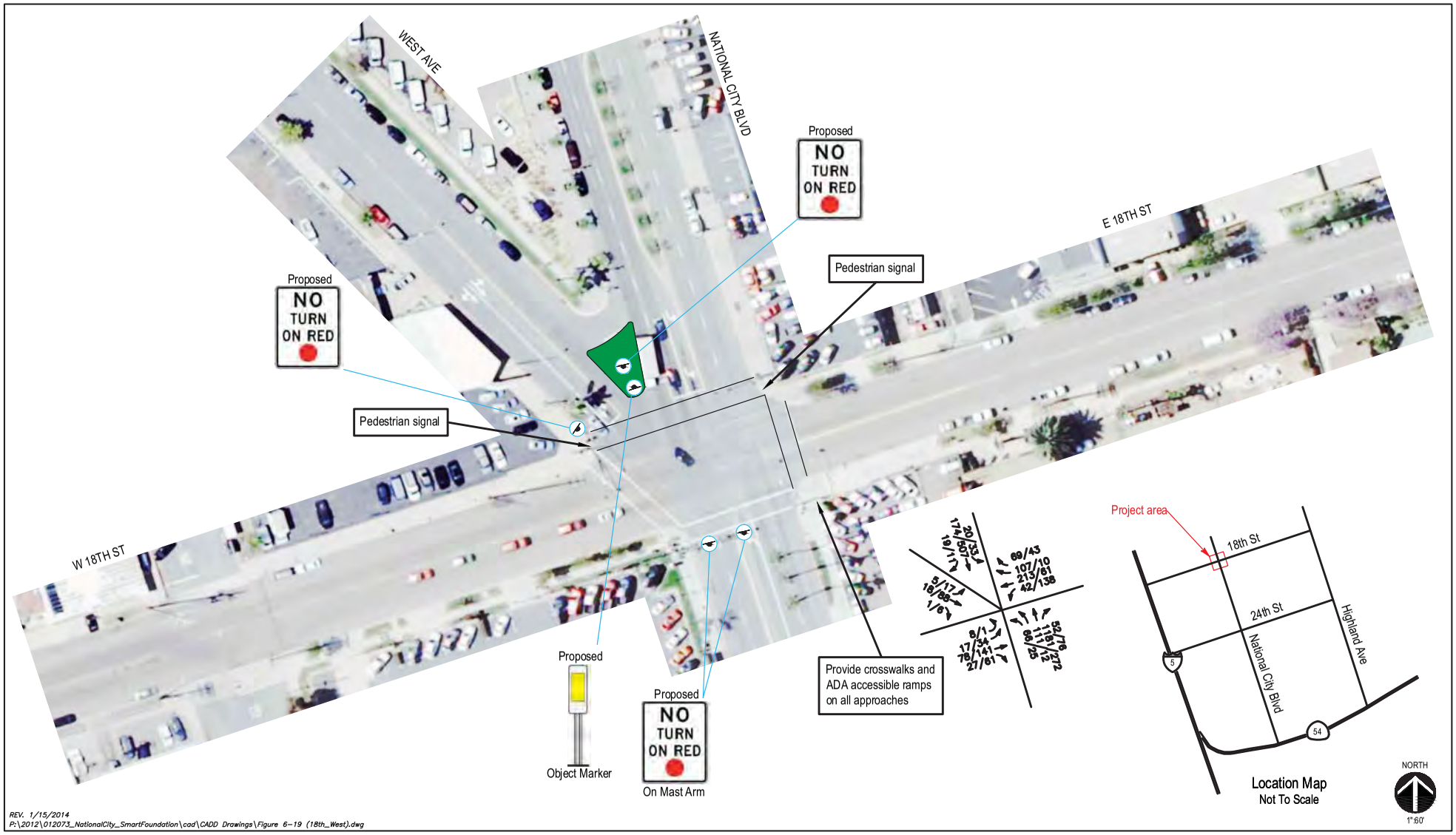

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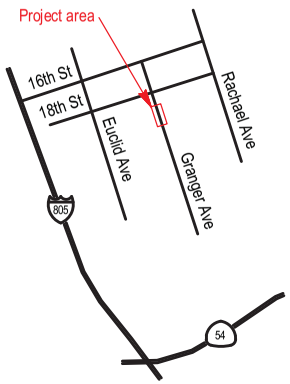
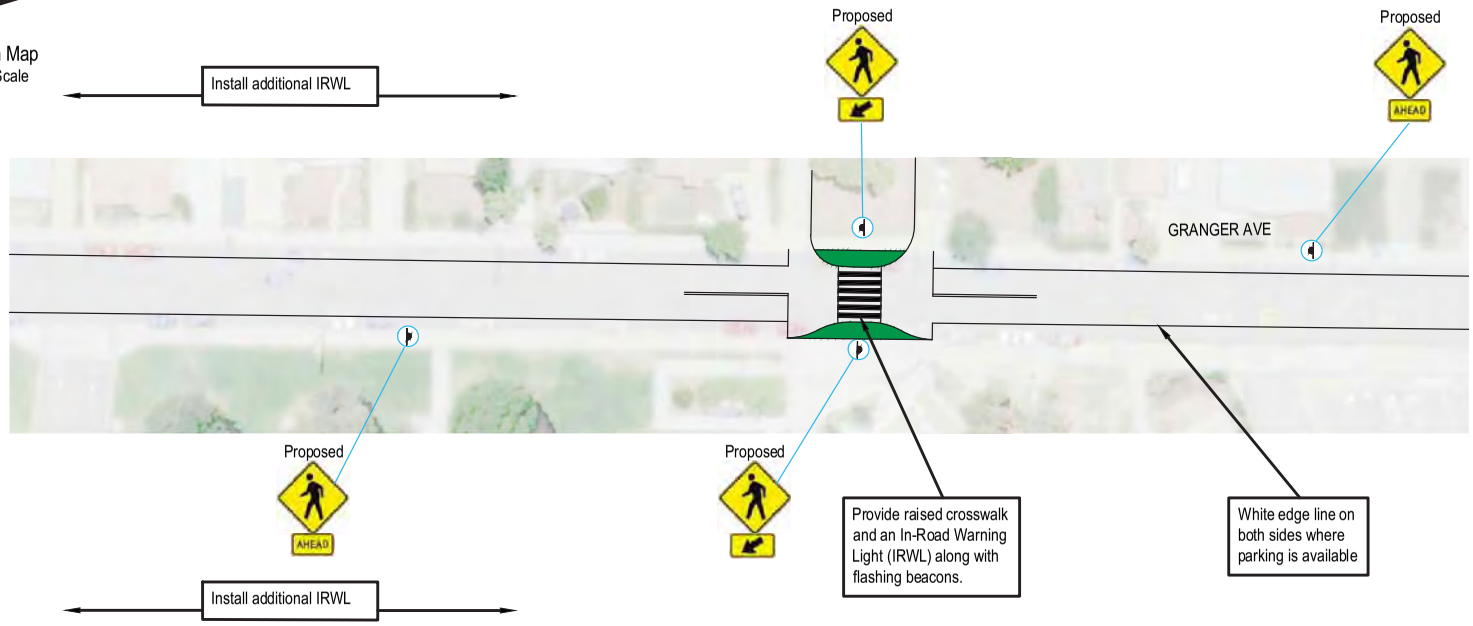
Figure 6-15
National City Blvd and 18th St



Location Map
Not To Scale



NORTH
1"=60'

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P:\2012\012073_NationalCity_SmartFoundation\cad\CADD Drawings\Figure 6-20 (GrangerJrHigh).dwg

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Figure 6-16
Granger Jr. High

Table 6-16: 24th Street Cost Estimate between D Avenue and L Avenue, Section #1

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-11 24th St between D Ave and L Ave

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	Bulb-outs (EA)	2	$20,000.00	$40,000.00
			Subtotal:	$40,000.00
	Signing and Striping			
453	Remove Pavement Legend (SF)	800	$0.50	$400.00
452	Install Pavement Legend - Thermoplastic (SF)	1200	$6.00	$7,200.00
454	Install Stripe - Paint (LF)	250	$1.00	$250.00
455	Install Stripe - Thermoplastic (LF)	750	$2.00	$1,500.00
404	Install Roadside Sign - One Post	10	$350.00	$3,500.00
X	Additional flashing beacons	2	$2,000.00	$4,000.00
			Subtotal:	$16,850.00
		BASE LINE COST:		**$56,850.00**
		CONSTRUCTION COST		
		Contingency:	25%	$14,212.50
		Bonding / Mobilization / Contractor Internal Management:	7.5%	$4,263.75
		TOTAL CONSTRUCTION COST:		**$18,476.25**
		DESIGN / MANAGEMENT / PERMITTING / ENGINEERING		
		Engineering / Design:	20%	$11,370.00
		Environmental Clearance:	4%	$2,274.00
		Permitting:	2%	$1,137.00
		Bid Support Services:	5%	$2,842.50
		Project Management:	5%	$2,842.50
		Traffic Management Services:	7%	$3,979.50
		TOTAL SOFT COST:		**$24,445.50**
		TOTAL COST:		**$99,771.75**

Table 6-17: 24th Street Cost Estimate between D Avenue and L Avenue, Section #2

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-12 - 24th St between D Ave and L Ave

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	Sidewalk (LF)	250	$150.00	$37,500.00
X	Curb and Gutter Removal (LF)	400	$5.00	$2,000.00
X	Curb and Gutter Installation (LF)	200	$25.00	$5,000.00
X	Remove Asphalt (SF)	3500	$5.00	$17,500.00
X	Pocket Park	1	$234,000.00	$234,000.00
510	Pedestrian Ramp	8	$3,000.00	$24,000.00
X	Bulb-Out (EA)	1	$20,000.00	$20,000.00
			Subtotal:	$340,000.00
	Signing and Striping			
454	Install Stripe - Paint (LF)	1250	$1.00	$1,250.00
455	Install Stripe - Thermoplastic (LF)	450	$2.00	$900.00
452	Install Pavement Legend - Thermoplastic (SF)	300	$6.00	$1,800.00
404	Install Roadside Sign - One Post	8	$350.00	$2,800.00
			Subtotal:	$6,750.00

BASE LINE COST:		**$346,750.00**
CONSTRUCTION COST		
Contingency:	25%	$86,687.50
Bonding / Mobilization / Contractor Internal Management:	7.5%	$26,006.25
TOTAL CONSTRUCTION COST:		**$112,693.75**
DESIGN / MANAGEMENT / PERMITTING / ENGINEERING		
Engineering / Design:	10%	$34,675.00
Environmental Clearance:	4%	$13,870.00
Permitting:	2%	$6,935.00
Bid Support Services:	5%	$17,337.50
Project Management:	5%	$17,337.50
Traffic Management Services:	3%	$10,402.50
TOTAL SOFT COST:		**$100,557.50**
TOTAL COST:		**$560,001.25**

Table 6-18: Division Street between Euclid Avenue and Harbinson Avenue, Section #1 Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-13 - Division St between Euclid Ave and Harbison Ave

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Signing and Striping			
454	Install Stripe - Paint (LF)	1000	$1.00	$1,000.00
455	Install Stripe - Thermoplastic (LF)	400	$2.00	$800.00
452	Install Pavement Legend - Thermoplastic (SF)	1000	$6.00	$6,000.00
404	Install Roadside Sign - One Post	20	$350.00	$7,000.00
X	Solar-Powered Speed Feedback Signs	2	$5,000.00	$10,000.00
510	Pedestrian Ramp	4	$3,000.00	$12,000.00
			Subtotal:	$36,800.00
		BASE LINE COST:		**$36,800.00**
		CONSTRUCTION COST		
		Contingency:	25%	$9,200.00
		Bonding / Mobilization / Contractor Internal Management:	7.5%	$2,760.00
		TOTAL CONSTRUCTION COST:		**$11,960.00**
		DESIGN / MANAGEMENT / PERMITTING / ENGINEERING		
		Engineering / Design:	25%	$9,200.00
		Permitting:	2%	$736.00
		Bid Support Services:	5%	$1,840.00
		Project Management:	5%	$1,840.00
		Trafic Management Services:	14%	$5,152.00
		TOTAL SOFT COST:		**$18,768.00**
		TOTAL COST:		**$67,528.00**

Table 6-19: Division Street between Euclid Avenue and Harbinson Avenue, Section #2 Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-14 - Division St between Euclid Ave and Harbison Ave

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Signing and Striping			
454	Install Stripe - Paint (LF)	800	$1.00	$800.00
452	Install Pavement Legend - Thermoplastic (SF)	800	$6.00	$4,800.00
404	Install Roadside Sign - One Post	20	$350.00	$7,000.00
			Subtotal:	$12,600.00
			BASE LINE COST:	**$12,600.00**
			CONSTRUCTION COST	
			Contingency:	25%	$3,150.00
			Bonding / Mobilization / Contractor Internal Management:	7.5%	$945.00
			TOTAL CONSTRUCTION COST:	**$4,095.00**
			DESIGN / MANAGEMENT / PERMITTING / ENGINEERING	
			Engineering / Design:	50%	$6,300.00
			Permitting:	2%	$252.00
			Bid Support Services:	5%	$630.00
			Project Management:	5%	$630.00
			Traffic Management Services:	20%	$2,520.00
			TOTAL SOFT COST:	**$10,332.00**
			TOTAL COST:	**$27,027.00**

Table 6-20: West Avenue between National City Blvd and 18th Street Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-15 - National City Blvd and 18th St

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
528	Median/Island - Stamped Concrete (SF)	600	$13.20	$7,920.00
X	Relocate Drainage Inlet	1	$15,000.00	$15,000.00
510	Pedestrian Ramp	5	$3,000.00	$15,000.00
			Subtotal:	$37,920.00
	Signing and Striping			
456	Remove Stripe (LF)	300	$1.50	$450.00
455	Install Stripe - Thermoplastic (LF)	700	$2.00	$1,400.00
404	Install Roadside Sign - One Post	3	$350.00	$1,050.00
X	Install Roadside Sign - Strap and Saddle Bracket	2	$350.00	$700.00
			Subtotal:	$3,600.00
	Traffic Signal Modfication			
202	Pedestrian Signal Head - LED	2	$900.00	$1,800.00
203	Pedestrian Push Button	2	$550.00	$1,100.00
			Subtotal:	$2,900.00
			BASE LINE COST:	**$44,420.00**
			CONSTRUCTION COST	
			Contingency: 25%	$11,105.00
			Bonding / Mobilization / Contractor Internal Management: 7.5%	$3,331.50
			TOTAL CONSTRUCTION COST:	**$14,436.50**
			DESIGN / MANAGEMENT / PERMITTING / ENGINEERING	
			Engineering / Design: 20%	$8,884.00
			Permitting: 2%	$888.40
			Bid Support Services: 5%	$2,221.00
			Project Management: 5%	$2,221.00
			Traffic Management Services: 12%	$5,330.40
			TOTAL SOFT COST:	**$19,544.80**
			TOTAL COST:	**$78,401.30**

Table 6-21: Granger Junior High Pedestrian Crossing Cost Estimate

LINSCOTT LAW & GREENSPAN engineers

ENGINEER'S ESTIMATE FOR
National City Smart Foundation
Figure 6-16 - Granger Ave (Granger Jr. High)

ITEM NO.	DESCRIPTION	QUANTITY**	UNIT COST	ITEM COST
	Civil Improvement			
X	Bulb-out (EA)	2	$20,000.00	$40,000.00
			Subtotal:	$40,000.00
	Signing and Striping			
454	Install Stripe - Paint (LF)	4500	$1.00	$4,500.00
452	Install Pavement Legend - Thermoplastic (SF)	1000	$6.00	$6,000.00
404	Install Roadside Sign - One Post	20	$350.00	$7,000.00
			Subtotal:	$17,500.00
	Traffic Signal Modfication			
	In-Road Warning Lights System	1	$50,000.00	$50,000.00
			Subtotal:	$85,000.00
			BASE LINE COST:	**$142,500.00**
			CONSTRUCTION COST	
			Contingency: 25%	$35,625.00
			Bonding / Mobilization / Contractor Internal Management: 7.5%	$10,687.50
			TOTAL CONSTRUCTION COST:	**$46,312.50**
			DESIGN / MANAGEMENT / PERMITTING / ENGINEERING	
			Engineering / Design: 10%	$14,250.00
			Environmental Clearance: 4%	$5,700.00
			Permitting: 2%	$2,850.00
			Bid Support Services: 5%	$7,125.00
			Project Management: 5%	$7,125.00
			Traffic Management Service: 4%	$5,700.00
			TOTAL SOFT COST:	**$42,750.00**
			TOTAL COST:	**$231,562.50**

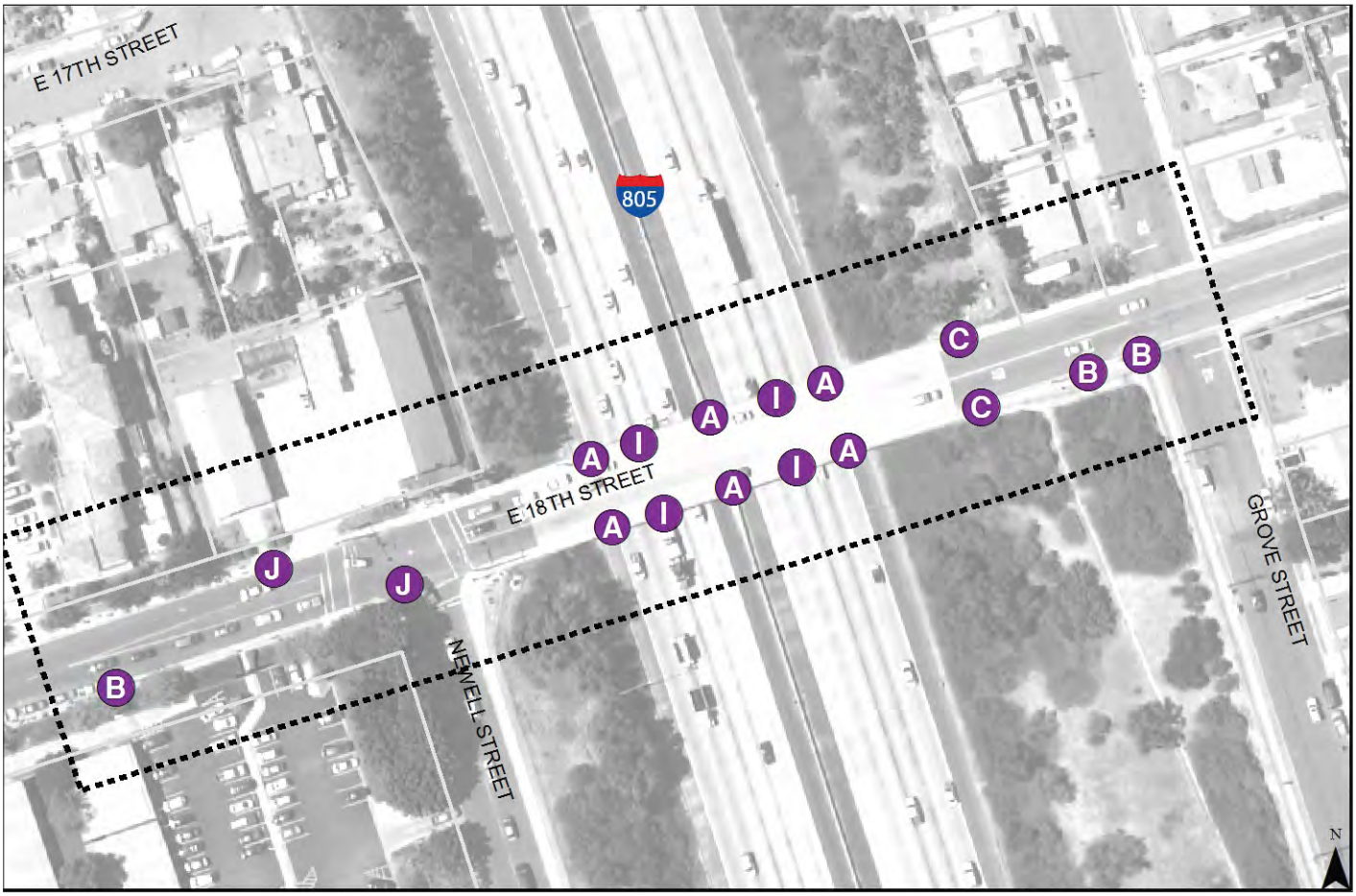
Tier 3 Projects

Tier Three projects range from widening or improving sidewalks to installing crosswalks or maintenance. While not high priority projects, they provide the framework to identify improvements when/if other improvements are made in the area.

Figure 6-17: 18th Street between Palm Ave and Newell Street

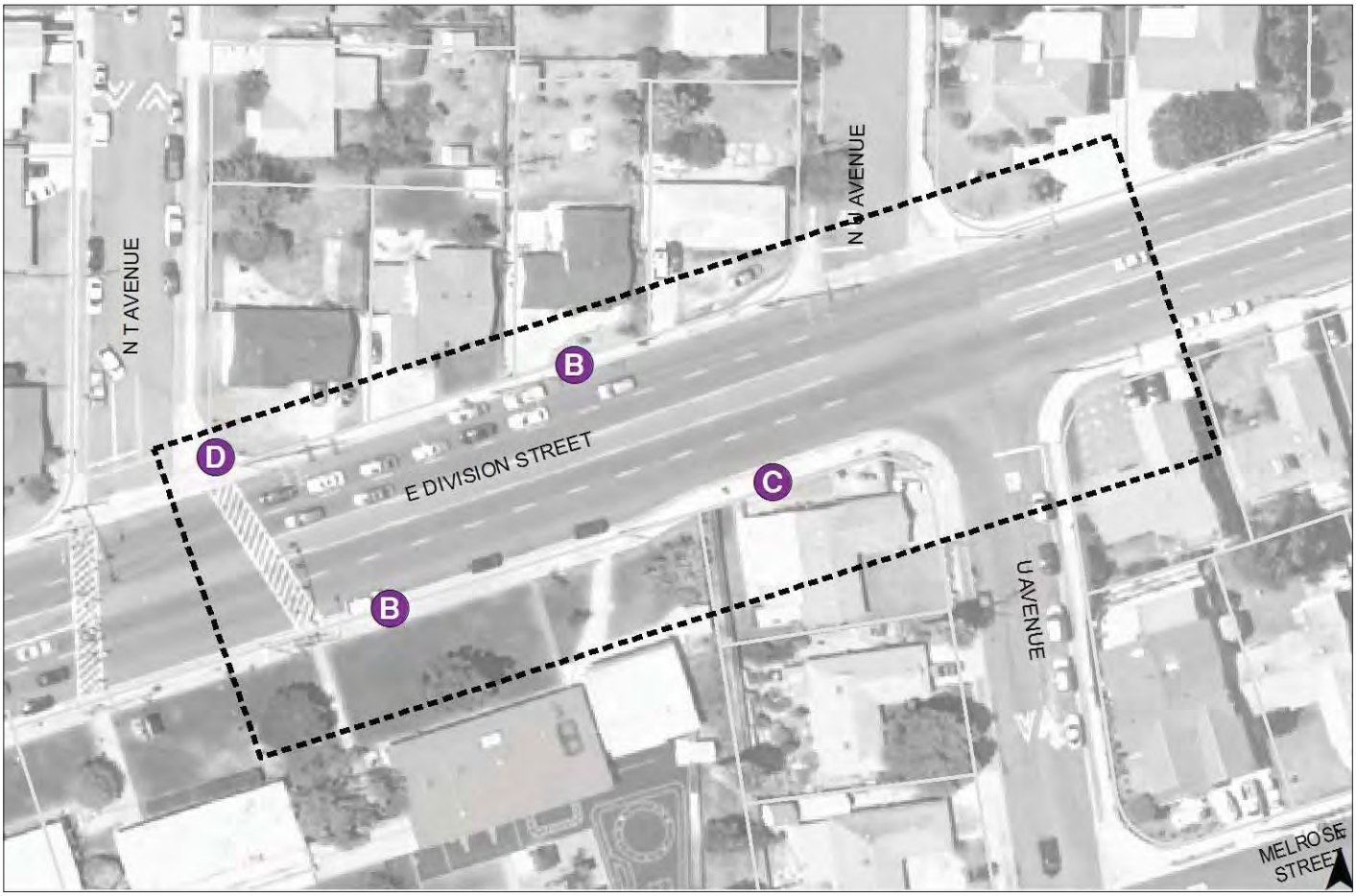
ID	Recommendations
B	Widen sidewalk around utility pole (or move pole)
C	Widen sidewalk beyond minimum for SRTS
H	Lengthen the red curb for ped visibility

Figure 6-18: 18th Street between Newell Street and Grove Street



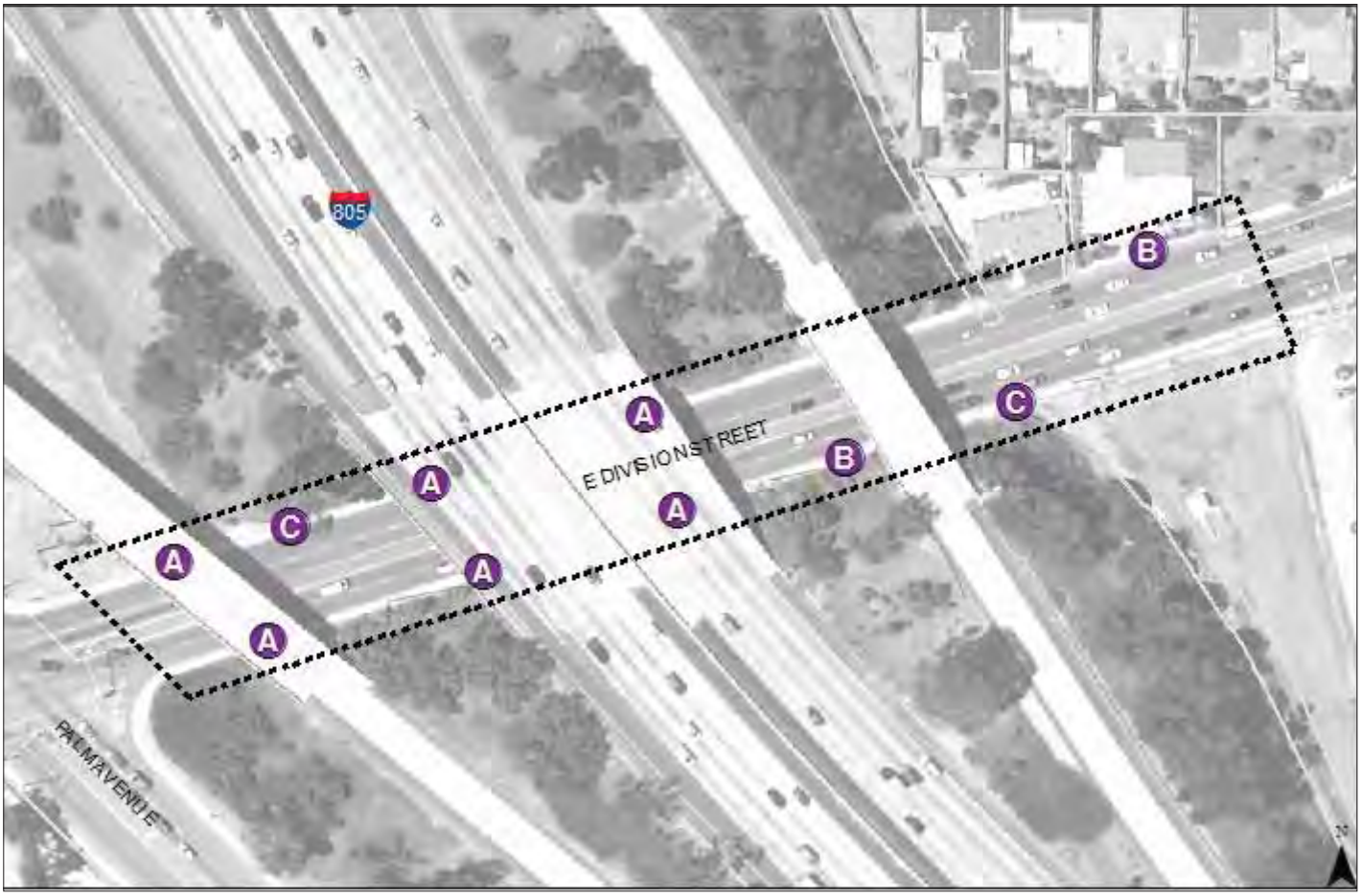
ID	Recommendations
A	Install lighting
B	Widen sidewalk around utility pole (or move pole)
C	Widen sidewalk beyond minimum for SRTS and general traffic calming and pedestrian comfort
I	Add noise barrier (vine, trainable shrub, etc.other plant)
J	Add bike lanes for roadway narrowing/traffic calming (radar sign indicates speeding problem)

Figure 6-19: Division Street between North T Avenue and North U Avenue



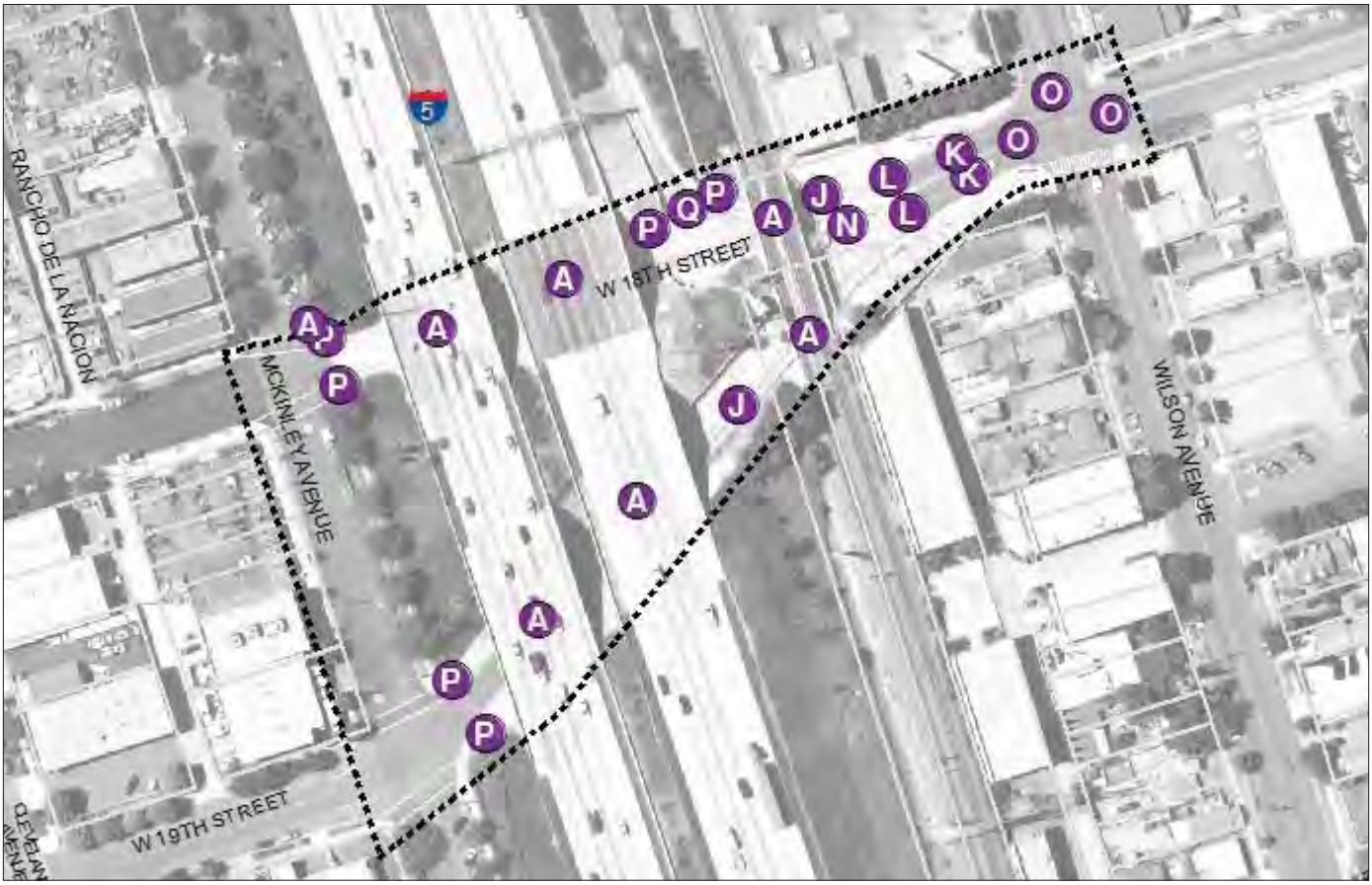
ID	Recommendations
B	Widen sidewalk around utility pole (or move pole)
C	Widen sidewalk beyond minimum for SRTS
D	Widen sidewalk around fire hydrant (or move hydrant)
General	Traffic calming all along the corridor
General	Paint all curbs red at intersections

Figure 6-20: Division Street between Palm Avenue and North R Avenue



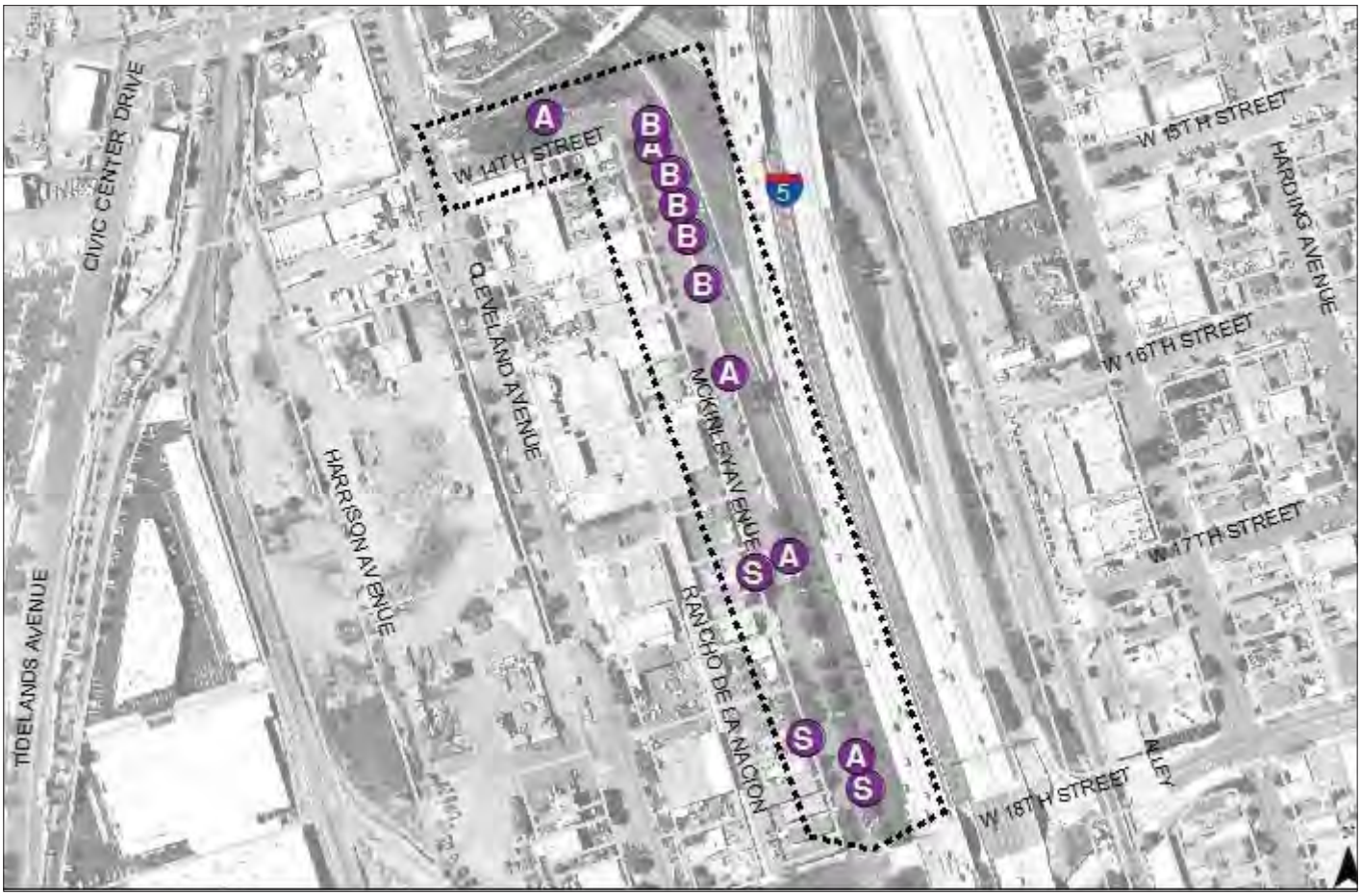
ID	Recommendations
A	Install lighting
B	Widen sidewalk around utility pole (or move pole)
C	Widen sidewalk beyond minimum for SRTS
General	Traffic calming all along the corridor
General	Paint all curbs red at intersections

Figure 6-21: 18th Street and I-5 between McKinley Avenue and Wilson Avenue



ID	Recommendations
A	Install lighting
C	Widen sidewalk to 6′ (curb to 1′)
J	Install Class II (5′) Bike Lane
K	Road Diet (reduce to one 11′ travel lane)
L	Install 4′ buffer
M	Extend curb to crosswalk
N	Install landscaping
O	Install crosswalks
P	Install curb ramps
Q	Reconfigure intersection; reduce curb radii at Harbor Drive
General	Cleaning/maintenance needed

Figure 6-22: McKinley Avenue between West 18th Street and Cleveland Avenue



ID	Recommendations
A	Install lighting
B	Widen sidewalk around utility pole (or move pole)
S	Repair sidewalk
General	Cleaning/maintenance needed

Active Transportation Toolbox

7

Active Transportation Toolbox

In recent years there has been an increase in the planning and designing of facilities to improve the bicycling and pedestrian environment. In San Diego County, many cities have begun implementing wider sidewalks, enhanced pedestrian crossings, and standard and innovative bicycle facilities to encourage the use of alternative modes of transportation such as bicycling, walking and public transit. National City is no exception and has been at the forefront of this endeavor implementing traffic calming measures such as In-Road Warning Lights (IRWL) on Newell Street and D Avenue.

With numerous enhancements and innovative facilities available, warrants and studies are typically needed to justify these treatments. This chapter identifies some of the typical issues and solutions for pedestrian and bicycle facilities and provides a toolbox for the City. A traffic calming toolbox is also include in this chapter to provide ideas for low-cost improvements in residential areas.

Connectivity Issues

Connectivity refers to the existence of a defined direct pedestrian path (generally along streets) between where a walker starts and where she or he wants to go. Community connectivity is the basis for a pedestrian-friendly environment. The typical walking distance is not much more than 0.25 mile distance, which is equivalent to a five to ten-minute walk at an easy pace of 2-4 mph. Within this ten-minute radius, residents should be able to walk to the center from anywhere in a neighborhood to take care of daily needs or to use public transit. The pedestrian system is an integral component of the overall transit system and serves as a connector between where we live, where we work and how we connect to the city.

Typical Connectivity Issues

In National City, sidewalk obstacles that make walking difficult include gaps in the sidewalks, sidewalk obstructions, canyon barriers, "difficult to cross" road barriers such as freeway overpasses, high volume arterials, and land use barriers that prevent easy pedestrian flow through a site.

Walkway Gaps

Throughout the city, there are gaps where walkways have not been completed because of development phasing, neighborhood aesthetics or funding. A typical situation occurs when development takes place on a parcel that is only a portion of an undeveloped block and the sidewalk is constructed to serve only the developed parcel. Until the remainder of the block is developed, there is no connection to other sidewalks in the area. Lack of walkway facilities also exist at the local site level. Often, movement around a development, community or commercial center is difficult because there is no separation between the vehicular driving and parking environment and the pedestrian.

Road Barriers/Freeway Crossings

Designing for the movement of vehicles has often relegated the pedestrian to a secondary status. This includes the use of wide curb radii to allow cars to make turns without significantly reducing speed, as well as freeway-like ramping, turn lanes and merge lanes that require a pedestrian to cross high speed traffic. Also, high speed, high volume and wide streets represent barriers because of the length of time needed to wait between cycles to cross, the overall crossing distance, and the fear of safety issues. These roadway related barriers can significantly affect connectivity.

Unlit Area Barriers

The typical spacing of streetlights is often a deterrent to pedestrian movement. In some areas of the city, the streetlights are located only at the intersections. The lack of pedestrian scale streetlights deters walkers who do not feel comfortable or safe on the dark sidewalks. This becomes a deterrent for transit riders if, after alighting from the bus, they must walk from a bus stop located at the opposite corner from the streetlight to reach their destinations. Longer routes may be selected that are well lit, avoiding the darker areas, and thereby contributing to a connectivity problem.

Walkway Capacity and Obstruction Barriers

The location and size of walkways can also be a connectivity problem if the route is avoided because of other walkability issues. A walkway, even one that meets the city's minimum required width, can be a deterrent to pedestrian travel. Poles for streetlights, traffic signal poles, utility boxes, newspaper racks, backflow preventers, vending machines, and other site furnishings are often located in the path of travel, making it difficult to maneuver even if there are only a small number of pedestrians using the walk.

Solutions that Address Connectivity Issues

Figure 7-1 has been developed to describe the typical connectivity issues associated with public rights-of-way and development patterns. Many of these solutions need to be brought up at the site planning and project approval stage. When a project is being portrayed as supporting smart growth and complete street strategies, it is incumbent upon the developer or property owner to prove that the new project will be connected with local land uses through direct walking facilities. This often requires connections that lead beyond the immediate limits of the project parcel. If the new or retrofitted environment is not fully connected at a pedestrian scale, then it will not support the objectives of smart growth or a complete street.

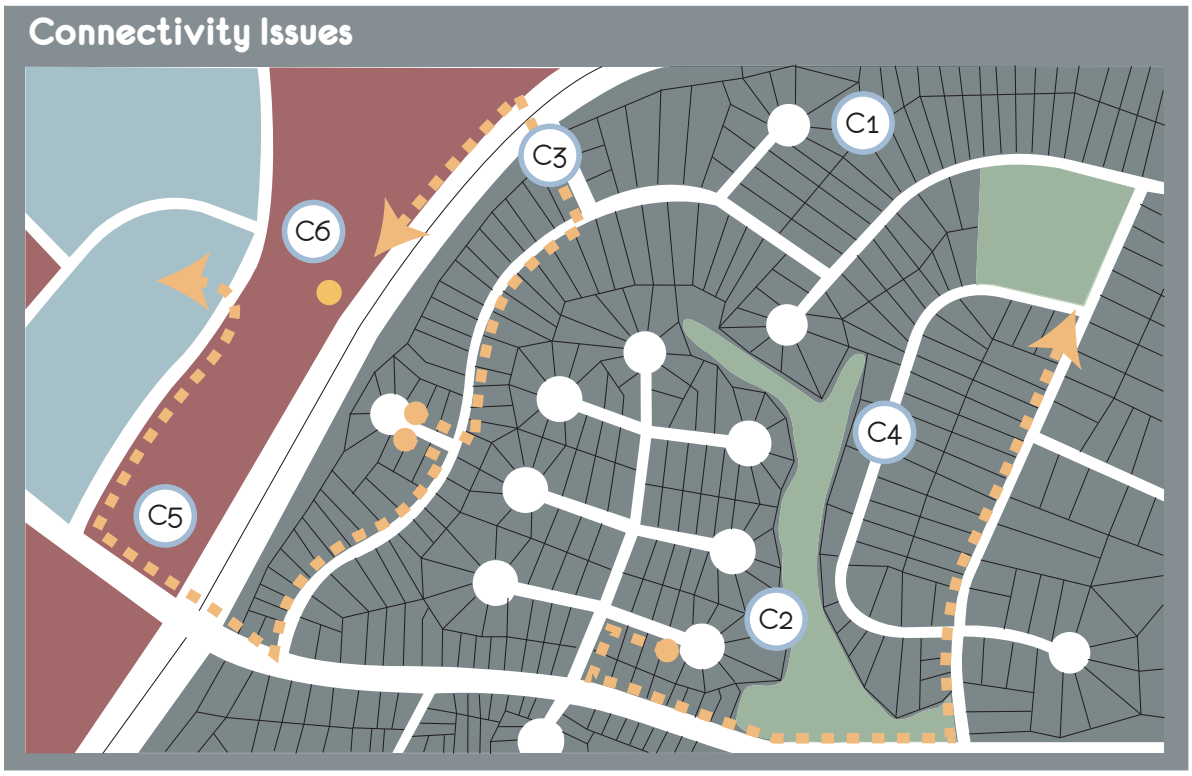


Figure 7-1: Connectivity Issues and Possible Solutions

Table 7-1: Connectivity Issues and Possible Solutions

Code	Connectivity Issues	Possible Connectivity Solutions (explained below and pictured on the following page)
C1	Street patterns are not connected	1C, 2C, 3C, 5C
C2	Walking barriers	6C
C3	Highspeed roadway barriers	4C, 5C, 6C, 7C; see also 1S, 2S, 3S, 4S, 10S, 11S, 12S, 13S
C4	Complete lack of walkways	2C
C5	Isolated land uses	3C, 5C, 8C
C6	Isolated transit facilities	1C, 2C, 3C, 4C, 5C, 6C, 7C, 8C

Code	Possible Connectivity Solutions
1C	Missing sidewalk segments added in areas where sidewalks mostly exist
2C	Missing sidewalks added in areas where no sidewalks exist at all
3C	Connecting pathways added between streets
4C	Street widths reduced or features added to narrow crossing distance
5C	Destinations added or made more connected within walking distance or origins
6C	Pedestrian bridges added that avoid excessive ramp lengths
7C	Pedestrian crossing opportunities added for all sides (legs) of intersections
8C	When reviewing projects, verify that pedestrian routes and distances between land uses are reasonable and direct

1C) Adding missing sidewalk segments in areas where sidewalks already exist improves accessibility and connectivity.

3C) Cul-de-sacs, designed to inhibit vehicular through traffic, may be made semi-permeable to pedestrians, encouraging trips on foot.

5C) Streets should be designed for more than moving vehicles. When all elements come together, a socially interactive environment will evolve.

7C) Some circumstances, such as dual left turn lanes, may require pedestrian restrictions on crossing to avoid safety issues. In other locations, the restrictions may have been primarily used to increase turning movements through the intersection. A case-by-case analysis is required to determine the right balance.

2C) In areas currently without sidewalks, where the street volume and speed are very low and the character is rural, sidewalks may not be needed.

4C) Retrofitting wide streets and intersections to improve walkability can be very expensive. It is generally less expensive to build these streets with pedestrians and cyclists in mind rather than retrofit later.

6C) To meet accessibility requirements, long ramps may be required to access activity centers such as transit stations.

8C) Verify that pedestrian distances between land uses are reasonable and direct. The applicant should submit plans showing actual distances along walking routes to transit, neighborhood services, parks, schools and other destinations found within the typical 0.25 mile walking distance radius.

Figure 7-2: Accessibility Issues and Possible Solutions

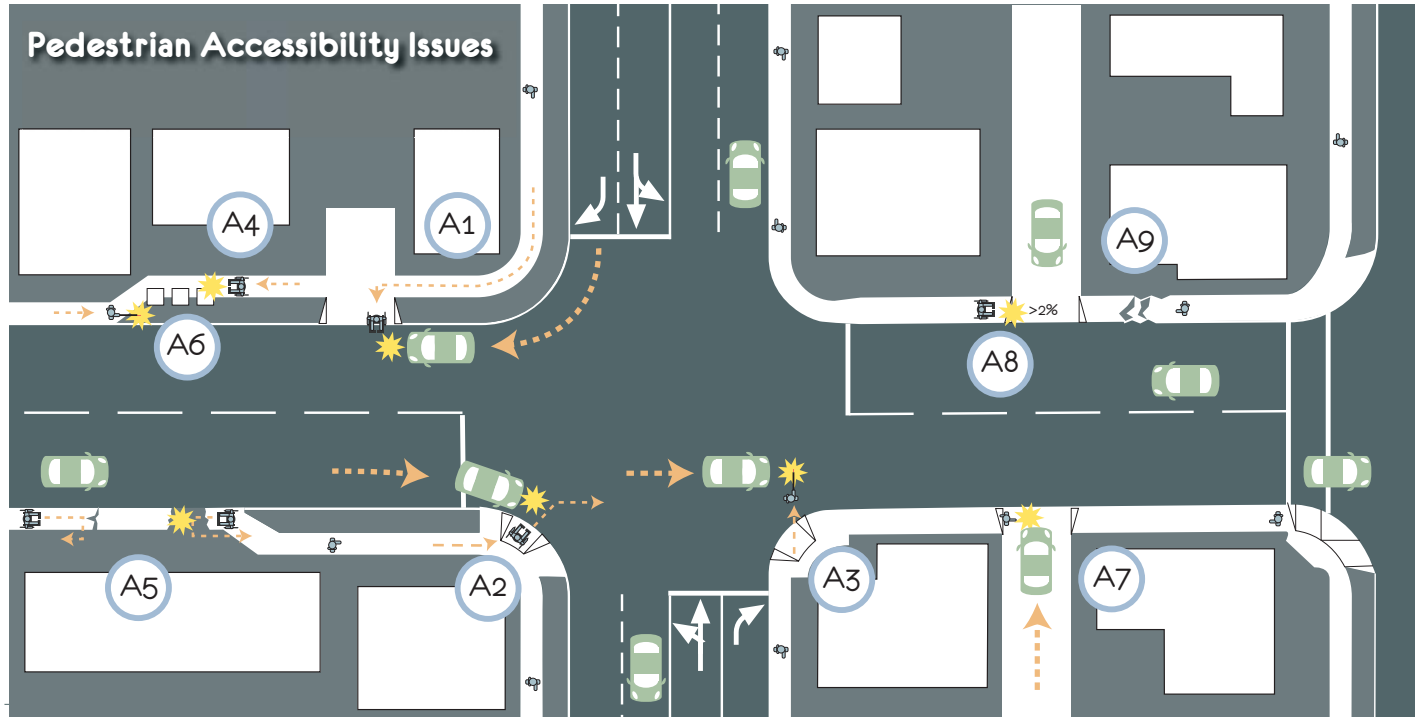


Table 7-2: Accessibility Issues and Possible Solutions

Code	Pedestrian Accessibility Issues	Possible Solutions
A1	Missing pedestrian ramps	1A, 2A
A2	Pedestrian ramps do not meet standards	2A, 3A, 4A, 6A, 7A
A3	Missing pedestrian signals	2A
A4	Sidewalk obstacles	3A, 4A
A5	Sidewalk gaps	4A, also see 20S
A6	Inconsistent sidewalk design	4A
A7	Cross slopes	5A
A8	Steep grades	6A
A9	Substandard walking surfaces	7A

Code	Possible Pedestrian Accessibility Solutions
1A	Pedestrian ramps
2A	Audible/visual crosswalk signals
3A	Walkways and ramps free of damage
4A	Pedestrian paths free of gaps, obstructions and barriers
5A	Sidewalks with limited driveways and minimal cross-slope
6A	Re-grade slope of walkway to meet ADA/Title 24 standards
7A	Repair, slice or patch lifts on walking surfaces and re-set utilities boxes flush

1A) Curb ramp meeting latest tactile strip and truncated dome requirements.

1A) Curb ramp in compliance with current tactile strip and truncated dome requirements.

2A) Pole mounted pedestrian signal actuator placed in accessible area next to the curb ramp.

3A) A good example of a walkway that is free of damage or trip hazards.

4A) A good example of a pedestrian path that is free of obstructions and barriers.

5A) A walkway separated from the curb with a parkway strip is the preferred solution.

6A) Re-grading the slope of a sidewalk to meet ADA and Title 24 standards is needed to improve the quality of accessibility.

7A) Repairing lifts and other obstacles on sidewalks also improves accessibility.

Pedestrian Safety Issues and Solutions

There are several typical safety issues and solutions associated with pedestrian crossings at intersections, driveways, and mid-block crossings. Figures 7-3 and 7-4 have been developed to describe the typical safety issues associated with pedestrians crossing at intersections and walking or crossing along roadway segments. Tables 7-3 and 7-4 suggest recommendations for possible solutions that can fully or partially address the safety issues. Examples of these solutions are illustrated on the pages following. Some photos examples were taken in National City and the others were from around the region.

Figure 7-3: Pedestrian Safety Issues at Intersections

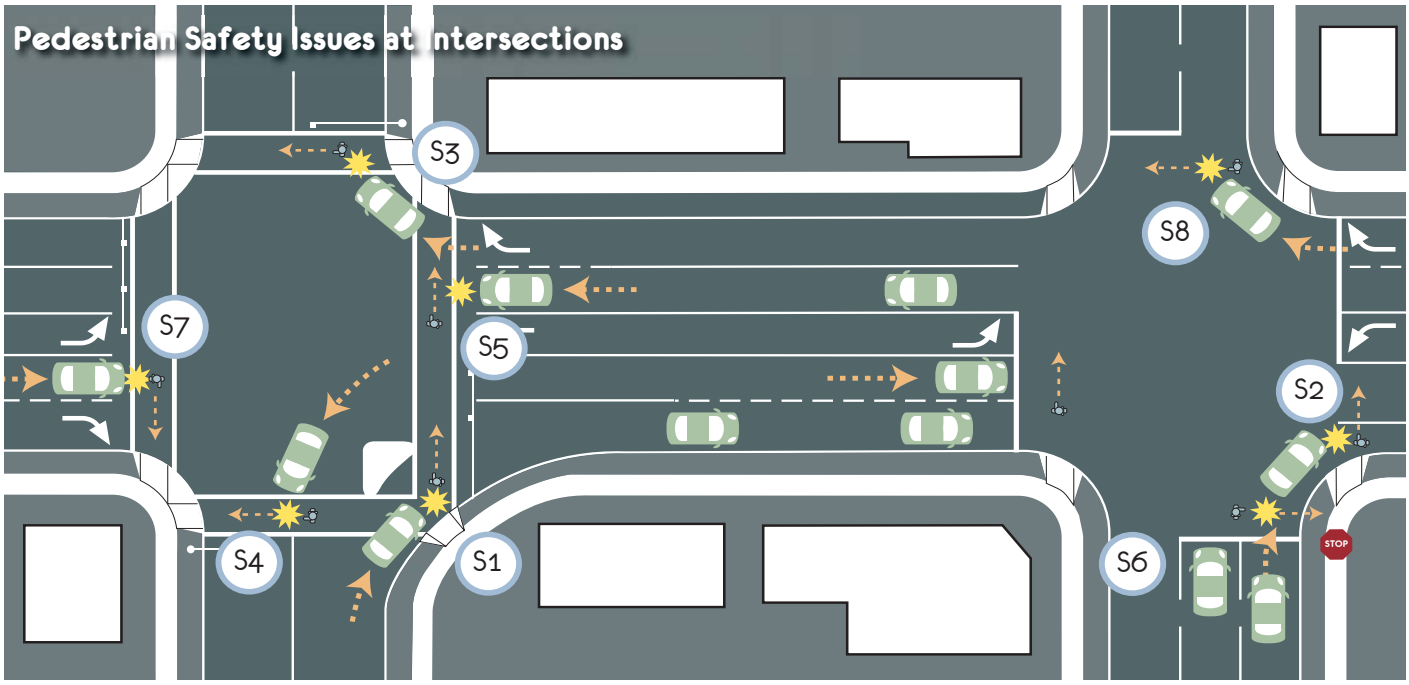


Table 7-3: Safety Issues at Intersections and Possible Solutions

Code	Pedestrian Issues At Intersections	Possible Solutions
S1	Right turning collisions	2S, 3S, 4S, 7S, 8S, 9S, 11S, 17S, 18S, 19S
S2	Turns from minor road stop-controlled intersection	2S, 3S, 4S, 7S, 17S, 19S
S3	Right turns at red lights	2S, 3S, 4S, 17S, 19S
S4	Left turning collisions	1S, 3S, 4S, 8S, 11S, 17S, 19S
S5	Wide streets	1S, 2S, 3S, 4S, 8S, 11S, 17S, 18S, 19S
S6	Multiple lane crosswalk collisions	2S, 3S, 4S, 5S, 17S, 18S, 19S
S7	Controlled intersection collisions	1S, 2S, 3S, 4S, 6S, 9S, 11S, 17S, 18S, 19S
S8	Uncontrolled intersection collisions	1S, 2S, 3S, 4S, 5S, 7S, 17S, 18S, 19S, also see 5W

Figure 7-4: Pedestrian Safety Along Streets at Intersections

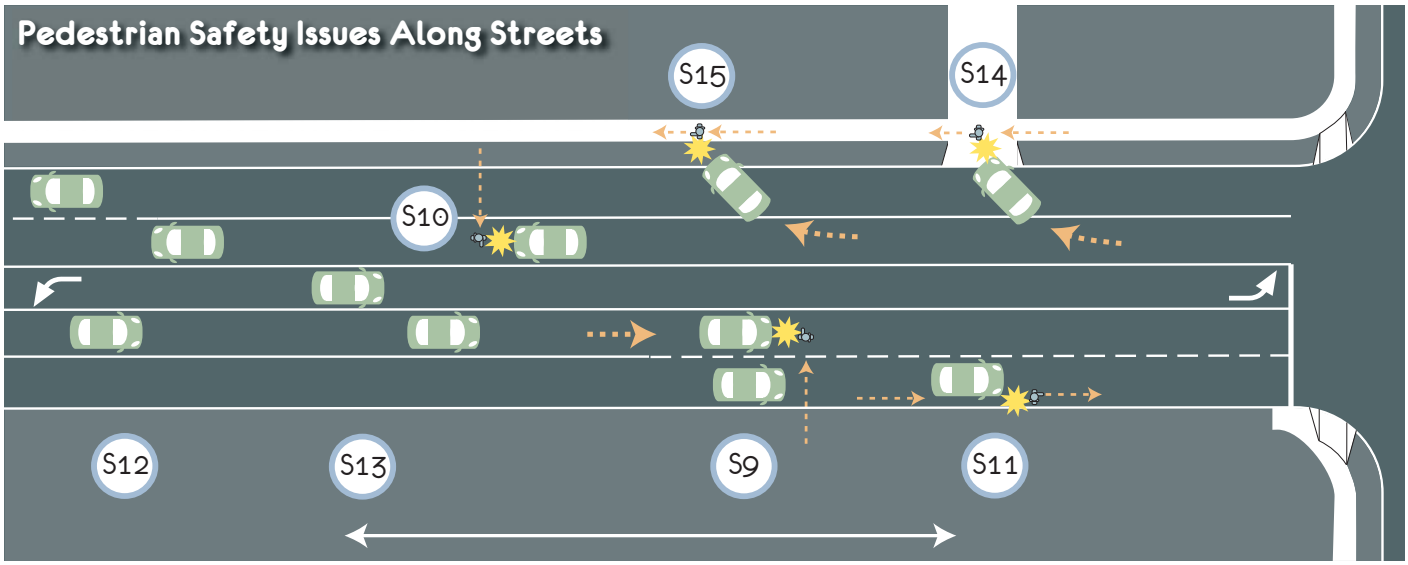


Table 7-4: Safety Issues Along Streets and Possible Solutions

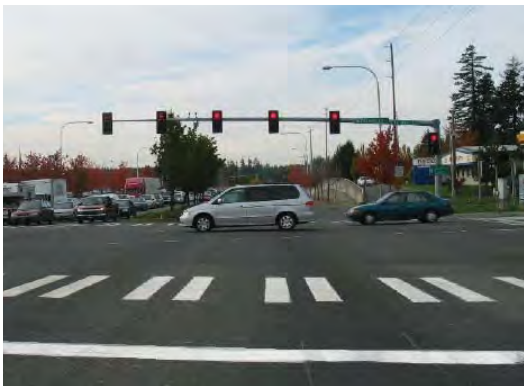
Code	Pedestrian Safety Issues Along Streets	Possible Safety Solutions (explained below and pictured on the following page)
S9	Lack of legal or safe crossings. Uncontrolled, restricted or excessively spaced crossings without stop signs or signal control can encourage mid-block crossings (whether legal or illegal).	1S, 5S, 10S, 11S, 12S, 13S, 14S, 17S, 18S, 19S
S10	Mid-block "jay walking." Safe, controlled intersection crossings often exist within typical blocks. However, some adjacent uses and high levels of pedestrian use may encourage illegal crossings, putting the pedestrian at risk, especially if crossing from between parallel parked vehicles.	1S, 5S, 10S, 11S, 12S, 13S, 14S, 17S, 18S, 19S
S11	Street collisions where no sidewalk exists. Where sidewalks are missing or damaged, pedestrians may be required to walk in the street, exposing them to collisions. Walking in the street is especially unsafe if vehicular speeds are above 25 mph, the travel lane is next to the curb or edge of the roadway, and the roadway is relatively narrow.	18S, 19S, 20S
S12	Unsafe conditions in the dark. Where lighting and/or building forms do not allow for defensible space, the walker may be subjected to personal harm.	17S, 18S
S13	Disincentive to walk in the dark. Inadequate light levels can influence a pedestrian's decision to not walk at night and can also result in collisions due to low visibility.	17S, 18S, 19S
S14	Turning into or out of driveways and alleys. Vehicles turning into or out of curb-cuts, driveways or alleys can collide with pedestrians on sidewalks. The driver is violating pedestrian right-of-way, but this collision is difficult to control through physical changes.	15S, 16S, 17S, 18S, 19S
S15	Out-of-control collisions on sidewalks. Pedestrians may be exposed to high speed vehicles where no buffers exist (such as trees, bike lane or parked cars). The problem is worse where there is no buffer between travel lanes and sidewalks.	6S, 15S, 16S, 17S, 18S, 19S

Table 7-4: Safety Issues Along Streets and Possible Solutions (continued)

Code	Possible Pedestrian Safety Solutions Along Streets
1S	Median refuges (a safe place to stand in the street)
2S	Pedestrian pop-outs (curb/sidewalk extensions into street)
3S	High-visibility crosswalk striping
4S	Elevated and/or specially paved crosswalks
5S	Advance stop bars at least 15 feet, but ideally 30 feet from crosswalks
6S	Radar speed monitoring and display
7S	Reduced curb radii
8S	Early pedestrian start at crossing point
9S	No right turn on red at intersection
10S	Mid-block crosswalks with pedestrian flashers, but no traffic control
11S	Automatic pedestrian detection and signal control
12S	Mid-block crosswalks with signs, median or curb extensions and flashing lights in roadway
13S	Mid-block crosswalks with pedestrian-actuated traffic control devices
14S	One-lane mid-block crossing with high contrast markings, signs, and center lane marker
15S	Parkway planting buffer between cars and pedestrians
16S	On-street parking buffer between cars and pedestrians
17S	Adequate pedestrian lighting levels
18S	Various traffic calming measures
19S	Enforcement and education solutions
20S	Missing sidewalk added or provide adequate walkway width clear of obstructions

1S) A good example of a median refuge that provides access without ramps and protects a walker unable to make it across all travel lanes at one time.

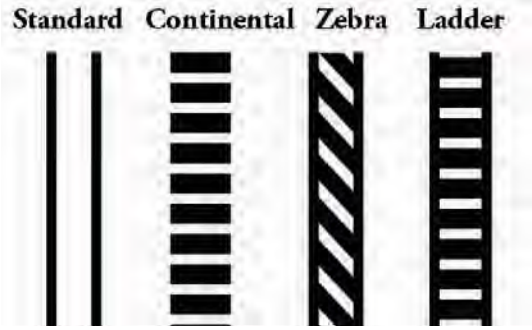
2S) Pedestrian pop-outs (curb extensions) can provide increased safety, improved visibility of pedestrians, protection for parked cars, and a shorter crossing distance for the pedestrian. They also provide for street furnishings, landscaping and social areas.



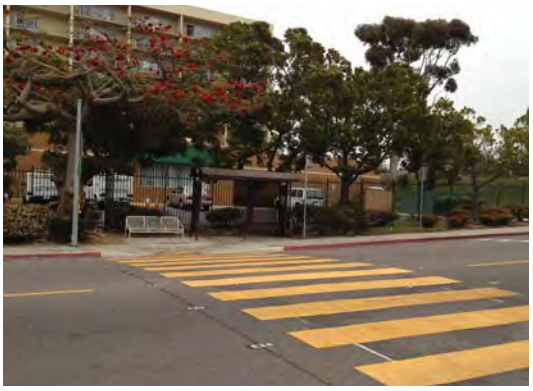
3S) Ladder style markings can be modified and spaced to lower the wear from vehicle tires.

4S) Raised crosswalks (speed tables) provide clear signs of a pedestrian crossing but need to be limited to lower speed, lower volume streets.

1S) Median refuges should be considered at intersections with or without traffic control. Multi-lane roadways should utilize solutions that include traffic control.



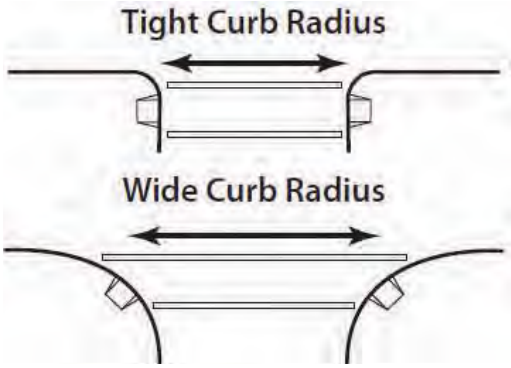
3S) A variety of crosswalk striping are used in the United States. All are typically used in California except for the solid and the dashed. The standard would suffice for many intersections. Intersections with higher levels of pedestrian use, should utilize a spacing modified continental style (see 3S.2).



3S) Certain urban areas (that are pedestrian dominant) should utilize high visibility markings in the entire intersection.

5S) Adequate lighting, pop-outs, the latest MUTCD approved signs and high visibility markings are essential for non-controlled multi-lane mid-block crossings. Note the stop bar (right image) located 15 feet from the actual crosswalk.

6S) Many cite increased regulation and enforcement as the solution to controlling speeding and reckless driving. Physical improvements provide a long term solution. However, some devices, such as radar speed display systems, can help educate the public and will slow the driver down while in use.



7S) Reducing the radius of corners also serves to decrease the crossing distance for a pedestrian and places them in a higher visibility zone.

8S) Right turn on red restrictions with an advance lead for the pedestrian crossing phase can reduce right hand turning conflicts.

9S) Right turn on red restrictions can lessen the conflicts between users and, if signs are properly placed, can increase awareness of these types of pedestrian / vehicle conflicts. Photo credit: Michael Ronkin

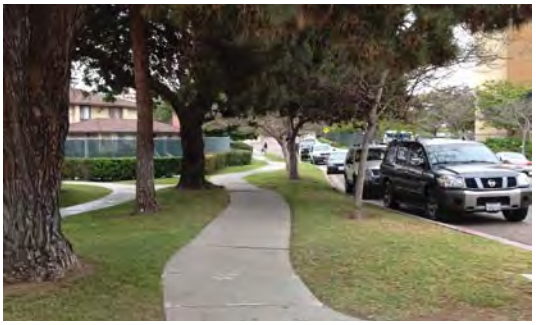
10S) A number of flashing pedestrian crossing warning signs are used throughout the region. Other solutions may be more appropriate where multi-lanes of travel on high volume streets exist. This crossing has visible signage and crosswalks, along with a median refuge. Improved street lighting and advance stop bars could increase safety, but a pedestrian actuated traffic signal would provide for the safest condition.

11S) A traffic signal or special pedestrian crossing can be controlled by sensors that note when a pedestrian approaches and / or leaves an intersection or a mid-block area.

12S) This crossing utilizes sensors to detect the presence of pedestrians and in-pavement lighting and signage to indicate their presence to others.

13S) The response time for stopping traffic for this mid-block crossing is quick. The design of the adjacent walkways concentrates pedestrians into this walkway crossing.

14S) If traffic control is not provided at an intersection, signage and striping along with a center pedestrian zone marker may help to make these crossings as safe as possible. This type of sign may require changes to existing policies, though it is allowed under MUTCD.



15S) Trees placed in a parkway strip with the sidewalk away from the edge of the curb are much safer for pedestrians since the trees provide a level of collision protection and the distance increases the ability to get out of the way. Tree lined streets also tend to slow speeds slightly.

15S) An outside striped shoulder or bike lane along with a parkway strip and street trees can dramatically reduce collision potential and increase comfort levels for pedestrians.

16S) Adjacent parallel or angled parking provides an increased level of protection and comfort along major streets.

17S) Adequate levels of pedestrian lighting are critical for public safety related to vehicular collisions or for the avoidance of crime related incidents.

18S) Modern roundabout with properly planned pedestrian crossings, markings, signage and lighting.

18S) Traffic circle

Typical Bicycle Issues and Solutions

Figure 7-5 shows the typical bicycle safety issues, briefly discusses them and provides possible solutions. These issues are common to the every day cyclist.

Figure 7-5: Bicycling Issues and Solutions

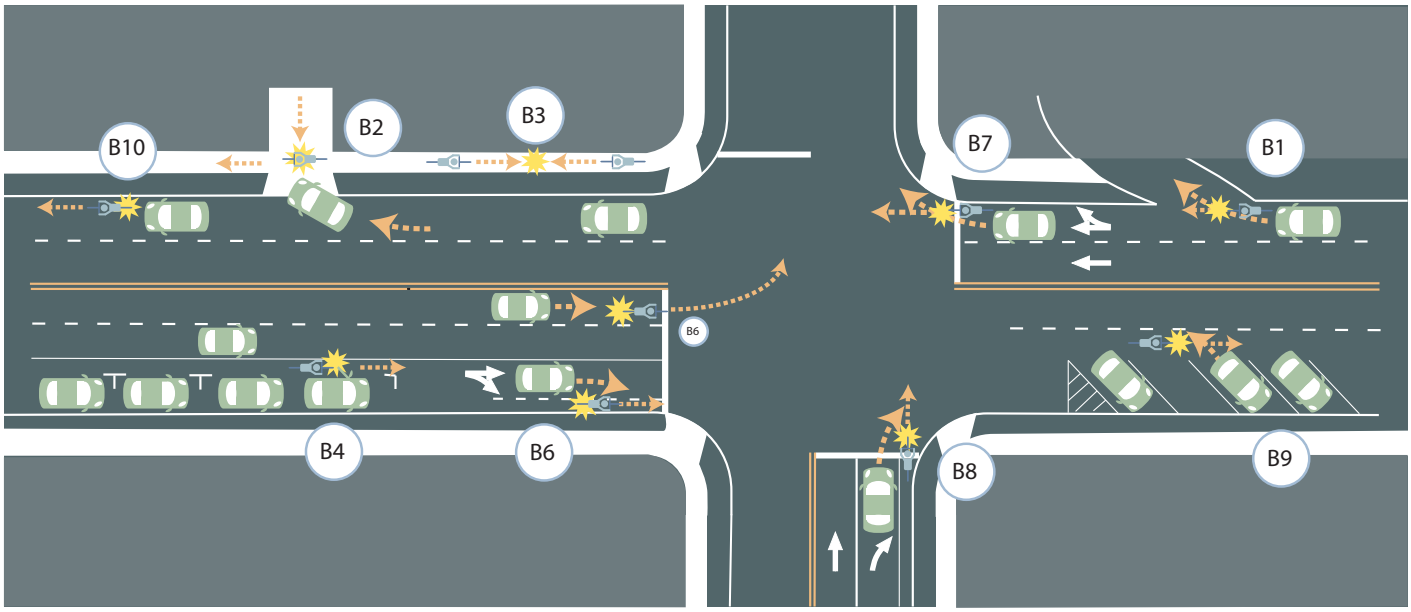


Table 7-5: Bicycling Issues and Possible Solutions

Code	Bicycle Issues	Possible Solutions
B1	Crossing Freeway On-ramps. Bicycle facilities that cross freeway on-ramps put the cyclist in a conflict point with crossing traffic that is accelerating to highway speeds.	1B, 8B, 9B
B2	Alley Conflicts. Cyclists that use alleys for travel must be aware of visibility problems for motorists, pedestrians and other cyclists.	1B, 2B
B3	Sidewalk Conflicts. Cyclists riding on the sidewalk not operating at pedestrian speeds must yield to pedestrians and use caution at every driveway, intersection, alley and business entrance.	1B, 2B, 3B, 14B
B4	Door Zone. Cyclists riding adjacent to parallel parked cars cannot be expected to ride closer than three feet to the parked cars. They are at risk for being hit or running into an opening car door. This type of collision between a parked car and bicyclist is often referred to as "dooring".	4B
B5	Left Turning Conflicts. Cyclists needing to turn left must navigate their way to the left turn lane (or left lane) are at risk for being hit as they are no longer in an area where they are more likely to be seen.	7B, 8B
B6	Right Turning Vehicles. Cyclists proceeding straight through an intersection are at risk of being hit by a right turning vehicle. This type of collision is often referred to as a "right hook".	9B, 10B
B7	Right Turn Only Lanes. Cyclists proceeding straight through an intersection are at risk for being hit by a right turning vehicle. Bike lanes or shared lanes end before the intersection without providing a facility to allow a cyclist to continue through the intersection.	9B, 11B, 12B
B8	Bike Lanes Placed in the Wrong Location at an Intersection: Bike lanes are installed to the right of right turn only lanes. Cyclists proceeding straight through an intersection are at risk for being hit by a right turning vehicle. This type of collision is often referred to as a "right hook".	9B, 11B
B9	Angled Parking. Cyclists riding behind angled parking spaces are vulnerable to being backed into due to impeded visibility from adjacent vehicles.	10B
B10	Outside Lane Too Narrow. The outside travel lane is too narrow for bike lanes to be installed and to share with vehicles.	1B, 4B, 8B, 13B

Table 7-5: Bicycling Issues and Possible Solutions (continued)

Code	Possible Bicycle Solutions
1B	Use caution, yield to slower users
2B	Ride in designated bike lanes, routes or streets
3B	Ride bicycle at pedestrian speed
4B	Mark proper lane placement with Shared Lane Markings or "Sharrows." Sharrows surrounded by a green painted box adds additional awareness
5B	Install a bike lane
6B	If space is available, install a buffer between the bike lanes and parking lane edge
7B	Install a bike box
8B	Increase bicycle awareness signage, "Share the Road" or "Bikes May Use Full Lane"
9B	Add color to the bike lane at conflict points
10B	Install reverse angled parking for improved sight lines and increased safety
11B	Install bike lanes between thru travel and right-turn-only lane
12B	Follow Caltrans MUTCD Figures 9C-4 and 9C-5
13B	Install Sharrows in the thru lane to direct cyclists thru the intersection
14B	Create districts where bicycling is not allowed on sidewalks

1B) Sign and enforce appropriately when pedestrians and bikes share the sidewalk.

2B & 5B) Bike Lanes on Pacific Coast Highway.

3B) Enforce bicycling speed limits when sharing facilities with pedestrians.

4B) Shared lane markings or "sharrows" remind motorists bicycles can be expected in the roadway and help cyclists place themselves within the roadway.

6B) A buffer removes extra space from a travel lane and increases the distance between vehicular and motor traffic. Photo credit: APBP

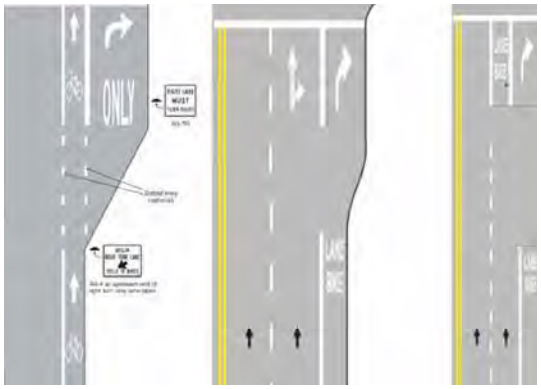
7B) A bike box creates an advanced stop bar for cyclists. This extra room provides an area for cyclists to cue up in front of cars waiting at a red light. While this treatment is still considered experimental by the MUTCD, it is thought that the treatment increases a bicyclist's visibility and therefore safety.

8B) Additional signage reminds motorists of the bicycle traffic on the street.

9B) Color in the bike lane is a visible reminder to a motorist to expect cyclists in the bike lane.

10B) Reversed angled parking allows greater visibility when motorists are exiting a parking stall.

11B) Bike lanes properly installed between thru travel lane and right-turn-only lane.



12B) Example of bicycle lane treatment at a right turn only lane.

13B) Example of shared lane marking directing cyclists thru and intersection.

14B) Example of business and commercial district signs enforcing policies on bicycle on sidewalks.

Cost Effective Traffic Calming

This section summarizes creative ideas for cost-effective traffic calming measures, including improvements such art work, striping, speed humps and raised crosswalks. Case studies have been included to provide feedback on the different techniques to identify which counter-measure fits best in a specific project area. General costs associated with these techniques is also included in Tables 7-6 and 7-7. This section provides the city with additional tools to improve the city's pedestrian and bi-cycling environment and to involve the city's youth and Arts Center wherever possible.

Intersection Murals

Intersection murals can be great opportunities for community building and placemaking. Creating such a mural requires community collaboration from project in-ception through implementation and has the potential to strengthen neighborhood identification and owner-ship. While not officially recognized as a traffic calming device, intersection murals, through beautification and conveying a sense of ownership, may cause motorists to be drive more respectfully and have an indirect impact on traffic speeds.

Intersection murals have been implemented at several locations throughout the U.S., but are most commonly associated with the City of Portland, where a dedicated non-profit (City Repair) and City Ordinance (No. 175937) have ensured their proliferation. While evidence regard-ing the efficacy of these murals is, unfortunately, anec-dotal, City Repair did conduct a survey among residents at one location. Survey respondents noted the following positive changes in conjunction with the mural's instal-lation:

Crime

- 87% of respondents feel safer and say that there is less crime.
- 13% of respondents feel safety and crime has remained the same.

Traffic Speed

- 90% of respondents say traffic speed through the inter-section has decreased.
- 10% say traffic speed has remained the same.

Traffic Safety*

- 81% of respondents say traffic safety in the intersection has increased.
- 19% say traffic safety has remained the same.

*There have been no accidents in the years since implementation of the murals in Portland and the street murals are updated annually by each neighborhood.

References

Portland: http://cityrepair.org/about/how-to/placemaking/intersectionrepair/
Philadelphia: http://wwbpa.org/2010/12/safe-routes-intersection-mural/

Neighborhood example where mural survey was conducted (Portland, OR)

Another neighborhood example (Portland, OR)

A Safe Routes to Schools example (Philadelphia, PA)

Pavement Texture

Traffic calming though pavement texture is achieved through small changes in vertical alignment and the resultant reverberation and noise. These effects are achieved, in turn, through the addition of pavers, a variety of tactile implants, rumble strips or other texture-producing devices.

The cost and ease of implementation of this treatment varies widely based on the material and area treated. Streets paved entirely with brick or cobble provide a high level of traffic calming, but at the cost of high ambient noise. Additionally, they are generally expensive and difficult to implement and maintain.

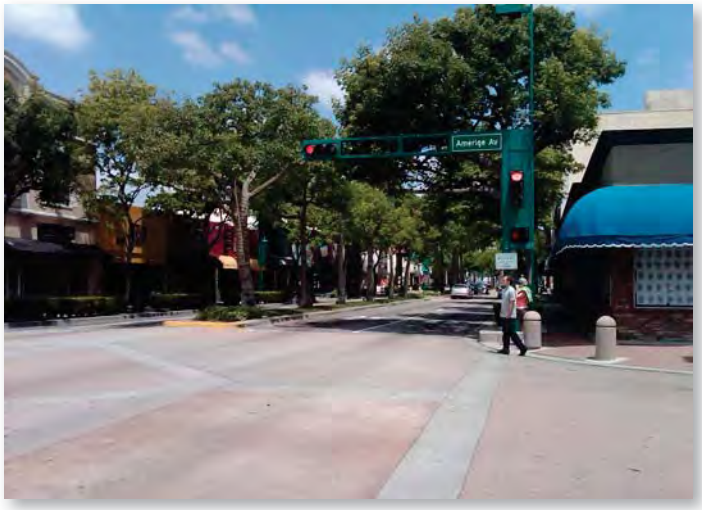
A quieter and more cost-effective treatment may entail the addition of texture to select locations of the street. Pavement texture is often installed in conjunction with speed humps, speed tables or crosswalks. While the bundling of traffic calming treatments increases their efficacy, it makes the isolated study of treatments difficult. This may be an issue where crosswalks are not warranted or constrained budgets exist.

Likely the most cost-effective and easy-to-implement form of pavement texture, and one that may additionally slow speed through effectively narrowing the roadway, are rumble strips.

One study in Provo, Utah found rumble strips to reduce speeding by 5%.

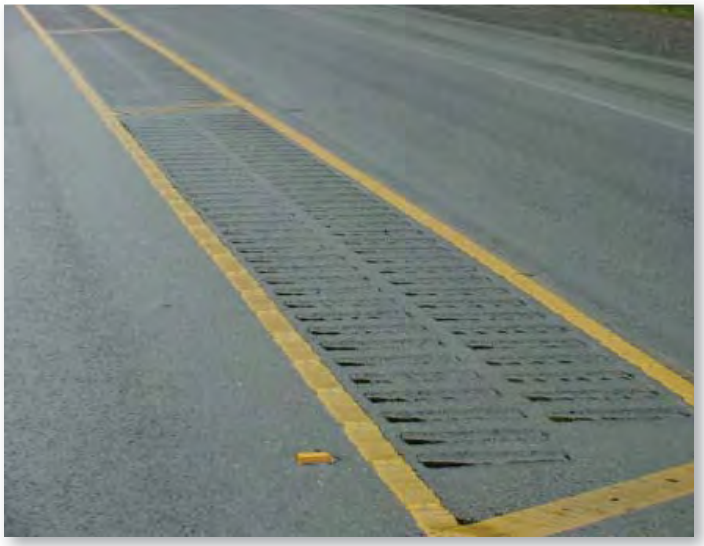
References

http://www.ite.org/traffic/tcsop/Chapter3c.pdf
http://afcity.org/Portals/0/PublicWorks/Docs/TRAFFIC%20CALMING.pdf
http://safety.fhwa.dot.gov/intersection/resources/fhwasa06016/chap_4.htm



Cobblestone and brick streets that discourage speeding (Fullerton, CA)

Block paving between two promenades (Santa Monica, CA)



Rumble strips (Provo, UT)

Striping

Striping as a traffic calming device may include centerline stripe, edge lines, centerline plus edge lines, striped median, striped choker or chicane, striped speed hump (without vertical element) and psycho-perceptive striping. A 2011 ITE-published study of roadway striping, including four case studies, allowed for more nuanced comparisons and lessons learned. The results of the studies are summarized in the table and paragraph below.

Lessons learned from the four case studies above include:

- Roadway striping can achieve significant gains in traffic calming , with nearly a 24% reduction in speed in some cases.
- Striping is cost-effective and, usually easy to implement.
- Striping is most effective where there are significant speeding problems. Striping had far less impact in Case Study #4, where speeds were lower. Where further traffic calming is desired in a similar setting, more aggressive treatments (e.g. shifts in vertical and horizontal alignment) should be pursued.

Table 1. Before-and-after speed surveys.

Location	Roadway	85th% Speed	
		Before Traffic Calming Striping (mph)	After Traffic Calming Striping (mph)
Case Study #1 Newport Ridge North (Newport Beach)	• Chambord N/O Rivay	46	37
	• Chambord S/O Musset	47	39
	• Chambord S/O Baryemon	45	39
Case Study #2 The Reserve (San Clemente)	• Montana del Sol N/O Camino Vera Cruz	23	22
	• Colina Rodante S/O Camino Vera Cruz	32	30
	• Calle de Los Arboles N/O Camino Vera Cruz	27	26
	• Calle de Los Arboles S/O Camino Vera Cruz	34	33
Case Study #3 Oak Creek (Irvine)	• Eagle Creek W/O Indigo	37	31
	• Eagle Creek W/O Palm Wood	38	27
Case Study #4 Summit at Turtle Ridge (Irvine)	• Garden Terrace E/O Hedgewood	31	30
	• Crest Terrace N/O Blue Summit	29	29
	• Canyon Terrace N/O Cezanne Valley	33	31
	• Valley Terrace S/O Climbing Vine	30	28
Summit at Turtle Ridge (Irvine)	• Garden Terrace N/O Summit Park	31	30
	• Crest Terrace W/O Summit Park	29	29
	• Canyon Terrace N/O Summit Park	33	31
	• Valley Terrace N/O Summit Park	30	28
	• Summit Park Drive at Valley Terrace	46	44
	• Summit Park Drive W/O View Terrace	44	44
	• Summit Park Drive E/O Garden Terrace	43	42
	• Summit Park Drive at Garden Terrace	39	39

Typical Roadway Striping (Chambord Road, Newport Beach)

Psychoperceptive Roadway Striping (Irvine, CA)

Reference:

http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf

"SLOW" and "MPH" Pavement Markings

In 2009, the FHWA published a study on *Traffic Calming on Main Roads Through Rural Communities* (in Iowa). Though the subject matter was very specific, the research outcomes were very interesting and may have some bearing on the application of traffic calming measures in a variety of settings. Most interesting was the fact that a speed limit marking, with red backing, was surprisingly effective in reducing speeds (up to 9% reduction in 85th percentile speeds), while roads including pavement legends reading "SLOW" incurred speed increases and were deemed completely ineffective.

The study noted that one drawback to the red paint was the need for frequent maintenance. Still, this treatment is noteworthy for being both effective and simple.

Reference:
http://www.fhwa.dot.gov/publications/research/safety/08067/

Table 8. Speeds before and after installing "SLOW" pavement legend.

Location	Analysis period	Sample size (veh)	Posted speed (mi/h)	85th Percentile (mi/h)	Change in 85th percentile speed from before period (mi/h)						
First legend	Before	2812	25	41							
	1-month	2888	25	44							+3
	6-month	2901	25	42					+1		
	9-month	2570	25	42					+1		
Second legend	Before	3503	25	34							
	1-month	3294	25	34				0			
	6-month	2886	25	32	-2						
	9-month	3084	25	33		-1					

Table 9. Speeds before and after "35 MPH" pavement legend with red background markings.

Location	Analysis period	Sample size (veh)	Posted speed (mi/h)	85th Percentile (mi/h)	Change in 85th percentile speed from before period (mi/h)									
Before curve	Before	2190	35	52										
	1-month	2150	35	47					-5					
	3-month	2022	35	47					-5					
	9-month	4033	35	43	-9									
	12-month	2031	35	51									-1	
West entrance	Before	2,369	35	45										
	1-month	2,256	35	40					-5					
	3-month	2,119	35	41						-4				
	9-month	4,027	35	37		-8								
	12-month	3,168	35	41						-4				
East entrance	Before	4254	35	40										
	1-month	3998	35	38								-2		
	3-month	2900	35	39									-1	
	9-month	4087	35	40										0
	12-month	4031	35	39									-1	

Speed Humps

Dorman Road is a two-lane residential street in Polk County, central Florida. A total of 83 residences access Dorman Road, including those from two subdivisions. The study segment is about 2,600 feet long and includes two school crossings. The posted speed limit is 25 mph. In total, five speed humps were installed along this section—at 255 feet, 660 feet, 1,170 feet, 1,670 feet and 2,305 feet north of Schoolhouse Road.

The speed humps are 3.5 inches high at the center and 12 feet wide. They extend across both travel lanes between pavement edge lines. To improve their aesthetic appeal, an imprinted brick texture was applied (Figure 1).

Figure 1. Speed Hump Treatment

Table 1. Pre- and post-installation data comparison.

Dorman Road	Between Schoolhouse Road and Serrento				Between Serrento and Nestlewood Court				Between Nestlewood Court and West Pipkin Road			
Characteristics	Pre	Post	Δ	% Δ	Pre	Post	Δ	% Δ	Pre	Post	Δ	% Δ
Volume measure												
Average day	1,562	1,104	-458	-29	1,297	1,237	-60	-5	1,661	1,422	-239	-14
Speed measures (mph)												
Mean	35	24	-11	-31	22	23	1	5	29	22	-7	-24
Median	33	24	-9	-27	22	23	1	5	30	22	-8	-27
85th percentile	41	29	-12	-29	37	29	-8	-22	38	27	-11	-29
10 mph pace	31–40	21–30	-10		26–35	21–30	-5		26–35	16–25	-10	
Percent in pace	52.2	71.4	19.2	37	58.6	67.8	9.0	16	45.5	76.2	30.7	67
Percent over posted speed	91.1	30.1	-61.0	-67	75.0	32.0	-43.0	-57	71.3	16.1	-55.2	-77

The corridor-specific analysis results indicated that speed humps reduced cut-through traffic and 85th percentile speeds, increased the number of vehicles in the 10 mph pace and decreased posted speed limit violations. It also can be concluded that more than one speed hump on short roadway sections, usually less than 1,000 feet, does not necessarily yield any more benefits than only one installation. This is because motorists may not have adequate time and distance to accelerate before responding to intersection geometry or the next hump.

This study focused on evaluating the effectiveness of a traffic calming treatment on a selected corridor. However, studies of this type could benefit from analyzing neighborhood corridors because of the potential for speed increases, practiced as a compensation measure, by motorists.

Reference:

http://www.ite.org/traffic/documents/JB05GA26.pdf

Speed Tables

Between 1996 and 2000, the city of Sarasota, FL conducted a study of the effectiveness of speed table projects on traffic speeds, traffic volumes, and cut-through traffic at nine locations throughout the city. All streets studied had a posted speed limit of 25 mph and carried between 240 and 1,460 vehicles per day.

Traffic speeds decreased at all nine locations. Prior to the installation of speed tables, the average 85th percentile speed was 35.1 mph. Afterward, it was reduced to 28.9 mph, a decrease of 17%.

Speed tables had a mixed effect on traffic volumes, increasing at three and decreasing at six locations. Although the change in traffic level at each site ranged from a decrease of 29% to an increase of 42%, the nine locations averaged a decrease in traffic levels of 11%.

Lastly, Sarasota studied the effects of the speed tables on cut-through traffic. Prior to the construction of speed tables, the proportion of cut-through traffic ranged from 10% to 88%. While cut-through traffic increased at three of the sites, it decreased at the other six. Overall, change in cut-through traffic ranged from a 49% decrease to an 87% increase.

In summary, this study showed mixed results with regard to speed table impacts on traffic volumes and cut-through traffic, but significant benefits in the area of speed reduction. Slower speeds and lower traffic volumes should contribute to a safer environment for pedestrians, especially in areas where many people cross the street.

Speed table with Psychoperceptive paint (Sarasota, FL)

Speed table with block paving (Solana Beach, CA)

Speed Cushions

A traffic calming project involving speed cushions in Vancouver, WA was found to be highly successful in many respects. Evergreen Boulevard (25 mph posted speed) was a relatively constrained collector street, near a commercial corridor and with significant pedestrian, bicycle and transit use. Both complaints of speeding and desire for cycling improvements (the boulevard was identified as a preferred route for cyclists) caused the city to look for solutions. Upon further investigation, city staff found an adjacent bike path, as well as the removal of all parking, to be infeasible.

The eventual compromise included the installation of four sets of speed cushions and landscaping. Two different configurations were envisioned to address the needs of the commercial district: (1) near the commercial district, some parking was removed and the roadway was designed as shared; (2) elsewhere, all parking was removed and bike lanes were added. Results of the project were overwhelmingly positive with 85 percentile speed dropping by nearly 14% and a 71% drop in the percentage of vehicles traveling over 30 mph. Furthermore, cyclists, residents, transit and fire agencies responded favorably to the project. The cushions were $2,000 each and the project was funded by a federal grant and local matching funds.

Reference:
http://www.bicyclinginfo.org/bikesafe/case_studies/casestudy.cfm?CS_NUM=504

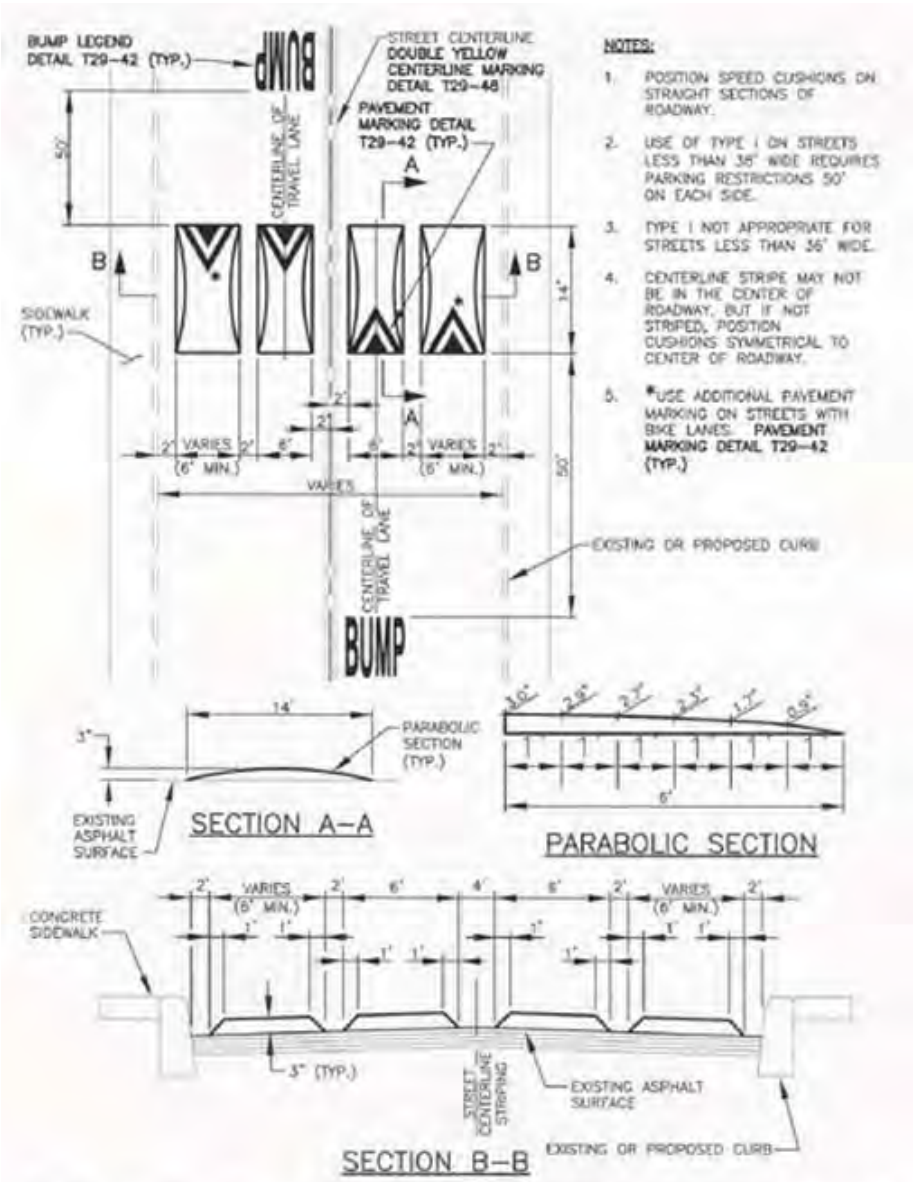


Figure 4. Speed cushion design configuration for 36–38 ft streets — use with parking restrictions.

Table 7-6: Speed Reduction Summary and Cost Estimates

Treatment/Source	Type	Description	Pros	Cons	Effectiveness	Cost
Street Murals ("Intersection Repair") http://cityrepair.org/about/how-to/place-making/intersectionrepair/		Intersection Repair is a means of reclaiming the public space of the street for the whole community. The intersection of pathways becomes a place for people to come together. The space becomes a place – a public square.	• Inexpensive, nominally free (1). • Offers beautification and expression of neighborhood identity. • Engages the community; the community necessarily takes ownership.	• Cyclists in Portland, where this treatment is common, have remarked that it is slippery and unsafe in rainy conditions (2). • While falling under the category of "psycho-perceptive control," it is not an approved treatment in any official manual.	Unknown	None (1)
Pavement Texture http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf		Can be in the form of rumble strips or embedded pavement markers made of durable plastic.	• Can cause minor reduction in speed. • Can be aesthetically pleasing. • Can be tied into crosswalks or intersections to define channelized areas for pedestrians.	• Costly to implement. • Difficult to remove. • Can effect some types of pedestrians crossing the street. • Can cause noise disturbance.	Limited Data	$5-$16 per sq ft
Striping http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf		Striping as a traffic calming device may include centerline stripe, edge lines, centerline plus edge lines, striped median, striped choker or chicane, striped speed hump (without vertical element) and psycho-perceptive striping.	• Effective in reducing speeds from 1 to 7+ mph. • Accepted by many public and emergency service agencies because they are standard traffic control. • Quick and easy to implement. • Easy to reverse.	• Some limitations in speed reduction. • Less effective when speeds are already relatively low (<35 mph)	1-7+ mph decrease	$500-$1,000 per 500 ft
"SLOW" Pavement Markings http://www.fhwa.dot.gov/publications/research/safety/08067/			• Relatively inexpensive. • Somewhat effective.	• Not incredibly effective. • Requires routine maintenance (repainting).	Up to 2 mph decrease	< $2,500

Treatment/Source	Type	Description	Pros	Cons	Effectiveness	Cost
"MPH" Pavement Legend http://www.fhwa.dot.gov/publications/research/safety/08067/	Red Background	A study by the Federal Highway Administration found such a treatment, when backed with red paint, to be highly effective; applications with white paint only were highly ineffective.	• Cost-effective. • Highly effective in reducing speeds.	• Red paint required routine maintenance.	Up to 9 mph decrease	< $2,500
Speed Humps http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf		Speed humps are rounded, raised areas placed across the roadway. They are generally 10 to 14 feet long (in the direction of travel) and are 3 to 4 inches high. The profile of a speed hump can be circular, parabolic, or sinusoidal. They are often tapered as they reach the curb on each end to allow unimpeded drainage.	• Effectively reduces speed by approximately 8 mph. • Relatively inexpensive. • Can cause some diversion of excess traffic volumes.	• Not accepted by many local jurisdictions and emergency service agencies. • Moderate cost considerations. • Can adversely impact bicycles/motorcycles. • Difficult to remove.	Up to 8 mph decrease	$1,500-$3,000 per unit
http://trafficcalming.org/	12 ft				Average of 22% decrease in the 85th percentile travel speeds	$2,000 per unit
http://trafficcalming.org/	14 ft				Average of 23% decrease in the 85th percentile travel speeds	$2,000 per unit
Speed Tables http://trafficcalming.org/	22 ft	These are flat-topped speed humps often constructed with brick or other textured materials on the flat section. Speed tables are typically long enough for the entire wheelbase of a passenger car to rest on the flat section. Good for locations where low speeds are desired but a somewhat smooth ride is needed for larger vehicles. Their long flat fields give speed tables higher design speeds than Speed Humps.	• Smoother for large vehicles than speed humps. • Effective in reducing speeds.	• • They are less effective in reducing speed than speed humps. • May be expensive; often require expensive materials. • May increase noise and air pollution.	Average of 18% decrease in the 85th percentile travel speeds	$2,000 per unit

Treatment/Source	Type	Description	Pros	Cons	Effectiveness	Cost
Speed Cushions http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf		A speed cushion is type of speed hump that allows larger vehicles, especially fire trucks, to straddle them without slowing down. Several small speed humps are installed in a series across a roadway with spaces in between them.	• Effective in reducing speeds up to 5 mph. • More acceptable to public and emergency service agencies because they slow normal-sized vehicles while allowing the passage of emergency vehicles.	• Some public and emergency service agencies do not support these devices. • Cost for construction is moderate. • Difficult to remove.	5 mph	$2,500-$3,500 per unit
Raised Crosswalks http://trafficcalming.org/		Raised crosswalks are Speed Tables outfitted with crosswalk markings and signage to channelize pedestrian crossings, providing pedestrians with a level street crossing and increasing their visibility.	• Raised Crosswalks improve safety for both pedestrians and vehicles • If designed well, they can have positive aesthetic value. • They are effective in reducing speeds, though not to the extent of Speed Humps	• Textured materials, if used, can be expensive • Their impact on drainage needs to be considered. • Their may increase noise and air pollution.	Average of 18% decrease in the 85th percentile travel speeds	$4,000 per unit
Speed Radar Signs http://www.fhwa.dot.gov/publications/research/safety/08067/		Temporary electronic signs that display motorist speed as they approach the sign. This treatment should be installed alongside posted speed limits.	• Relatively effective with speed reductions of up to 7 mph.	• Can be relatively expensive.	7 mph	$5,000 to $12,000
Medians (may include pedestrian refuge) http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf		Medians may vary widely in design and materials used but generally refer to a strip of land between the lanes of opposing traffic.	• Can reduce speeds to some degree. • Can provide aesthetic benefits to the community. • Provides a permeable surface to handle stormwater run-off.	• Costly to implement. • Difficult to remove. • Can cause additional maintenance costs. • May impact parking.	2-3 mph	$5,000-$15,000 per unit

Treatment/Source	Type	Description	Pros	Cons	Effectiveness	Cost
Chokers (2) http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf; http://trafficcalming.org/		Chokers are curb extensions at mid-block locations that narrow a street by widening the sidewalk or planting strip. If marked as crosswalks, they are also known as safe crosses. Two-lane chokers leave the street cross section with two lanes that are narrower than the normal cross section. One-lane chokers narrow the width to allow travel in only one direction at a time, operating similarly to one-lane bridges. They are good for areas with substantial speed problems and no on-street parking shortage.	• Effectively reduces traffic speed approximately 3 mph. • Can reduce roadway width to reduce walking distance for pedestrian (which is a safety benefit). • Can be enhanced with landscaping to improve aesthetics.	• Expensive to implement (see reverse angled parking option below). • Can cause drainage issues. • Difficult to reverse. • Some loss of parking (See parking option). • Can impact bicycle facilities.	Up to 3-5 mph; Average of 7% decrease in the 85th percentile travel speeds	$7,000-$15,000 per pair; $7,000-$10,000
Chicanes (2) http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf	Landscaped	Chicanes are curb extensions that alternate from one side of the street to the other, forming S-shaped curves.			Up to 3-5 mph	$10,000 - $15,000 per pair
http://www.bicyclinginfo.org/bikesafe/countermeasure.cfm?CM_NUM=26	Reverse Angle Parking	Chicanes can be created by alternating on-street parking, either diagonal or parallel, between one side of the street and the other. Each parking bay can be created either by restriping the roadway or by installing raised, landscaping islands at the ends of each parking bay.	• Cost-effective. • Can provide additional parking.	• Less aesthetically appealing than its landscaped counterparts.		Should be far less than landscaped version
Mini Traffic Circles http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf; http://trafficcalming.org/		These are raised circular islands constructed in the center of residential or local street intersections. They may vary in design and materials used.	• Minor reduction in speed. • Improves aesthetics. • Slows traffic though the intersection.	• Costly to implement. • Can impact left turns for large vehicles. • Can slow emergency service vehicles. • Confuse many drivers.	4-6 mph; Average of 11%	$10,000-$60,000 per unit; varies by materials used and area covered

Treatment/Source	Type	Description	Pros	Cons	Effectiveness	Cost
Bulb-outs http://trafficcalming.org/		Bulb-outs are curb extensions at intersections that reduce the roadway width from curb to curb. They "pedestrianize" intersections by shortening crossing distances for pedestrians and drawing attention to pedestrians via raised peninsulas. They also tighten the curb radii at the corners, reducing the speeds of turning vehicles. They are best suited to locations with substantial pedestrian activity, where vertical traffic calming measures would be unacceptable due to noise considerations.	• Improve pedestrian circulation. • Through and left-turn movements are easily negotiated by large vehicles. • Create protected on-street parking bays. • Reduce speeds, especially for right-turning vehicles.	• Effectiveness is limited by the absence of vertical or horizontal deflection. • May slow right-turning vehicles. • May require elimination of some on-street parking near the intersection. • May require cyclists to briefly merge with traffic.	Average of 7% decrease in the 85th percentile travel speeds	$40,000 – 80,000 for four corners
Intersection Realignment http://trafficcalming.org/		Realignment to reduce speed generally comes in two forms: • Curving of a straight intersection such that the approach is slightly obscured. • Squaring off of curvy and excessively wide lanes. Exact treatment depends on the specific context.	• Effective reducing speeds and improving safety at a T-intersection that is commonly ignored by motorists.	• Can be costly. • May require some additional right-of-way to cut the corner (in the case of the former realignment) .	No data available	Varies by context

(1) City Repair (Portland): The City Repair Project charges no fees for the work they do with neighborhoods – they are a nonprofit organization, and are supported by individual donations and limited grant funding.
(2) Could use a different type of paint or somehow add texture.
(3) Bollards and Planters may be implemented at a lower cost.

References

http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf
http://www.pps.org/reference/livememtraffic/
http://www.vtpi.org/tdm/tdm4.htm
http://trafficcalming.org/
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http://catsip.berkeley.edu/case-studies/DUTCH
http://wiki.coe.neu.edu/groups/sustsafety/wiki/03ecd/
http://www.ite.org/membersonly/itejournal/pdf/2011/JB11IA30.pdf

Table 7-7: Volume Reduction Summary and Cost Estimates

Treatment/Source	Description	Pros	Cons	Effectiveness	Cost
Median Barrier http://trafficcalming.org/	These are islands located along the centerline of a street and continuing through an intersection so as to block though-movement at cross streets. They are effective at inhibiting though traffic from main streets to local streets and unsafe left turns from local streets to main streets.	• Can improve safety at an intersection of a local street and main by inhibiting dangerous turning movements. • Reduce cut-through traffic on local streets.	• Require available street width on the major street. • Limits turns to and from side street for local residents and emergency service vehicles.	Average of 31% decrease in traffic volume, or a decrease of 1167 vehicles per day	$15,000 – 20,000 per 100 feet
Half Closure http://trafficcalming.org/	These are barriers that block travel in one direction for a short distance on otherwise two-way streets. They are good for locations with extreme traffic volume problems and non-restrictive measures have been unsuccessful.	• Maintains two-way bicycle access. • Effective in reducing traffic volumes.	• Create circuitous routes for local residents and emergency services. • May limit access to businesses. • Drivers may be able to circumvent barrier.	Average of 42% decrease in traffic volume, or a decrease of 1,611 vehicles per day	$35,000-$40,000
Diagonal Diverter http://trafficcalming.org/	Diagonal diverters are barriers placed diagonally across an intersection, blocking through movements and creating two separate, L-shaped streets. Like half closures, diagonal diverters are often staggered to create circuitous routes through the neighborhood as a whole, discouraging non-local traffic while maintaining access for local residents.	• Not a closure, per se, but a redirection of traffic flow. • Maintain full bicycle and pedestrian access. • Reduce traffic volumes.	• Cause circuitous routes for local residents and emergency service vehicles. • May be expensive (3); may require construction of corner curbs.	Average of 35% decrease in traffic volume, or a decrease of 501 vehicles per day	$85,000
Full Closure http://trafficcalming.org/	These are barriers placed across a street to completed close the street to through-traffic, usually leaving only sidewalks open. They are good for locations with extreme traffic volume problems and several other measures have been unsuccessful.	• Maintains full pedestrian and bicycle access; provides preferred route for these roadway users. • Highly effective in reducing traffic volume.	• Legal procedure required for street closure in California. • Cause circuitous routes for local residents and emergency services. • May be expensive (3). • May limit access to businesses.	Average of 44% decrease in traffic volume, or a decrease of 671 vehicles per day	$120,000

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Funding Sources

8

Bicycle and Pedestrian Funding Sources

Federal, State and local government agencies invest billions of dollars every year in the nation's transportation system. Only a fraction of that funding is used in development projects, policy development and planning to improve conditions for cyclists and pedestrians. Even though appropriate funds are limited, they are available, but desirable projects sometimes go unfunded because communities may be unaware of a fund's existence, or may apply for the wrong type of grants. Also, the competition between municipalities for the available bicycle and pedestrian funding is often fierce.

Whenever Federal funds are used for bicycle and pedestrian projects, a certain level of State and/or local matching funding is generally required. State funds are often available to local governments on the similar terms. Almost every implemented bicycle or pedestrian program and facility in the United States has had more than one funding source and it often takes a good deal of coordination to pull the various sources together.

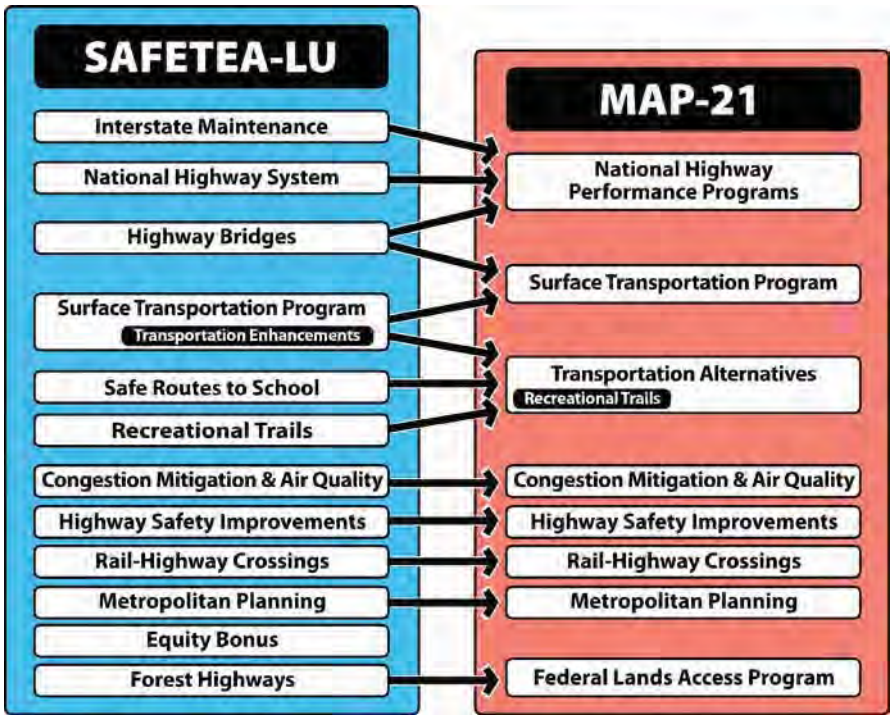
According to the Federal Highway Administration's (FHWA) publication, An Analysis of Current Funding Mechanisms for Bicycle and Pedestrian Programs at the Federal, State and Local Levels, where successful local bike facility programs exist, there is usually a full time bicycle and/or pedestrian coordinator with extensive understanding of funding sources. Cities such as Seattle, Washington, Portland, Oregon and Tucson, Arizona are prime examples. Coordinators are often in a position to develop a competitive project and detailed proposal that can be used to improve conditions for cyclists within their jurisdictions. Much of the following information on Federal and State funding sources was derived from the previously mentioned FHWA publication.

Bicycle & Pedestrian Federal Sources

The long legacy of U.S. Department of Transportation Enhancement Funds SAFETEA-LU (Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users) has ended and there is a new funding mechanism titled MAP-21. MAP-21 (Moving Ahead for Progress in the 21st Century) was approved by Congress and signed by the President in 2012.

MAP-21 replaces SAFETEA-LU with a similar amount of total funding, but significantly changes the overall number and scope of programs. The number of programs has been consolidated by two-thirds. The Transportation Enhancements (TE) program has been eliminated and replaced with Transportation Alternatives (TA). The Recreational Trails program is now housed under the Transportation Alternatives Program. Bicycle and pedestrian projects remain eligible for major funding and MAP-21 does have an emphasis on safety and active transportation with a 30% increase in CMAQ funds, doubled Highway Safety Improvement funds and specific mentions of bicycle and pedestrian projects.

There are still many unknowns regarding the details and interpretations of these changes. The federal levels of funding and scope have been set, yet it remains to be defined how the state and local programs will individually implement these funding mechanisms.



Safe Routes to School Programs

There are two separate Safe Routes to School Programs administered by Caltrans. There is the State-legislated program referred to as SR2S and there is the Federal Program referred to as SRTS. Both programs are intended to achieve the same basic goal of increasing the number of children walking and bicycling to school by making it safer for them to do so. The differences between the two programs are as follows:

Legislative Authority

SR2S - Streets & Highways Code Section 2330-2334
SRTS - Section 1404 in SAFETEA-LU

Expires

SR2S - AB 57 extended program indefinitely
SRTS - Through MAP-21 sources.

Eligible Applicants

SR2S - Cities and counties
SRTS - State, local, and regional agencies experienced in meeting federal transportation requirements. Non-profit organizations, school districts, public health departments, and Native American Tribes must partner with a city, county, MPO, or RTPA to serve as the responsible agency for their project.

Eligible Projects

SR2S - Infrastructure projects
SRTS - Stand-alone infrastructure or non-infrastructure projects

Local Match

SR2S - 10% minimum required
SRTS – None

Project Completion Deadline

SR2S - Within 4 ½ years after project funds are allocated to the agency
SRTS - Within 4 ½ years after project is amended into FTIP

Restriction on Infrastructure Projects

SR2S - Must be located in the vicinity of a school
SRTS - Infrastructure projects must be within 2 miles of a grade school or middle school

Targeted Beneficiaries

SR2S - Children in grades K-12
SRTS - Children in grades K-8

Funding

SR2S - $24.25M annual funding
SRTS - $21M annual funding

The Safe Routes to School Program funds non motorized facilities in conjunction with improving access to schools through the Caltrans Safe Routes to School Coordinator. For more information visit: http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm

Department of the Interior - Land and Water Conservation Fund (LWCF)

The U.S. Recreation and Heritage Conservation Service and the State Department of Park and Recreation administer this funding source. Any project for which LWCF funds are desired must meet two specific criteria. The first is that projects acquired or developed under the program must be primarily for recreational use and not transportation purposes and the second is that the lead agency must guarantee to maintain the facility in perpetuity for public recreation. The application will be considered using criteria such as priority status within the State Comprehensive Outdoor Recreation Plan (SCORP). The State Department of Park and Recreation will select which projects to submit to the National Park Service (NPS) for approval. Final approval is based on the amount of funds available that year, which is determined by a population based formula. Trails are the most commonly approved project.

Rivers, Trails, and Conservation Assistance Program (RTCA)

The Rivers, Trails and Conservation Assistance Program is the community assistance arm of the National Park Service. RTCA provides technical assistance to communities in order to preserve open space and develop trails. The assistance that RTCA provides is not for infrastructure, but rather building plans, engaging public participation and identifying other sources of funding for conversation and outdoor recreation projects.

Other Bicycle Infrastructure Funding Options

Additionally, States received a one time appropriation of $53.6 billion in state fiscal stabilization funding under AARA in 2009. States must use 18.2 percent of their funding – or $9.7 billion – for public safety and government services. An eligible activity under this section is to provide funding to K-12 schools and institutions of higher education to make repairs, modernize and make renovations to meet green building standards. The Leadership in Energy and Environmental Design (LEED) Green Building Rating System, developed by the U.S. Green Building Council (USGBC), addresses green standards for schools that include bicycle and pedestrian facilities and access to schools.

Another $5 billion is provided for the Energy Efficiency and Block Grant Program. This provides formula funding to cities, counties and states to undertake a range of energy efficiency activities. One eligible use of funding is for bicycle and pedestrian infrastructure.

State Sources

Streets and Highways Code – Bicycle Transportation Account (BTA)

The Bicycle Transportation Account (BTA) funds non motorized facilities and access to cities and counties that have adopted bikeway master plans. Section 2106 (b) of the Streets and Highways Code transfers funds annually to the BTA from the revenue derived from the excise tax on motor vehicle fuel. The Caltrans Office of Bicycle Facilities administers the BTA.

For a project to be funded from the BTA, the project shall:
i) Be approximately parallel to a State, county, or city roadways, where the separation of bicycle traffic from motor vehicle traffic will increase the traffic capacity of the roadway; and

ii) Serve the functional needs of commuting cyclists; and
iii) Include but not be limited to:

- New bikeways serving major transportation corridors
- New bikeways removing travel barriers to potential bicycle commuters
- Secure bicycle parking at employment centers, park and ride lots and transit terminals
- Bicycle carrying facilities on public transit vehicles
- Installation of traffic control devices to improve the safety and efficiency of bicycle travel
- Elimination of hazardous conditions on existing bikeways serving a utility purpose

- Project Planning
- Preliminary and Construction engineering

Maintenance is specifically excluded from funding and allocation takes into consideration the relative cost effectiveness of the proposed project.

Caltrans Active Transportation Program (ATP)

The Active Transportation Program was created by Senate Bill 99 (Chapter 359, Statutes 2013) and Assembly Bill 101 (Chapter 354, Statutes 2013) to encourage increased use of active modes of transportation, such as biking and walking. The ATP consolidates existing federal and state transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single program with a focus to make California a national leader in active transportation. The ATP administered by the Division of Local Assistance, Office of Active Transportation and Special Programs. This is a competitive program to:

- Increase biking and walking trips
- Increase safety
- Increase mobility
- Support regional agencies GHG reduction
- Enhance public health
- Benefit disadvantaged communities (25%)
- Include a broad spectrum of projects

Transportation Development Act Article III (Senate Bill 821)

TDA funds are based on a ¼ percent state sales tax, with revenues made available primarily for transit operating and capital purposes.

TDA Article 3 funds may be used for the following activities related to the planning and construction of bicycle and pedestrian facilities:

- Engineering expenses leading to construction
- Right-of-way acquisition
- Construction and reconstruction
- Retrofitting existing bicycle facilities to comply with ADA requirements
- Route improvements, such as signal controls for cyclists, bicycle loop detectors and rubberized rail crossings

Purchase and installation of bicycle facilities such as improved intersections, bicycle parking, benches, drinking fountains, rest rooms, showers adjacent to bicycle trails, employment centers, park-and-ride lots, and/or transit terminals accessible to the general public

Other State Bicycle Project Funding Sources

Governor's Energy Office (Oil Overcharge Funds)

The Federal government forced oil companies to repay the excess profits many of them made when they violated price regulations enacted in response to the energy crisis of the early 1970's. Few states have taken advantage of this fund, but some have received grants for bike coordinators and bicycle facilities. The types of projects eligible for funding vary by state, as does the level of allocation available.

Local Sources

Developer Impact Fees

As a condition for development approval, municipalities can require developers to provide certain infrastructure improvements, which can include bikeway projects. These projects have commonly provided Class 2 facilities for portions of on street, previously planned routes. They can also be used to provide bicycle parking or shower and locker facilities. The type of facility that should be required to be built by developers should reflect the greatest need for the particular project and its local area. Legal challenges to these types of fees have resulted in the requirement to illustrate a clear nexus between the particular project and the mandated improvement and cost.

New Construction

Future road widening and construction projects are one means of providing on street bicycle facilities. To ensure that roadway construction projects provide bike lanes where needed, it is important that the review process includes input pertaining to consistency with the proposed system. Future development in the City of National City will contribute only if the projects are conditioned.

Restoration

Cable TV and telephone companies sometimes need new cable routes within public rights of way. Recently, this has most commonly occurred during expansion of fiber optic networks. Since these projects require a significant amount of advance planning and disruption of curb lanes, it may be possible to request reimbursement for affected bicycle facilities to mitigate construction impacts. In cases where cable routes cross undeveloped areas, it may be possible to provide for new bikeway facilities following completion of the cable trenching, such as sharing the use of maintenance roads.

Other Sources

Local sales taxes, fees and permits may be implemented as new funding sources for bicycle projects. However, any of these potential sources would require a local election. Volunteer programs may be developed to substantially reduce the cost of implementing some routes, particularly multi use paths. For example, a local college design class may use such a multi use route as a student project, working with a local landscape architectural or engineering firm. Work parties could be formed to help clear the right of way for the route. A local construction company may donate or discount services beyond what the volunteers can do. A challenge grant program with local businesses may be a good source of local funding, in which the businesses can "adopt" a route or segment of one to help construct and maintain it.

Private Sources

Private funding sources can be acquired by applying through the advocacy groups such as the League of American Bicyclists and the Bikes Belong Coalition. Most of the private funding comes from foundations wanting to enhance and improve bicycle facilities and advocacy. Grant applications will typically be through the advocacy groups as they leverage funding from federal, state and private sources.

The following tables summarize some of the numerous funding sources available.

Table 8-1: Federal Funding Sources

Federal Sources					
Grant Source	**Annual Total**	**Agency**	**Funding Cycle**	**Match**	**Remarks**
Land and Water Conservation Act of 1965 (LWCF)	$450 million Federal; $3.6 million CA (2012)	National Parks Service/California Department of Parks and Recreation	December- January	50% + 2-6% admin. surcharge	Funding subject to North/South split (60% for Southern California). Fund provides matching grants to state and local governmentsfor the acquisition and development of land for outdoor recreation use. Individual project awards are not available.
MAP-21 - Surface Transportation Program (STP)	$10 billion Federal; $888 million CA (pre-set-aside, pre-penalty)	FHWA / Caltrans	June 1	20%	STP funds wide a variety of bicycle and pedestrian improvements are eligible, including on-street bicycle facilities, off-street trails, sidewalks, crosswalks, bicycle and pedestrian signals, parking and other ancillary facilities. May be exchanged for local funds for non-federally certified local agencies. No match required if project improves safety.
MAP-21 - Transportation Alternatives Program (TAP) Includes Trails and SRTS Programs	$820 million Federal; $72.5 million CA	FHWA / SANDAG	Annual	20%	Funds construction, planning, and design of facilities for pedestrians, bicyclists and other non-motorized forms of transportation.
MAP-21 - Recreational Trails Program	$5.75 million guaranteed (set aside from TAP)	FHWA, Regional agency may also contribute	Annual	Federal + Regional must not exceed 95%	The percentage of TAP funding allocated to the Recreational Trails Program is at the discretion of the State
MAP-21 - National Highway Performance Program	$1.9 billion (pre-set-aside, pre-penalty)	FHWA / Caltrans	Not available	Federal 80%-100%; State 0%-20%	This program provides funding for construction and maintenance projects located on the newly expanded National Highway System (NHS), including those related to bicycle and pedestrian infrastructure. Certain safety projects may have a federal cost share of up to 100%.

Federal Sources					
Grant Source	**Annual Total**	**Agency**	**Funding Cycle**	**Match**	**Remarks**
MAP-21 - Highway Safety Improvement Program (HSIP)	$2.4 billion Federal; $197 million CA (pre-set-aside, pre-penalty)	FHWA / Caltrans		Federal 90%; State 10%	Projects must address a safety issues and may include education and enforcement programs. This program includes the Railroad-Highway Crossings and High Risk Rural Roads programs. Bike projects must provide a high degree of safety.
MAP-21 - Congestion Mitigation and Air Quality (CMAQ)	$464 million CA (pre-set-aside, pre-penalty)	FHWA / Caltrans	April	20%	The amount of CMAQ Funds depends on the state's population share and on the degree of air pollution
MAP-21 - Safe Routes to School Program (SRTS)	$21 million (2012 Funding; see remarks section for more information)	Federal Highway Administration (FHWA) Caltrans and then MPO (SANDAG)		80% Federal; 20% State	Latest news from Caltrans (September 27, 2012): Caltrans proposed funding SRTS from a $21 million set aside in the STP. This concept was approved by the CTC as a one year policy. Future funding for SRTS will be determined through the MAP-21 Implementation process.
Rivers, Trails and Conservation Assistance Program (RTCA)		National Park Service	August		Expenditures include bikeway plans, corridor studies and trails assistance
Energy Efficiency and Block Grant Program	$3 million	Department of Energy			Provided formula funding for cities, counties and states to take part in energy efficient activities
Community Development Block Grants (CDBG)	$3 million	HUD & CA Dept of Housing & Com. Dvpmt.	Ongoing	10%	Funds improve land use and transportation infrastructure in low-income neighborhoods or citywide for accessibility improvements.
Federal Lands Highway Program	$611 million 2008-10	FLH/FHWA	Ongoing	Varies	May be used to build bicycle and pedestrian facilities in conjunction with roads and parkways at the discretion of the grantee
Land and Water Conservation Fund (LWCF)	$30 million in 2010	NPS/California Department of Parks and Recreation	Annual	50%	LWCF grants may be used for statewide outdoor recreational planning and for acquiring and developing recreational parks and facilities, especially in urban areas.

Federal Sources					
Grant Source	**Annual Total**	**Agency**	**Funding Cycle**	**Match**	**Remarks**
MAP-21 – Pilot Transit-Oriented Development Planning Program	$10 million	Federal Transit Administration	Not available	Not available	Provides funding to advance planning efforts that seek to increase access to transit hubs for pedestrian and bicycle traffic.
Map-21 - Associated Transit Improvements	1% of the Urbanized Area Formula Grant; for FY2014 that would be 1% of 4.5 Billion (~ $45 million)	Federal Transit Administration/ MPO	Not available	80% Federal Assistance (Capital); 50% Federal Assistance (Operational)	Recipients of Section 5307 (Urbanized Area Formula Grants) must certify that they are spending no less than 1 percent of their Federal transit funds on associated transit improvements (formerly transit enhancements). Typical projects have included bike lockers and bike parking near transit stations and stops.
Partnership for Sustainable Communities	$409 million in grants and/ or assistance in 2010	HUD/DOT/EPA	Ongoing	Not available	Funding for preparing or implementing regional plans for sustainable development.
Energy Efficiency and Conservation Block Grant Program	$3.2 Billion Federal; over $35 million CA	FHWA	June	None	Provided formula funding for cities, counties and states to take part in energy efficient activities.
Rivers, Trails and Conservation Assistance (RCTA) Program	Staff time is awarded for technical assistance	NationalParks Service	August 1 for the following year	N/A	Technical assistance offered for the conservation of rivers and open space and the development of trails and greenways.
Community Development Block Grant (CDBG)	$2 million for Planning and technical assistance in 2013	HUD & California Department of Housing and Community Development	Ongoing	Ongoing 90% Federal; 10% Local	Available for low-income neighborhoods to improve land use and transportation infrastructure. Can be used for accessibility improvements citywide.
Community Transformation Grants (CTG)	$35 million in 2012	Regional health and planning agencies	Not available	N/A	Funds to implement broad, sustainable strategies that will reduce health disparities and expand preventive health care services.

Federal Sources					
Grant Source	**Annual Total**	**Agency**	**Funding Cycle**	**Match**	**Remarks**
Transportation Investment Generating Economic Recovery Program (TIGER)	$474 million Federal; $31 Million CA (2013)		October	80% Federal; 20% State	Can be used for innovative, multi-modal and multi-jurisdictional transportation projects (including bicycle and pedestrian projects) that promise significant economic and environmental benefits to an entire metropolitan area, region or the nation. Minimum project cost is $10 million.
Bus and Bus Facilities Program: State of Good Repair	$2.17 billion Federal (2014)	Federal Transit Administration	March	80% Federal; 20% State	Can be used for projects to provide access for bicycles to public transportation facilities. More specifically, funds are used to shelters for people, bike parking amenities and means of accommodating bikes on transit vehicles.
Bus Livability Initiative	$125 million (2012)	Federal Transit Administration	March	90% Federal;10% State	Can be used for bicycle and pedestrian support facilities, such as bicycle parking, bike racks on buses, pedestrian amenities and educational materials.
Federal Lands Transportation Program, Category 3, "Alternative Transportation" (see remarks)	Pacific West Region was awarded $3.38 million (2013)	FHWA	Varies, generally October; programmed through 2017	None	Funds transportation modes that reduce congestion and pollution in parks and public lands. Formerly the Paul S. Sarbanes Transit in Parks Grant Program (repealed upon enactment of MAP-21)
Local Highway Bridge Program	$300 million	FHWA/Caltrans	Ongoing	88.53% Fed. Match for Local Highways; 100% for Fed. Highways	Funds to replace or rehabilitate public highway bridges over waterways, other topographical barriers, other highways, or railroads.

Table 8-2: State Funding Sources

State Sources					
Grant Source	**Annual Total**	**Agency**	**Funding Cycle**	**Match**	**Remarks**
State Highway Account (SHA): Bicycle Transportation Account (BTA)	$7.2 million/yr. state-wide	Caltrans	March application deadline. Consult Local Assistance Office	10%	Must have an adopted Bicycle Transportation Plan. Funding available for all phases of projects
Active Transportation Program	TBD	Caltrans	Two-year cycle	12%	Consolidates BTA, Transportation Alternatives and Safe Routes to School funding
Transportation Development Act (TDA) Section 99234	$149 in 2014	OCTA	Annually	None	2% of TDA total, funds for bike ped projects
AB 2766 Vehicle Registration Funds	$30 million in 2010	SCAQ	February	None	Competitive program for projects that benefit air quality
Vehicle Registration Surcharge Fee (AB 434) RCF		APCB	July	None	Competitive program for projects that benefit air quality
Vehicle Registration Surcharge Fee (AB 434) PMF	40% from grant source	APCB	April	None	Funds distributed to county communities based on population
Developer Fees or Exactions	Project-specific	Cities	Ongoing	None	Mitigation required during land use approval process
State Gas Tax (local share)		Allocated by State Auditor-Controller	Monthly allocation	None	Major Projects, >$300,000
State and Local Transportation Partnership Program (SLPP)	Est. $200 million/yr. state-wide	Caltrans	Summer	50%	Road projects with bike lanes are eligible, requires developer or traffic fee match
Caltrans Minor Capital Program	Varies	Caltrans	Ongoing after July 1	None	Projects must be on state highways; such as upgraded bike facilities
Environmental Enhancement and Mitigation Program (EEM)	$10 million/yr. state-wide	State Resources Agency	October annually	None required, but favored	Individual grants limited to $350K.
Petroleum Violation Escrow Account (PVEA)	Varies	Caltrans, CA Community Services and Development, Air Resources Board	March	None	Projects must save energy, provide public restitution and be approved by CA Energy Commission and US DOE

State Sources					
Grant Source	**Annual Total**	**Agency**	**Funding Cycle**	**Match**	**Remarks**
Community Based Transportation Planning Demonstration Grant Program	$3 million annually	Caltrans	November	20%	Projects must have a transportation component or objective
Habitat Conservation Fund Grant Program (HCF)	$2 million	CA Dept of Park and Recreation	October	50%	Will only be available until July 1, 2020
Office of Traffic Safety Program (OTS)	Varies	Office of Traffic Safety	January	None	Goal to reduce vehicle fatalities and injuries through a safety program to include: education, enforcement and engineering
Safe Routes to School Program (SR2S)	$24 million in 2009*	Caltrans	April	10%	Eligible for projects in the vicinity of a school and grades K-12
State Transportation Improvement Program (STIP)	Varies	Caltrans	Every 4 years	None	Gives metropolitan regions more control over state transportation fund investment
California Conservation Corps (CCC)		California Conservation Corps			The CCC provides emergency assistance & public service conservation work.
Environmental Justice (EJ) Planning Grants	$9 million in 2010	Caltrans	Annually	10%	Engage low-income and minority communities in transportation projects to ensure equity and positive social, economic and environmental impacts
California River Parkways	Varies	CA Natural Resources Agency	October	None	Create or expand trails for walking, bicycling and/or equestrian activities that are compatible with other conservation objectives

Table 8-3: Local Funding Sources

Local Sources					
Grant Source	**Annual Total**	**Agency**	**Funding Cycle**	**Match**	**Remarks**
Parking Meter Districts		City	Annual Budget	N/A	Parking Meter Districts can use parking meter revenues for streetscape improvements such as ped facilities, landscaping & lighting.
Transient Occupancy Tax (TOT)		City	Annual Budget	None	Created to cover expenses & improvements related to tourism & to encourage more tourists to visit. This fund may be appropriate in areas where heavy tourism exists such as along the waterfront, major parks & historic neighborhoods.
SANDAG Active Transportation: Capital Grants	$6.6 million in 2012	SANDAG	Annually	None	Awarded on a competitive basis. The goals of the Active Transportation Grant Program are to encourage the planning and development of Complete Streets, and to provide multiple travel choices for the region's residents.
SANDAG Active Transportation: Non-Capital Grants	$2.2 million in 2012	SANDAG	Annually	None	Encourages local jurisdictions to provide bicycle parking, education, encouragement, and awareness programs that support pedestrian and bicycle infrastructure.

Table 8-4: Private Funding Sources

Private Sources					
Grant Source	**Annual Total**	**Agency**	**Funding Cycle**	**Match**	**Remarks**
SRAM Cycling Fund	$400,000+/yr	SRAM	Ongoing	None	www.sramcyclingfund.org
Surdna Foundation	Project-specific	Surdna Foundation	Ongoing	None	The Surdna Foundation makes grants to nonprofit organizations in the areas of environment, community revitalization, effective citizenry, the arts, and the nonprofit sector.
Bikes Belong	$180,000 annually	Bikes Belong Coalition	Three times a year	50%	Community grants focus on funding facilities and programs. www.bikesbelong.org
Kaiser Permanente Community Health Initiatives	$54 million annually	Kaiser Permanente	Ongoing	None	Numerous programs to help with Healthy Initiatives
Health Foundations		Various foundations	Ongoing		Focus active transportation improvements for an obesity prevention strategy. Examples include California Wellness Foundation, Kaiser & California Endowment.
Rails to Trails Conservancy		Rails to Trails Conservancy			Provides technical assistance for converting abandoned rail corridors to use as multi-use trails.
Donations		Depends on nature of project	Ongoing		Corporate or individual donations, sponsorships, merchandising or special events.
In-kind Services		Depends on nature of project	Ongoing		Donated labor & materials for facility construction or maintenance such as tree planting programs or trail construction and maintenace.
People for Bikes Community Grant Program	Up to $10,000	People for Bikes	Twice a year	None	PeopleForBikes focuses most grant funds on bicycle infrastructure projects such as: bike paths, lanes, trails, and bridges, mountain bike facilities, bike parks and pump tracks, BMX facilities, end-of-trip facilities such as bike racks, bike parking, and bike storage

Community Garden Funding Sources

Similar to bicycle and pedestrian projects and programs, funding for community gardens and pocket farm are scarce. What funding does exist is often coveted by several parties. However, similar to bicycle and pedestrian funding, opportunities do exist, particularly for the creative. Several opportunities for funding community gardens exist at various levels and from a variety of sources. Fully financing a project sometimes requires compiling together various, disparate funding sources.

Considering the particular case of Joe's Pocket Farm/Mundo Gardens, funding sources were compiled in the following section. While some state and regional sources may be available, the majority of opportunities found were at the local and national level. The majority of the funding found comes from individual donors, non-profits, foundations and corporations. The tables below lists the various funding sources identified and their pertinent details.

Table 8-5: Community Garden Local Funding Sources

Agency/ Corporation	Grant Amount	Description	Eligibility	Deadline
San Diego American Society of Landscape Architecture (ASLA): San Diego Community Grant Program	$5,000	Community groups are invited to apply for the Grant to make landscape improvements to their neighborhoods. The following are examples of what the grant could be used for: • Landscape Amenities • Landscape Construction • Landscape Maintenance http://www.asla-sandiego.org/Download/2013%20Grant%20Application.pdf	All recipients must be non-profits, located in San Diego County and have existed as a non-profit for at least three years.	Application Period: June 1 - August 1
CPPW - HHSA, SD County: People's Produce Project		Deliverable: Create a functional community garden located in Southeastern San Diego http://www.sdcounty.ca.gov/hhsa/programs/phs/documents/CPPW-PeoplesProduce.pdf		
San Diego Foundation	Varies	The Foundation's grants are driven by The Foundation's mission, values, and focus on results that will bring lasting benefits to each community in our region. Grants are distributed through a competitive process across specific subject areas, each headed by Working Groups of committed volunteers. To view available grants, see program website. While unsolicited grants will not be considered, grantees may be eligible for funding though the "Better Giving" program. http://www.sdfoundation.org/	Depends on grant; see website	Ongoing
San Diego Foundation: Create a "Better Giving" Profile	Varies	BetterGiving is a free online directory of nearly 450 (and growing) San Diego-based nonprofits. This powerful resource was created to help donors and the community better understand nonprofit organizations strengths and needs and connect donors with organizations they care about most. Each nonprofit portrait provides detailed program, financial and governance information, and they can accept direct online donations at no cost to the organization.	Must be a registered non-profit	Ongoing

Table 8-6: Community Garden State Funding Sources

Agency/ Corporation	Grant Amount	Description	Eligibility	Deadline
Sustainable Communities Planning Grant and Incentives Program, Strategic Growth Council: Urban Greening Program	Varies	The Strategic Growth Council Urban Greening Program is a competitive grants program administered by the California Natural Resources Agency, on behalf of the Strategic Growth Council. Community Gardens are frequent recipients of these grants. Funded activities are intended to achieve the following Program Objectives: Improve air and water quality, Promote public health, Promote equity, Increase housing affordability, Increase infill and compact development, Revitalize urban and community centers, Protect natural resources and agricultural lands, Reduce automobile usage and fuel consumption, Improve infrastructure systems, Promote water conservation, Promote energy efficiency and conservation and Strengthen the economy. http://bondaccountability.resources.ca.gov/plevel1.aspx?id=104&pid=4	Eligible Applicants Cities, Counties, MPOs, Joint Powers Authorities, Regional Transportation Planning Agencies (RTPAs), Councils of Governments (COGs), or combinations thereof are eligible to apply.	Applications due February 28, 2014
Ca Water Resources Control Board: Prop 84 Stormwater Grant	Varies, $38 million for 2014	Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006, was approved by California voters in the general election on November 7, 2006. Proposition 84 provided the State Water Board $90 million for matching grants to local public agencies for the reduction and prevention of stormwater contamination of rivers, lakes, and streams (PRC § 75050[m]). After bond and program administration costs, approximately $82 million was made available for projects. http://www.waterboards.ca.gov/water_issues/programs/grants_loans/prop84/#funding	Local Public Agencies	Round 1: Awarded in 2012, Round 2: Feb, 2014

Table 8-7: Community Garden National Funding Sources

Agency/ Corporation	Grant Amount	Description	Eligibility	Deadline
Fiskars Corporation: Project Orange Thumb	$5,000 in cash and garden tools	In addition to the $5,000 award, winners could even be the recipient of a complete garden makeover, in which the Project Orange Thumb team comes to your neighborhood and turns unused space into a beautiful community garden in just one day! http://www2.fiskars.com/Community/Project-Orange-Thumb	Any community garden group or civic organization in the US or Canada is eligible.	Annually, December
National Gardening Association: Youth Garden Grant	Award Includes: •$500 gift certificate to "Gardening with Kids" Online Store •Tool package from Ames •Plant starts from Bonnie Plants •Two Growums Garden Kits •A raised bed from Rustic Cedar •A generous seed donation from High Mowing Seeds	Since 1982, National Gardening Association has provided the Youth Garden Grant to over 5,000 schools, nonprofits, and youth programs across the United States. This year we will present awards to 20 schools or youth programs. http://grants.kidsgardening.org/2014-youth-garden-grant	School or organization must plan to garden in 2014 with at least 15 children between the ages of 3 and 18. Must demonstrate a relationship between the garden program and education related to the environment, health and nutrition issues, character education, and entrepreneurship in the United States.	Annually, December
National Gardening Association, in partnership with the Muhammad Ali Center and underwritten by Yum! Brands Foundation: Peace Garden Grant	Award includes: •Garden Package valued over $500, including $400 in gardening supplies and $100 in soil amendments and plants	In an effort to help schools sow the seeds of respect, the Muhammad Ali Center Peace Garden Grant is designed to teach lessons of peace and hunger awareness through garden activities. As a global initiative, national and international youth gardening programs are eligible to participate. The grant opportunity begins the week of September 21st, 2013 in honor of the United Nations International Day of Peace. http://grants.kidsgardening.org/2014-muhammad-ali-center-peace-garden-grant-0	School or organization must plan to garden in 2014 with at least 15 children between the ages of 3 and 18. Preference will be given to schools within the United States with student body eligible for 50% or more reduced or free lunches. Must demonstrate a relationship between the garden program and peace studies, and nutrition and hunger issues.	Annually, January

Agency/ Corporation	Grant Amount	Description	Eligibility	Deadline
Awesome Foundation: Food Chapter	Monthly $1000 microgrants	Awesome Food continues to accept applications to further food awesomeness in the universe through monthly $1,000 microgrants. Anyone can apply. And we interpret food in its broadest possible way, so use your imagination. The questions are simple and direct. http://www.awesomefoundation.org//submissions/new	Anyone can apply. Points for Imaginative Ideas!	Ongoing
IOBY: IOYB Crowd Funding	Crowdfunding: Applicant decides on amount; IOBY is merely a platform for raising money	ioby is a crowd-resourcing platform for citizen-led neighborhood projects. Our name is derived from the opposite of NIMBY. We have a mission to deepen civic engagement in cities by connecting individuals directly to community-led, neighbor-funded environmental projects in their neighborhoods. ioby.org/idea	"Let us know about your idea(s) for a great neighborhood project and we'll get back to you within 2-3 business days with an update on using ioby to bring your idea to life."	Ongoing

Appendix A

The following maps summarize the data collection efforts of the Walk Audits. For a full summary please see Chapter 2.

The following photos are examples of the data collected during these walk audits.

Uneven sidewalks in the Kimball Community

Utilities blocking the sidewalk on Palm Ave and Division St

Lack of sidewalk maintenance on 21st St

Uneven sidewalk pavement on Highland Ave

Pedestrian crossing sign without a crosswalk on Euclid Ave in front of the Paradise Valley Hospital

Figure A1: El Toyon - Bicycling

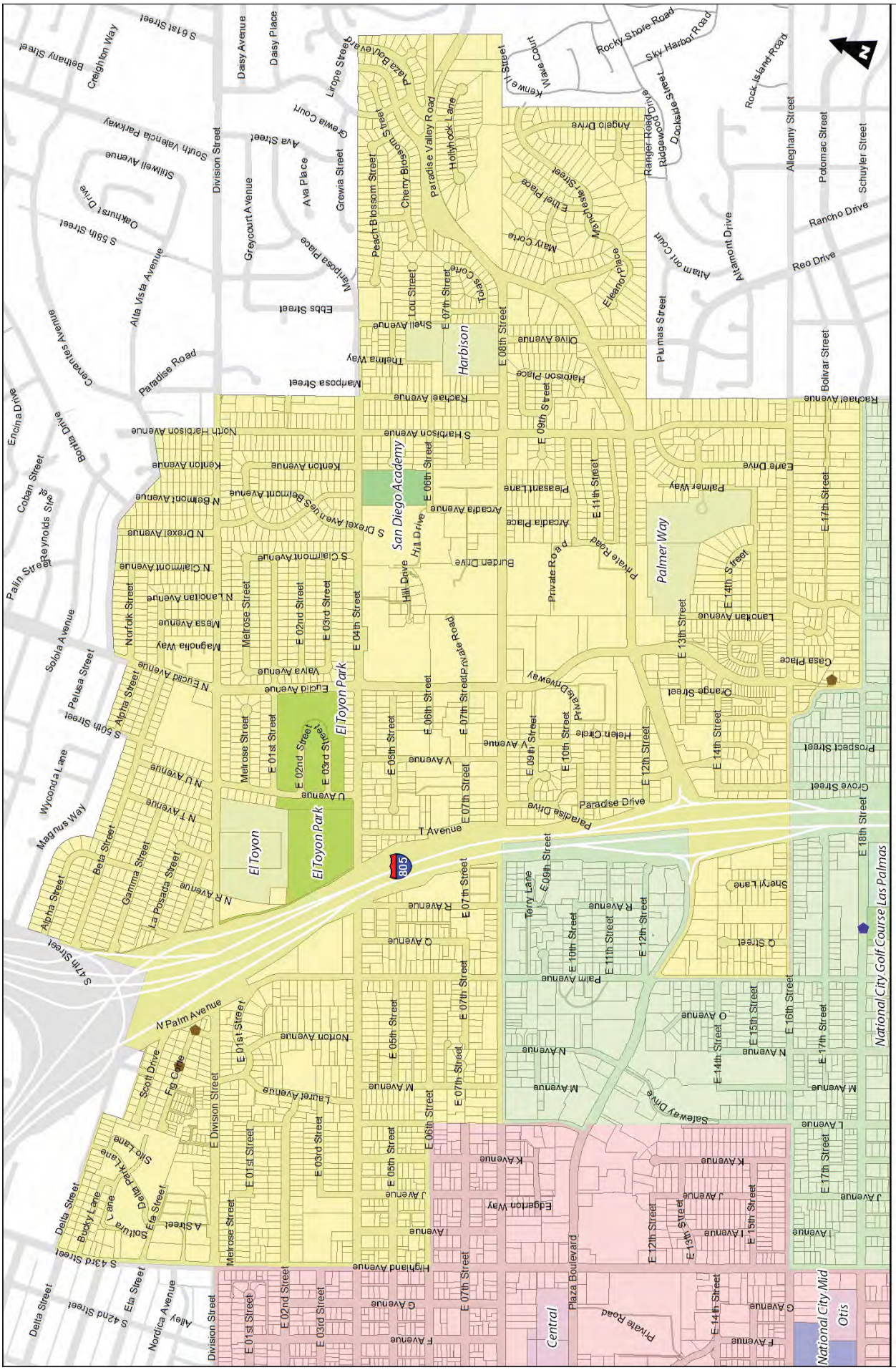

Bicycling
No bike facilities
People riding on the sidewalk
El Toyon
El Toyon Park
San Diego Academy
Harbison
Palmer Way
National City Golf Course Las Palmas
National City Mid
Otis
Central
805
Plaza Boulevard
Paradise Valley Road
Paradise Drive
Private Road
Hill Drive
Highland Avenue
Division Street
Euclid Avenue
Norton Avenue
Kenton Avenue
Lanoitan Avenue
Palmer Way
Allegheny Street
Rancho Drive
Reo Drive
Altamont Drive
Rock Island Road
Rocky Shore Road
Sky Harbor Road
Dockside Street
Ridgewood Drive
Ranger Road
Kenwell Street
Wave Court
Angelo Drive
Eleanor Place
Mary Corte
Tolosa Corte
Peach Blossom Street
Cherry Blossom Street
Hollyhock Lane
Plaza Boulevard
Litrope Street
Daisy Avenue
Daisy Place
Grewia Court
Grewia Street
Ava Street
Ava Place
Greycourt Avenue
Mariposa Place
Mariposa Street
Ebbs Street
Thelma Way
Shell Avenue
Lou Street
Olive Avenue
Harbison Place
Rachael Avenue
Pleasant Lane
Arcadia Avenue
Arcadia Place
Burden Drive
Private Road
Helen Circle
Private Driveway
Terry Lane
Sheryl Lane
Palm Avenue
Safeway Drive
Edgerton Way
Highland Avenue
Norton Avenue
Laurel Avenue
Scott Drive
Fig Cove
Site Lane
Delta Park Lane
Bucky Lane
Soltura Street
Ela Street
Delta Street
Nordica Avenue
Alley
Melrose Street
Norfolk Street
Magnolia Way
Mesa Avenue
Vaya Avenue
Wyoonda Lane
Magnus Way
Solola Avenue
Palin Street
Reynolds Street
Coban Street
Encina Drive
Bonita Drive
Cervantes Avenue
Alta Vista Avenue
Paradise Road
Stillwell Avenue
South Valencia Parkway
Oakhurst Drive
S 58th Street
S 61st Street
Creighton Way
Bethany Street
S 47th Street
S 50th Street
S 42nd Street
S 43rd Street
Alpha Street
Beta Street
Gamma Street
La Posada Street
Peluca Street
Bolivar Street
Potomac Street
Schuyler Street
Rachael Avenue
Casa Place
Orange Street
Prospect Street
Grove Street
E 18th Street
Palm Avenue
Plumas Street
Altamont Court
Ridgewood Drive
Ranger Road
Dockside Street
Rocky Shore Road
Sky Harbor Road
Rock Island Road
Allegheny Street
Potomac Street
Schuyler Street
Rancho Drive
Reo Drive
Bolivar Street
Rachael Avenue
Encina Drive
Bonita Drive
Cervantes Avenue
Alta Vista Avenue
Paradise Road
Stillwell Avenue
South Valencia Parkway
Oakhurst Drive
S 58th Street
S 61st Street
Creighton Way
Bethany Street
S 47th Street
S 50th Street
S 42nd Street
S 43rd Street
Alpha Street
Beta Street
Gamma Street
La Posada Street
Peluca Street
Solola Avenue
Palin Street
Reynolds Street
Coban Street
Magnus Way
Wyoonda Lane
Norfolk Street
Melrose Street
Magnolia Way
Mesa Avenue
Vaya Avenue
Euclid Avenue
Norton Avenue
Kenton Avenue
Lanoitan Avenue
Palmer Way
Allegheny Street
Rancho Drive
Reo Drive
Altamont Drive
Rock Island Road
Rocky Shore Road
Sky Harbor Road
Dockside Street
Ridgewood Drive
Ranger Road
Kenwell Street
Wave Court
Angelo Drive
Eleanor Place
Mary Corte
Tolosa Corte
Peach Blossom Street
Cherry Blossom Street
Hollyhock Lane
Plaza Boulevard
Litrope Street
Daisy Avenue
Daisy Place
Grewia Court
Grewia Street
Ava Street
Ava Place
Greycourt Avenue
Mariposa Place
Mariposa Street
Ebbs Street
Thelma Way
Shell Avenue
Lou Street
Olive Avenue
Harbison Place
Rachael Avenue
Pleasant Lane
Arcadia Avenue
Arcadia Place
Burden Drive
Private Road
Helen Circle
Private Driveway
Terry Lane
Sheryl Lane
Palm Avenue
Safeway Drive
Edgerton Way
Highland Avenue
Norton Avenue
Laurel Avenue
Scott Drive
Fig Cove
Site Lane
Delta Park Lane
Bucky Lane
Soltura Street
Ela Street
Delta Street
Nordica Avenue
Alley
Melrose Street
Norfolk

Figure A2: El Toyon - Comfort and Appeal

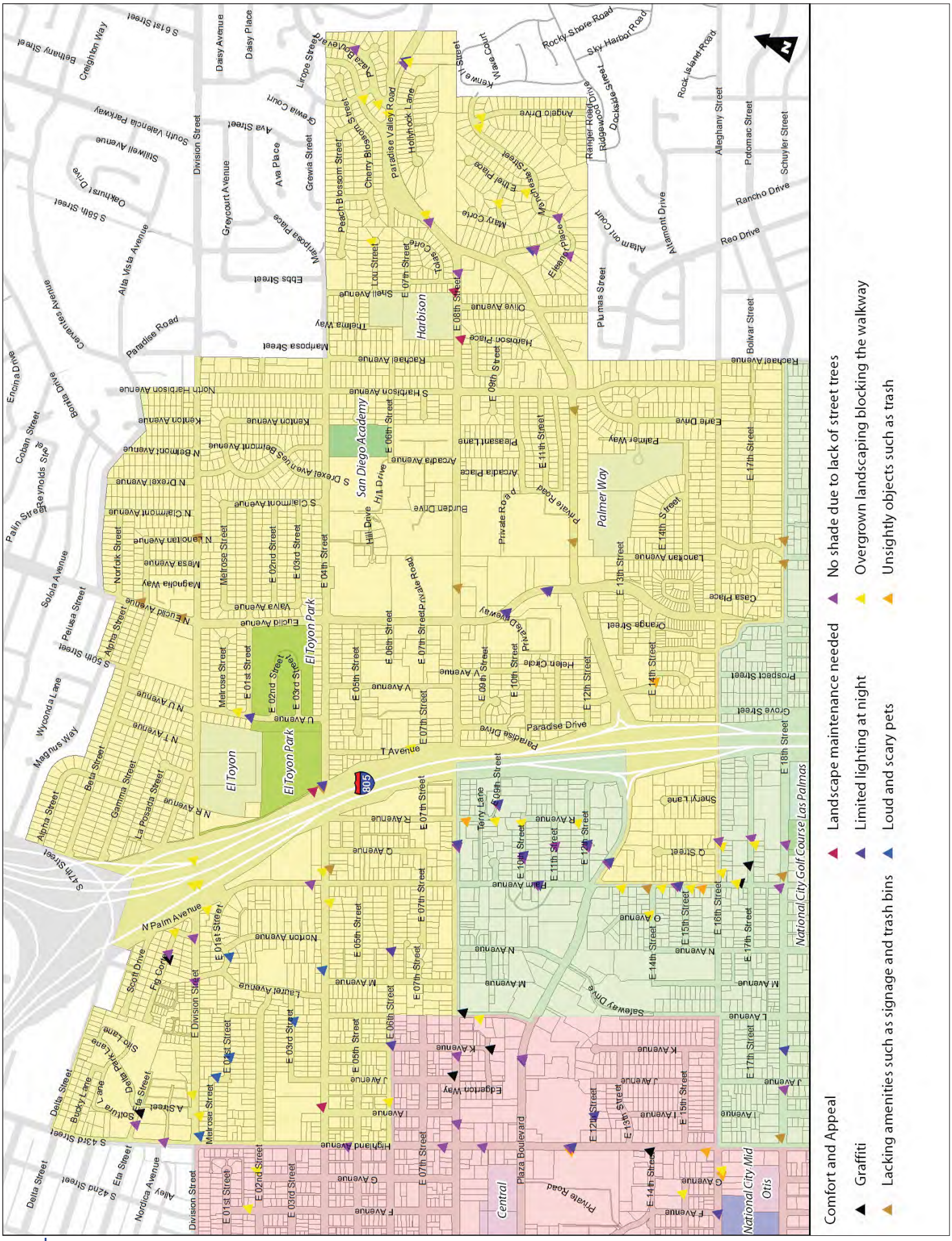


Figure A3: El Toyon - Safety

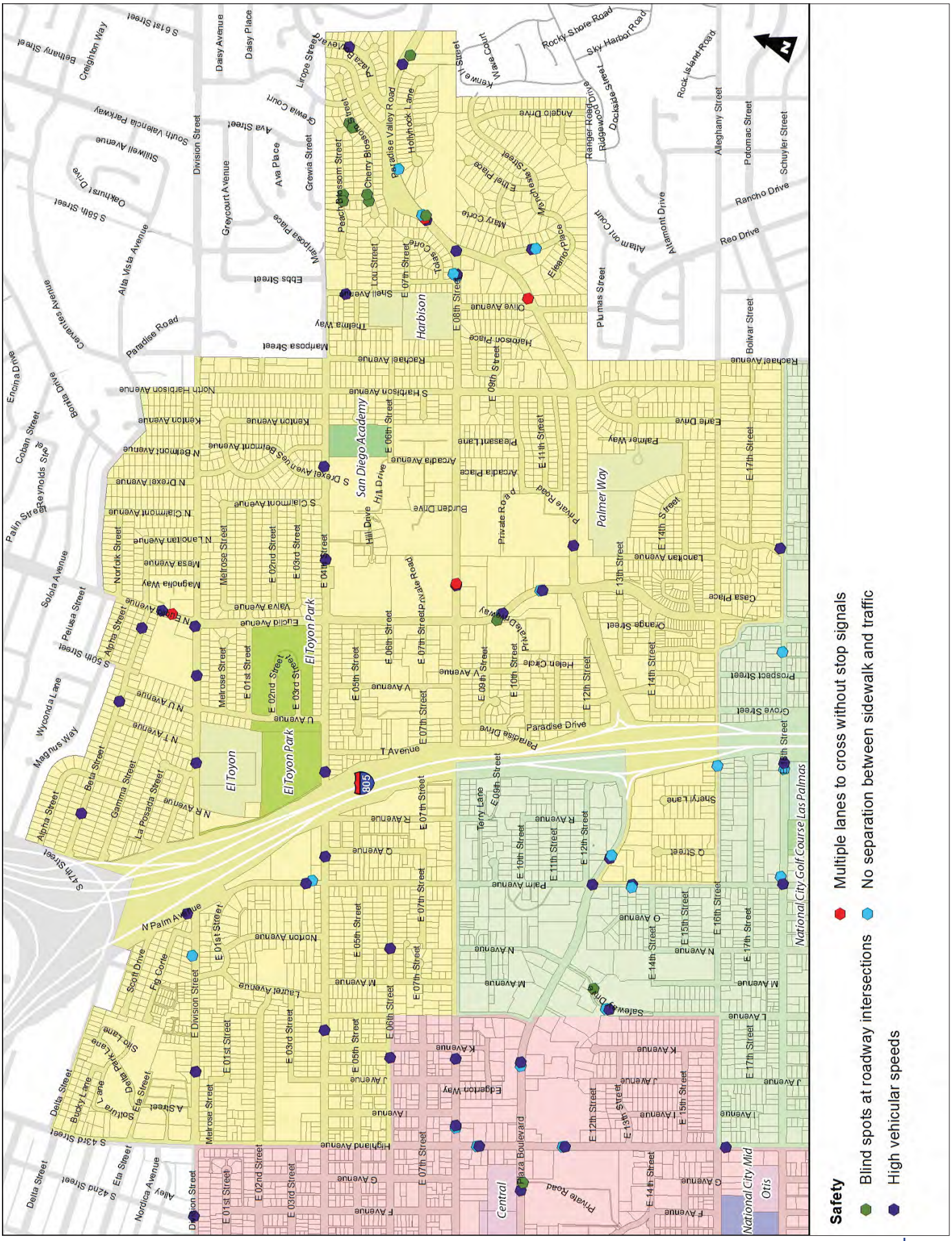


Figure A4: El Toyon - Sidewalk Conditions

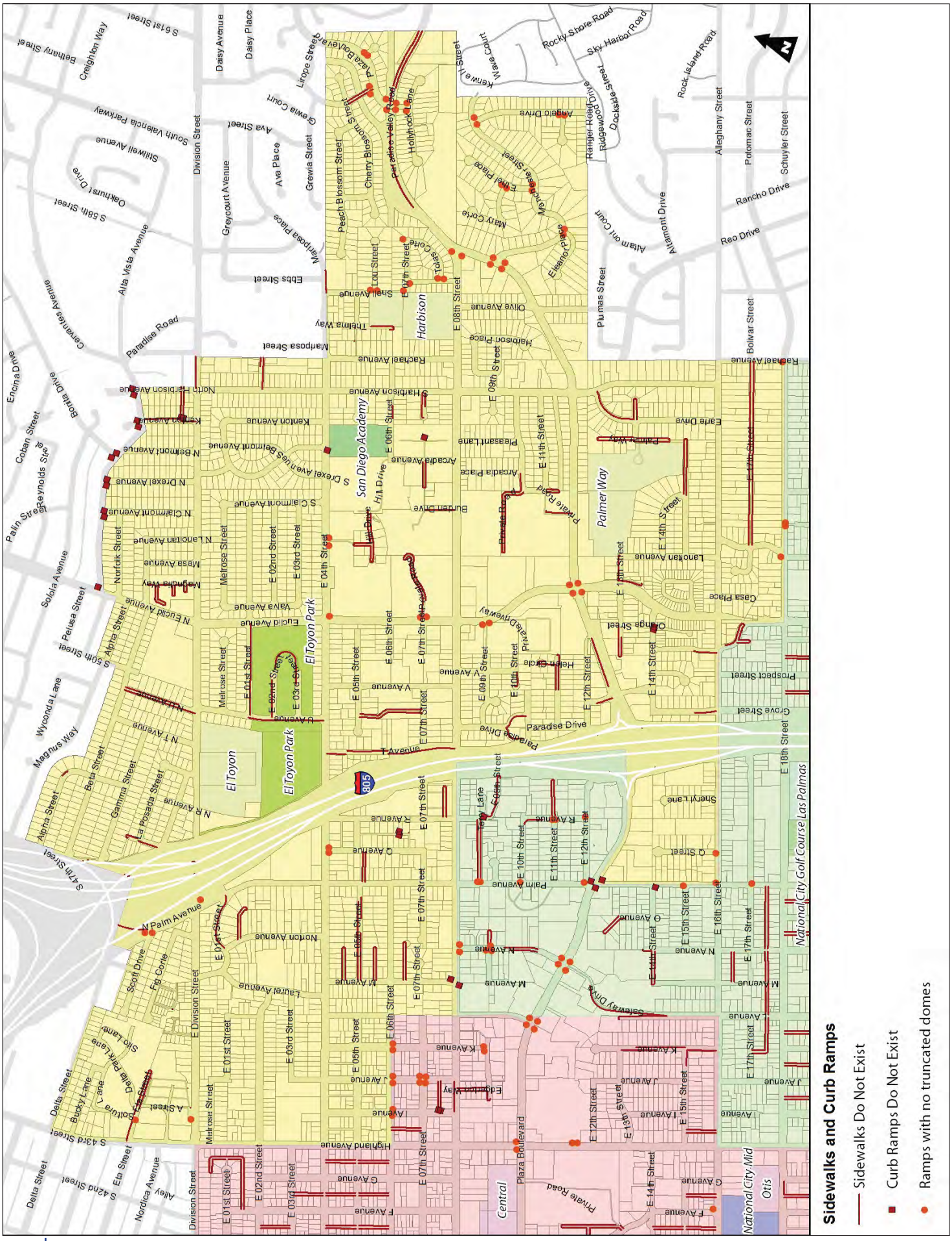


Figure A5: El Toyon - Street Crossings

Figure A6: El Toyon - Walkways

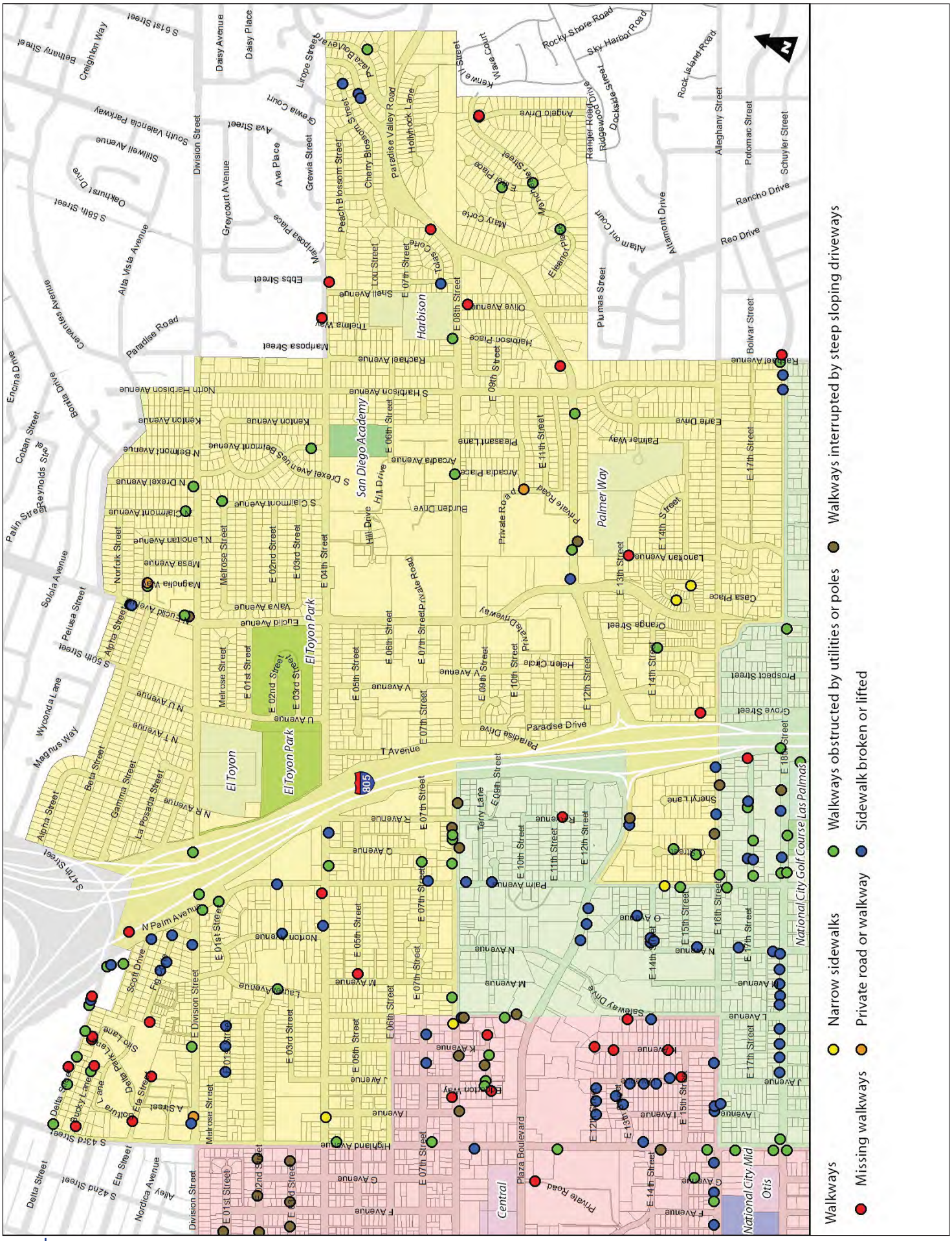


Figure A7: Kimball - Bicycling

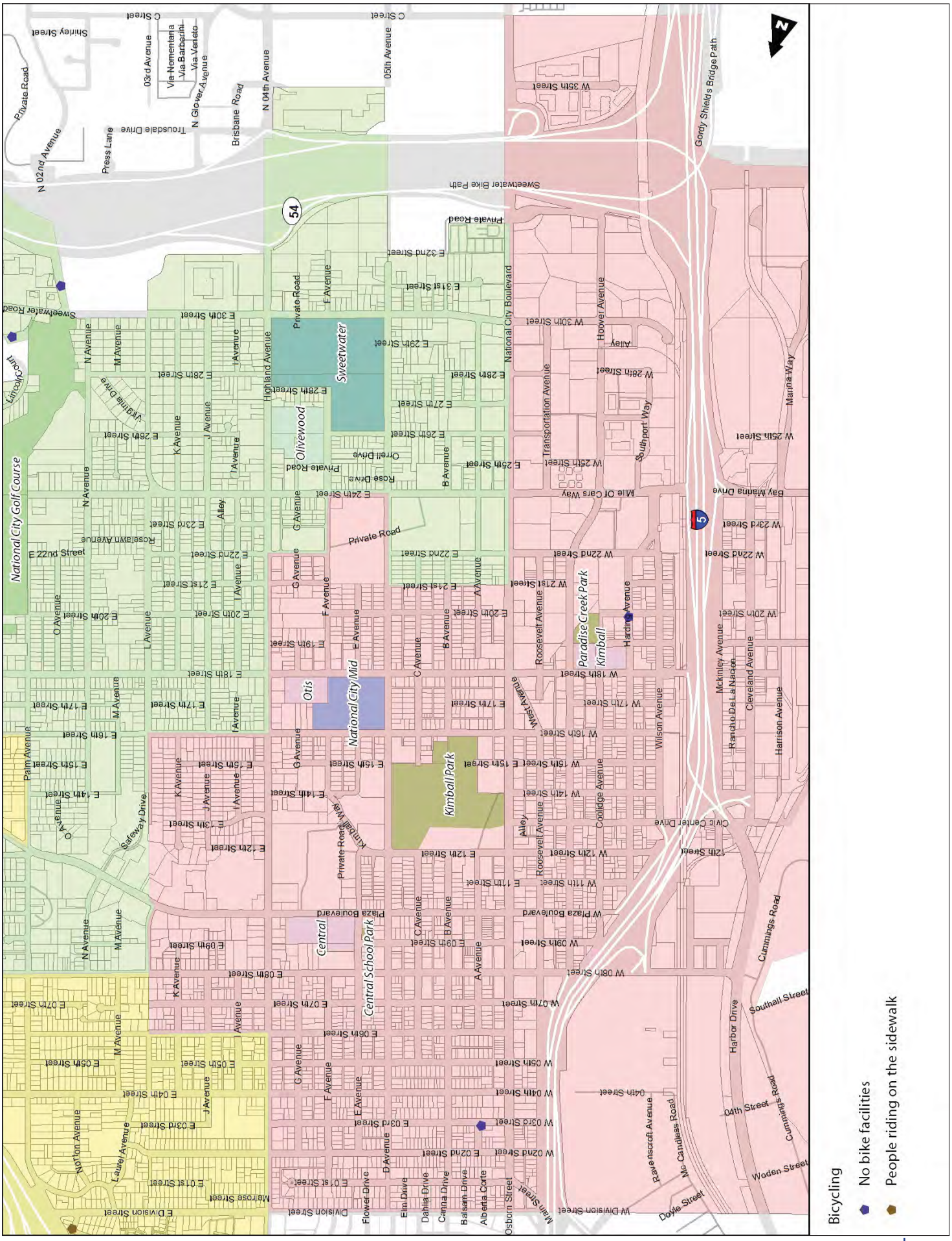


Figure A8: Kimball - Comfort and Appeal

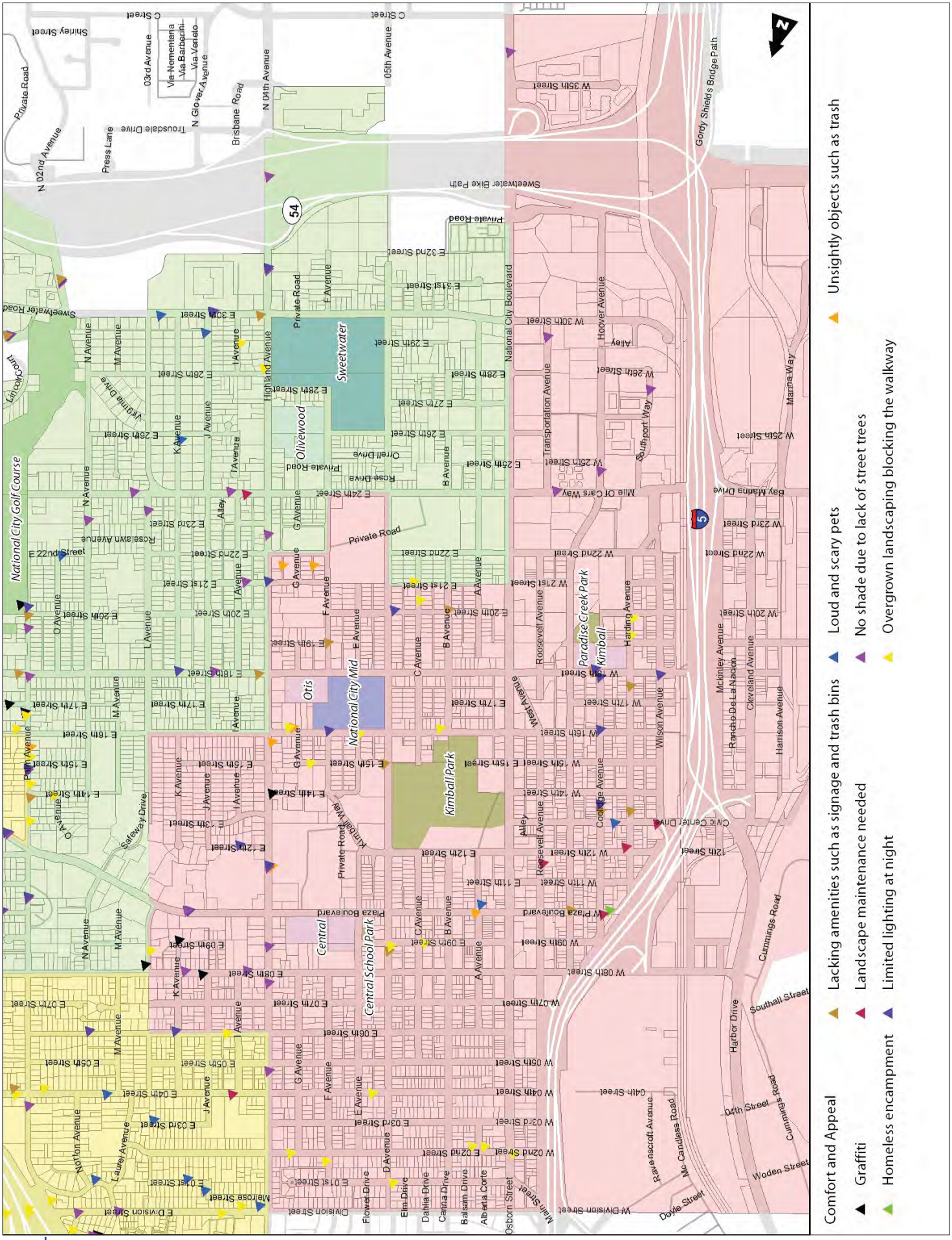
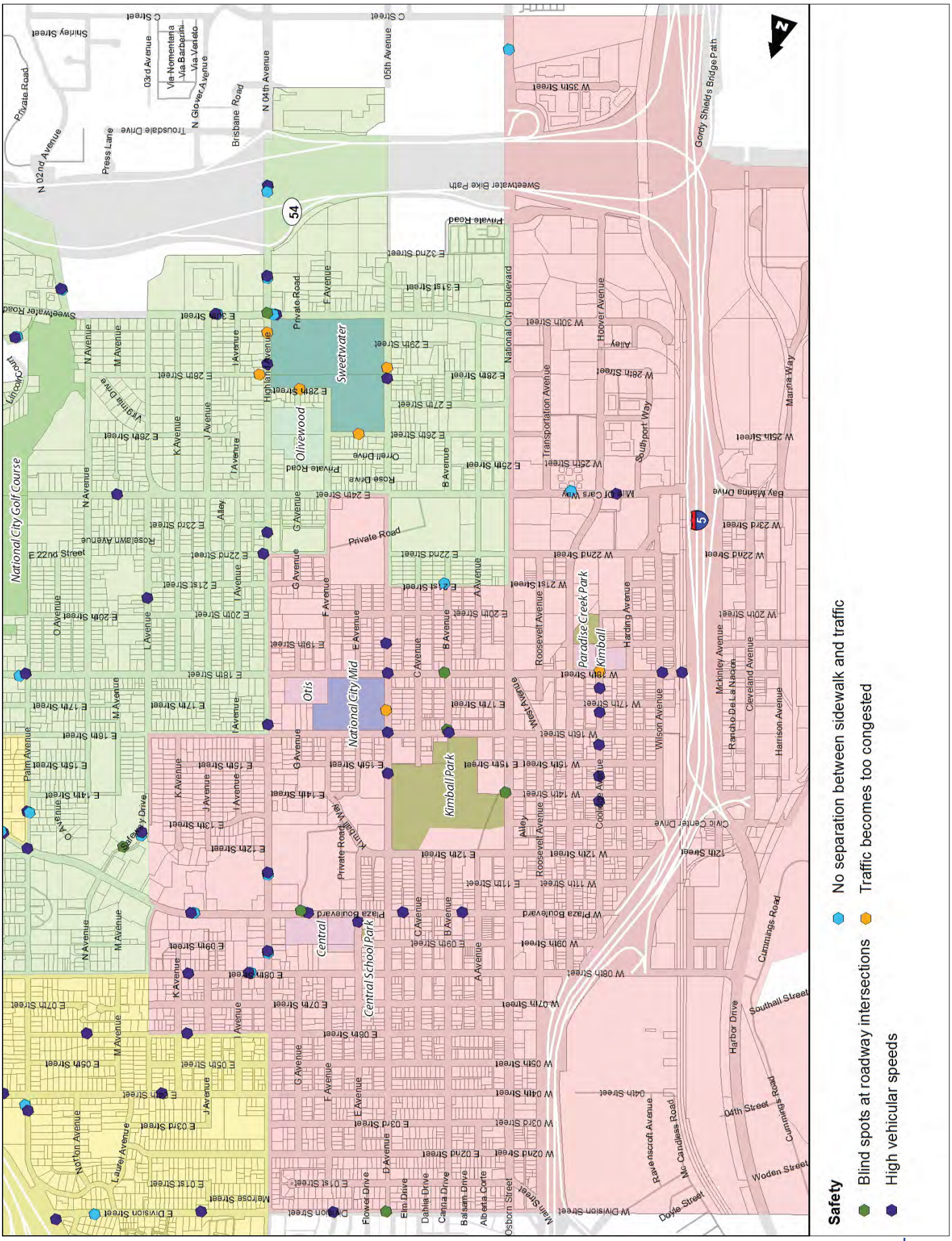


Figure A9: Kimball - Safety


Safety
No separation between sidewalk and traffic
Traffic becomes too congested
Blind spots at roadway intersections
High vehicular speeds
National City Golf Course
Sweetwater
Olivewood
Otis
National City Mid
Kimball Park
Central
Central School Park
Paradise Creek Park
Kimball
National City Boulevard
Transportation Avenue
Hoover Avenue
Southport Way
Marina Way
Bay Marina Drive
Roosevelt Avenue
Harding Avenue
Wilson Avenue
Mckinley Avenue
Rancho De La Nacion
Cleveland Avenue
Harrison Avenue
Civic Center Drive
Cummings Road
Southail Street
Harbor Drive
Gordy Shields Bridge Path
Sweetwater Bike Path
Mc Candless Road
Ravenscroft Avenue
Doyle Street
Woden Street
Main Street
Osborn Street
Alberta Corte
Balsam Drive
Canna Drive
Dahlia Drive
Elm Drive
Flower Drive
Division Street
Marrose Street
Norton Avenue
Laurel Avenue
Palm Avenue
Safety Way
Rosewan Avenue
E 22nd Street
Private Road
Press Lane
Trousdale Drive
Brisbane Road
N Glover Avenue
Via Nomentana
Via Barberini
Via Verlato
Shirley Street
C Street
N 02nd Avenue
03rd Avenue
N 04th Avenue
05th Avenue
W 35th Street
W 30th Street
W 28th Street
W 25th Street
W 23rd Street
W 22nd Street
W 21st Street
W 20th Street
W 18th Street
W 17th Street
W 16th Street
W 15th Street
W 14th Street
W 12th Street
W 11th Street
W Plaza Boulevard
W 09th Street
W 08th Street
W 07th Street
W 05th Street
W 04th Street
W 03rd Street
W 02nd Street
W Division Street
E 32nd Street
E 31st Street
E 30th Street
E 29th Street
E 28th Street
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E 26th Street
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E 14th Street
E 13th Street
E 12th Street
E 11th Street
E 09th Street
E 08th Street
E 07th Street
E 05th Street
E 03rd Street
E 01st Street
E Division Street
Highland Avenue
Orrell Drive
Rose Drive
Kimball Way
Sweetwater Road
Sweetwater Road
Private Road
Private Road
Private Road
Private Road
Alley
Alley
Alley

Figure A10: Kimball - Sidewalk Conditions

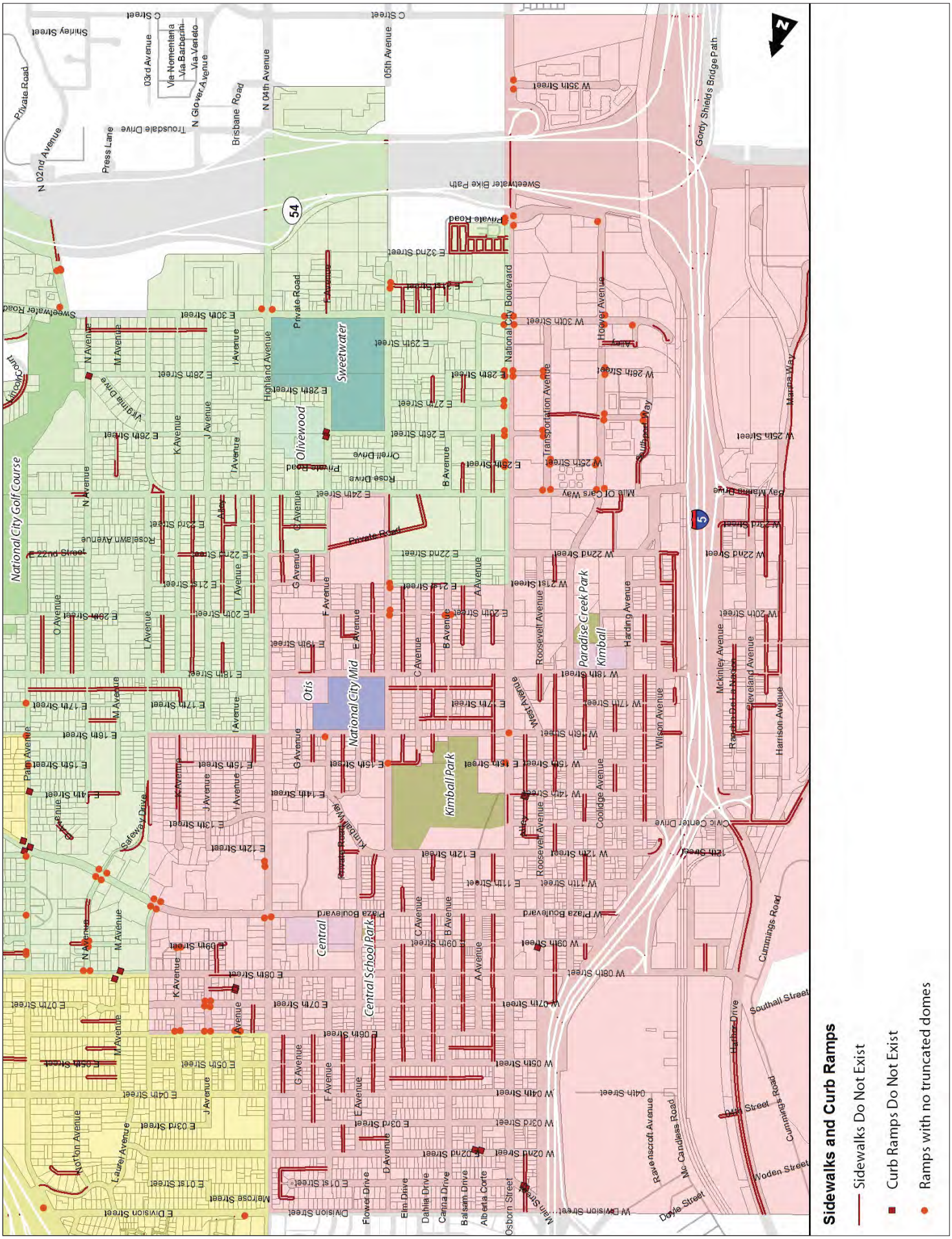


Figure A11: Kimball - Street Crossings

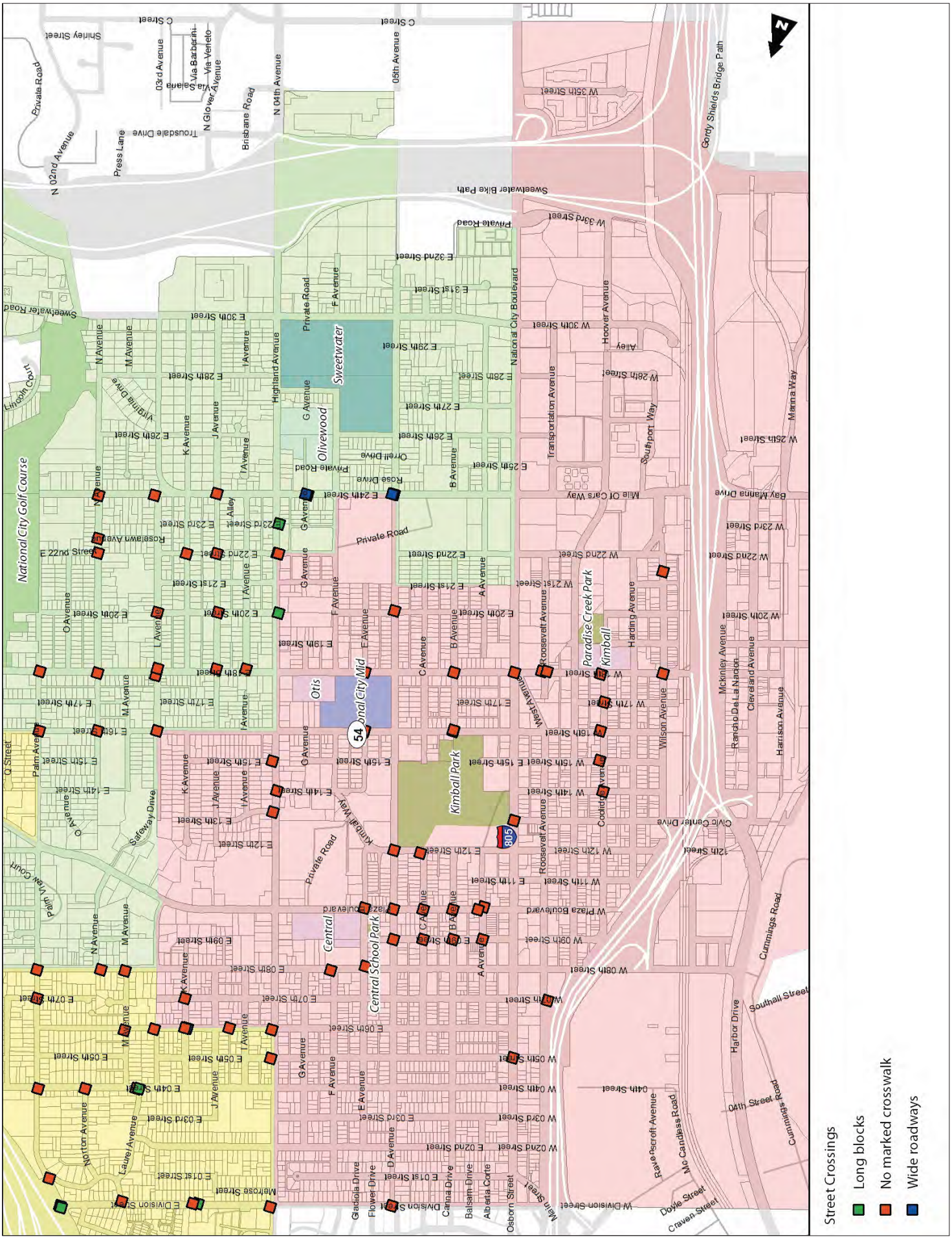


Figure A12: Kimball - Walkways

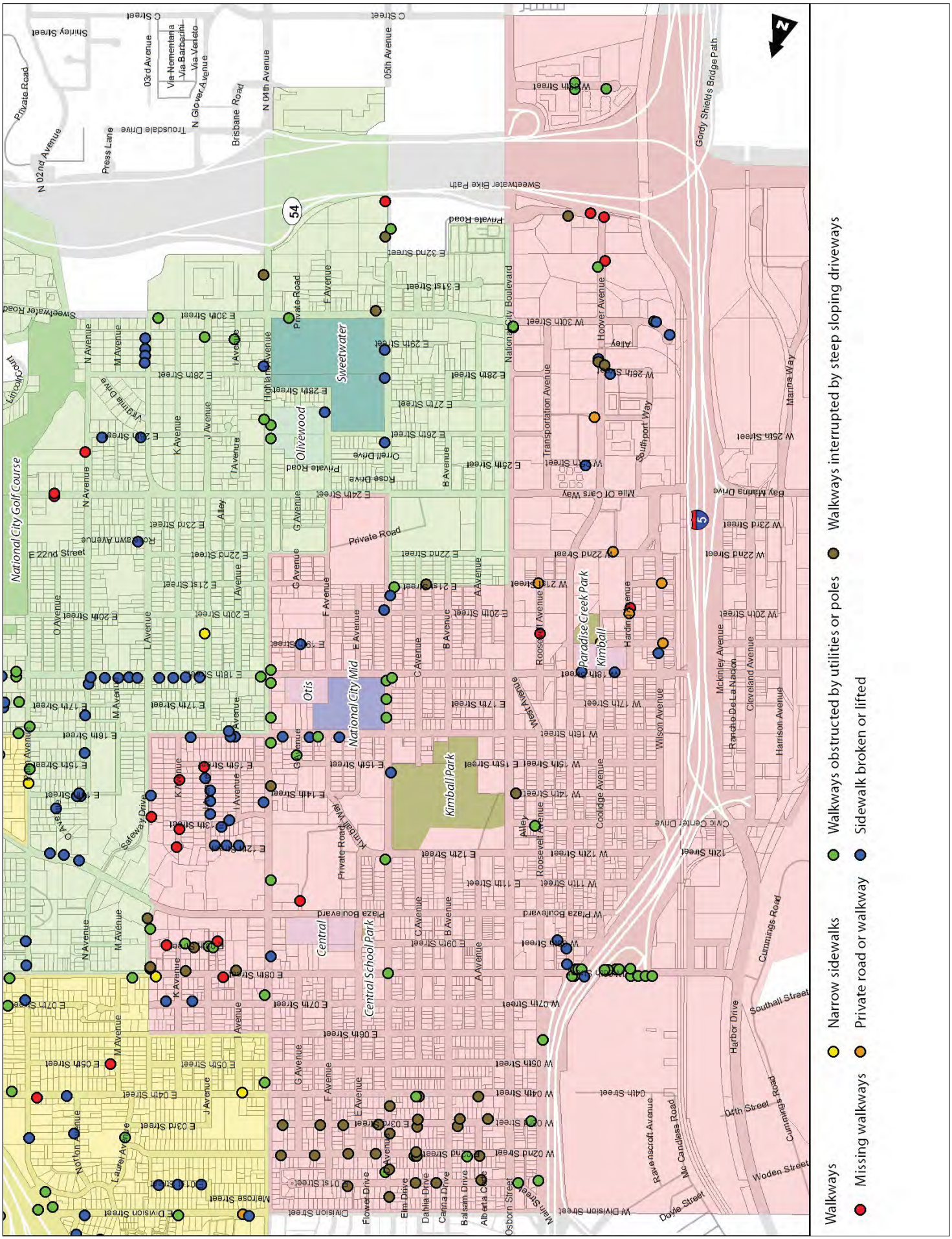
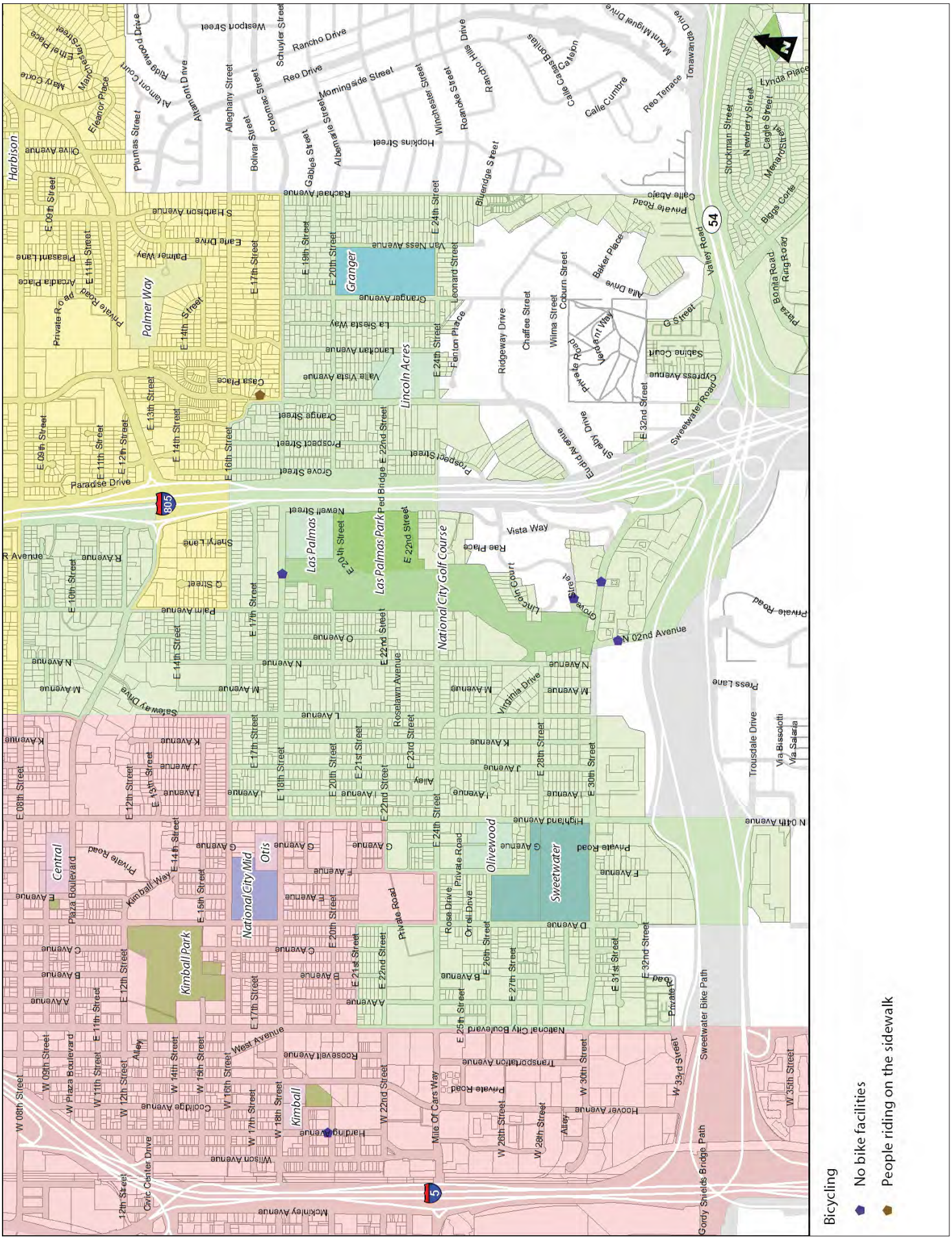


Figure A13: Las Palmas - Bicycling


Bicycling
No bike facilities
People riding on the sidewalk
Harbison
Palmer Way
Granger
Lincoln Acres
Las Palmas
Las Palmas Park
National City Golf Course
Central
National City Mid
Otis
Kimball Park
Kimball
Olivewood
Sweetwater
Paradise Drive
Valley Road
Sweetwater Road
Plaza Boulevard
Civic Center Drive
Sweetwater Bike Path
Gordy Shields Bridge Path
Ped Bridge
Mile Of Cars Way
National City Boulevard
Transportation Avenue
Hoover Avenue
Harding Avenue
Wilson Avenue
Roosevelt Avenue
Coolidge Avenue
West Avenue
Mckinley Avenue
Highland Avenue
Euclid Avenue
Roselawn Avenue
Virginia Drive
Trousdale Drive
Press Lane
Private Road
Vista Way
Rae Place
Grove Street
N 02nd Avenue
N 04th Avenue
Newell Street
Prospect Street
Orange Street
Grove Street
Granger Avenue
Van Ness Avenue
Rachael Avenue
Hopkins Street
Morningside Street
Reo Drive
Rancho Drive
Westport Street
Schuyler Street
Plumas Street
Olive Avenue
Eane Drive
Palmer Way
Pleasant Lane
Private Road
Arcadia Place
Casa Place
La Siesta Way
Lanoitan Avenue
Valle Vista Avenue
Fenton Place
Leonard Street
Ridgeway Drive
Chaffee Street
Wilma Street
Coburn Street
Baker Place
Alta Drive
G Street
Sabine Court
Cypress Avenue
Shelby Drive
Euclid Avenue
Prospect Street
Blueridge Street
Roanoke Street
Winchester Street
Albemarle Street
Gables Street
Bolivar Street
Potomac Street
Allegheny Street
Altamont Drive
Altamont Court
Ridgewood Drive
Mary Corte
Eleanor Place
Ethel Place
Mount Miguel Drive
Tonawanda Drive
Calle Cumbre
Reo Terrace
Calle Casas Bonitas
Calle Caleion
Stockman Street
Newberry Street
Cagle Street
Menard Street
Lynda Place
Biggs Corte
Bonita Road
Ring Road
Plaza
Private Road
Calle Abajo
Private Road
Via Bissolotti
Via Salaria
Sabway Drive
Palm Avenue
Sheryl Lane
R Avenue
O Street
E 08th Street
E 09th Street
E 10th Street
E 11th Street
E 12th Street
E 13th Street
E 14th Street
E 15th Street
E 16th Street
E 17th Street
E 18th Street
E 19th Street
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E 21st Street
E 22nd Street
E 23rd Street
E 24th Street
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E 30th Street
E 31st Street
E 32nd Street
W 08th Street
W 09th Street
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W 15th Street
W 16th Street
W 17th Street
W 18th Street
W 20th Street
W 22nd Street
W 26th Street
W 28th Street
W 30th Street
W 33rd Street
W 35th Street
Alley
Kimball Way
Plaza Boulevard
Private Road
Rose Drive
Ordit Drive
Private Road
Highland Avenue
Private Road
Press Lane
Trousdale Drive
Via Bissolotti
Via Salaria
N 04th Avenue
Private Road
Private Road
Private Road

Figure A14: Las Palmas - Comfort and Appeal

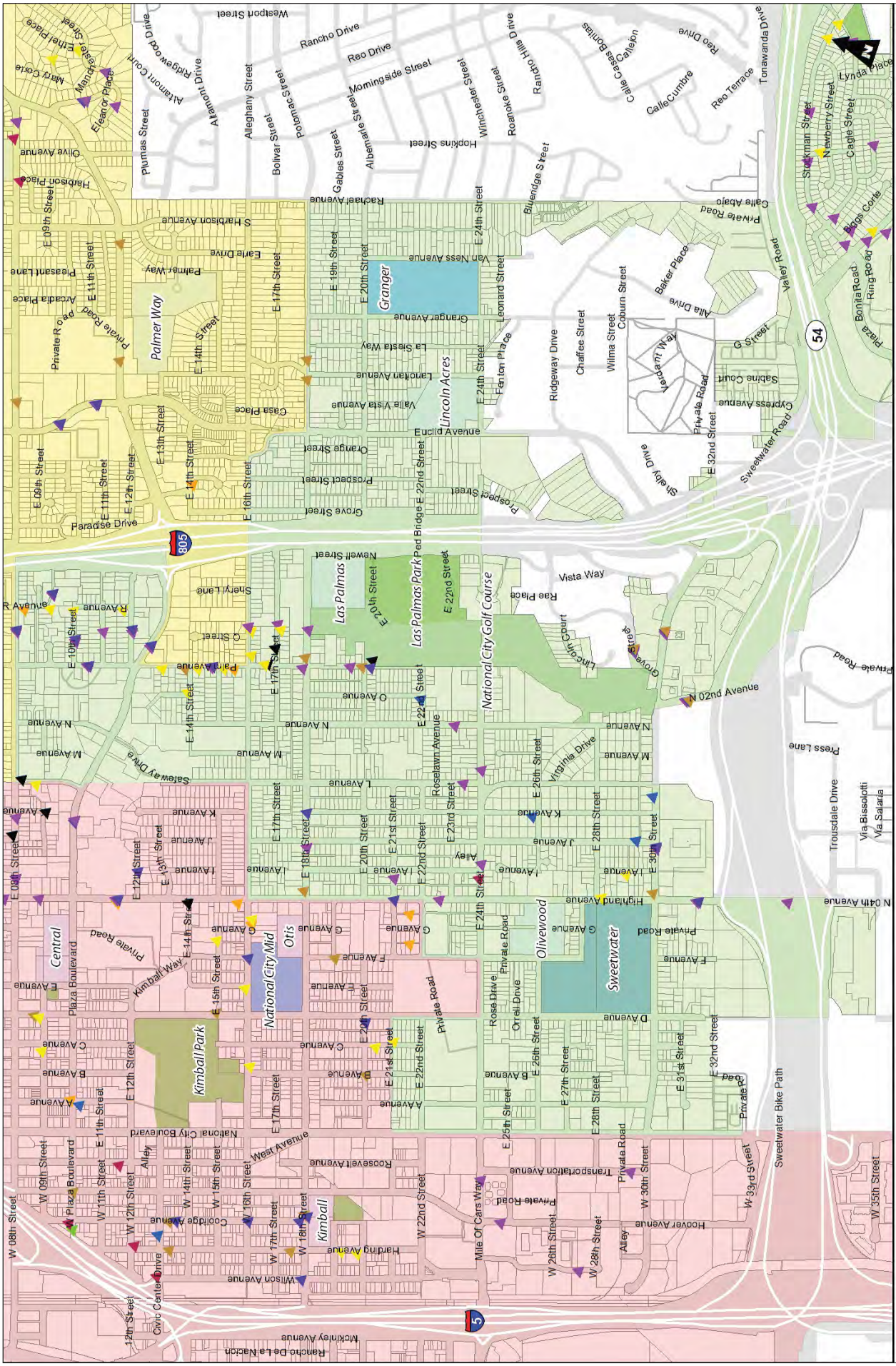

Comfort and Appeal
Graffiti
Homeless encampment
Lacking amenities such as signage and trash bins
Landscape maintenance needed
Limited lighting at night
Loud and scary pets
No shade due to lack of street trees
Overgrown landscaping blocking the walkway
Unsightly objects such as trash
Las Palmas
Las Palmas Park
National City Golf Course
Granger
Lincoln Acres
Palmer Way
Central
Kimball Park
National City Mid
Otis
Olivewood
Sweetwater
Kimball
Sweetwater Bike Path
Mile Of Cars Way
Civic Center Drive
Plaza Boulevard
National City Boulevard
West Avenue
Kimball Way
Private Road
Paradise Drive
Euclid Avenue
Vista Way
Highland Avenue
Van Ness Avenue
Granger Avenue
Lincoln Avenue
Vale Vista Avenue
Grove Street
Prospect Street
Newell Street
Roosevelt Avenue
Transportation Avenue
Hoover Avenue
Harding Avenue
Wilson Avenue
Coolidge Avenue
Rancho De La Nacion
Mckinley Avenue
Trousdale Drive
Via Bissolotti
Via Salaria
Press Lane
Sweetwater Road
Valley Road
Cypress Avenue
Sabine Court
Ridgeway Drive
Chaffee Street
Wilma Street
Coburn Street
Baker Place
Alta Drive
G Street
Bonita Road
Ring Road
Plaza
Lynda Place
Stockman Street
Newberry Street
Cagle Street
Biggs Corte
Rancho Drive
Reo Drive
Morningside Street
Hopkins Street
Bluebridge Street
Roanoke Street
Winchester Street
Rapidan Hills Drive
Calle Casas Bonitas
Calle Callejon
Calle Cumbre
Reo Terrace
Tonawanda Drive
Weston Street
Plumas Street
Alleghany Street
Bolivar Street
Potomac Street
Albemarle Street
Gables Street
Rachael Avenue
Harbison Place
Olive Avenue
Mandeville Street
Ethel Place
Mary Corte
Eleanor Place
Ridgewood Drive
Altamont Court
Altamont Drive
Private Road
Calle Abajo
Sweetwater Road
Sidby Drive
Fenton Place
Leonard Street
Pleasant Lane
Arcadia Place
Earle Drive
S Harbison Avenue
Sherry Lane
Satellite Place
Virginia Drive
Rae Place
Lincoln Court
Roselawn Avenue
Alley
N 02nd Avenue
N 04th Avenue
Rose Drive
Orchid Drive
Private Road
Private Road
Private Road

Figure A15: Las Palmas - Safety

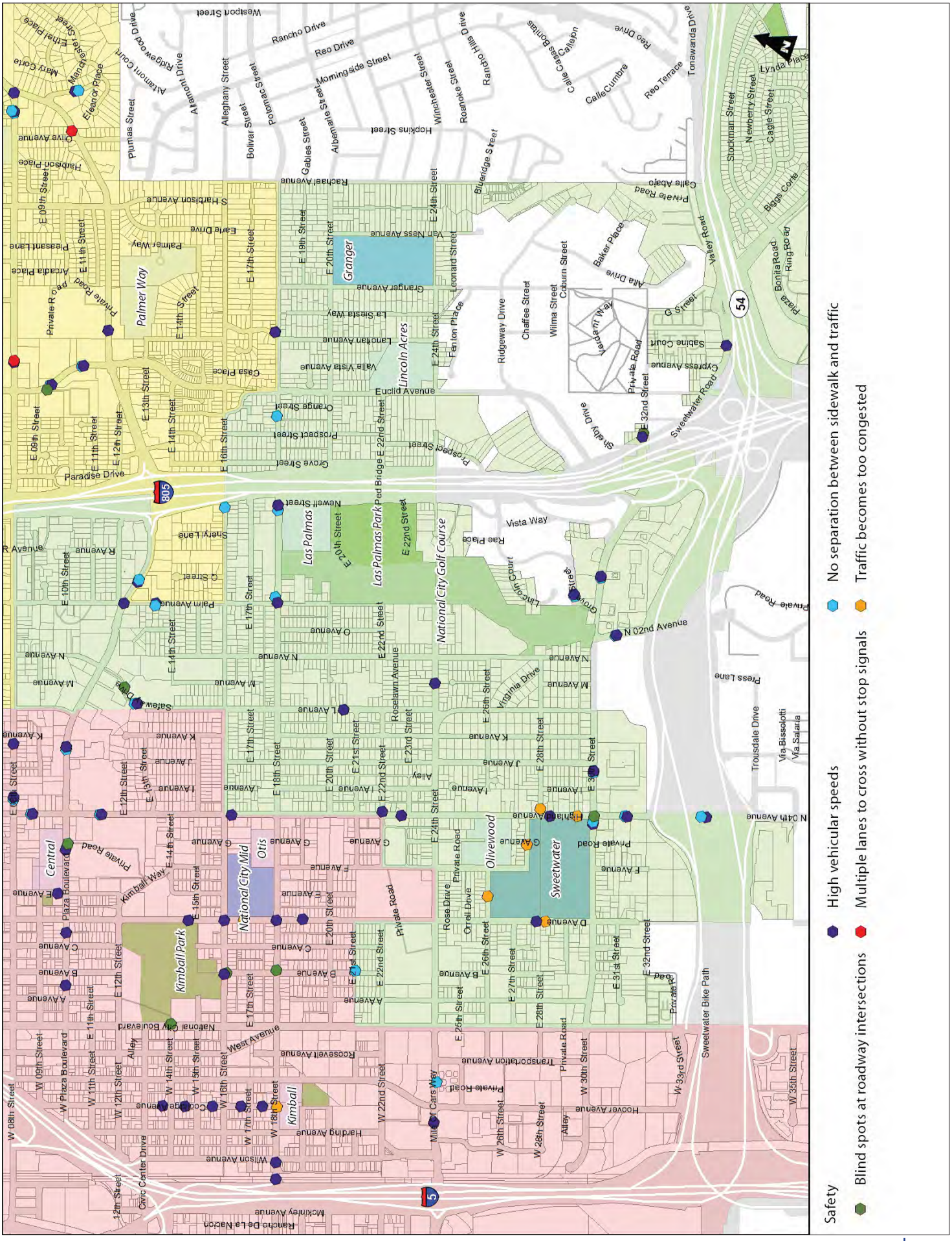

Safety
High vehicular speeds
Blind spots at roadway intersections
No separation between sidewalk and traffic
Multiple lanes to cross without stop signals
Traffic becomes too congested
Palmer Way
Granger
Lincoln Acres
Las Palmas
Las Palmas Park
National City Golf Course
Central
National City Mid
Otis
Kimball Park
Kimball
Olivewood
Sweetwater
Plumas Street
Alameda Drive
Ridgewood Court
Allegheny Street
Bolivar Street
Potomac Street
Gables Street
Albemarle Street
Morningside Street
Rancho Drive
Reo Drive
Hopkins Street
Winchester Street
Roanoke Street
Rancho Hills Drive
Calle Cabeza Bonita
Calle Callejon
Calle Cumbre
Reo Terrace
Tonawanda Drive
Stockman Street
Newberry Street
Cagle Street
Lynda Place
Biggs Corte
Bonita Road
Ring Road
Plaza Drive
Valley Road
Private Road
Calle Abajo
Bluerdge Street
Rachael Avenue
Van Ness Avenue
Leonard Street
Granger Avenue
La Siesta Way
Lincoln Avenue
Vale Vista Avenue
Casa Place
Euclid Avenue
Orange Street
Prospect Street
Grove Street
Paradise Drive
Newell Street
Sneyl Lane
Palm Avenue
Vista Way
Rae Place
Lincoln Court
Grove Street
N 02nd Avenue
Press Lane
Trousdale Drive
Via Bissolotti
Via Salaria
N 04th Avenue
Sweetwater Bike Path
Sweetwater Road
Cypress Avenue
Sabine Court
Private Road
Alta Drive
Baker Place
Coburn Street
Wilma Street
Chaffee Street
Ridgeway Drive
Fenton Place
Sandy Drive
E 32nd Street
Virginia Drive
Roselawn Avenue
Rose Drive
Orrell Drive
Transportation Avenue
Hoover Avenue
Harding Avenue
Wilson Avenue
Roosevelt Avenue
West Avenue
National City Boulevard
Plaza Boulevard
Kimball Way
Civic Center Drive
Rancho De La Nacion
Mckinley Avenue
Harbison Place
Olive Avenue
Mandy Lane
Eleanor Place
Ethel Place
Mary Corte
Pleasant Lane
Arcadia Place
Private Road
Earle Drive
S Harbison Avenue
Saturn Way
Palmer Way
Paradise Drive
Private Road
Private Road
Private Road

Figure A16: Las Palmas - Sidewalk Conditions

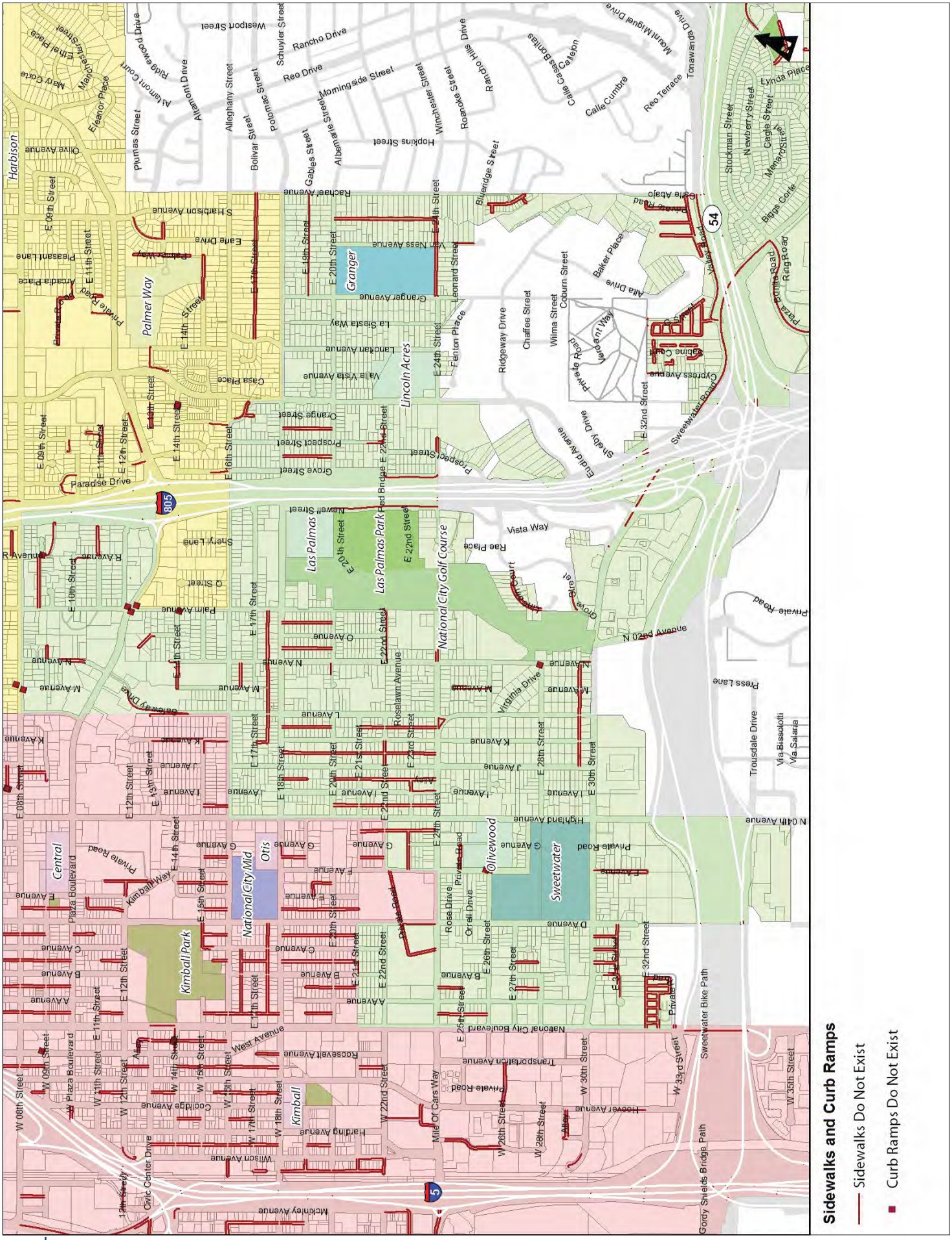


Figure A17: Las Palmas - Street Crossings

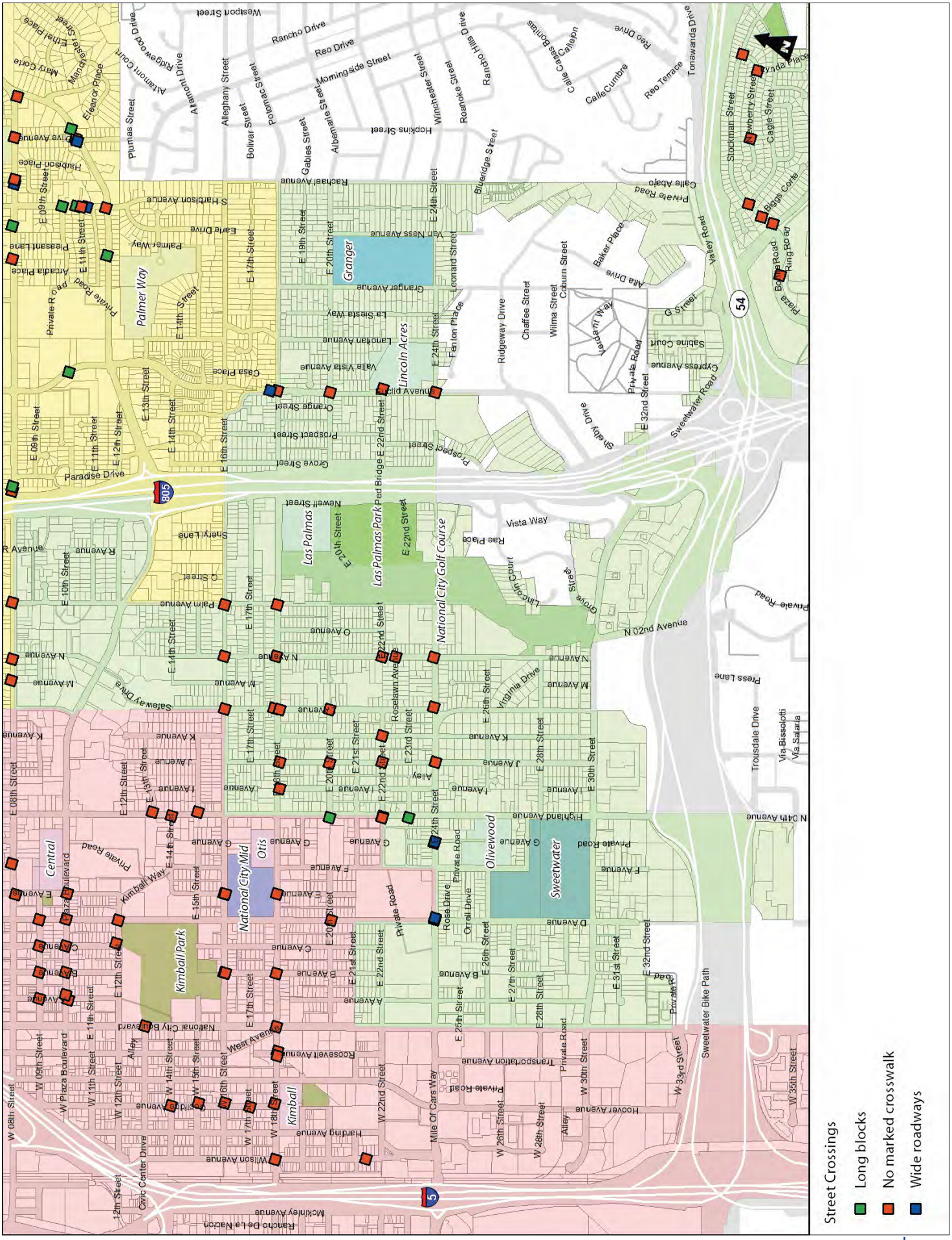


Figure A18: Las Palmas - Walkways

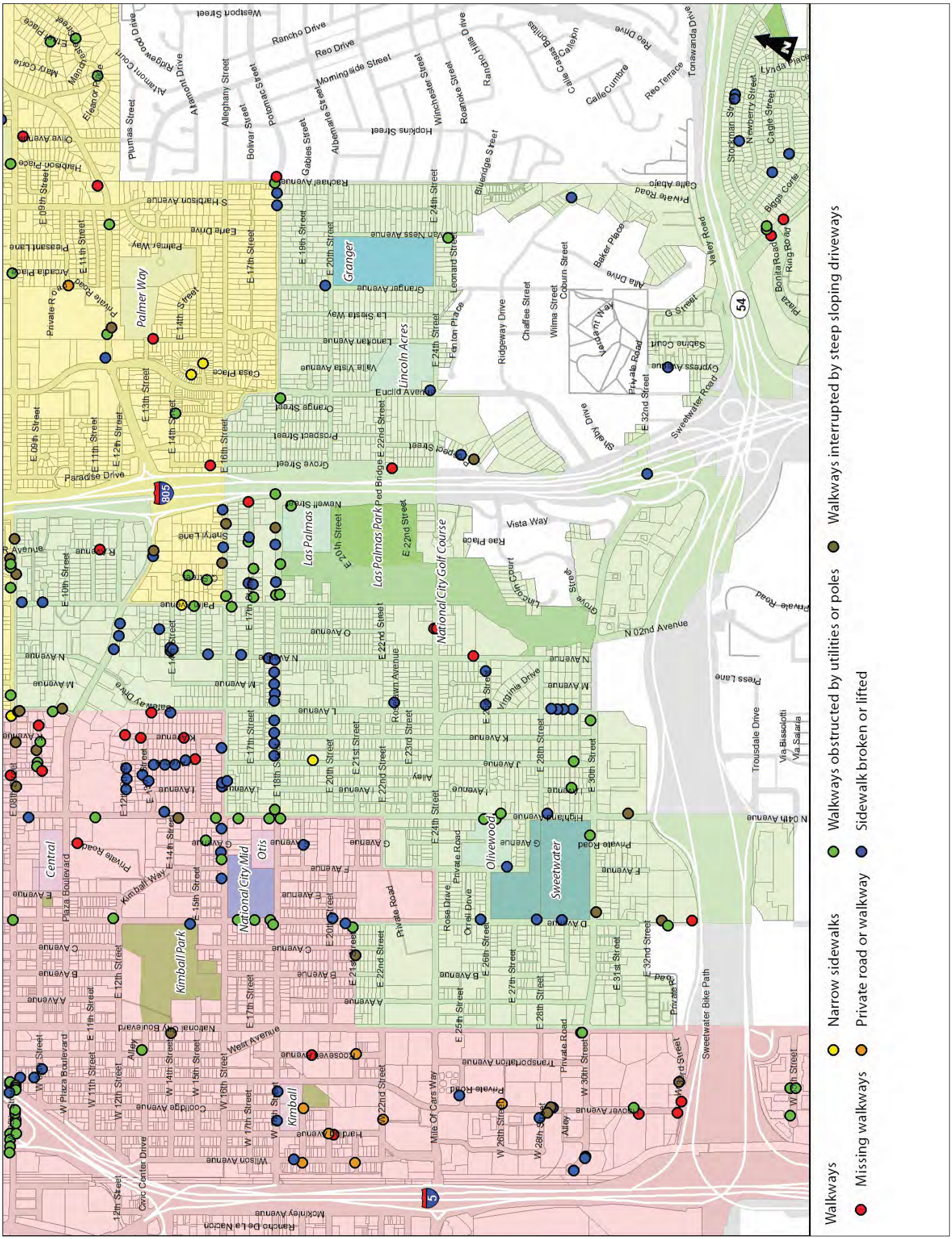


Figure A19: Lincoln Acres - Bicycling

Figure A20: Lincoln Acres - Comfort and Appeal

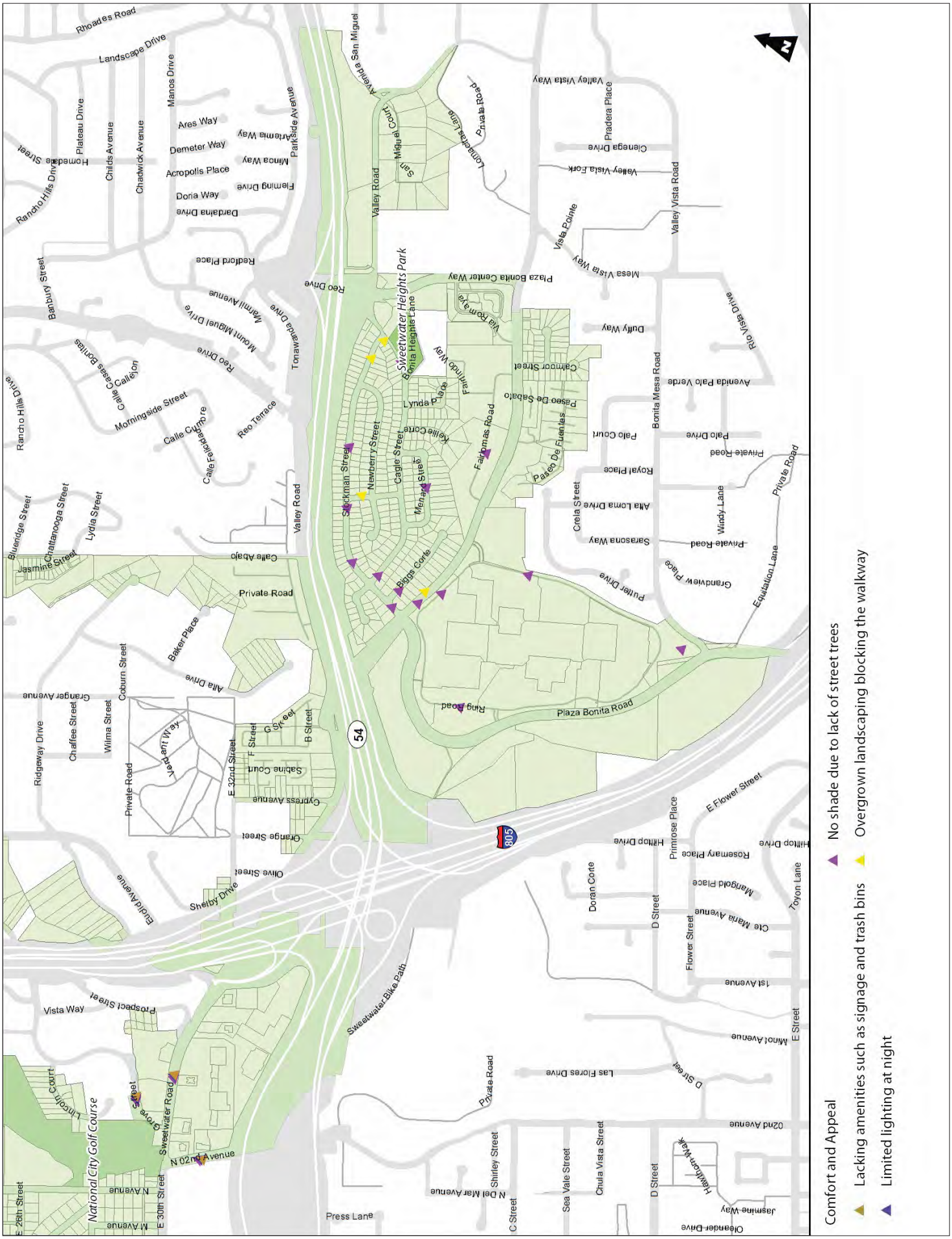


Figure A21: Lincoln Acres - Safety

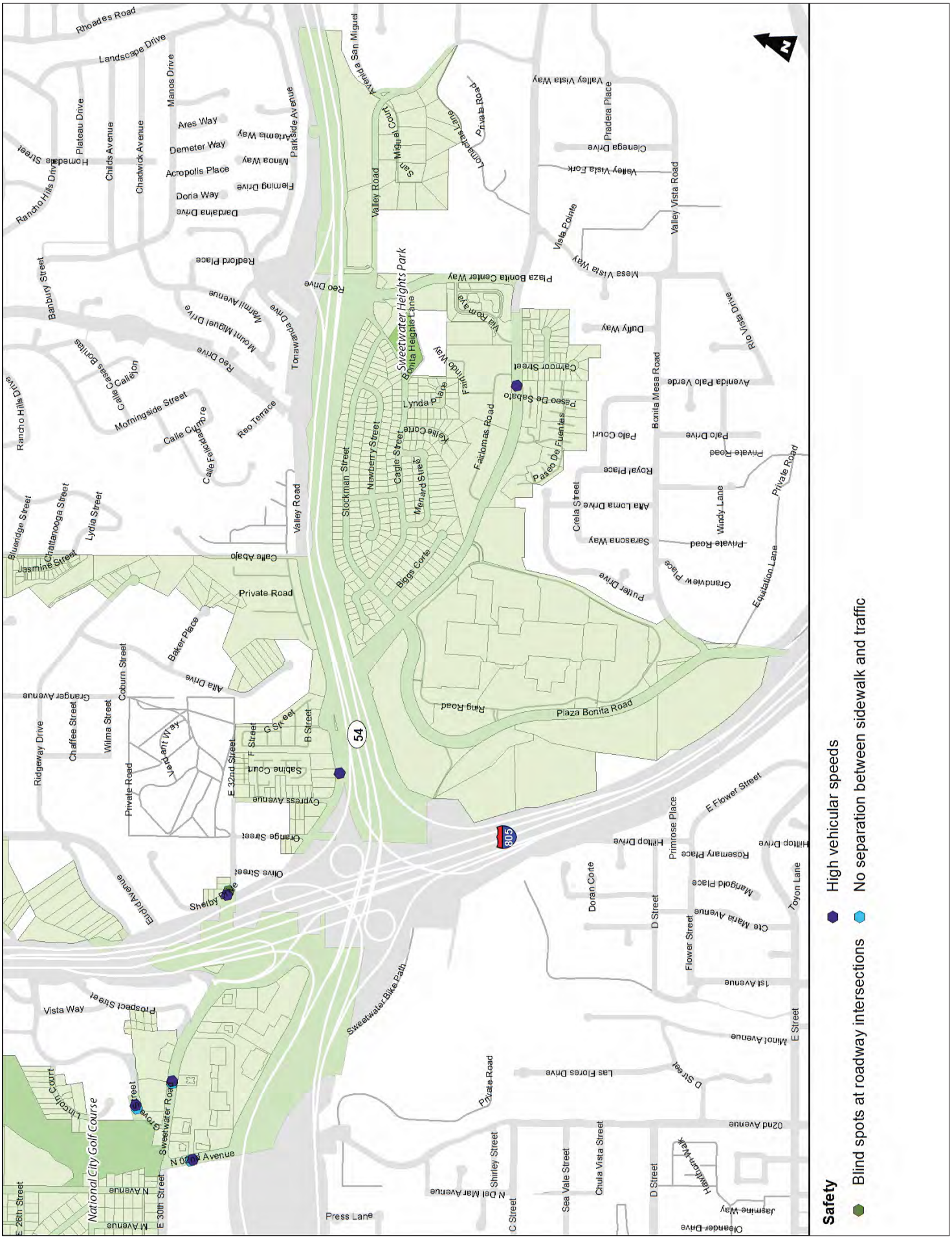


Figure A22: Lincoln Acres - Sidewalk Conditions

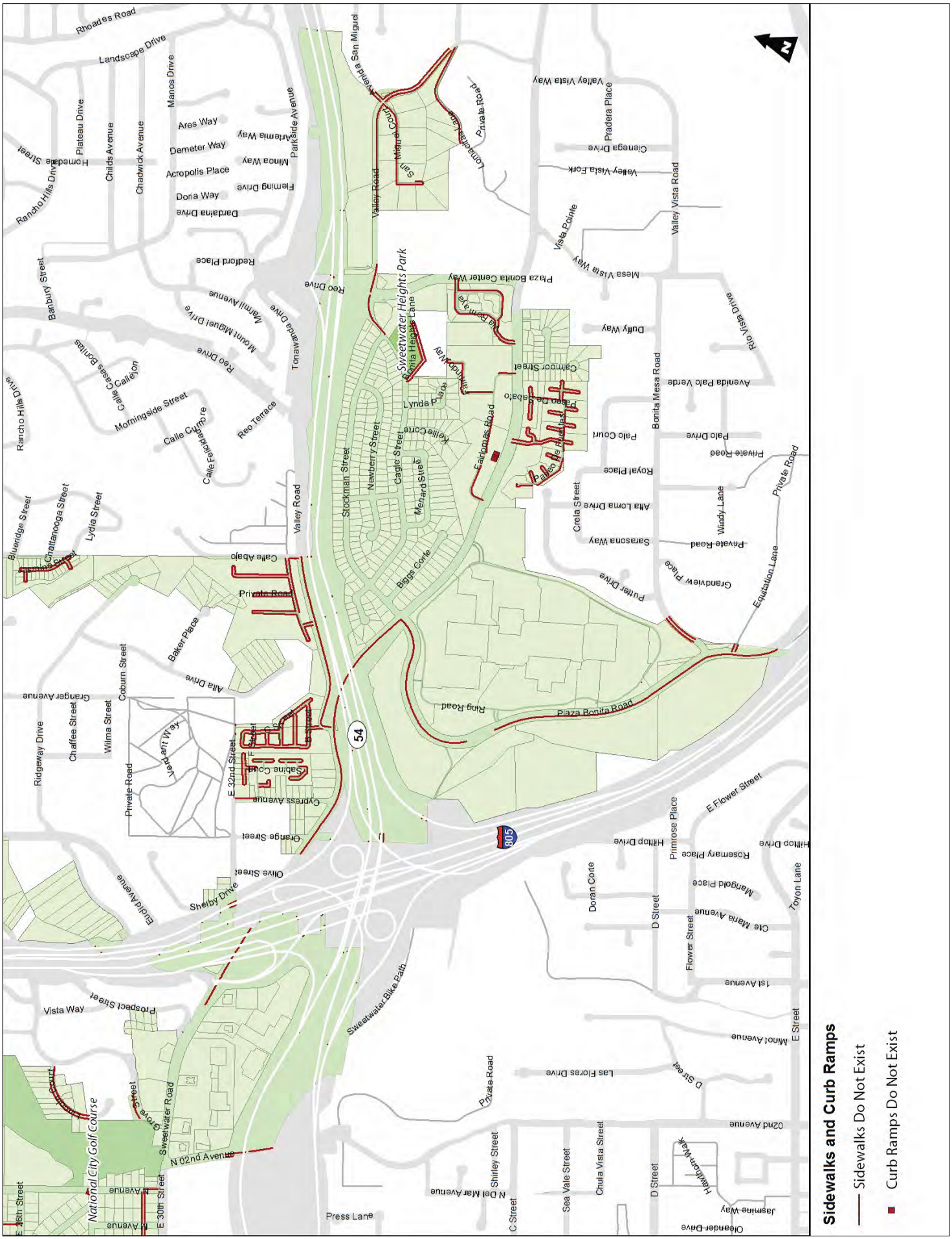
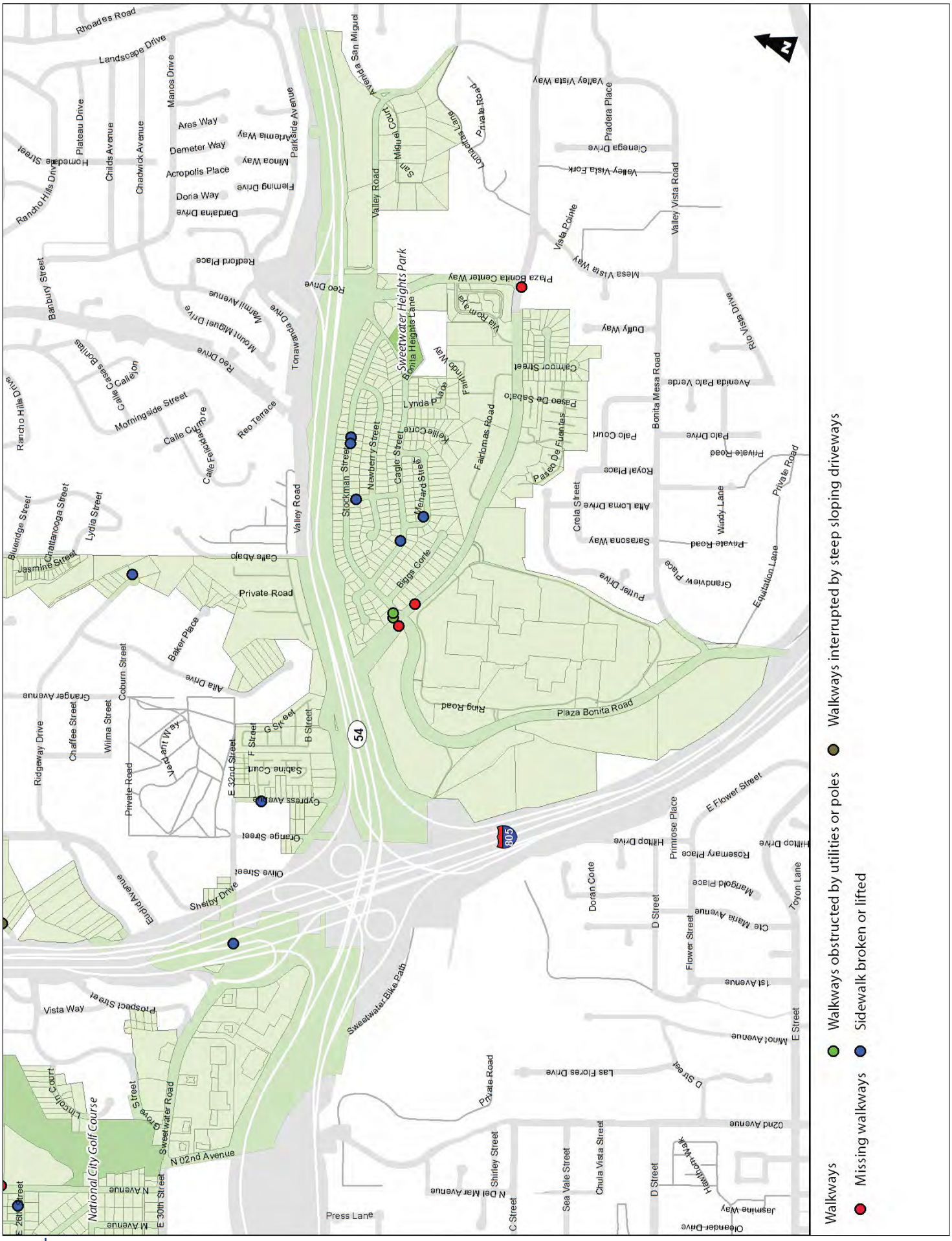


Figure A23: Lincoln Acres - Street Crossings

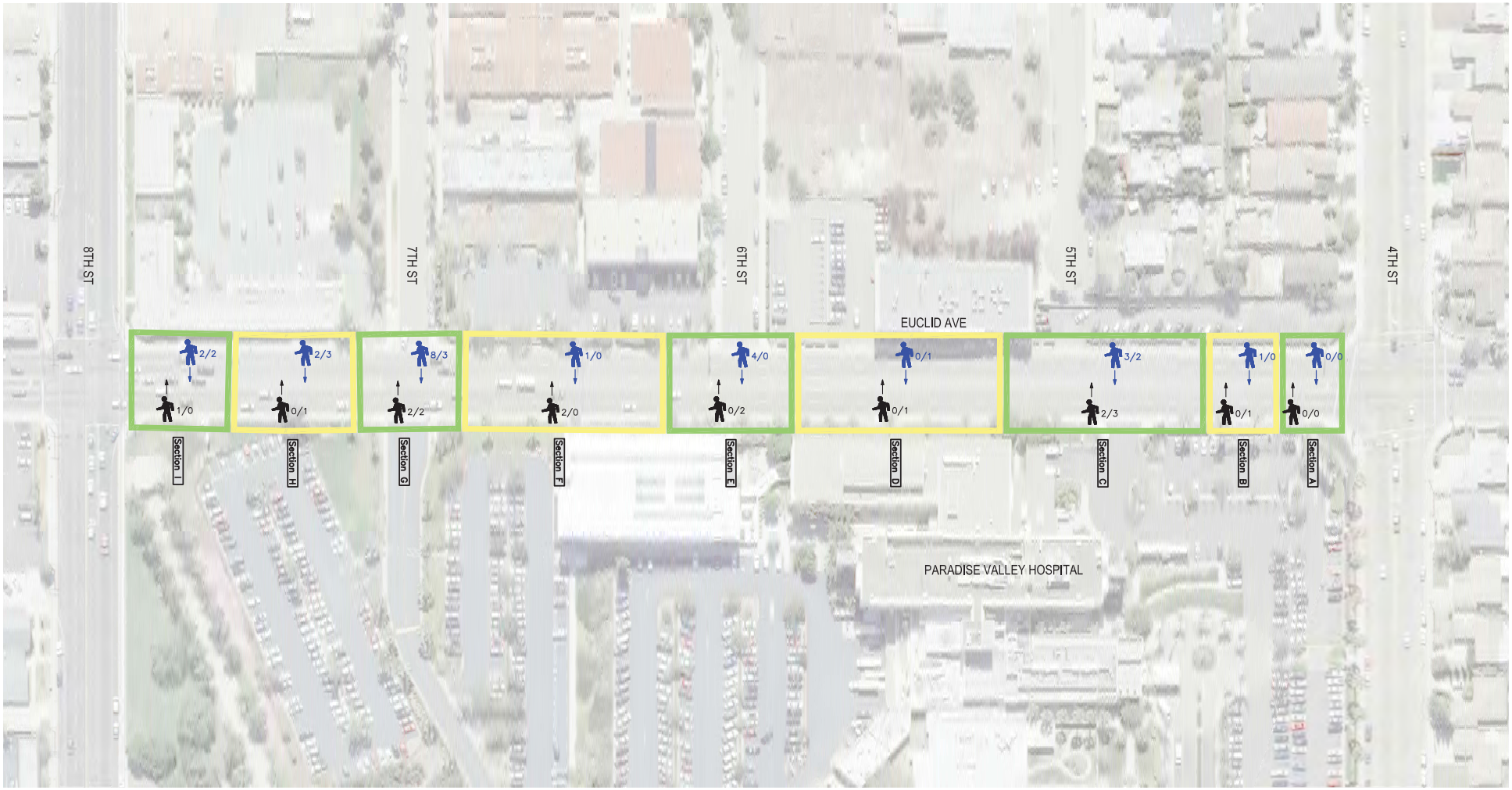
Figure A24: Lincoln Acres - Walkways



Appendix B: Technical Documents

Appendix B summarizes the following:

- Bicycle and pedestrian counts for the Euclid Avenue
- Vehicular counts for Euclid Avenue
- Documentation for enhanced pedestrian crosswalks
- Signage details for the El Toyon-Las Palmas Bicycle Corridor
- Granger Junior High bicycle and pedestrian counts



LEGEND

XX/XX - 7AM - 9AM (2 hours) Pedestrian counts / 4PM-6PM (2 hours) Pedestrian counts

NORTH

1":100'

REV. 12/17/2013
N:\2197\Figures\Maps\CAD\Figure 2-1 (Euclid_4th_8th).dwg

LINSCOTT LAW & GREENSPAN engineers

KTU+A Planning + Landscape Architecture

Figure 2-1
Euclid Ave: Between 4th St and 8th St

National City Smart Foundation