Kearny Mesa Community Plan Update

Transportation Impact Study

Final Report

July 2020

Prepared for:

The City of SAN DIEGO

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1.0 Introduction

1.1 Purpose of the Report

This Transportation Impact Study (TIS) serves to identify and document potential CEQA transportation impacts related to buildout of the Kearny Mesa Community Plan Update proposed land uses and mobility network (Proposed Project), and alternatives evaluation, as well as to recommend improvements/mitigation measures as appropriate.

Figure 1-1 displays Kearny Mesa's location in the San Diego Region.

Study Scenarios

Seven (7) mobility scenarios were evaluated, including five (5) alternatives based on the Kearny Mesa Community Plan Update (CPU) land uses. The seven scenarios consist of the following:

- Base Year (2012) – establishes the existing baseline VMT within the project study area based on the SANDAG Series 13 Regional Model Base Year (2012) calibrated for Kearny Mesa.

- Proposed Community Plan Update (Proposed Project) – represents buildout of the Proposed Project land uses and mobility network, which were developed in collaboration with community members, City staff, and the project consultant team. A summary of the proposed land uses is provided in Chapter 2 of this report, while the detailed network development process and recommendations are provided in Chapter 4.

- No Project (Adopted Community Plan) – represents buildout of the Kearny Mesa currently Adopted Community Plan land uses and mobility network as they apply today, including all amendments to the Community Plan from its original adoption in 1992 to the most recent amendment in 2018.

- Alternative 1 (Reduced Density Alternative) – represents the same proposed mobility network but retains more of the existing industrial and business park areas within the CPU area and would increase the floor area ratio (FAR) limits for commercial and industrial zones.

- Alternative 2 (Reduced Height Alternative) – represents the same proposed mobility network, and land uses (i.e. type and total quantity) as the Proposed Project but would implement reduced height limits in the proposed village areas.

- Alternative 3 (Reduced Industrial Employment Alternative) – represents the proposed mobility network, but assumes an increased overall employment compared to the Proposed Project by increasing the scale of commercial development in industrial zones.

- Alternative 4 (Residential Option) - represents the same proposed mobility network and land uses as the Proposed Project but would redistribute a portion of the dwelling units on Clairemont Mesa Boulevard.

All study scenarios were modeled using the calibrated SANDAG Series 13 Regional Model – Kearny Mesa Community Plan Update Subarea Model (the "Model"). This customized Model assumed buildout of the proposed Kearny Mesa land uses and the respective mobility networks for Kearny Mesa, as well as the Horizon Year 2050 land uses and transportation improvements for the rest of the San Diego region. Detailed modeling information and documentation can be found in Chapter 4 of the *Mobility Technical Report*.

This report has been prepared in accordance with the City's compliance with the SB 743 legislation specified by the Governor's Office of Planning (OPR). SB 743 removes traffic Level of Service (LOS) as a metric for determining significant environmental impacts for transportation and replaces it with Vehicle Miles Traveled (VMT) as the primary measure of transportation impacts.

For the purpose of the transportation impact study, Plan-to-Ground analysis was conducted by comparing the Proposed Project and the various alternatives to Base Year (2012), which is representative of baseline conditions.

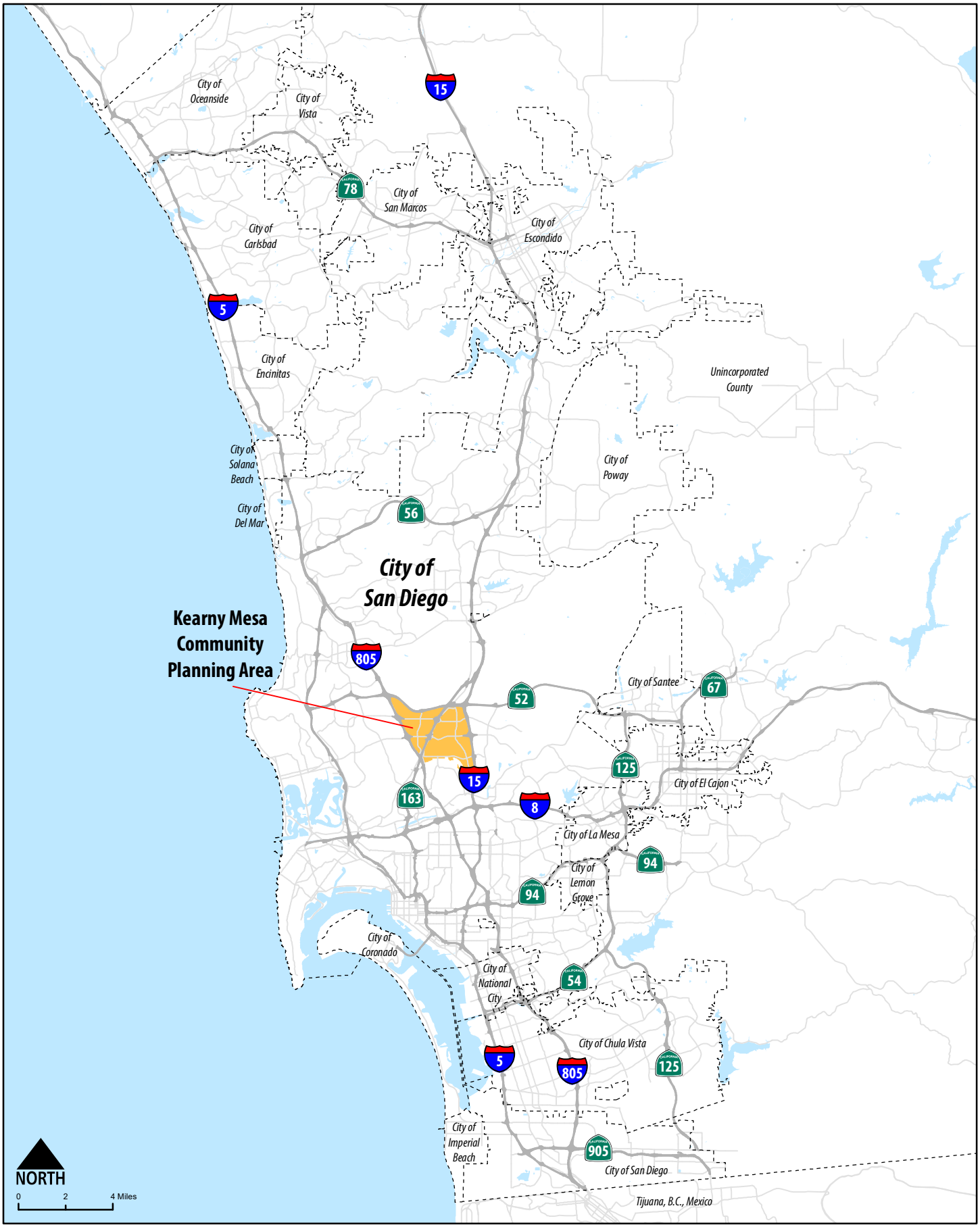

Figure 1-1
Kearny Mesa within the Region

1.2 Report Organization

The remainder of this report is organized into the following chapters:

2.0 *Project Description* – This chapter summarizes the land uses for the Base Year, Adopted Plan, and Proposed Community Plan Update (Proposed Project).

3.0 *Analysis Methodology* – This chapter describes the methodologies and standards utilized to analyze the VMT conditions for all scenarios.

4.0 *Project Impacts* – This chapter discusses the VMT analysis and potential CEQA transportation impacts of the Proposed Project. Mitigation measures for significant transportation impacts are identified, as necessary.

5.0 *Vehicle Miles Traveled for GHG Analysis Purposes* – This chapter discusses the VMT data required for the Greenhouse Gas (GHG) Emissions analysis of the Proposed Project. As opposed to the VMT metric used in evaluating project transportation impacts, which is an efficiency metric (Resident VMT per Capita or Employee VMT per Employee), the VMT for GHG analysis is based on the project VMT generated. This VMT for GHG analysis was provided for the Base Year, Adopted Plan, and the Proposed Project.

6.0 *Alternatives Analysis* – This chapter discusses the VMT analysis and potential transportation impacts of the five project alternatives including the No Project Alternative.

2.0 Project Description

The Proposed Project includes an update of the currently Adopted Community Plan to address future growth and development in the Kearny Mesa community. Table 2.1 summarizes key Kearny Mesa land uses for the Base Year, Adopted Plan, and Proposed Project.

Table 2.1 Land Use Summary

Land Use[1]	2012 Base Year	2050 Adopted Plan	2050 Proposed Project
Dwelling Units	2,857	5,882	25,826
Commercial Retail + Visitor Retail (sf[2])	7,815,123	9,677,820	12,953,174
Office (sf)	11,654,234	13,537,017	20,713,682
Industrial (sf)	11,865,171	16,865,661	19,089,750
Institutional + Education (sf)	3,583,855	4,808,397	4,638,427

Source: City of San Diego (2019)

Notes:

[1] Land uses provided in this summary table reflect the primary vehicular traffic generating uses in the community. Land uses not included this table include parks and recreational uses, open space, transportation/utilities (e.g. airport runways, transit stop facilities, etc.), and vacant areas.

[2] sf = square feet

The Kearny Mesa Community Plan Update plans to provide better jobs and housing balance, increasing transit usage by leveraging future investments of robust transit infrastructure and service enhancements near new residences and employment hubs, and making the community more walkable and bikeable. The plan strives to be in alignment with the City's General Plan and Climate Action Plan (CAP).

Between the Base Year to Adopted Plan, the number of dwelling units would more than double (2,857 to 5,882), but under the Proposed Project scenario, the number of dwelling units would increase by 804% (2,857 to 25,826), eight times the Base Year scenario's dwelling units. As a result, the Proposed Project scenario substantially increases the dwelling unit capacity beyond what is currently available and what is proposed in the Adopted Plan. Most of the additional dwelling units would be added along Clairemont Mesa Boulevard and would increase densities around transit stops and mixed-use development.

The commercial retail would increase moderately by 24% (7,815,123 sf to 9,677,820 sf) from the Base Year to Adopted Plan and would increase significantly by 66% (7,815,123 sf to 12,953,174 sf) in the Proposed Project. Similarly, the office and industrial uses would increase moderately by 29% (23,519,405 sf to 30,402,678 sf) from the Base Year to Adopted Plan and would increase significantly by 69% (23,519,405 sf to 39,803,432 sf) in the Proposed Project.

Kearny Mesa's transition to a more urbanized, high-intensity land use pattern under the Community Plan Update would require equally supportive mobility infrastructure, public improvements, and policies focused on better serving pedestrians, bicyclists and transit users, in addition to motorists. Therefore, to supplement these land use changes, the Proposed Project also includes transportation network changes to address existing and forecasted mobility needs and deficiencies. Details on the network development process and recommendations can be found in Chapter 4 of this report.

3.0 Analysis Methodology

This chapter describes the CEQA transportation impact analysis methodology that was prepared in accordance with the City's compliance with the SB 743 legislation and the California Environmental Quality Act (CEQA) project review process.

3.1 Data Sources and Methods

The following data and metrics were obtained from the San Diego Association of Governments' (SANDAG) Series 13 Activity Based Model (ABM), which was calibrated and customized for the Kearny Mesa Community Plan Update. The ABM is a travel demand forecasting model that incorporates census data and travel surveys to inform the algorithms of the model's projections. It uses a simulated population based on existing and projected demographics to match residents to employment and forecasts the daily travel on the regional transportation network. In addition, the model is able to track the daily travel of individuals in the simulated population, including origins, destinations, travel distances and mode choices. The Series 13 ABM has four (4) forecast scenarios: 2012, 2020, 2035, and 2050. The regional forecast for the listed years can be found at SANDAG's Transportation Forecast Information Center (http://tfic.sandag.org/).

SANDAG's regional ABM was customized for the Kearny Mesa community and calibrated at the local level. For the KM CPU, the 2012 forecast was calibrated using detailed land use inputs for the Kearny Mesa study area. In addition, the local transportation network was refined to better match ground conditions in 2012. By refining land use and network assumptions, a Base Year scenario was developed that closely matched baseline conditions in 2012. With the calibrated base year model as a foundation, the Proposed Project, Adopted Plan, and project alternatives scenarios were also developed with a build-out year of 2050. These scenarios provided the relevant traffic data and metrics for the analysis.

In consultation with SANDAG modelers, additional model output data was provided to support the Kearny Mesa CPU efforts and some of these methodologies are documented in the *Vehicle Miles Traveled Calculation Using the SANDAG Regional Travel Demand Model – Technical White Paper* (San Diego Institute of Transportation Engineers, May 2013) provided in Appendix A. SANDAG produced relevant metrics and reports specific to the Kearny Mesa modeling scenarios. These reports include the following:

- Vehicle Miles of Travel Report (SB 743 metrics for residential and employment) – Appendix B
- Disaggregated VMT for Kearny Mesa Select Zone (VMT for GHG Analysis) – Appendix C

Activity Based Model (ABM) Background

The ABM is a complex travel demand model that can track the characteristics of each person and can analyze the travel patterns of a wide area throughout a whole day. When simulating a person's travel patterns, the ABM takes into consideration a multitude of personal and household attributes to ensure that people move from one place to another in a plausible manner. Each model run represents a specific year, land use type, or transportation network type and is considered a "scenario". After a scenario is conducted using the ABM, it produces a loaded roadway network that has the projected daily vehicle traffic (travel) on each link in the network. In addition, the region is geometrically divided into Traffic Analysis Zones (TAZs), and the land uses in these zones generate the traffic that is projected on the roadway network through zone-connectors. Detailed modeling information and documentation can be found in Chapter 4 of the *Mobility Technical Report*.

3.2 Determination of CEQA Significant Impacts

Project-specific significance thresholds for the Kearny Mesa Community Plan Update have been developed to guide a programmatic analysis for the Proposed Project, a significant transportation impact could occur if the Proposed Project would:

1. Result in a conflict with an adopted program, plan, ordinance, or policy addressing the transportation system, including transit, roadways, bicycle and pedestrian facilities;

2. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or

3. Result in vehicle miles traveled (VMT) exceeding thresholds for City of San Diego's compliance with SB 743 legislation, as identified in Table 3.1, *Significance Thresholds for Transportation VMT Impacts by Land Use Type*.

Table 3.1 Significance Thresholds for Transportation VMT Impacts by Land Use[1]

Land Use Type	Threshold for Determination of a Significant Transportation VMT Impact
Residential	15% below regional average[2] Resident VMT/Capita
Employment	15% below regional average[2] Employee VMT/Employee
Retail	Zero net increase in VMT generated by retail uses

Source: City of San Diego (2019)

Notes:
[1] The thresholds included in this table are for the pertinent land use types of the Proposed Project. Other land use thresholds (e.g. hotel, institutional, mixed-use, etc.) have been excluded as those thresholds are more land use specific and for project-level analyses.
[2] The regional average is determined using the Base Year (2012) of the current version of the SANDAG Regional Travel Demand Model (Series 13, version 13.3.2) that has been calibrated for Kearny Mesa.

These VMT thresholds provided in Table 3.1 were developed based on SB 743 legislation and the Governor's Office of Planning and Research's (OPRs) *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which covers specific changes to the CEQA guidelines and contains OPR's technical recommendations related to the use of VMT, as the preferred CEQA transportation metric.

The following definitions describe how VMT is referred to, calculated, and accounted for in this CEQA impact analysis:

- Resident VMT/Capita includes, for all San Diego County residents, all vehicle-based resident travel grouped and summed to the home location of the individual. It includes *all* resident vehicle travel: home-based and non-home-based. The VMT for each individual is then summed for all individuals residing in a particular census tract and divided by the population of that census tract to arrive at Resident VMT/Capita.

- Employee VMT/Employee includes, for all San Diego County residents, all vehicle-based employee travel grouped and summed to the work location of the individual. This includes *all* employee travel, not just work-related trips. The VMT for each work location is then summed for all work locations in a particular census tract and divided by the number of employees of that census tract to arrive at Employee VMT/Employee. This does not include employees whose work location is specified as home.

- Kearny Mesa Total Retail VMT is the sum of all vehicle trips generated by retail uses in the community multiplied by their associated trip lengths.

4.0 Impact Analysis

This chapter presents the assessment of transportation impacts resulting from the Proposed Project.

4.1 Issue 1: Conflicts with Current Plans/Policies

Would the Proposed Project conflict with an adopted program, plan, ordinance, or policy addressing the transportation system, including transit, roadways, bicycle and pedestrian facilities?

This issue focuses on whether the Proposed Project conflicts with an adopted program, plan, ordinance, or policy related to the transportation system. For the purposes of this analysis, a significant transportation impact could occur if the Proposed Project would conflict with the General Plan Mobility Element or other adopted transportation programs, plans, ordinances, or policies such as the City's Bicycle Master Plan.

The Proposed Project would be consistent with the Mobility Element of the General Plan and other adopted policies, plans, or programs supporting the transportation system, as it strives to improve mobility through a balanced, multi-modal transportation network with planned improvements to pedestrian, bicycle, transit, and roadway facilities. Additionally, the Proposed Project would provide policies that support such multi-modal improvements. Thus, the Proposed Project would not conflict with adopted policies, plans, or programs related to the transportation system as discussed below.

Pedestrian Facilities

The Proposed Project includes a network of planned pedestrian facilities to support the level of pedestrian traffic in the area. The following pedestrian facilities are planned for the Kearny Mesa community as part of the Proposed Project.

Pedestrian Route Types

Pedestrian route types are used to categorize pedestrian facilities along roadways based on adjacent uses and characteristics of the walking environment. The City of San Diego Pedestrian Master Plan (City 2006) defines route types, each suggesting a level of treatments or features that best supports the specific area's walking environment. Corridor, Connector, and District route types are particularly suitable within the context of Kearny Mesa.

Connector route types run along roadways with lower pedestrian activity levels, thus requiring more basic treatments such as landscaped buffers between the sidewalk and roadway, and mandatory features like standard sidewalk widths, ADA-compliant curb ramps, and marked crosswalks at signalized intersections with advance stop bars. Connectors also offer key circulation connections that feed more prominent Corridor and District roadways.

Corridor route types are present along roadways that support business and shopping districts with moderate pedestrian activity levels and consist of features of those identified under Connector route types with the addition of more enhanced treatments such as above minimum sidewalk widths (>5 feet), visual and audible pedestrian signal heads, lead pedestrian intervals, high visibility crosswalks, pedestrian lighting, and trees to shade walkways.

District route types support high pedestrian activity levels in mixed-use urban areas and major community thoroughfares, consisting of features designed to support higher volumes of pedestrians in an environment

where heavier vehicular traffic is also likely. Districts are intended to include improvements that provide premium comfort and priority for pedestrians. District features consist of those identified under Connector and Corridor route types with the addition of wider walkway widths for forming promenades/paseos/linear parks, decorative crosswalks and/or pavement materials, street furnishings, bulb outs/curb extensions, and median refuges and/or pedestrian actuated controls at crossings.

Figure 4-1 displays the Proposed Project's District, Corridor, and Connector pedestrian route types. Based on the defined pedestrian route types, improvements are included in the Proposed Project to help create a safer, connected, and accessible pedestrian environment that would make walking a more attractive transportation choice. Examples of proposed pedestrian treatments are described in the subsequent subsections. Overall, such pedestrian treatments will be implemented at the time of need and as Kearny Mesa revitalizes.

Intersection Pedestrian Enhancements

All crossing points at signalized intersections are planned to be upgraded to current City standards, to include the following:

- ADA compliant pedestrian ramps;
- High visibility continental crosswalks;
- Advanced stop bar placement; and
- Pedestrian count down signals.

For unsignalized intersections, features such as ADA-compliant curb ramps, advanced stop bar placement, and high visibility continental crosswalks are to be included along the intersection leg with the traffic control (i.e., stop sign).

Districts and Corridors Pedestrian Enhancements

Corridors and Districts include additional operational and physical treatments beyond the basic pedestrian amenities to support the heavier pedestrian activity levels that traverse along such roadways. As previously defined, the more enhanced and premium pedestrian improvements that can be implemented along the proposed project's Corridors and Districts include, but are not limited to, walkways greater than 5 feet, pedestrian actuated traffic control devices and signals, early pedestrian start at crossing signals (i.e., LPIs), bulb outs, and pedestrian furnishings and lighting, where appropriate. Listed below are the Proposed Project's identified Corridors and Districts, where enhanced and/or premium pedestrian treatments will be implemented to strengthen the community's pedestrian network.

Corridor route types will be present along the following roadways under the Proposed Project:

- Clairemont Mesa Boulevard, from Shawline Street to Ruffner Street;
- Clairemont Mesa Boulevard, from Mercury Street to Kearny Mesa Road;
- Clairemont Mesa Boulevard, from Kearny Villa Road to Ruffin Road;
- Spectrum Center Boulevard, from Kearny Villa Road to Paramount Drive;
- Balboa Avenue, from Convoy Street to Mercury Street;
- Armour Street, from Convoy Street to Kearny Mesa Road;
- Aero Drive, from Kearny Villa Road to Sandrock Road;
- Aero Drive, from West Canyon Avenue to Murphy Canyon Road;
- Kearny Villa Road, from Clairemont Mesa Boulevard to Lightwave Avenue/Ruffin Court;
- Mercury Street, from Engineer Road to Armour Street; and
- Murphy Canyon Road, from Aero Drive to Wal-Mart Driveway.

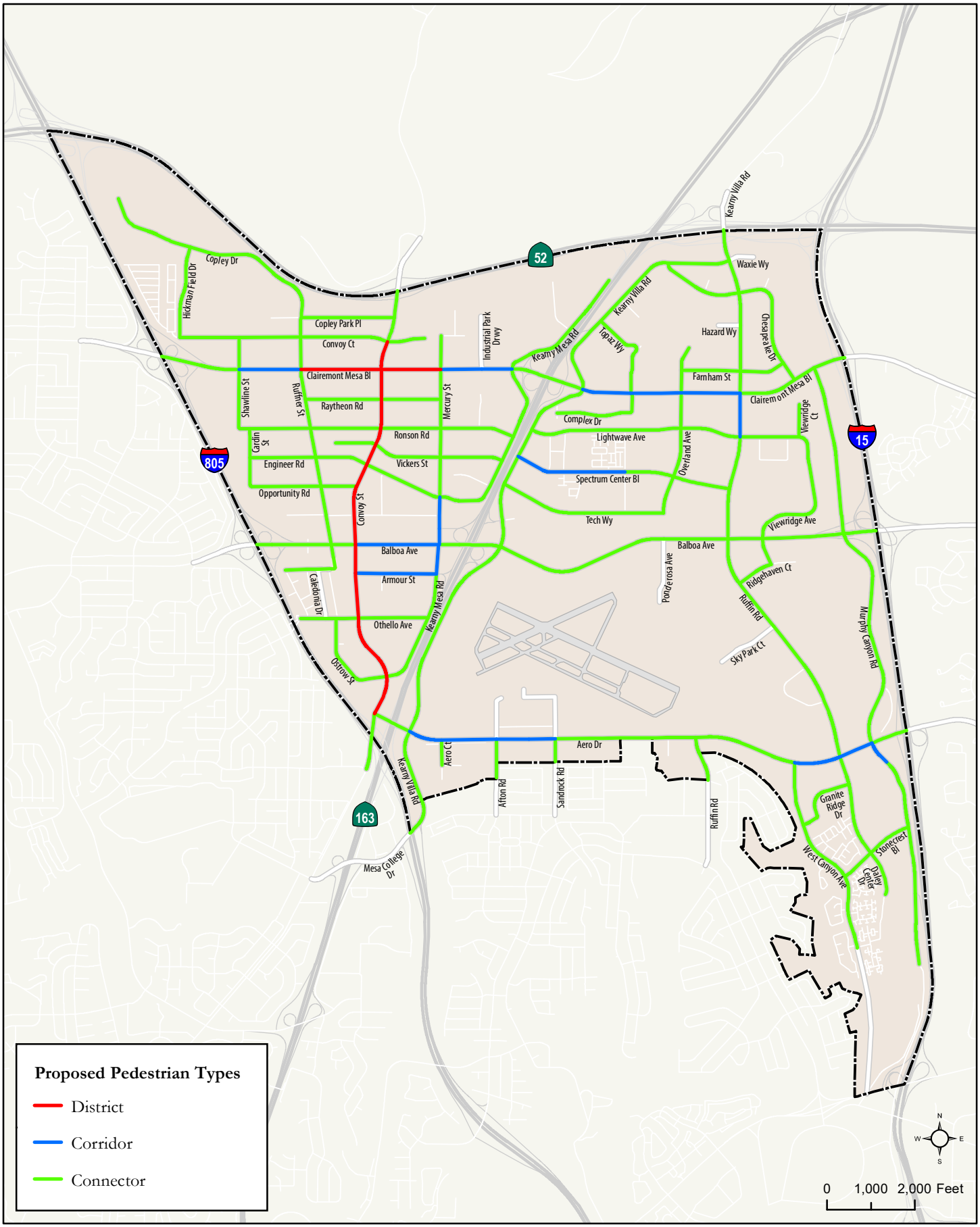

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Figure 4-1
Pedestrian Route Types - Proposed Project Conditions

Districts route types will be present along the following roadways under the Proposed Project:

- Clairemont Mesa Boulevard, from Ruffner Street to Mercury Street; and
  Convoy Street, from Convoy Court to Aero Drive.

Lead Pedestrian Intervals

Lead Pedestrian Intervals (LPIs) are recommended by the Proposed Project to improve pedestrian safety and efficiency at signalized intersection locations along District and Corridor pedestrian route types and at signalized intersections with high existing pedestrian volume locations (defined as thirty or more pedestrians during AM and PM peak periods). Additionally, locations where Lead Bicycle Intervals are recommended can accommodate LPIs without any additional modification to the signal timing. LPIs are recommended at the following intersections and legs where pedestrian crossings are permitted:

- Convoy Street & Convoy Court (north, south, west, east legs)
- Shawline Street & Clairemont Mesa Boulevard (north, south, east legs)
- Ruffner Street & Clairemont Mesa Boulevard (north, south, west, east legs)
- Convoy Street & Clairemont Mesa Boulevard (north, south, west, east legs)
- Mercury Street & Clairemont Mesa Boulevard (north, south, west, east legs)
- Kearny Mesa Road & Clairemont Mesa Boulevard (north, south, west legs)
- Kearny Villa Road & Clairemont Mesa Boulevard (north, south, east legs)
- Complex Drive & Clairemont Mesa Boulevard (north, south, west, east legs)
- Overland Avenue & Clairemont Mesa Boulevard (north, south, west, east legs)
- Convoy Street & Ronson Road (north, south, west, east legs)
- Ruffin Road & Lightwave Avenue/Ruffin Court (north, south, west, east legs)
- Convoy Street & Engineer Road (north, south, west, east legs)
- Mercury Street & Engineer Road (north, south, west, east legs)
- Ruffner Street & Balboa Avenue (north, south, west, east legs)
- Convoy Street & Balboa Avenue (north, south, west, east legs)
- Mercury Street & Balboa Avenue (north, south, west, east legs)
- Convoy Street & Armour Street (north, south, west, east legs)
- Mercury Street & Armour Street (north, south, west, east legs)
- Convoy Street & Othello Avenue (north, south, west, east legs)
- Convoy Street & Ostrow St/Kearny Mesa Road (north, south, west, east legs)
- Aero Court & Aero Drive (north, south, east legs)
- Afton Road/Glenn H. Curtiss Road & Aero Drive (south, east legs)
- Broadstone Driveway & Aero Drive (south, east legs)
- Sandrock Road/John J. Montgomery Drive & Aero Drive (north, south, west, east legs)
- West Canyon Avenue & Aero Drive (south, east legs)
- Murphy Canyon Road & Aero Drive (north, south, west legs)

New Sidewalks

Sidewalk facilities would be implemented along new roadways as well as the following segments where missing sidewalks were identified through the existing conditions analysis. Note that certain segments may have parcel-specific sidewalks in place, but those segments listed below currently lack fully connective sidewalks.

- Convoy Street, from SR-52 eastbound ramps to Copley Park Place (east side and portions of west side);

- Convoy Street, from Copley Park Place to approximately 150 feet south of Copley Park Place (east side);
- Convoy Street, from Aero Drive to southern community boundary (east side);
- Shawline Street, from Convoy Court to Clairemont Mesa Boulevard (east side);
- Raytheon Road, from approximately 240 feet east of Ruffner Street to 380 feet east of Ruffner Street (south side);
- Raytheon Road, from approximately 510 feet west of Convoy Street to 280 feet west of Convoy Street (south side);
- Clairemont Mesa Boulevard, from I-805 SB Ramps to I-805 NB Ramps (south side);
- Clairemont Mesa Boulevard, from Kearny Mesa Road to SR-163 SB Ramps (both sides);
- Ronson Road, from Mercury Street to approximately 300 feet west of Kearny Mesa Road (north side);
- Kearny Villa Road, from northern community boundary to Waxie Way (both sides);
- Kearny Villa Road, from Waxie Way to Topaz Way (west side);
- Kearny Villa Road, from Topaz Way to Clairemont Mesa Boulevard (west side);
- Kearny Villa Road, from Clairemont Mesa Boulevard to Lightwave Avenue (west side);
- Kearny Villa Road, from Lightwave Avenue to Century Park Court (west side);
- Kearny Villa Road, from Balboa Avenue to Aero Drive (both sides);
- Armour Street, approximately 790 feet east of Convoy Street to 1,040 feet east of Convoy Street;
- Kearny Mesa Road, from northern end to Clairemont Mesa Boulevard (both sides);
- Kearny Mesa Road, from Clairemont Mesa Boulevard to Engineer Road (east side);
- Kearny Mesa Road, from Othello Avenue to approximately 370 feet east of Convoy Street (east side);
- Mercury Street, from Mercury Court to Clairemont Mesa Boulevard (west side);
- Mercury Street, from approximately 375 feet north of Clairemont Mesa Boulevard to approximately 220 north of Clairemont Mesa Boulevard (east side);
- Mercury Street, from Clairemont Mesa Boulevard to Raytheon Road (east side);
- Lightwave Avenue, from Kearny Villa Road to Paramount Drive (north side);
- Ponderosa Avenue, from Balboa Avenue to southern end (both sides);
- Viewridge Avenue, from Balboa Avenue to Ridgehaven Court (both sides);
- Complex Drive, from Topaz Way to Clairemont Mesa Boulevard (east side);
- Complex Drive, from Clairemont Mesa Boulevard to Kearny Villa Way (both sides);
- Balboa Avenue, from Kearny Villa Road to Ruffin Road (both sides);
- Balboa Avenue, from Viewridge Avenue to I-15 Southbound off-ramps (south side);
- Aero Drive, from Convoy Street to Kearny Villa Road (south side);
- Aero Drive, from Kearny Villa Road to Afton Road/Glenn H. Curtiss Road (both sides);
- Aero Drive, from Sandrock Road to West Canyon Avenue (north side);
- Aero Drive, from Murphy Canyon Road to eastern community boundary (south side);
- Ruffin Road, from Spectrum Center Boulevard to Balboa Avenue (east side);
- Ruffin Road, from Balboa Avenue to approximately 530 feet south of Balboa Avenue (west side);
- Ruffin Road, from approximately 170 feet south of Ridgehaven Court to 610 feet south of Ridgehaven Court (east side);
- Ruffin Road, from Calle Fortunada (north) to approximately 830 feet north of Aero Drive (east side);
- Murphy Canyon Road, from approximately 250 feet north of Balboa Avenue overcrossing to 1,480 feet south of Balboa Avenue overcrossing (east side);

- Murphy Canyon Road, from Aero Drive to south end (both sides); and
  Daley Center Drive, south end of cul-de-sac.

In addition to closing gaps in the sidewalk network, seeking additional right-of-way for wider, non-contiguous sidewalks and parkway area will also occur at the project-level to help upgrade the community's pedestrian network.

Urban Pathways

A re-envisioned Kearny Mesa will include urban pathways that support the vision for a vibrant employment and residential community. Urban pathways are designed as wide, urban sidewalks for pedestrian mobility and connections within the village areas.

The environments surrounding the urban pathways will vary. Urban pathways serve as linkages, enhance the pedestrian environment, incorporate urban greening improvements, and provide a sense of place within villages. Paseos may also be implemented to provide direct routes through large parcels, adjacent to buildings, through parking lots or along parcel peripheries – all away from high speed, high volume roadways (i.e., absent from vehicular traffic altogether).

The Proposed Project includes the following four urban pathways to connect the urban villages to key destinations and transit services:

- Airport Loop
- Opportunity Trail
- Park Link
- Aero Promenade

One signature urban pathway that will provide connections between the planned mobility network and also serve as an active transportation feature for Kearny Mesa is the Airport Loop around the Montgomery-Gibbs Executive Airport. A combination of pedestrianways, bicycle facilities, and multi-use paths will make up a five-mile loop along Balboa Avenue, Ruffin Road, Aero Drive, and Kearny Villa Road. The active transportation facility types comprising the loop will vary due to physical constraints (i.e., lack of publicly available right-of-way) but could include the following:

- Balboa Avenue – One-way cycle tracks plus a pedestrianway on the south side
- Ruffin Road – One-way cycle tracks and sidewalks
- Aero Drive – Multi-use path on the north side and one-way cycle track on the south side
- Kearny Villa Road – Multi-use path on the east side and one-way cycle track on the west side.

Bicycle Facilities

The Proposed Project would support existing plans and policies relative to the bicycle network. The bicycle facility network for the Proposed Project is shown in Figure 4-2. Bicycle-focused policies in the proposed CPU include implementation of new separated and on-street bicycle facilities, installation of bicycle parking facilities, and increasing the level of bicycle comfort and safety for all levels of bicycle riders. Proposed CPU policies support coordination with SANDAG on the planning and implementation of regional bicycle facilities and support increased bicycle comfort and safety, repurposing right-of-way for bicycle facilities, and bike sharing. Thus, implementation of the Proposed Project would not conflict with adopted policies, plans, or programs supporting bicycle facilities.

A key focus of the San Diego Regional Bike Plan prepared by SANDAG is to develop an interconnected network of bicycle corridors to improve the connectivity and quality of bicycle facilities and their supporting facilities. Similarly, the City of San Diego Bicycle Master Plan establishes guidance on achieving an ideal bicycle environment throughout the City and refines the Regional Bike Plan to include community-wide bicycle facilities. Together these facilities promote intra-community and inter-community bicycle trips to strengthen connections within the planning area and between adjacent communities.

The Proposed Project includes facilities that build on those identified in the Regional Bike Plan and City of San Diego Bicycle Master Plan, while also identifying new recommendations and improving upon existing facilities through an emphasis on protected facilities such as multi-use paths and cycle tracks. The Proposed Project recommends a variety of additional bicycle facilities on the local street network, including multi-use paths (Class I), bicycle lanes (Class II), bicycle routes (Class III), and cycle tracks (Class IV).

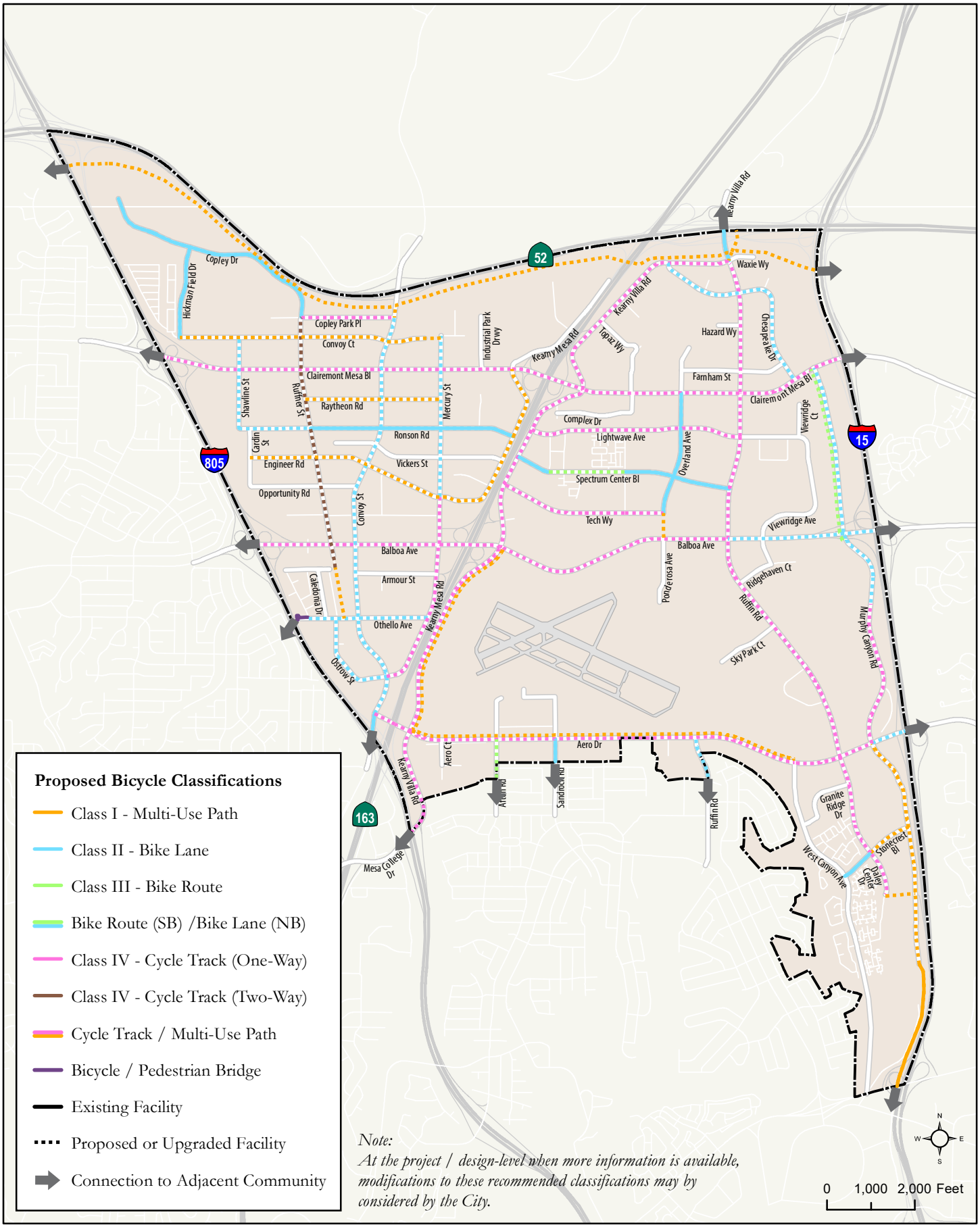

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Figure 4-2
Bicycle Network - Proposed Project Conditions

The following bicycle facilities are planned for the Kearny Mesa community as part of the Proposed Project, City's Bicycle Master Plan, and/or the San Diego Regional Bike Plan, Riding to 2050.

Class I Multi Use Path

- SR-52 Bikeway (San Clemente Canyon);
- Convoy Court, from Hickman Field Drive to Mercury Street;
- Raytheon Road, from Ruffner Street to Mercury Street;
- Engineer Road, from Cardin Street to Kearny Mesa Road;
- Kearny Mesa Road, from Engineer Road to Clairemont Mesa Boulevard;
- New connecter, from Ruffner Street terminus to Othello Avenue;
- Stonecrest Boulevard, from Daley Center Drive to Murphy Canyon Road;
- Ponderosa Avenue, from Balboa Avenue to Tech Way;
- New connector, from southern terminus of Daley Center Drive to Murphy Canyon Road; and
- Murphy Canyon Road, from Aero Drive to existing Class I multi use path.

Class II Bike Lanes

- Chesapeake Drive, from Kearny Villa Road to Clairemont Mesa Boulevard;
- Ronson Road, from Shawline Street to Ruffner Street;
- Balboa Avenue, from Ruffin Road to eastern community boundary;
- Othello Avenue, from western terminus to eastern terminus;
- Aero Drive, from Murphy Canyon Road to eastern community boundary;
- Shawline Street, from Ronson Road to Convoy Court;
- Ostrow Street, from Othello Avenue to Convoy Street;
- Convoy Street, from Copley Park Place to Aero Drive;
- Mercury Street, from Convoy Court to Engineer Road;
- Ruffin Road, from Aero Drive to southern community boundary; and
- Murphy Canyon Road, from Balboa Avenue to approximately 1,500 feet south of Balboa Avenue

Class II Bike Lane (NB) and Class III Bike Route (SB)

- Murphy Canyon Road, from Clairemont Mesa Boulevard to Balboa Avenue

Class III Bike Routes

- Spectrum Center Boulevard, from Sunroad Centrum Lane to Paramount Drive; and
- Afton Road, from Aero Drive to southern community boundary.

Class IV Cycle Track (One-Way Cycle Tracks provided in both directions)

- Copley Park Place, from Ruffner Street to Convoy Street
- Clairemont Mesa Boulevard, from western community boundary to I-15 SB ramps;
- Lightwave Avenue, from Kearny Villa Road to Ruffin Road;
- Tech Way, from Kearny Villa Road to Overland Avenue;
- Balboa Avenue, from western community boundary to Ruffin Road;
- Aero Drive, from West Canyon Avenue to Murphy Canyon Road;
- Aero Drive, from Convoy Street to Kearny Villa Road
- Kearny Mesa Road, from Engineer Road to Convoy Street;
- Kearny Villa Road, from Ruffin Road to Balboa Avenue;
- Kearny Villa Road, from Aero Drive to southern community boundary;
- Ruffin Road, from Kearny Villa Road to Aero Drive;

- Daley Center Drive, from Aero Drive to southern terminus of roadway; and
- Murphy Canyon Road, from approximately 1,500 feet south of Balboa Avenue to Aero Drive.

Class IV Cycle Track (Two -Way)

- Ruffner Street (east side), from Copley Park Place to approximately 200 feet south of Balboa Avenue

Class I Multi Use Path and Class IV Cycle Tracks (One-Way)

- Kearny Villa Road (Class I on east side, Class IV on west side), from Balboa Avenue to Aero Drive; and
- Aero Drive (Class I on north side, Class IV on south side), from Kearny Villa Road to West Canyon Avenue.

Bicycle Signal Phasing

Bicycle signal phasing are recommended by the Proposed Project to improve cyclists' safety and efficiency at signalized intersection locations along Class IV Cycle Track facilities. Bicycle signal phasing modifications were based upon incorporating lead bike signals, which provide a three-second lead for bicyclists to enter the intersection before the start of the vehicular phase. In the case of intersections that also would include LPIs, the lead bike signal would occur at the same time as the pedestrian-only phase. These locations include:

- Ruffin Road & Kearny Villa Road/Waxie Way (all legs)
- Ruffin Road & Chesapeake Drive (north, south legs)
- Ruffin Road & Hazard Way (north, south legs)
- I-805 NB Off-Ramp & Clairemont Mesa Boulevard (east, west legs)
- Shawline Street & Clairemont Mesa Boulevard (lead bike signals on all legs with LPIs on legs with crosswalks)
- Ruffner Street & Clairemont Mesa Boulevard (signal with LPI - all legs)
- Convoy Street & Clairemont Mesa Boulevard (signal with LPI - all legs)
- Mercury Street & Clairemont Mesa Boulevard (signal with LPI - all legs)
- Industrial Park Driveway & Clairemont Mesa Boulevard (east, west legs)
- Kearny Mesa Road & Clairemont Mesa Boulevard (lead bike signals on all legs with LPIs on legs with crosswalks)
- SR-163 SB On-Ramp/SR-163 SB Off-Ramp & Clairemont Mesa Boulevard (east, west legs)
- SR-163 NB Off-Ramp/SR-163 NB On-Ramp & Clairemont Mesa Boulevard (east, west legs)
- Kearny Villa Road & Clairemont Mesa Boulevard (lead bike signals on all legs with LPIs on legs with crosswalks)
- Complex Street & Clairemont Mesa Boulevard (signal with LPI - all legs)
- Overland Avenue & Clairemont Mesa Boulevard (signal with LPI - all legs)
- Ruffin Road & Farnham Street (north, south legs)
- Ruffin Road & Clairemont Mesa Boulevard (all legs)
- Murphy Canyon Road & Clairemont Mesa Boulevard (east, west legs)
- Clairemont Mesa Boulevard & SR-52 EB & I-15 SB Off-Ramps (east, west legs)
- I-15 NB Ramps & Clairemont Mesa Boulevard (east, west legs)
- Kearny Villa Road & Lightwave Avenue (all legs)
- Overland Avenue & Lightwave Avenue (east, west legs)
- Ruffin Road & Lightwave Avenue/Ruffin Court (signals with LPI - all legs)
- Convoy Street & Engineer Road (signal with LPI - all legs)

- Kearny Villa Road & Spectrum Center Boulevard (north, south legs)
- Ruffin Road & Spectrum Center Boulevard (north, south legs)
- Mercury Street & Engineer Road (signal with LPI – all legs)
- Kearny Villa Road & Tech Way (all legs)
- Mercury Street & SR-163 SB On-Off Ramps (north, south legs)
- Kearny Villa Road & SR-163 NB On-Off Ramps/Century Park Court (north, south legs)
- Balboa Avenue & Ruffner Street (signal with LPI - all legs)
- Convoy Street & Balboa Avenue (signal with LPI - all legs)
- Mercury Street & Balboa Avenue (signal with LPI - all legs)
- Kearny Villa Road & Balboa Avenue (all legs)
- Balboa Avenue & Pennisi Driveway (east, west legs)
- Ponderosa Avenue & Balboa Avenue (east, west legs)
- Ruffin Road & Balboa Avenue (all legs)
- Mercury Street & Armour Street (signal with LPI – all legs)
- Kearny Villa Road & SR-163 On-Off Ramps (north, south legs)
- Ruffin Road & Ridgehaven Court (north, south legs)
- Ruffin Road & Sky Park Court (north, south legs)
- Convoy Street & Aero Drive (north, south, east legs)
- Kearny Villa Road & Aero Drive (all legs)
- Aero Court & Aero Drive (signal with LPI – all legs)
- Afton Road/Glenn H Curtiss Road & Aero Drive (lead bike signals on east and west legs with LPIs on legs with crosswalks)
- Broadstone Driveway & Aero Drive (lead bike signals on east and west legs with LPIs on legs with crosswalks)
- Sandrock Road/John J Montgomery Drive & Aero Drive (signal with LPI – all legs)
- Ruffin Road & Aero Drive (east, west legs)
- West Canyon Avenue & Aero Drive (lead bike signals on east and west legs with LPIs on legs with crosswalks)
- Daley Center Drive/Ruffin Road & Aero Drive (all legs)
- Murphy Canyon Road & Aero Drive (all legs)
- Daley Center Drive & Granite Ridge Drive (north, south legs)
- Mesa College Drive/Kearny Villa Road & Berger Avenue (east, west legs)
- I-805 NB Off-Ramp & Kearny Villa Road (east, west legs)
- Murphy Canyon Road & Stonecrest Boulevard (all legs)

Protected Intersections

To facilitate cyclists safely maneuvering through a challenging intersection (i.e. intersection with high traffic volumes, wide cross-sections, unique lane configurations/signal timings, etc.), the following locations are identified in the Proposed Project as potential protected intersections[1]:

- Ruffin Road and Clairemont Mesa Boulevard;

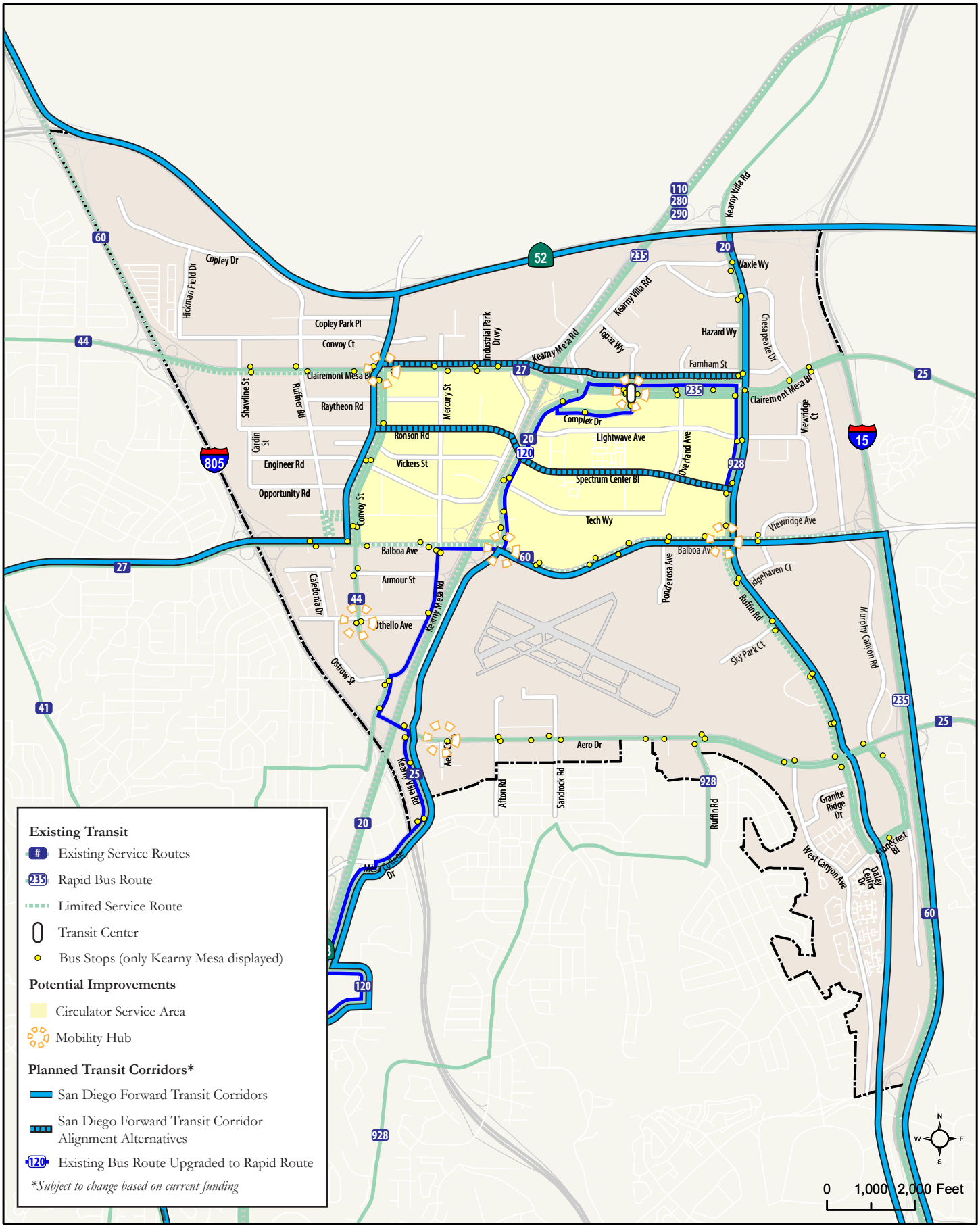
[1] Protected intersection includes at-grade physical separations to define the turning paths of motor vehicles, slow motor-vehicle turning speed, promote yielding to bicyclists and offer comfort for bicyclists waiting at a red signal or traversing through the intersection.

- Kearny Villa Road and Balboa Avenue;
- Ruffin Road and Balboa Avenue;
- Kearny Villa Road and Aero Drive; and
- Ruffin Road & Aero Drive.

Transit Facilities

Planned transit routes within the CPU area identified in SANDAG's *San Diego Forward: The Regional Plan* (2015) include Rapid Bus, LRT, and transit facilities as shown in Figure 4-3. The planned changes in existing transit operations to serve the Kearny Mesa community are as follows:

- *Local Bus Service* – Increase local bus service in key corridors (unidentified) to 10-minute headways. The Regional Plan currently targets approximately 2035 for this project.
- *Purple Line (Phase I)* – The initial Purple Line Trolley phase would extend from San Ysidro to Kearny Mesa via Chula Vista, National City, Southeast San Diego, Mid-City, and Kearny Mesa. Within Kearny Mesa, the alignment would run north-south, west of I-15. The Regional Plan currently targets approximately 2035 for operation of Phase I.
- *Purple Line (Phase II)* – The second Purple Line Trolley phase would extend from the anticipated endpoint of Phase I of the Purple Line, in Kearny Mesa, to Carmel Valley. The Regional Plan currently targets approximately 2050 for operation of Phase II.
- *Red Line* – The Red Line Trolley would run from Pacific Beach to the El Cajon Transit Center via Kearny Mesa. The Regional Plan currently targets approximately 2050 for operation of the Red Line.
- *BRT Route 653* – A future BRT service, that may carry a *RAPID* or different service designator, would run from Mid-City San Diego to Palomar Airport Road via Kearny Mesa, I-805, and I-5. The Regional Plan currently targets approximately 2035 for operation of this future bus route.
- *BRT Route 890* – A future BRT service, that may carry a *RAPID* or different service designator, would run from El Cajon to Sorrento Mesa via Kearny Mesa. The Regional Plan currently targets approximately 2035 for operation of this future bus route.
- *Rapid Bus Route 28* – A new Rapid bus route would run from Point Loma to Kearny Mesa via Old Town and Linda Vista. The Regional Plan currently targets approximately 2035 for operation of this future bus route.
- *Rapid Bus Route 41* – A new Rapid bus route would run from the Fashion Valley Transit Center to UTC/UC San Diego via Linda Vista and Clairemont. The Regional Plan currently targets approximately 2035 for operation of this future bus route.
- *Rapid Bus Route 120* – A new Rapid bus route would run from Kearny Mesa to Downtown via Kearny Mesa. The Regional Plan currently targets approximately 2035 for operation of this future bus route.
- *Rapid Bus Route SR-163 Direct Access Ramps (DARs)* – Kearny Mesa to Downtown via SR-163. Stations at Sharp/Children's Hospital, University Avenue and Fashion Valley Transit Center. The Regional Plan currently targets approximately 2035 for operation of this future bus route.



Kearny Mesa Community Plan Update
Transportation Impact Study

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Figure 4-3
Transit Coverage - Proposed Project Conditions

Note that in the Kearny Mesa Community Plan Update and *Mobility Technical Report*, the Purple Line is displayed as part of the general illustration of "San Diego Forward Transit Corridors" and reflects the alignment indicated in the adopted 2015 *San Diego Forward: The Regional Plan*. According to the Regional Plan, transit corridors include Rapid Bus and Trolley services on key corridors such as I-15, SR-52, Balboa Avenue, Convoy Street, Clairemont Mesa Boulevard, Spectrum Center Boulevard, Kearny Villa Road, and Ruffin Road.

City staff has requested that SANDAG consider the preferred alignment of the Purple Line along Ruffin Road and Clairemont Mesa Boulevard, as prescribed in the 2017 *Final Purple Line Conceptual Planning Study*, in the 2021 Regional Plan. As the first major step in the 2021 Regional Plan process, SANDAG staff introduced the key strategies, known as 5 Big Moves,[2] that will be used to identify transportation solutions for critical connections throughout the region. The Purple Line is identified as one of these critical connections.

Specific route alignments and stations are not included in the Proposed Project as future transit corridors from SANDAG are preliminary and subject to change. With the 2021 Regional Plan process underway, transit-focused policies in the proposed CPU includes to coordinate with SANDAG to plan and implement transit infrastructure and service enhancements in the upcoming Regional Plan, including light rail and/or bus rapid transit to serve areas of future residential and employment uses. This can include, but is not limited to, alignment of the planned Purple Line.

Transit Priority

As future Rapid Transit routes and community circulator routes are identified and established, additional transit priority measures will be considered in coordination with MTS and community circulator operators in an effort to maximize route efficiency and on-time performance. Transit signal priority, queue jump lanes, and transit only lanes, or shared transit/right-turn lanes are examples of measures that can be utilized to give transit priority at intersections and can be implemented as applicable at the project-level. The proposed project includes transit priority measures on the following corridors:

- *Clairemont Mesa Boulevard (SMART Corridor)* throughout the entire community planning area;
- *Balboa Avenue (SMART Corridor)* between I-805 NB and SR-163 SB ramps;
- *Balboa Avenue* between SR-163 SB ramps and I-15 NB ramps;
- *Aero Drive* between Convoy Road and I-15 NB ramps;
- *Convoy Street* between SR-52 WB ramps and Aero Drive; and
- *Ruffin Road* between Chesapeake Drive and Aero Drive.

[2] The 2021 Regional Plan will synchronize the 5 Big Moves to deliver a fully integrated, world class transportation system for the San Diego region. The 5 Big Moves include Complete Corridors, Transit Leap, Mobility Hubs, Flexible Fleets, and the Next OS. Complete Corridors are the backbone of a complete transportation system that leverages technology, pricing, and connectivity to repurpose how both highways and local roads are used. Transit Leap includes a complete network of high-capacity, high-speed, and high-frequency transit services that incorporates new transit modes and improves existing services. Mobility Hubs are places of connectivity where a variety of travel options converge to deliver a seamless travel experience. Flexible Fleets include on-demand, shared, electric vehicles that connect to transit and travel between Mobility Hubs along the network of Compete Corridors. And lastly, Next OS is the "brain" of the transportation system that will make all of the strategies work together.

Roadway Facilities

A list of Proposed Project roadway, intersection, and freeway improvements are presented below. Planned bicycle facility improvements within the specified roadway extents are also identified, however, the full list of recommended bicycle facility improvements is provided in the previous sections. The roadway improvements are predominantly based on the future year traffic volumes and accommodating the planned multi-modal improvements.

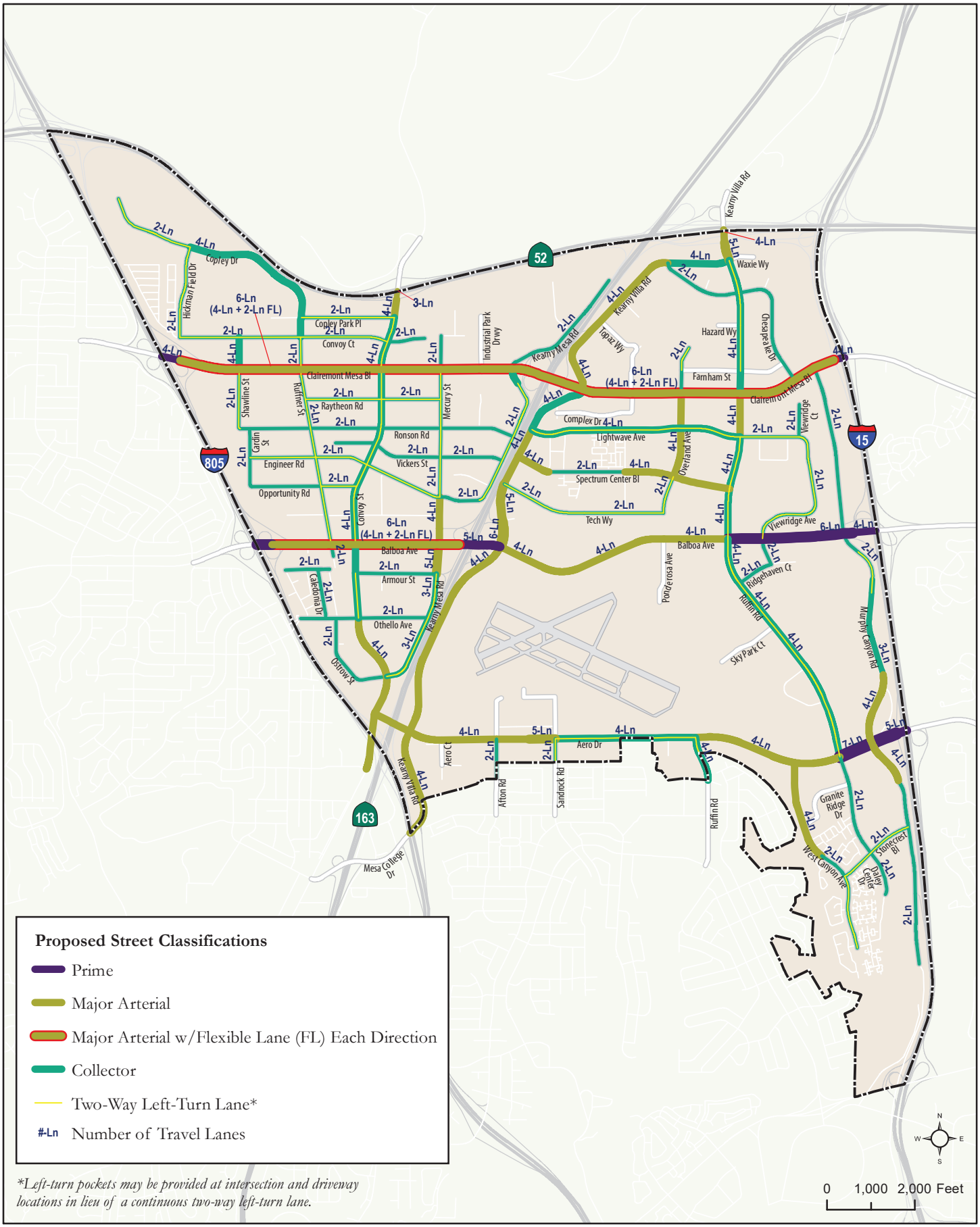
The Proposed Project incorporates Sustainable Mobility for Adaptable and Reliable Transportation, "SMART Corridors", to further SANDAG's 5 Big Moves strategy. A SMART Corridor is a six-lane major arterial roadway that provides access to or between at least two freeways, whereby mobility improvements are planned for transit and other congestion reducing mobility forms through the repurposing of roadway space. This repurposing creates facilities with general purpose lanes plus flexible lanes, that may be used by a combination of non-single occupancy vehicles, connected/autonomous vehicles, or other emerging mobility concepts. SMART corridors would increase safety, capacity, and efficiency; provide dedicated space for efficient transit and other pooled services; manage demand in real-time; and maximize use of existing roadways. The lane configuration and type of use is contingent upon time of need.

The roadway facility network in the Proposed Project is shown in **Figure 4-4**, and the identified roadway modifications are described in the following section.

Roadway Modifications

- *Balboa Avenue, from I-805 NB On-Ramp to SR-163 SB On-Ramp* – Reclassify this segment from a 6-Lane Major Arterial with raised median and intermittent on-street parking to a *SMART* Corridor, with two general purpose travel lanes, one flexible lane, and a one-way Class IV Cycle Track provided in each direction in lieu of on-street parking.
- *Clairemont Mesa Boulevard, from I-805 NB On-Ramp to I-15 SB On-Ramp*– Reclassify this segment from a 6-Lane Major Arterial with raised median and intermittent on-street parking to a *SMART* Corridor, with two general purpose travel lanes, one flexible lane, and a one-way Class IV Cycle Track provided in each direction in lieu of on-street parking.
- *Copley Park Place, from Copley Drive to Convoy Street* – Reclassify this segment from a 4-Lane Collector with two-way left-turn lane to a 2-Lane Collector with two-way left-turn lane (TWLTL), repurposing the additional width as one-way Class IV Cycle Track provided in each direction.
- *Daley Center Drive, from Aero Drive to Stonecrest Boulevard* - Reclassify this segment from a 4-Lane Major with raised median to a 2-Lane Collector without TWLTL, repurposing the additional width as one-way Class IV Cycle Track provided in each direction.
- *Kearny Mesa Road, from Armour Street to Convoy Street* – Reclassify this segment from a 4-Lane Collector with striped median or two-way left-turn lane to a 3-Lane collector (2 southbound and 1 northbound) with a TWLTL, repurposing the additional width as one-way Class IV Cycle Track provided in each direction. Two southbound lanes are needed to serve the higher vehicle volumes, whereas one northbound lane is sufficient to serve the lower vehicle volumes. Intermittent parking loss may be required to accommodate the cycle tracks
- *Kearny Villa Road, from Ruffin Road to Chesapeake Drive* – Reclassify this segment from a 3-Lane Collector with two-way left-turn lane, 2 eastbound lanes, and 1 westbound lane to a 4-lane collector without TWLTL, with one-way Class IV Cycle Track provided in each direction.

- *Kearny Villa Road, from Chesapeake Drive to Clairemont Mesa Boulevard* – Reclassify this segment from a 2-Lane Collector with two-way left-turn lane with on-street parking to a 4-Lane Major Arterial, repurposing existing Class II Bike Lanes, on-street parking, and two-way left-turn lane for additional lanes and one-way Class IV Cycle Track provided in each direction.
- *Tech Way, from Kearny Villa Road to Overland Avenue* – Reclassify this segment from a 4-Lane Collector with two-way left-turn lane to a 2-Lane Collector with two-way left-turn lane (TWLTL), repurposing the additional width as one-way Class IV Cycle Track provided in each direction.
- *Murphy Canyon Road, from 1,300 feet south of Balboa Avenue Overcrossing to 1,600 feet north of Aero Drive* – Reclassify this segment from a 3-lane Collector with two-way left-turn lane, 2 northbound lanes, and 1 southbound lane to a 3-lane Collector with no median, 2 northbound lanes, and 1 southbound lane to accommodate Class IV Cycle Tracks.
- *Ronson Road, from Shawline Street to Ruffner Street* – Reclassify this segment from a 2-lane collector with two-way left-turn lane to 2-lane collector without TWLTL, to accommodate Class II Bike Lanes.
- *Ruffner Street, south of Balboa Avenue* – Remove this segment by truncating the 2-Lane collector of Ruffner Street segment south of Balboa Avenue at the existing driveway and create a Class I multi-use path.



Mobility Technical Report
Transportation Impact Study

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Figure 4-4
Roadway Classifications - Proposed Project Conditions

Intersection Modifications

Several intersections are proposed to be modified to accommodate buildout of the roadway segment and bicycle classifications, as well as to support the pedestrian treatments associated with the pedestrian route typologies. Improvements are aimed at enhancing operation and safety for all travel modes. These intersection improvements can include, but are not limited to, restriping, lane reconfiguration, new intersection legs, signal modifications, new signals, and other modifications to accommodate the proposed project's active transportation facilities, transit corridors, and the SMART corridors. In addition to the listings of intersections recommended for LPIs and bicycle signal phasing in the previous sections, Table 4.1 lists the intersections with proposed improvements to accommodate buildout of the roadway segment classifications. Details of those improvements are provided in Chapter 3 of the *Mobility Technical Report*.

Table 4.1 List of Planned Intersections with Planned Modifications Within the CPU Area

Intersection	Geometry Modification[1]	Signal Modification[2]	New Signal
Kearny Villa Road & SR-52 WB Ramps		✓	
Ruffin Road & Chesapeake Drive	✓	✓	
Convoy Street & Convoy Court	✓	✓	
Shawline Street & Clairemont Mesa Boulevard	✓	✓	
Ruffner Street & Clairemont Mesa Boulevard	✓	✓	
Convoy Street & Clairemont Mesa Boulevard	✓	✓	
Mercury Street & Clairemont Mesa Boulevard	✓	✓	
Industrial Park Driveway & Clairemont Mesa Boulevard	✓	✓	
Kearny Mesa Road & Clairemont Mesa Boulevard	✓	✓	
SR-163 SB On-Ramp/SR-163 SB Off-Ramp & Clairemont Mesa Boulevard	✓	✓	
SR-163 NB Off-Ramp/SR-163 NB On-Ramp & Clairemont Mesa Boulevard	✓	✓	
Kearny Villa Road & Clairemont Mesa Boulevard	✓	✓	
Complex Drive & Clairemont Mesa Boulevard	✓	✓	
Overland Avenue & Clairemont Mesa Boulevard	✓	✓	
Ruffin Road & Farnham Street	✓	✓	
Ruffin Road & Clairemont Mesa Boulevard	✓	✓	
Murphy Canyon Road & Clairemont Mesa Boulevard	✓	✓	
Mercury Street & Engineer Road		✓	
Ruffner Street & Balboa Avenue	✓		✓
Convoy Street & Balboa Avenue	✓	✓	
Mercury Street & Balboa Avenue	✓	✓	
Kearny Villa Road & Balboa Avenue	✓	✓	

Table 4.1 List of Planned Intersections with Planned Modifications Within the CPU Area

Intersection	Geometry Modification[1]	Signal Modification[2]	New Signal
Ruffin Road & Balboa Avenue	✓	✓	
Viewridge Avenue & Balboa Avenue	✓	✓	
Mercury Street/Kearny Mesa Road & Armour Street/SR-163 SB Ramps	✓	✓	
Ruffin Road & Ridgehaven Court	✓	✓	
Kearny Villa Road & Aero Drive	✓	✓	
Sandrock Road/John J Montgomery Drive & Aero Drive		✓	
Daley Center Drive/ Ruffin Road & Aero Drive	✓	✓	
Daley Center Drive & Granite Ridge Drive	✓	✓	

Source: City of San Diego and Chen Ryan Associates 2020

Notes:

[1] Geometry modifications are changes to the intersection configuration and examples include: restriping, lane addition or removal, new intersection legs, new turn pockets, and channelization of turning movements. It is assumed that implementation of the Proposed Project's protected intersections will include intersection reconfiguration.

[2] Signal modifications are changes to the phasing and key timings and examples include: change in left-turn phasing (i.e., protected phasing, permissive phasing) and addition or removal of a right-turn overlap. It is assumed that intersections along the proposed SMART corridors will have signal modifications associated with the mobility concept. Additionally, this listing of intersections does not include locations with only recommended LPIs and/or bicycle signal phasing and focus more on signal modifications related to vehicular movement and associated with accommodating buildout of the proposed project's roadway classifications.

Freeway Improvements

Freeway improvements within the Kearny Mesa study area are identified within this section. The improvements were derived from the Revenue Constrained scenario of SANDAG's *San Diego Forward: The Regional Plan* (2015), the currently adopted regional transportation plan, and are anticipated to be implemented by 2050.

SR-52, from I-805 to SR-125

Two reversible managed lanes will be added to this segment of SR-52. This segment will consist of six general purpose lanes and two managed lanes. Further, two general purpose lanes will be added to this segment between SR-125 and Mast Boulevard to provide six general purpose lanes throughout the entirety of the segment. The additional general-purpose lanes are anticipated to be implemented by 2035, with managed lanes implemented by 2050.

I-15, from I-8 to SR-163

Two managed lanes will be added to this segment of I-15, one in each direction. This segment will consist of eight freeway lanes and two managed lanes. This improvement is anticipated to be implemented by 2035.

I-805, from SR-15 to SR-163

Four managed lanes will be added to this segment of I-805, two in each direction. This segment will consist of eight/ten freeway lanes and four managed lanes. This improvement is anticipated to be implemented by 2050.

Conclusion

As discussed above, the Proposed Project would be consistent with the Mobility Element of the General Plan and other adopted policies, plans, or programs supporting the transportation system, including pedestrian, bicycle, transit, and roadway facilities. Policies contained in the proposed Community Plan Update (CPU) would support improvements to pedestrian, bicycle, transit, and roadway facilities. It should be noted that implementation of some of these transportation infrastructure improvements, such as multi-use paths and higher quality bicycle facilities, may necessitate on-street parking removal, additional right-of-way, and/or require the redevelopment of adjacent properties. All transportation facilities would be designed in accordance to applicable City standards. Thus, the Proposed Project would not conflict with adopted policies, plans, or programs related to the transportation system. Impacts would be less than significant.

4.2 Issue 2: Hazardous Design Features

Would the Proposed Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

This issue relates to whether transportation infrastructure meets design standards as identified in the City's Street Design Manual or other transportation infrastructure-related codes and regulations enforced by the City Engineer.

The Proposed Project proposes repurposing the roadways to accommodate all modes of transportation, which would alter the existing street geometry of some roadways in the CPU area. The design of roadways in the CPU area, however, would be required to conform with applicable Federal, State, and City of San Diego's design criteria which contain provisions to minimize roadway hazards. Compliance with these standards and designed to the satisfaction of the City of San Diego's City Engineer would avoid impacts related to roadway hazards due to a design feature or incompatible uses. Furthermore, the Proposed Project would improve existing transportation deficiencies by providing higher quality bicycle facilities and improving pedestrian connectivity with the closure of facility gaps. These multi-modal enhancements are intended to improve safety for bicycle and pedestrians on the roadway. Therefore, impacts related to hazardous design features would be less than significant.

4.3 Issue 3: Vehicle Miles Traveled – SB 743 Analysis

Would the Proposed Project result in vehicle miles traveled (VMT) exceeding thresholds for City of San Diego's compliance with SB 743 legislation?

This issue focuses on whether the Proposed Project would have a significant impact if proposed new residential, office, or retail land uses would in aggregate exceed the respective VMT by land use thresholds in Table 3.1.

On September 27, 2013, Governor Jerry Brown signed Senate Bill (SB) 743 into law and started a process intended to fundamentally change transportation impact analysis as part of the California Environmental Quality Act (CEQA) compliance. The Office of Planning and Research (OPR) published its latest recommended *Technical Advisory on Evaluating Transportation Impact in CEQA* in December 2018. This Technical Advisory provides recommendation on how to evaluate transportation impacts under SB 743. The OPR guidance covers specific changes to the CEQA guidelines and recommends elimination of auto delay for CEQA purposes and the use of Vehicle Miles Traveled, or VMT, as the preferred CEQA transportation metric.

VMT is positively correlated with growth and as the region is expected to grow, VMT is also expected to increase. However, where the growth occurs plays a significant role to determine how much the VMT will increase. Growth in areas with access to high quality transit such as Transit Priority Areas (TPAs)[3] with a complete active transportation network and complementary land use mixes are projected to be more VMT efficient. In their *Technical Advisory on Evaluating Transportation Impacts on CEQA* (December 2018), OPR recommends the use of VMT metrics when analyzing land use projects and plans. For residential uses, the recommended efficiency metric is Resident VMT per Capita; and for employment uses, the recommended efficiency metric is Employee VMT per Employee. However, for retail uses, the recommended metric is a net change of total area (i.e. Kearny Mesa) VMT due to the nature of retail trips typically redistributing shopping trips rather than creating new trips. Consistent with the OPR Technical Advisory, the significance thresholds are shown in Table 3.1.

As described in Chapter 3, SANDAG's Activity Based Model (ABM) was used to calculate the Proposed Project's VMT. The proposed land uses and mobility network were inputs to the model to develop future roadway forecasts and VMT. It should be noted that the land use inputs that were modeled were slightly different from the Proposed Project. This difference includes a slight shift in dwelling units from a few parcels along Clairemont Mesa Boulevard. Under the Proposed Project, the dwelling units were redistributed amongst several adjacent parcels around the Clairemont Mesa Boulevard and Convoy Street intersection easterly to parcels between Mercury Street and Overland Avenue along Clairemont Mesa Boulevard. Though the model is not exactly replicative of the Proposed Project's land use distribution, the difference is considered insignificant as it relates to VMT since the land uses are only being shifted to immediately adjacent parcels and not changing the land use type or total quantity. Therefore, the model used in the analysis was still considered to accurately represent the Kearny Mesa's VMT for the Proposed Project.

Table 4.2 presents the Kearny Mesa resident and employee VMT efficiency metrics for Base Year conditions. For Kearny Mesa, under Base Year conditions, the community is above the 85 percent threshold (i.e., exceeding 15 percent below the Base Year average) for both efficiency metrics at 89 percent and 107.1 percent of the Base Year regional averages for both average Resident VMT per Capita and average Employee VMT per Employee, respectively.

Table 4.2 Kearny Mesa Base Year VMT Metrics for Transportation Impact Analysis

VMT Metric[1]	Base Year (2012)			% of Regional Base Year	
	Region	City	KM	City	KM
Resident VMT/Capita	17.3	15.1	15.4	87.3%	89.0%
Employee VMT/Employee	25.4	25.2	27.2	99.2%	107.1%

Source: SANDAG and Chen Ryan Associates (2019)

Note:
[1] Kearny Mesa Base Year VMT efficiency metrics were obtained from the SANDAG's Vehicle Miles of Travel Report specific to the Kearny Mesa modeling scenario. Data is provided in Appendix B.

[3] Transit Priority Areas, within the context of Kearny Mesa, include areas within one-half mile of existing or planned trolley stations or the intersection of two or more major bus routes, each having a frequency of service of 15 minutes or less during the morning and afternoon peak commute periods.

By 2050 with the implementation of the Proposed Project, the VMT efficiency of Kearny Mesa substantially improves. Table 4.3 presents the Kearny Mesa average resident and employee VMT for the Proposed Project. Kearny Mesa is projected to have an average Resident VMT per Capita at 9.2 and an average Employee VMT per Employee at 20.5, which are 53.2 percent and 80.7 percent, respectively, of the Base Year regional averages for these efficiency metrics. These reductions assume implementation of the SANDAG 2015 Regional Plan and Sustainable Communities Strategy. VMT associated with residential and employment land uses would not exceed the 85 percent thresholds at buildout of the Proposed Project. Therefore, impacts related to VMT for residential and employment land uses would be less than significant.

Table 4.3 Kearny Mesa Proposed Project
VMT Efficiency Metrics for Transportation Impact Analysis of Residential and Employment Uses

VMT Metric[1]	Base Year (2012)	2050 Proposed Project			% of Regional Base Year		Significant Impact?
	Region	Region	City	KM	City	KM	KM
Resident VMT/ Capita	17.3	14.6	12.5	9.2	72.3%	53.2%	NO
Employee VMT/ Employee	25.4	21.5	19.9	20.5	78.3%	80.7%	NO

Source: SANDAG and Chen Ryan Associates (2019)

Note:
[1] Kearny Mesa Base Year and Proposed Project VMT efficiency metrics were obtained from the SANDAG's Vehicle Miles of Travel Report specific to the Kearny Mesa modeling scenarios. Data is provided in Appendix B.

Between the Base Year to buildout of the Proposed Project, Kearny Mesa's commercial retail square footage would in aggregate increase by 66% (7,815,123 sf to 12,953,174 sf). With this significant increase in commercial retail square footage and where some of these uses could have regionally-drawing characteristics, the Kearny Mesa Total VMT generated by retail uses is expected to increase under the Proposed Project, which would exceed the applicable significance threshold for retail uses. Therefore, impacts related to VMT for retail land uses would be significant.

4.4 Significance of Impacts

Conflicts with Current Plans/Policies

Pedestrian Facilities

The Proposed Project would be consistent with and would implement the General Plan's safety and accessibility, connectivity, and walkability policies. Pedestrian-focused policies contained in the proposed include enhancements to pedestrian travel within the CPU area, such as implementing the multi-use urban pathway system, constructing sidewalk and intersection improvements, and installing missing sidewalks and curb ramps[4]. In addition, the impact fee study (IFS) for the Proposed Project would include planned pedestrian improvements to install curb ramps, sidewalks, and audible pedestrian signals to meet ADA standards. Implementation of the Proposed Project would not restrict or impede pedestrian connectivity and would not conflict with any adopted policies or plans addressing pedestrian facilities. Thus, impacts would be less than significant.

[4] See Policies for Mobility MO-4.6 through MO-4.11, MO-4.12, MO-4.15, MO-4.18, and MO-4.20.

Bicycle Facilities

The Proposed Project includes facilities that build on those identified in the Regional Bike Plan and City of San Diego Bicycle Master Plan, while also identifying new recommendations and improving upon existing facilities through an emphasis on protected facilities such as multi-use paths and cycle tracks. Bicycle-focused policies contained in the proposed CPU are consistent with current Regional and City plans that include providing and supporting a continuous network of safe, convenient, and attractive bicycle facilities throughout the community, and enhancing safety, comfort, and accessibility for all levels of bicycle riders[5]. The Proposed Project supports improvements such as wayfinding marking, bicycle signals, buffered bicycle lanes, and protected bicycle facilities. Implementation of the Proposed Project would not restrict or impede bicycle connectivity and would not conflict with any adopted policies or plans addressing bicycle facilities. Thus, impacts would be less than significant.

Transit Facilities

The General Plan includes policies for supporting the provision of higher-frequency transit services and implementing transit priority measures to help bypass congested areas. Transit-focused policies contained in the proposed CPU support implementation of the transit improvements identified in the Regional Plan by prioritizing the transit system and improving efficiency of transit services[6]. The Proposed Project includes implementation of transit priority signals on key transit corridors and roadway right-of-way specifically for high-quality transit facilities. In addition, the Proposed Project provides for a complete bicycle and pedestrian network connecting with and improving access to transit. Thus, implementation of the Proposed Project would not interfere with implementation of planned transit improvements and would provide policy support for their implementation. Impacts related to conflicts with plans or policies addressing existing or planned transit facilities. Thus, impacts would be less than significant.

Roadway Facilities

The Proposed Project would support goals and policies included in the General Plan, which is to provide a balanced, multi-modal transportation network where each travel mode can contribute to an efficient network of services meeting varied user needs. The General Plan advocates for interconnected street networks within and between community, and the Proposed Project would support this effort by creating a walkable and bicycle-friendly environment, and supporting transit as a primary mode of travel for many users. Roadway improvements includes, but not limited to, repurposing vehicle travel lanes to provide protected bicycle facilities and flexible lanes for SMART corridors, signal operational improvements for corridor management, reserving right-of-way to implement multi-use paths, and providing bicycle and pedestrian signal enhancements to improve safety. Implementation of the Proposed Project would not conflict with any adopted policies or plans addressing roadway facilities. Thus, impacts would be less than significant.

Hazardous Design Features

The design of roadways in the CPU area would be required to conform with applicable Federal, State and City of San Diego's design criteria which contain provisions to minimize roadway hazards. Compliance with these standards and designed to the satisfaction of the City of San Diego's City Engineer would avoid roadway hazards. Impacts would be less than significant.

[5] See Policies for Mobility MO-4.6, MO-4.12 through MO-4.20.
[6] See Policies for Mobility MO-4.1 through MO-4.5, and MO-4.23.

Vehicle Miles Traveled per Capita – SB 743 Analysis

Residential Land Uses

The Proposed Project would not create a significant impact for residential land uses as the VMT would be under the 85 percent threshold (i.e. 15 percent below the Base Year regional average) for this efficiency metric. Figure 4-5 displays the citywide and Kearny Mesa Resident VMT per Capita as a percentage of the Base Year's regional average Resident VMT per Capita. As shown, with the Proposed Project, the average Resident VMT per Capita for Kearny Mesa is lower than the 85 percent threshold. Furthermore, the citywide average Resident VMT per Capita is also below the 85 percent threshold under the Proposed Project. Kearny Mesa's Resident VMT per Capita for the Proposed Project is 53.2 percent of the Base Year regional average, and therefore, the transportation impacts related to residential uses are considered less than significant.

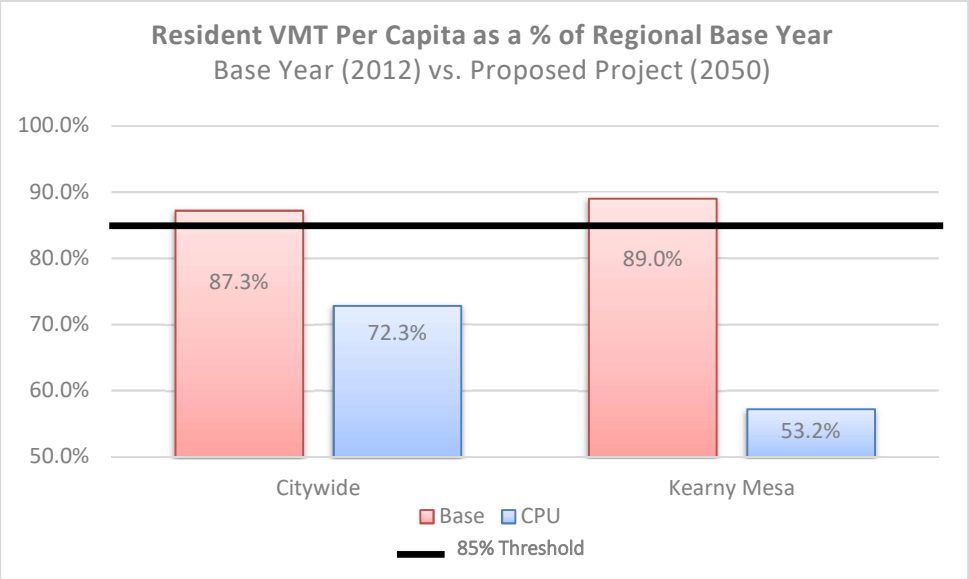

Figure 4-5 Resident VMT Per Capita

Employment Land Uses

The Proposed Project would not create a significant impact for employment land uses as the VMT would be under the 85 percent threshold (i.e. 15 percent below the Base Year regional average) for this efficiency metric. Figure 4-6 displays the citywide and Kearny Mesa Employee VMT per Employee as a percentage of Base Year's regional average for Employee VMT per Employee. As shown, with the Proposed Project, the average Employee VMT per Employee for Kearny Mesa is lower than the 85 percent threshold. Furthermore, the citywide average Employee VMT per Employee is also below the 85 percent threshold under the Proposed Project. Kearny Mesa's Employee VMT per Employee for the Proposed Project is 80.7 percent of the Base Year regional average, and therefore, the transportation impacts related to employment uses are considered less than significant.

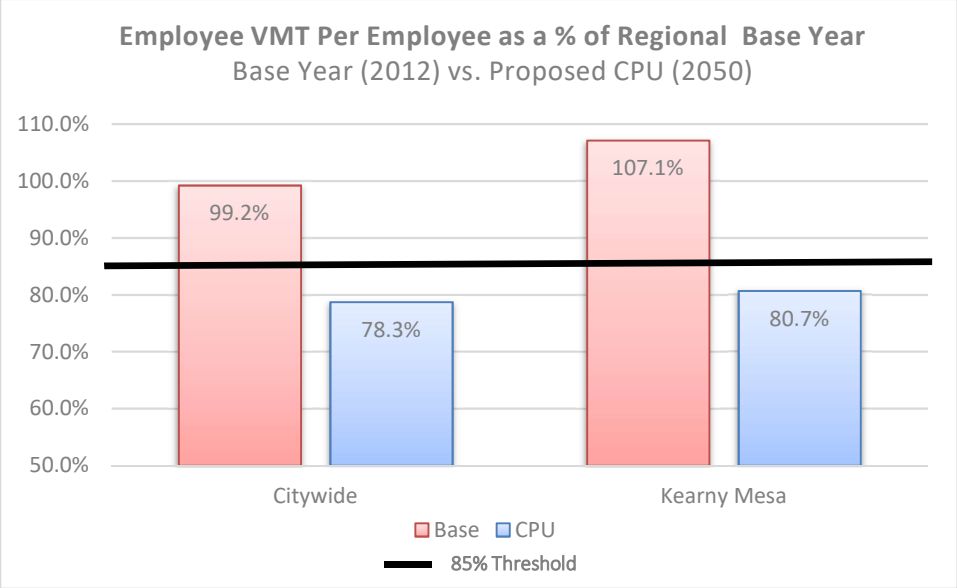

Figure 4-6 Employee VMT Per Employee

Overall, Kearny Mesa CPU's lower residential and employment related VMT compared to the Base Year is largely because the Proposed Project was designed to self-mitigate by increasing the transportation efficiency in the community guided by the General Plan and Climate Action Plan which also align with Statewide goals. The Proposed Project is also consistent with the City of San Diego's Complete Communities initiative, which includes planning strategies that work together to create incentives to build homes near transit, provide more mobility choices, enhance opportunities for places to walk, bike, relax and play, and more quickly bring neighborhood benefits where needed the most[7]. As a result, the Proposed Project improves not only the community's VMT efficiencies, but also the citywide VMT efficiencies for the Resident VMT per Capita and the Employee VMT per Employee.

Retail Land Uses

According to OPR's recommendations, a retail impact is considered significant when there is a net increase in total area (i.e. Kearny Mesa) VMT related to the new retail and commercial uses that could be developed with the adoption of the proposed CPU. Kearny Mesa Total Retail VMT is anticipated to increase with the buildout of the proposed project when compared to the present condition due to all the retail growth anticipated to occur in the future throughout the community. While some of the proposed project's retail uses would be intended to be locally serving, much of Kearny Mesa's existing commercial uses, such as uses on Convoy Street, Clairemont Mesa Boulevard, or Balboa Avenue, have more regional drawing characteristics due to the uniqueness of those uses (e.g. car dealerships, specialty grocery markets, restaurants, etc.). With the proposed project, it is anticipated that further redevelopment would maintain and possibly expand these unique retail and commercial destinations. This potential increase in VMT related to the regionally serving retail and commercial uses would be a significant transportation impact under the VMT thresholds.

[7] City of San Diego's Complete Communities Initiative (https://www.completecommunitiessd.org/)

Mitigation Measures

VMT is positively correlated with growth and as the region is expected to grow, VMT is also expected to increase. However, where the growth occurs plays a significant role in determining how much VMT will increase. Growth in areas with access to high-quality transit such as Transit Priority Areas (TPAs), a complete active transportation network, and complementary land uses mixes are more VMT efficient.

Guided by the City's General Plan and Climate Action Plan, SANDAG's Regional Plan, as well as state of the practice urban planning principles (i.e., such as Transit Oriented Development and Complete Streets), the Proposed Project land uses focus growth in transit corridors and providing a complementary mix of uses. With a fully connected active transportation network, this mix of uses in the locations proposed are planned for the purpose of eliminating and reducing vehicular trips, thereby results in reduced VMT. The key theme behind the Proposed Project is the *connected community*[8]. The Proposed Project envisions this community as a sub-regional employment center adaptable to future employment trends and technologies that would bring in a diversified workforce. New development would be focused in mixed-use villages, that would introduce new residential, retail and employment opportunities consolidated around transit corridors with a supportive and balanced mobility system to serve the needs of all current and future users. This system would provide an active transportation network that would be a viable and enjoyable option for traveling within the community in addition to providing connections to transit to get to and from destinations around the region. By bringing in varied and complementary uses in transit corridors and a mobility network that supports and encourages alternative mode choice, the Proposed Project plans a more VMT efficient and sustainable future for the community.

Residential Land Uses

As shown in Table 4.3 and Figure 4-5, the Proposed Project's impact for its proposed residential land uses would be less than significant, therefore, no mitigation measures are required.

Employment Land Uses

As shown in Table 4.3 and Figure 4-6, the Proposed Project's impact for its proposed employment land uses would be less than significant; therefore, no mitigation measures are required.

Retail Land Uses

For the Proposed Project's retail land uses, there is a potentially significant impact due to existing and planned retail and commercial uses that would be regionally serving, as well as locally serving. Overall, the proposed CPU is a planning document intended to guide future development throughout Kearny Mesa. It provides detailed policies and implementation guidance that would be applicable to many specific details of future development as applications are filed and future implementing actions are considered. Due to the programmatic nature of the proposed CPU, it does not propose any specific development projects, and thus, cannot adequately anticipate specific project-level requirements at this time. To mitigate the potential impact to less than significant, future development under this proposed CPU would need to be mitigated on a project basis. This could be accomplished through a citywide VMT reduction ordinance that would require development projects to reduce their VMT to the extent feasible by providing on-site VMT reducing infrastructure such as those found in CAPCOA[9], the SANDAG Mobility Management Toolbox[10], or

[8] Mentioned in Section 5: Urban Design of the *Kearny Mesa Community Plan*, March 2020 version.

[9] "Quantifying Greenhouse Gas Mitigation Measures." August 2010. (http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf)

[10] The SANDAG Mobility Management Toolbox was released as a local public resource in July 2019. It is currently housed on their iCommute website. (https://www.icommutesd.com/planners/TDM-local-governments)

other sources that have been vetted through peer-review research; or pay a fee that would fund active transportation infrastructure and transit improvements to reduce citywide VMT.

Mitigation Measure MM-TR-1: Adopt and implement a VMT reduction ordinance that would require future development projects within the City to provide on-site VMT reducing infrastructure or pay a fee that would fund active transportation infrastructure and transit improvements intended to reduce vehicle miles traveled resulting from retail uses.

However, because this action by a decision-making body cannot be ensured to occur, and analysis of the implementation of such an ordinance has not be included in the Programmatic Environmental Impact Report (PEIR), this mitigation while potentially feasible, is not implementable at this time. This VMT impact is significant and unavoidable.

4.5 Level of Significance After Mitigation

Should MM-TR-1 be adopted by City Council, and implemented, VMT would be reduced by individual projects that maybe permitted and constructed under the proposed CPU. A citywide VMT reduction ordinance could reduce community and citywide VMT for projects both ministerial and discretionary, thereby mitigating the potential impact identified in the previous section. The effectiveness of the VMT reducing infrastructure included in such an ordinance would need to be context sensitive and would vary depending on the individual project site such as the location, access to transit, etc. For this reason, and because it is uncertain if, or when such regulations would become effective, MM-TR-1 would not fully mitigate the VMT impact for retail land uses. However, through continued updates to community plans in transit priority areas, further reductions in citywide VMT would potentially occur. Thus, transportation impacts due to the Proposed Project's retail land uses would remain significant and unavoidable.

5.0 Vehicle Miles Traveled for GHG Analysis Purposes

To more accurately describe the vehicle miles traveled (VMT) attributable to a smaller geography, such as a community planning area, it is necessary to track the trips and distances to and from the community that goes beyond the boundary of the geography. As shown with previous metrics, the ABM has this capability by designating the Kearny Mesa community as a *select zone*. By selecting Kearny Mesa as a *select zone*, any vehicle-based trip that has an origin, destination, or both in the community are tracked and all of the VMT of these trips are aggregated as the select zone VMT for Kearny Mesa. Appendix A further describes this analytical approach and resulting VMT, which can further be applied to a calculation of transportation emissions.

The select zone VMT includes all the VMT from any trip that originates or ends in that select zone. However, for External-to-Internal (E-I)[11] or Internal-to-External (I-E)[12] trips that only have one trip end in the select zone, it is not entirely accurate to attribute that entire trip length to the community as it originated or ended elsewhere, whereas all of the Internal-to-Internal (I-I)[13] trip lengths are included in select zone. The International Council for Local Environment Initiatives (ICLEI) method was developed to appropriately calculate the VMT attributable to the community for GHG purposes. Essentially the equation is as follows:

ICLEI VMT = 100% (I-I VMT) + 50% (E-I, I-E VMT)

Table 5.1 presents the VMT for greenhouse gas (GHG) emissions analysis using the ICLEI method for the Kearny Mesa community. As shown, the Proposed Project scenario's VMT is greater than both the Base Year and Adopted Plan scenarios, specifically, the Proposed Project's VMT would be 49.3% greater than the Base Year and 31.6% greater than the Adopted Plan for the Kearny Mesa community. This is a result of the increased residential and employment land uses.

Table 5.1 Vehicle Miles Traveled for GHG Analysis

Kearny Mesa	2012 Base Year (BY)	2050 Adopted Plan (ACP)	2050 Proposed Project (CPU)	% Change		
				ACP vs. BY	CPU vs. BY	CPU vs. ACP
KM VMT for GHG (ICLEI)[1]	2,477,173	2,809,408	3,698,527	13.4%	49.3%	31.6%

Source: SANDAG and Chen Ryan Associates (2019)

Notes:
[1] Kearny Mesa's VMT for GHG analysis was calculated using the information provided through the disaggregated VMT for Kearny Mesa Select Zone model output from SANDAG, which is provided in Appendix C.

5.1 Vehicle Miles Traveled for GHG Analysis per Service Population

VMT per service population is an informative metric to understand the growth in VMT in relation to community growth. Table 5.2 provides the population, employment, and service population for the Kearny Mesa community for the three (3) scenarios.

[11] Trips that originate outside of the Community and end within the Community.
[12] Trips that originate within the Community and end outside of the Community.
[13] Trips that both the origin and destination are within the Community limits.

Table 5.2 Kearny Mesa Population and Employment

Kearny Mesa	2012 Base Year (BY)	2050 Adopted Plan (ACP)	2050 Proposed Plan (CPU)	% Change		
				ACP vs. BY	CPU vs. BY	CPU vs. ACP
Dwelling Units	2,857	5,883	25,826	105.9%	804.0%	339.0%
Residents[1]	6,387	13,411	57,516	110.0%	800.5%	328.9%
Employees[1]	86,861	84,851	106,927	-2.3%	23.1%	26.0%
Service Population[2]	93,248	98,262	164,443	5.4%	76.4%	67.4%

Source: SANDAG and Chen Ryan Associates (2019)

Notes:
[1] Residents and employment values taken from model output provided in the Vehicle Miles of Travel Reports provided in Appendix B. Slight variations than existing and proposed employment numbers due to model synthesis.
[2] Service population is the sum of residents and employees within Kearny Mesa.

The Adopted Plan's dwelling units and residents would be more than double the Base Year by the projected build-out of 2050, while the employments generally stay the same.

The goals of the Proposed Project include bringing in closer origins and destinations, increasing transit usage by leveraging the major investment of robust transit infrastructure and service enhancements near new residences and employment hubs, and making the community more walkable and bikeable. These goals are in alignment with the City's General Plan and CAP.

As a result, the Proposed Project substantially increases the dwelling unit capacity well beyond what is proposed in the Adopted Plan, and would moderately increase the employment and retail components within the community. Most of the additional dwelling units would be added along Clairemont Mesa Boulevard and would increase densities around transit stops and mixed-use development.

In the Proposed Project scenario, the number of residents would increase by 800.5% (6,387 to 57,516), almost eight times the Base Year Scenario's population. The service population of Kearny Mesa is the sum of residents and employees within Kearny Mesa. As expected, the service population under the Proposed Project is greater than the Adopted Plan due to increase in residents and results towards a population and employment balance. Development under the Proposed Project's Community Plan Update constitutes infill development that represents increased intensity and density compared to the Base Year's land use conditions and the development type allowable through Adopted Community Plan of Kearny Mesa.

Table 5.3 presents the VMT via the ICLEI method per service population for Kearny Mesa using the projected service populations for each scenario.

Table 5.3 Kearny Mesa Vehicle Miles Traveled for GHG Analysis Per Service Population

Kearny Mesa	2012 Base Year (BY)	2050 Adopted Plan (ACP)	2050 Proposed Project (CPU)	% Change		
				ACP vs. BY	CPU vs. BY	CPU vs. ACP
ICLEI VMT per Service Population	26.6	28.6	22.5	7.6%	-15.3%	-21.3%

Source: SANDAG and Chen Ryan Associates (2019)

The Proposed Project scenario shows a decrease in VMT per Service Population of 15.3% when compared to the Base Year scenario and over a 21% reduction seen in the Adopted Plan scenario. As described in the previous chapter, the reduction in VMT per Service Population is due to the more balanced land use network and the comprehensive multi-modal mobility network.

6.0 Alternatives Analysis

The California Environmental Quality Act (CEQA) mandates consideration and analysis of alternatives to the Proposed Project. According to CEQA Guidelines, the range of alternatives "shall include those that could feasibly accomplish most of the basic purposes of the project and could avoid or substantially lessen one or more of the significant impacts" (CEQA Guidelines Section 15126.6 (d) (2)). The discussion must also include an evaluation of the No Project Alternative to allow decision-makers to compare the impacts of approving the Proposed Project against the impacts of not approving it.

The alternatives discussion need not be exhaustive and are subject to a construction of reasonableness. The impacts of the alternatives may be discussed "in less detail than the significant effects of the project proposed" (CEQA Guidelines Section 15126.6 (d)). Additionally, the CEQA Guidelines generally permit analysis of alternatives at a less detailed level for general plans and other program EIRs than what is required for project EIRs. The CEQA Guidelines do not specify what constitutes an adequate level of detail, though an EIR must provide sufficient information to allow meaningful evaluation, analysis, and comparison of each alternative. The CEQA Guidelines require that this analysis identify the environmentally superior alternative among those analyzed.

This chapter discusses the vehicle miles traveled (VMT) under the five (5) project alternatives. The primary difference between all the alternatives, with the exception of the No Project Alterative, is changes to the land uses. The mobility networks for Alternatives 1 through 4 are the same as the Proposed Project. The No Project Alternative includes a different mobility network and land use plan than the Proposed Project. The Vehicle Miles of Travel Reports (SB 743 metrics for residential and employment) for all project alternatives are included in Appendix D.

6.1 No Project Alternative (Adopted Community Plan)

The purpose of evaluating the No Project Alternative is to allow decision makers to compare the potential impacts of approving the Proposed Project with the potential impacts of not approving the Proposed Project. The No Project Alternative represents what would reasonably be expected to occur in the foreseeable future if the proposed CPU were not approved. The No Project Alternative would consist of the Adopted Community Plan's land use designations and proposed mobility network as they apply today, including all amendments to the Community Plan from its original adoption in 1992 to the most recent amendment in 2018. The majority of Kearny Mesa is designated for industrial uses. Adopted Community Plan land use designations are intended to retain the mix of industrial, business park, scientific and research, and heavy commercial land uses. Table 2.1 summarizes buildout under the No Project Alternative (Adopted Plan) compared to the Base Year and Proposed Project.

Table 6.1 presents the Kearny Mesa average resident and employee VMT for No Project conditions. As shown, Kearny Mesa is projected to have an average Resident VMT per Capita at 13.0 and an average Employee VMT per Employee at 22.2 under the No Project Alternative, which is 75.1% and 87.4%, respectively, of the 2012 regional averages for these efficiency metrics.

Table 6.1 Kearny Mesa No Project
VMT Efficiency Metrics for Transportation Impact Analysis of Residential and Employment Uses

VMT Metric	Base Year (2012)	2050 Proposed Project			2050 No Project		
	VMT	VMT	% of Regional Base Year	SI?	VMT	% of Regional Base Year	SI?
	Region		KM			KM	
Resident VMT/ Capita	17.3	9.2	53.2%	NO	13.0	75.1%	NO
Employee VMT/ Employee	25.4	20.5	80.7%	NO	22.2	87.4%	YES

Source: SANDAG and Chen Ryan Associates (2019)

Between the Base Year to buildout of the No Project Alternative, Kearny Mesa's commercial retail square footage would in aggregate increase by 24% (7,815,123 sf to 9,677,820 sf). With this increase in commercial retail square footage and where some of these uses could have regionally-drawing characteristics, the Kearny Mesa Total VMT generated by retail uses is expected to increase under the No Project Alternative compared to Base Year conditions.

Significance of Impacts

Residential Land Uses

As shown in Table 6.1, the No Project Alternative would not create a significant impact for its residential land uses as the VMT is under the 85% threshold (i.e., 15% below the Base Year regional average). Kearny Mesa's Resident VMT per Capita for the No Project Alternative is 75.1% of the Base Year regional average, and therefore, the transportation impacts related to residential uses are considered *less than significant*.

Employment Land Uses

As shown in Table 6.1, the No Project Alternative would result in a significant impact for its employment land uses as the VMT is greater the 85% threshold (i.e., 15% below the Base Year regional average). Due to the minimal increase in office space and continued housing imbalance under No Project conditions compared to Base Year conditions, Kearny Mesa's Employee VMT per Employee for the No Project Alternative is 87.4% of the Base Year regional average, and therefore, the employee uses are considered *to have a significant transportation impact.*

Retail Land Uses

The No Project Alternative could potentially increase Kearny Mesa's Total VMT generated by retail uses, therefore, per the significance criteria, the retail component would have a *significant transportation impact*.

6.2 Alternative 1 (Reduced Density Alternative)

Compared to the Proposed Project, Alternative 1 retains more of the existing industrial and business park areas with the CPU area. Similar to the Proposed Project, Alternative 1 would increase the FAR limits for commercial and industrial zones. Although more lot coverage would be allowed compared to the adopted Community Plan (No Project Alternative), under Alternative 1, the total increase in employment would be slightly less than under the Proposed Project.

Table 6.2 presents the Kearny Mesa average resident and employee VMT for Alternative 1. As shown, Kearny Mesa is projected to have an average Resident VMT per Capita at 10.1 and an average Employee VMT per Employee at 21.5 under Alternative 1 conditions, which is 58.4% and 84.6%, respectively, of the 2012 regional averages for these efficiency metrics.

Table 6.2 Kearny Mesa Alternative 1
VMT Efficiency Metrics for Transportation Impact Analysis of Residential and Employment Uses

	Base Year (2012)	2050 Proposed Project			2050 Alternative 1		
VMT Metric	VMT	VMT	% of Regional Base Year	SI?	VMT	% of Regional Base Year	SI?
	Region		KM			KM	
Resident VMT/ Capita	17.3	9.2	53.2%	NO	10.1	58.4%	NO
Employee VMT/ Employee	25.4	20.5	80.7%	NO	21.5	84.6%	NO

Source: SANDAG and Chen Ryan Associates (2019)

Between the Base Year to buildout of the Alternative 1 scenario, Kearny Mesa's commercial retail square footage would in aggregate increase by 66% (7,815,123 sf to 13,008,168 sf). With this significant increase in commercial retail square footage and where some of these uses could have regionally-drawing characteristics, the Kearny Mesa Total VMT generated by retail uses is expected to increase under the Alternative 1 compared to Base Year conditions.

Significance of Impacts

Residential Land Uses

As shown in Table 6.2, Alternative 1 would not create a significant impact for its residential land uses as the VMT is under the 85% threshold (i.e., 15% below the Base Year regional average). Kearny Mesa's Resident VMT per Capita for Alternative 1 is 58.4% of the Base Year regional average, and therefore, the transportation impacts related to residential uses are considered *less than significant*.

Employment Land Uses

As shown in Table 6.2, Alternative 1 would not create a significant impact for its employment land uses as the VMT is under the 85% threshold (i.e., 15% below the Base Year regional average). Kearny Mesa's Employee VMT per Employee for Alternative 1 is 84.6% of the Base Year regional average, and therefore, the transportation impacts related to employee uses are considered *less than significant*.

Retail Land Uses

Alternative 1 could potentially increase the Kearny Mesa's Total VMT generated by retail uses, therefore, per the significance criteria, the retail component would have a *significant transportation impact*.

6.3 Alternative 2 (Reduced Height Alternative)

Alternative 2 would include the same planned land uses and land use distribution and same planned mobility network as the Proposed Project. However, Alternative 2, Reduced Height Alternative, would implement the planned land uses in the proposed village area with zones that have reduced height limits. Consequently, the transportation operations and impacts are anticipated to be exactly the same as the Proposed Project and no additional model run was conducted.

Table 6.3 presents the Kearny Mesa average resident and employee VMT for the Alternative 2 conditions. Similar to the Proposed Project, Kearny Mesa is projected to have an average Resident VMT per Capita at 9.2 and an average Employee VMT per Employee at 20.5 under Alternative 2 conditions, which is 53.2% and 80.7%, respectively, of the 2012 regional averages for these efficiency metrics.

Table 6.3 Kearny Mesa Alternative 2
VMT Efficiency Metrics for Transportation Impact Analysis of Residential and Employment Uses

	Base Year (2012)	2050 Proposed Project & Alternative 2		
	VMT	VMT	% of Regional Base Year	SI?[1]
VMT Metric	Region		KM	
Resident VMT/ Capita	17.3	9.2	53.2%	NO
Employee VMT/ Employee	25.4	20.5	80.7%	NO

Source: SANDAG and Chen Ryan Associates (2019)

Note:
[1] SI = Significant Impact

Between the Base Year to buildout of the Alternative 2 scenario, Kearny Mesa's commercial retail square footage would in aggregate increase by 66% (7,815,123 sf to 12,953,174 sf). With this significant increase in commercial retail square footage and where some of these uses could have regionally-drawing characteristics, the Kearny Mesa Total VMT generated by retail uses is expected to increase under the Alternative 2 compared to Base Year conditions.

Significance of Impacts

Residential Land Uses

As shown in Table 6.3, Alternative 2 would not create a significant impact for its residential land uses as the VMT is under the 85% threshold (i.e. 15% below the Base Year regional average). Kearny Mesa's Resident VMT per Capita for Alternative 2 is 53.2% of the Base Year regional average, and therefore, the transportation impacts related to residential uses are considered *less than significant*.

Employment Land Uses

As shown in Table 6.3, Alternative 2 would not create a significant impact for its employment land uses as the VMT is under the 85% threshold (i.e. 15% below the Base Year regional average). Kearny Mesa's Employee VMT per Employee for Alternative 2 is 80.7% of the Base Year regional average, and therefore, the transportation impacts related to employee uses are considered *less than significant*.

Retail Land Uses

Alternative 2 could potentially increase Kearny Mesa's Total VMT generated by retail uses, therefore, per the significance criteria, the retail component would have a *significant transportation impact*.

6.4 Alternative 3 (Reduced Industrial Employment Alternative)

Alternative 3 proposes similar land uses to the Proposed Project; however, Alternative 3 would implement the planned land uses with zones that apply citywide development standards related to maximum lot coverage. Alternative 3 assumes that the majority of new non-residential development would consist of multi-story buildings, and that there would be additional high-rise buildings with greater lot coverage in industrial areas. These buildings would accommodate buildout of more commercial services, retail, and office space. Therefore, while Alternative 3 would result in increased overall employment compared to the Proposed Project, by increasing the scale of commercial development in industrial zones, it would result in increased commercial encroachment and reduced industrial employment.

Table 6.4 presents the Kearny Mesa average resident and employee VMT for the Alternative 3 conditions. As shown, Kearny Mesa is projected to have an average Resident VMT per Capita at 8.7 and an average Employee VMT per Employee at 20.8 under Alternative 3, which is 50.3% and 81.9%, respectively, of the 2012 regional averages for these efficiency metrics. The Resident VMT per Capita is less than the Proposed Project due to the increase in employment, resulting in a greater housing-to-jobs balance.

Table 6.4 Kearny Mesa Alternative 3
VMT Efficiency Metrics for Transportation Impact Analysis of Residential and Employment Uses

VMT Metric	Base Year (2012)	2050 Proposed Project			2050 Alternative 3		
	VMT	VMT	% of Regional Base Year	SI?	VMT	% of Regional Base Year	SI?
	Region		KM			KM	
Resident VMT/ Capita	17.3	9.2	53.2%	NO	8.7	50.3%	NO
Employee VMT/ Employee	25.4	20.5	80.7%	NO	20.8	81.9%	NO

Source: SANDAG and Chen Ryan Associates (2019)

Between the Base Year to buildout of the Alternative 3 scenario, Kearny Mesa's commercial retail square footage would in aggregate increase by 88% (7,815,123 sf to 14,719,954 sf). With this significant increase in commercial retail square footage and where some of these uses could have regionally-drawing characteristics, the Kearny Mesa Total VMT generated by retail uses is expected to increase under the Alternative 3 compared to Base Year conditions.

Significance of Impacts

Residential Land Uses

Alternative 3 would not create a significant impact for its residential land uses as the VMT is under the 85% threshold (i.e. 15% below the Base Year regional average). Kearny Mesa's Resident VMT per Capita for Alternative 3 is 50.3% of the Base Year regional average, and therefore, the transportation impacts related to residential uses are considered *less than significant*.

Employment Land Uses

Alternative 3 would not create a significant impact for its employment land uses as the VMT is under the 85% threshold (i.e. 15% below the Base Year regional average). Kearny Mesa's Employee VMT per

Employee for Alternative 3 is 81.9% of the Base Year regional average, and therefore, the transportation impacts related to employee uses are considered *less than significant*.

Retail Land Uses

Alternative 3 could potentially increase Kearny Mesa's Total VMT generated by the retail uses, therefore, per the significance criteria, the retail component would have a *significant transportation impact*.

6.5 Alternative 4 (Residential Option)

Alternative 4 would include the same planned land uses and land use distribution, and same planned mobility network as the Proposed Project. However, Alternative 4, includes residential dwelling units in the airport easements north of Clairemont Mesa Boulevard, whereas the Proposed Project's dwelling units are located primarily south of Clairemont Mesa Boulevard between I-805 and Mercury Street and along Clairemont Mesa Boulevard east of SR-163.

Table 6.5 presents the Kearny Mesa average resident and employee VMT for the Alternative 4. As shown, Kearny Mesa is projected to have an average Resident VMT per Capita at 9.9 and an average Employee VMT per Employee at 20.5 under Alternative 4, which is 57.2% and 80.7%, respectively, of the 2012 regional averages for these efficiency metrics. The Resident VMT per Capita and Employee VMT per Employee are very similar between the Proposed Project and Alternative 4 since the main difference between the two scenarios consist of only redistributing a portion of the residential dwelling units on Clairemont Mesa Boulevard.

Table 6.5 Kearny Mesa Alternative 4
VMT Efficiency Metrics for Transportation Impact Analysis of Residential and Employment Uses

	Base Year (2012)	2050 Proposed Project			2050 Alternative 4		
VMT Metric	VMT Region	VMT	% of Regional Base Year KM	SI?	VMT	% of Regional Base Year KM	SI?
Resident VMT/ Capita	17.3	9.2	53.2%	NO	9.9	57.2%	NO
Employee VMT/ Employee	25.4	20.5	80.7%	NO	20.5	80.7%	NO

Source: SANDAG and Chen Ryan Associates (2019)

Between the Base Year to buildout of the Alternative 4 scenario, Kearny Mesa's commercial retail square footage would in aggregate increase by 74% (7,815,123 sf to 13,586,154 sf). With this significant increase in commercial retail square footage and where some of these uses could have regionally-drawing characteristics, the Kearny Mesa Total VMT generated by retail uses is expected to increase under the Alternative 4 compared to Base Year conditions.

Significance of Impacts

Residential Land Uses

As shown in Table 6.5, Alternative 4 would not create a significant impact for its residential land uses as the VMT is under the 85% threshold (i.e. 15% below the Base Year regional average). Kearny Mesa's Resident VMT per Capita for Alternative 4 is 57.2% of the Base Year regional average, and therefore, the transportation impacts related to residential uses are considered *less than significant*.

Employment Land Uses

As shown in Table 6.5, Alternative 4 would not create a significant impact for its employment land uses as the VMT is under the 85% threshold (i.e. 15% below the Base Year regional average). Kearny Mesa's Employee VMT per Employee for Alternative 4 is 80.7% of the Base Year regional average, and therefore, the transportation impacts related to employee uses are considered *less than significant*.

Retail Land Uses

Alternative 4 could potentially increase Kearny Mesa's Total VMT generated by retail uses, therefore, per the significance criteria, the retail component would have a *significant transportation impact*.

Appendix A Vehicle Miles Traveled Calculation Using the SANDAG Regional Travel Demand Model – Technical White Paper

TECHNICAL WHITE PAPER

VEHICLE MILES TRAVELED CALCULATIONS USING THE SANDAG REGIONAL TRAVEL DEMAND MODEL

San Diego, California
May 2013

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TECHNICAL WHITE PAPER

VEHICLE MILES TRAVELED CALCULATIONS USING THE SANDAG REGIONAL TRAVEL DEMAND MODEL

San Diego, California
May 2013

1.0 INTRODUCTION

In the last six years, the State of California has adopted key legislative bills that address the reduction of greenhouse gas (GHG) emissions. Specifically, Assembly Bill 32 (AB 32, 2006) sets a statewide GHG reduction target to return to the 1990 emissions level by the year 2020. In addition, in 2008, California adopted SB 375 which specifically addresses emissions from transportation. SB 375 directs California's Metropolitan Planning Organizations (MPO's) to meet GHG emission reduction targets established by the California Air Resources Board (CARB) through coordinated land use and transportation planning. Subsequently, Senate Bill 97 (SB 97, 2009) created guidelines for analyzing GHG emissions in environmental documents required under the California Environmental Quality Act (CEQA). For the purpose of this white paper, Vehicle Miles of Travel (VMT) are used as a proxy for greenhouse gases.

The Bureau of Transportation Statistics defines VMT as a unit to measure vehicular travel made by individual vehicles. Each mile traveled is counted as one vehicle mile regardless of the number of persons in the vehicle. Total vehicle miles is the aggregated total mileage traveled by all individual vehicles.

As a result of these acts, regional agencies, local governments, and private firms have worked to establish methodologies for analyzing the effects of development projects, climate action plans, and proposed general plan updates on GHG emissions as part of the CEQA process.

At the national-level, the International Council for Local Environmental Initiatives (ICLEI)-Local Governments for Sustainability has recently published a technical paper documenting a new national standard that establishes requirements and recommended best practices for developing local community GHG emissions inventory titled the "U.S. Community Protocol for Accounting and Reporting GHG Emissions (Community Protocol)"[1]. The recommended method presented in this document recognizes that local governments possess the authority to influence GHG emissions from passenger vehicle trips both inside and outside of a community's geographic boundaries. This method also recognizes that local governments cannot influence all passenger vehicle GHG emissions within their boundaries. As such, the recommended origin-destination method (using a travel demand-based model) better captures a local government's ability to affect passenger vehicle emissions than the previous method of using average trip lengths to calculate in-boundary emissions.

[1] **ICLEI-Local Governments for Sustainability US Community Protocol V1, October 2012. Appendix D: Transportation and Other Mobile Emission Activities and Sources.** http://www.icleiusa.org

The approach recommended by this national document discusses why it is important to determine VMT calculations using a large area such as a community's geographic boundaries. One reason to focus on community-wide boundaries is because a high proportion of pass-through traffic can occur in smaller study areas that are outside that area's influence. An example is an Interstate highway that passes through a small city. Another reason is that a low proportion of vehicle miles from trips that terminate or originate in a small study area occur outside the area's geographic boundaries and would be more accurately identified in an expanded community-wide study area.

The ICLEI-recommended method for calculating VMT is to use model data of all travel originating or terminating within the jurisdictional boundaries of a community. Trip tables from either a traditional 4-step travel demand model (trip-based) or from an activity-based travel demand model (tour-based) are required to calculate and extract disaggregated VMT data in this manner.

Congruent with the methodology presented by ICLEI, the SB 375 Regional Targets Advisory Committee, in their September 2009 report to the CARB, recommended the following method for allocating VMT to a study area for the purposes of a GHG analysis:

- Internal-Internal: all VMT should be included in the analysis
- Internal-External or External-Internal: 50% of VMT should be included in the analysis
- External-External: all VMT should be excluded in the analysis

Following these recommended methods of allocation, this white paper describes the analytical approach for disaggregating VMT into these categories using a suite of existing tools. The resulting study area VMT can then be applied to a calculation of transportation emissions for a GHG analysis of the study area.

A glossary of acronyms and terms is provided in ***Appendix A.***

2.0 METHODOLOGY

To date, the methodologies that have been developed focus on specific land uses as well as incorporation of average trip lengths (ATL). The methodology outlined in this paper switches the focus to trip ends (Origin and Destination patterns) with the intent of removing the uncertainty and potential for error in using average trip lengths, as recommended at both the state and national level.

This section of the white paper presents a methodology that utilizes existing tools for VMT and GHG analysis. The three main tools required for the analysis include:

1. A travel demand model
2. A Geographic Information System (GIS)
3. A spread sheet

Note that this method can be applied using any travel demand model software, a GIS that is capable of producing spatial overlays, and any spread sheet software.

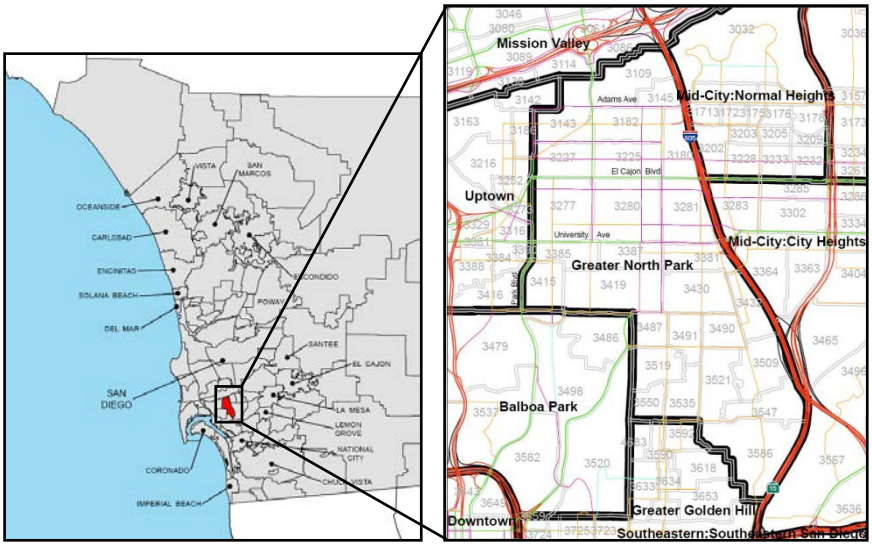
This methodology is intended to be used to analyze whole cities, communities within a large city and/or large-scale developments. The analysis area should include multiple Traffic Analysis Zones (TAZs).

The first step in the process is to define a study area. It should be noted that the size and shape of the study area can affect the analysis, as mentioned in the ICLEI protocol. For example, the larger the study area (community-wide) and the more homogeneous the study area shape, the more Internal-to-Internal trips and VMT will be captured. Conversely, smaller study areas with odd and/or linear shapes tend to have less Internal-to-Internal trip and VMT capture. Therefore it is recommended that a small or linear study area be expanded to a more homogenous study area size and shape, and that a normalized metric of VMT per acre be included in the analysis.

CASE STUDY: THE COMMUNITY OF GREATER NORTH PARK

The community of North Park was chosen as a test study area for this paper. North Park, depicted in ***Figure 2–1***, is located in the central part of the City of San Diego and is defined by the City as a Community Plan Area (CPA). The community of North Park is bound by the other CPAs of Uptown and Balboa Park to the West, Golden Hill to the South, City Heights and Normal Heights to the East and Mission Valley to the North. The community boundary to the east is defined by the freeways I-15 and I-805, and defined by Park Blvd to the west. North Park is subdivided into 27 TAZs, and none of those TAZs overlap into adjacent community plan areas.

Figure 2–1
Study Area Map



Alternatives analysis is a term used to describe the process of incrementally comparing one scenario to another, and travel demand models are one example of a tool used in the planning practice for comparing alternatives. ***Figure 2–2*** shows the four travel demand model land use and network alternatives that were created in support of this white paper:

Figure 2–2
Travel Demand Model Alternatives

ALTERNATIVE	LAND USE	NETWORK
2008	Existing	Existing
2050 A	Adopted General Plan	Adopted Circulation Element
2050 B	Proposed Project	Adopted Circulation Element
2050 C	Proposed Project	Proposed Network Enhancement

The base year scenario was created to ensure consistency throughout the analysis and provides a bench mark for current conditions. The 2050 scenarios were created using SANDAG's "Series 12" Growth Forecast and Travel Demand Model. The three 2050 scenarios are based on the 2050 Revenue Constrained network as defined in the 2011 Regional Transportation Plan. *Alternative A* includes no changes and thus is the Adopted scenario. *Alternative B* adds a proposed development into TAZ 3491 which is located in the middle of the community of North Park. *Alternative C* includes the proposed development in TAZ 3491 plus upgrading 32nd Street

between Redwood Street and University Avenue from a Two-Lane Local Collector to a Four-Lane Collector with a raised median. For the purpose of comparing apples to apples, all four scenarios have consistent TAZ systems. *Alternatives A and B* utilize the same network, however, *Alternative C* includes an upgraded network. To maintain the synonymous comparison, an additional metric of VMT per lane mile has been developed and documented later on in *Section 2.0* of this paper. ***Appendix B*** contains the results of the trip generation model for TAZ 3491 for the four scenarios.

VMT is a straight-forward calculation that includes traffic volume multiplied by the length of the roadway segment. VMT is usually measured on a daily basis or for a 24-hour period for each link in the road network. A network link is a modeling term used to identify road segments between two or more end points where the network might be accessed by vehicular traffic. Twenty-four hour volumes are often referred to as Average Daily Traffic (ADT) volumes. The 24-hour traffic volume and link lengths are the only two variables required to calculate VMT. This calculation can actually be made using any of the three tools previously noted in this paper(GIS, a Travel Demand Model, or a spreadsheet). Depending on how link lengths are stored, either of these two formulas can be applied:

1. Use where link lengths are stored in miles:
   VMT = ADT * LINK LENGTH

2. Use where link lengths are stored in feet:
   VMT = (ADT * LINK LENGTH) / 5,280

The main benefit of this methodology is the ability to define VMT by origin-destination (OD) pairs as well as by functional classification. Functional classifications are coded on a travel demand model network using GIS. VMT by OD pair includes the disaggregation of VMT into the following categories:

1. **Internal-to-Internal (I-I)**

   This category includes trips that have both the Origin and Destination (two trip-ends) within the same city/community/development being analyzed. This, however, is not intra-zonal trips, which is defined as trips that start and end within the same TAZ and discussed later in this paper.

2. **Internal-to-External, and External-to-Internal (I-E, E-I)**

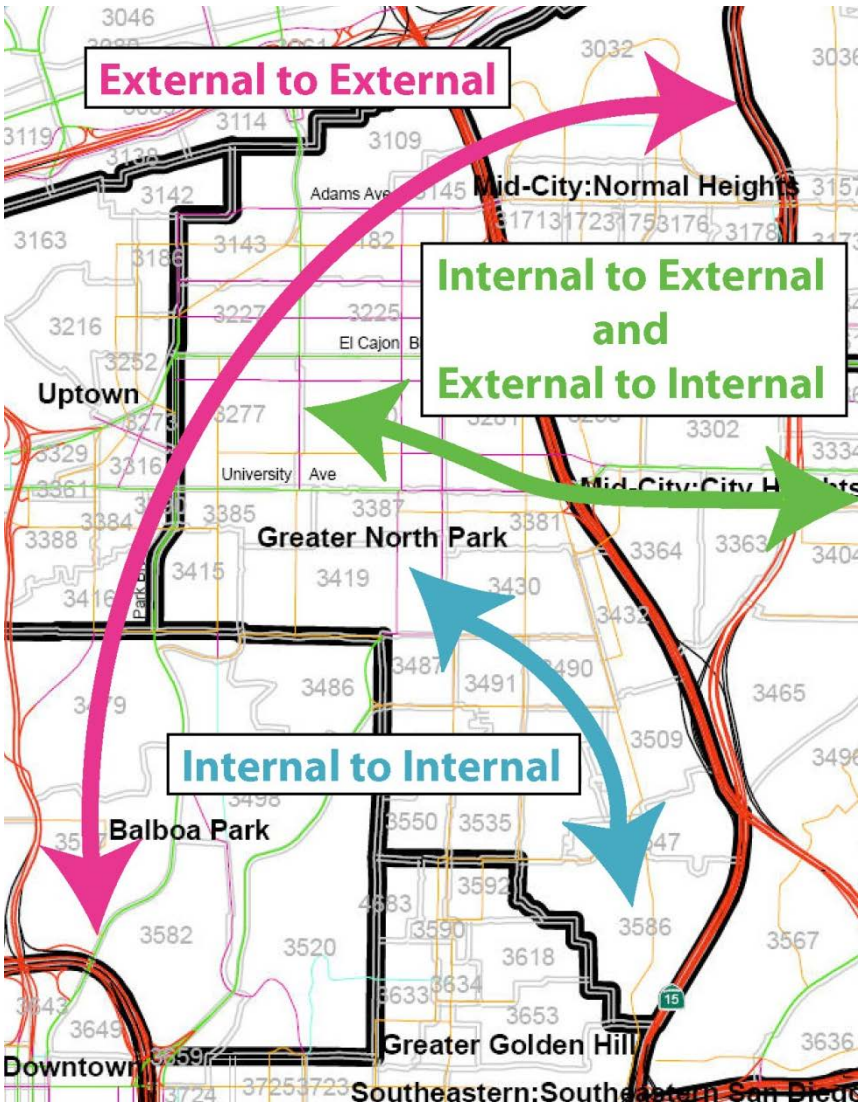
   This category includes trips with either the Origin or Destination (one trip-end) within the city/community/development being analyzed. Internal-to-External and External–to-Internal have been combined into one category as directional VMT is not an important variable when analyzing GHG.

3. **External-to-External (E-E)**

The third category includes trips with neither Origin nor Destination (zero trip-ends) within the city/community/developments being analyzed. These are essentially trips passing through the city/community/development.

Figure 2–3 illustrates the three types of disaggregated VMT.

Figure 2–3
The Three VMT Categories



To disaggregate VMT using the OD methodology, the following detailed steps are recommended:

Step 1. Run a travel demand model on a set of land use / network scenarios. The scenarios will ultimately be compared to one another (alternatives analysis). Ensure there are no errors and the traffic assignment step completed normally.

Step 2. Use the travel demand model to run a "study area" select zone assignment. This includes defining a select zone analysis by combining all TAZs within the study area into one query. Repeat as necessary for each alternative being analyzed.

Step 3. Compress the resulting select zone trip table into two districts: the defined study area is district 2, and the rest of the region is district 1. This step is essential for extracting Internal-to-Internal VMT. Repeat as necessary for each alternative being analyzed. Export the compressed trip tables into a format that can be read by a spread sheet. (See ***Figures 2–4*** through ***2–7***)

Figure 2–4
Base Year 2008 Select Zone Trip Table Before Compression

ORIGINS \ DESTINATIONS	TAZ	1	2	3	4	5	6	7	8	9	…4683
	1	6	0	0	0	0	0	0	0	0	0
	2	4	2	0	0	1	3	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	3	0	0	2	1	0	0
	5	2	1	0	0	2	2	0	0	0	0
	6	6	4	0	0	1	3	0	0	0	0
	7	0	0	0	2	0	0	2	0	0	0
	8	0	0	0	0	0	0	0	101	0	0
	9	0	0	0	0	0	0	0	0	0	0
	…4683	0	0	0	0	0	0	0	0	0	4

Figure 2–5
4683 TAZs Compressed into Two Districts

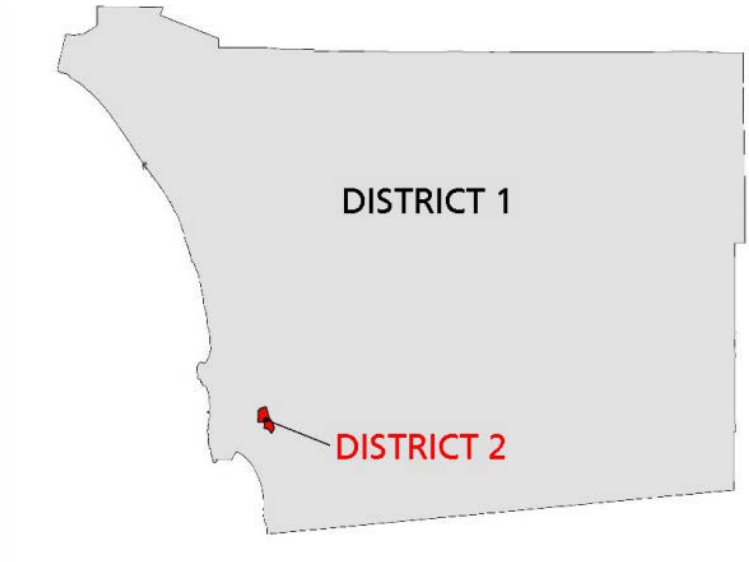


Figure 2–6
Actual Trip Table After Compression

		Destinations	
	District	1	2
Origins	1	0	92970
	2	89154	25319

Figure 2–7
Conceptual Trip Table After Compression

		Destinations	
	District	1	2
Origins	1	Both O&D OUTSIDE of North Park	O OUTSIDE of North Park, D INSIDE of North Park
	2	O INSIDE of North Park, D OUTSIDE of North Park	Both O&D INSIDE of North Park

In summary, this methodology includes creating a study area select zone assignment and compressing the select zone trip table to calculate the number of trips by district and determine the OD breakdown within those districts (I-I, E-I, I-E, and E-E).

The following defines the necessary steps to calculate intra-zonal trips.

Step 4. Extract intra-zonal trips and distance skims for each TAZ within the study area. While intra-zonal VMT will be a very small fraction of the overall region-wide VMT, it is still important to include and document. Intra-zonal trips and distances come from the diagonal rows of vehicular trip tables and distances skim files. Trip tables contain trip flows between TAZs. Skim files usually include travel time, travel distance, and/or travel cost between TAZs.

The distance skim is used to calculate intra-zonal trip distances. Intra-zonal trip distances are calculated by halving the average distance between the TAZ in question and its three nearest TAZ neighbor.

Intra Zonal Distance = $((D_{ij1} + D_{ij2} + D_{ij3}) / 3) / 2$

Where:

D = Distance (in miles)
ij1 = Origin Zone to the first nearest neighbor
ij2 = Origin Zone to the second nearest neighbor
ij3 = Origin Zone to the third nearest neighbor

Or

$0.23 = ((0.40 + 0.56 + 0.42) / 3) / 2$

Figures2–8 and ***2–9*** illustrate the intra-zonal data extracted in spreadsheet-format.

Figure 2–8
Intra-Zonal Cells Within the Base Year 2008 AM Trip Table

ORIGINS \ DESTINATIONS	3486	3487	3488	3489	3490	3491	3492	3493	3494	3495
3486	6	0	0	0	0	0	0	0	0	0
3487	4	2	0	0	1	3	0	0	0	0
3488	0	0	0	0	0	0	0	0	0	0
3489	0	0	0	3	0	0	2	1	0	0
3490	2	1	0	0	2	2	0	0	0	0
3491	6	4	0	0	1	3	0	0	0	0
3492	0	0	0	2	0	0	2	0	0	0
3493	0	0	0	0	0	0	0	101	0	0
3494	0	0	0	0	0	0	0	0	0	0
3495	0	0	0	0	0	0	0	0	0	4

Figure 2–9 Calculated Base Year 2008 Intra-Zonal VMT for North Park						
2008						
TAZ	INTRA DISTANCE	AM	PM	OP	INTRA TRIPS	INTRA VMT
3109	0.23	26	20	92	138	31.74
3143	0.20	17	20	94	131	26.20
3145	0.24	3	4	28	35	8.23
3180	0.25	32	50	302	384	94.08
3182	0.17	55	53	256	364	61.88
3225	0.19	38	50	263	351	64.94
3227	0.20	25	36	210	271	54.20
3277	0.22	124	141	712	977	214.94
3280	0.21	133	172	965	1270	266.70
3281	0.25	82	137	879	1098	269.01
3381	0.23	21	40	282	343	78.89
3385	0.24	13	24	154	191	44.89
3387	0.25	16	20	127	163	40.75
3415	0.19	7	9	49	65	12.35
3419	0.30	20	14	55	89	26.70
3430	0.22	18	14	56	88	18.92
3432	0.23	2	0	3	5	1.13
3487	0.18	2	3	14	19	6.42
3490	0.16	2	1	3	6	0.96
3491	0.14	3	3	17	23	3.22
3509	0.23	3	4	21	28	6.30
3519	0.24	1	2	6	9	2.12
3521	0.22	21	14	68	103	22.15
3535	0.19	2	2	11	15	2.85
3547	0.38	2	0	2	4	1.52
3550	0.26	2	3	11	16	4.16
3586	0.67	7	8	30	45	30.15
TOTAL NORTH PARK INTRA-ZONAL VMT						1392.37

Steps 5 and **6** explain the final steps in calculating the three trip types necessary for calculating total VMT.

Step 5. Use GIS to process the results and export files that can be read by a spread sheet. The main goal of this step is to produce a table with VMT split by jurisdiction and road functional classification. Note that the following process was designed using an AML (Arc Macro Language) script which can be found in ***Appendix C***. AML is the native scripting language of ESRI's Arc/INFO workstation software. This script could be duplicated using the scripting language Python for use in ESRI's ArcMap desktop

software. The results should be the same if AML is used in Arc/INFO or if Python is used in ArcMap. The following nine steps define the activities of the script:

a. Create a network layer with additional attributes for analysis

b. Create a lookup table to store the results of the select zone assignment

c. Join the lookup table with the network layer

d. Overlay the network layer with a polygon layer that represents jurisdictional boundaries

e. Calculate daily VMT (formula above)

f. Calculate select zone VMT using basically the same formula:

g. Select Zone VMT = (Select Zone Query volume * Link Length) / 5280

h. Perform a frequency function of the link attribute table. A frequency function returns the count of values that fall into a specific range. In this example, the values of the link Functional Classifications are used to summarize the daily and select zone query VMT.

i. Output a text or CSV file that can be imported into a spread sheet (This file should have a minimum of 4 columns):

    1. Jurisdiction name
    2. Functional Classification Code
    3. Daily 24-hour VMT
    4. Select zone query VMT

j. This file can have a variable number of rows (records) depending on the number of classifications defined in the network being analyzed as well as the granularity of the jurisdictions to analyze.

k. Clip the network layer with the study area boundary and calculate bi-directional lane miles with the following formula:

    Lane Miles = (Total Lanes * Length) / 5280

    Aggregate the total lane miles within the study area and export one number for use in calculating VMT per Lane Mile in the spread sheet analysis. This step is crucial for the ability to compare network scenarios equitably. ***Figure 2–10*** shows the summarized lanes miles for each alternative analyzed in this paper.

Figure 2–10 Study Area Lane Miles by Scenario	
ALTERNATIVE	LANE MILES
2008	104.0
2050 A	111.5
2050 B	111.5
2050 C	113.0

Step 6. Use a spread sheet to calculate the three categories of VMT.

a. Open the compressed select zone trip table and use it to calculate the internal capture percentage for the district that represents the city/community/ development being studied. The internal capture rate represents the percent of Internal-to-Internal trips relative to the total study area VMT. ***Figure 2–11*** displays the compressed trip table. The formula shown below illustrates the internal capture calculation for the base year.

Internal Capture Rate (%) = I-I VMT (district 2 to 2) ÷ Total VMT ($\sum$ all districts)

Or

25,319 ÷ 207,443 = <u>12.21%</u>

Figure 2–11
Compressed Trip Tables & Calculated Internal Capture Rate

Base Year 2008

Origins \ Destinations	District	1	2	Sum
Origins	1	0	92,970	92,970
	2	89,154	25,319	114,473
Sum		89,154	118,289	**207,443**
Internal Capture Rate				**12.21%**

2050 A

Origins \ Destinations	District	1	2	Sum
Origins	1	0	127,947	127,947
	2	121,689	30,051	151,740
Sum		121,689	157,998	**279,687**
Internal Capture Rate				**10.74%**

2050 B

Origins \ Destinations	District	1	2	Sum
Origins	1	0	131,176	131,176
	2	124,400	31,817	156,217
Sum		124,400	162,993	**287,393**
Internal Capture Rate				**11.07%**

2050 C

Origins \ Destinations	District	1	2	Sum
Origins	1	0	131,215	131,215
	2	124,429	31,799	156,228
Sum		124,429	163,014	**287,443**
Internal Capture Rate				**11.06%**

E-E (Zero Trip-Ends)
I-E and E-I (One Trip-End)
I-I (Two Trip-Ends)
Internal Capture Rate (I-I ÷ Sum)
District 1 = Everything BUT North Park
District 2 = North Park

A value other than zero in the District 1-to-District 1 cell indicates one of the following potential issues: 1) A miss-match between the list of TAZs used for the community-wide select zone assignment compared to the definition of the study area Districts; or 2) one or more of the study area TAZs straddle a community or city boundary.

Analyzing the 2050 No Build scenario (*Alternative A*), the result shows that the model predicts 10.74% of trips with an origin inside of Greater North Park will also have a destination within Greater North Park. This will become the factor to apply to total VMT within Greater North Park to calculate Internal-to-Internal VMT.

a. Open the text or CSV file created from GIS, which will become the main worksheet.

b. Add four columns, one for each of the three VMT categories noted above plus one for intra-zonal VMT. ***Figure 2–12*** shows the column headers for each VMT category.

Figure 2–12
Worksheet Headers

SCENARIO							
JURISDICTION	CLASSIFICATION	TOTAL VMT	TOTAL NORTH PARK VMT (I-I, I-E, E-I, & E-E)	TWO TRIP-ENDS NORTH PARK VMT (I-I)	ONE TRIP-END NORTH PARK VMT (I-E and E-I)	NON-NORTH PARK VMT (E-E)	NORTH PARK INTRA-ZONAL VMT (INTRA)

The post-SANDAG forecast process creates a standard report called "postlod2.pr" that summarizes many modeling metrics including VMT. The reports used to validate this methodology can be found in ***Appendix D***. The "Total VMT" column contains 24-hour daily VMT and the "Total North Park VMT" includes the study area select zone assignment VMT.

Calculate the "Two Trip-Ends" category with the following formula, but only for the city/community/development being analyzed as the rest of the two trip end records should all be null. ***Figure 2–13*** shows the spread sheet results.

I-I VMT = (select zone query VMT * internal capture % calculated in **Step 6a**)

Or

212,850 * 12.21% = <u>25,979 I-I VMT</u>

Figure 2–13 Two Trip-Ends VMT Calculations								
BASE YEAR 2008								
JURISDICTION	CLASSIFICATION		TOTAL VMT	TOTAL NORTH PARK VMT (I-I, I-E, E-I, & E-E)	TWO TRIP-ENDS NORTH PARK VMT (I-I)	ONE TRIP-END NORTH PARK VMT (I-E and E-I)	NON-NORTH PARK VMT (E-E)	NORTH PARK INTRA-ZONAL VMT (INTRA)
GNC	1	Freeway	327,268	36,989	4,515	32,474	290,279	
GNC	3	Major	67,085	49,701	6,066	43,635	17,384	
GNC	4	Collector	44,221	35,296	4,308	30,988	8,925	
GNC	5	Local Collector	52,603	42,254	5,157	37,097	10,349	
GNC	8	Freeway Ramp	35,242	4,325	528	3,797	30,917	
GNC	9	Local Ramp	8,697	5,837	712	5,125	2,860	
GNC	10	Zone Connector	38,447	38,448	4,693	33,755	(1)	
GNC	11	Intra-Zonal						1,392
GNC		Total	573,563	212,850	25,979	186,871	360,713	1,392

*GNC = Greater North Park

Calculate the "One Trip-End" category with the following formula for all records:

I-E & E-I VMT = (select zone query VMT – I-I VMT)

Or

212,850 – 25,979 = 186,871 I-E & E-I VMT

Figure 2–14 shows the spread sheet results.

Figure 2–14 One Trip-Ends VMT Calculations								
BASE YEAR 2008								
JURISDICTION	CLASSIFICATION		TOTAL VMT	TOTAL NORTH PARK VMT (I-I, I-E, E-I, & E-E)	TWO TRIP-ENDS NORTH PARK VMT (I-I)	ONE TRIP-END NORTH PARK VMT (I-E and E-I)	NON-NORTH PARK VMT (E-E)	NORTH PARK INTRA-ZONAL VMT (INTRA)
GNC	1	Freeway	327,268	36,989	4,515	32,474	290,279	
GNC	3	Major	67,085	49,701	6,066	43,635	17,384	
GNC	4	Collector	44,221	35,296	4,308	30,988	8,925	
GNC	5	Local Collector	52,603	42,254	5,157	37,097	10,349	
GNC	8	Freeway Ramp	35,242	4,325	528	3,797	30,917	
GNC	9	Local Ramp	8,697	5,837	712	5,125	2,860	
GNC	10	Zone Connector	38,447	38,448	4,693	33,755	(1)	
GNC	11	Intra-Zonal						1,392
GNC		Total	573,563	212,850	25,979	186,871	360,713	1,392

*GNC = Greater North Park

Calculate the "Zero Trip-End" or "through trips" category with the following formula for all records:

E-E VMT = (24-hour total VMT – select zone query VMT)

Or

573,563 – 212,850 = 360,713 E-E VMT

Figure 2–15 shows the spread sheet results.

Figure 2–15
Zero Trip-Ends VMT Calculations

BASE YEAR 2008

JURISDICTION	CLASSIFICATION	TOTAL VMT	TOTAL NORTH PARK VMT (I-I, I-E, E-I, & E-E)	TWO TRIP-ENDS NORTH PARK VMT (I-I)	ONE TRIP-END NORTH PARK VMT (I-E and E-I)	NON-NORTH PARK VMT (E-E)	NORTH PARK INTRA-ZONAL VMT (INTRA)
GNC	1 Freeway	327,268	36,989	4,515	32,474	290,279	
GNC	3 Major	67,085	49,701	6,066	43,635	17,384	
GNC	4 Collector	44,221	35,296	4,308	30,988	8,925	
GNC	5 Local Collector	52,603	42,254	5,157	37,097	10,349	
GNC	8 Freeway Ramp	35,242	4,325	528	3,797	30,917	
GNC	9 Local Ramp	8,697	5,837	712	5,125	2,860	
GNC	10 Zone Connector	38,447	38,448	4,693	33,755	(1)	
GNC	11 Intra-Zonal						1,392
GNC	Total	573,563	212,850	25,979	186,871	360,713	1,392

*GNC = Greater North Park

Cross check each of the last three calculations by comparing the study area total sums with the sum of each functional classification, as shown in ***Figure 2–16.***

Figure 2–16 Cross-Checking of VMT Calculations								
BASE YEAR 2008								
JURISDICTION	CLASSIFICATION		TOTAL VMT	TOTAL NORTH PARK VMT (I-I, I-E, E-I, & E-E)	TWO TRIP-ENDS NORTH PARK VMT (I-I)	ONE TRIP-END NORTH PARK VMT (I-E and E-I)	NON-NORTH PARK VMT (E-E)	NORTH PARK INTRA-ZONAL VMT (INTRA)
GNC	1	Freeway	327,268	36,989	4,515	32,474	290,279	
GNC	3	Major	67,085	49,701	6,066	43,635	17,384	
GNC	4	Collector	44,221	35,296	4,308	30,988	8,925	
GNC	5	Local Collector	52,603	42,254	5,157	37,097	10,349	
GNC	8	Freeway Ramp	35,242	4,325	528	3,797	30,917	
GNC	9	Local Ramp	8,697	5,837	712	5,125	2,860	
GNC	10	Zone Connector	38,447	38,448	4,693	33,755	(1)	
GNC	11	Intra-Zonal						1,392
GNC		Total	573,563	212,850	25,979	186,871	360,713	1,392

*GNC = Greater North Park

Incorporate the summary of intra-zonal VMT from **Step 4** as shown in ***Figure 2–17***.

Figure 2–17 Intra-Zonal Trips								
BASE YEAR 2008								
JURISDICTION	CLASSIFICATION		TOTAL VMT	TOTAL NORTH PARK VMT (I-I, I-E, E-I, & E-E)	TWO TRIP-ENDS NORTH PARK VMT (I-I)	ONE TRIP-END NORTH PARK VMT (I-E and E-I)	NON-NORTH PARK VMT (E-E)	NORTH PARK INTRA-ZONAL VMT (INTRA)
GNC	1	Freeway	327,268	36,989	4,515	32,474	290,279	
GNC	3	Major	67,085	49,701	6,066	43,635	17,384	
GNC	4	Collector	44,221	35,296	4,308	30,988	8,925	
GNC	5	Local Collector	52,603	42,254	5,157	37,097	10,349	
GNC	8	Freeway Ramp	35,242	4,325	528	3,797	30,917	
GNC	9	Local Ramp	8,697	5,837	712	5,125	2,860	
GNC	10	Zone Connector	38,447	38,448	4,693	33,755	(1)	
GNC	11	Intra-Zonal						1,392
GNC		Total	573,563	212,850	25,979	186,871	360,713	1,392

*GNC = Greater North Park

Create subtotals for each jurisdiction across all VMT categories and facility types, and compare the region-wide totals, as shown in ***Figure 2–18***.

Figure 2–18
Jurisdictional VMT Summaries

Scenario					
Jurisdiction	Total VMT	Total North Park VMT	Two Trip-Ends North Park VMT	One Trip-End North Park VMT	Non-North Park VMT
CARLSBAD TOTAL	3,344,783	6,864	-	6,864	3,337,919
CHULA VISTA TOTAL	3,944,329	26,635	-	26,635	3,917,694
CORONADO TOTAL	425,415	7,511	-	7,511	417,904
DEL MAR TOTAL	97,997	151	-	151	97,846
EL CAJON TOTAL	2,170,595	13,539	-	13,539	2,157,056
ENCINITAS TOTAL	2,072,646	8,464	-	8,464	2,064,182
ESCONDIDO TOTAL	2,804,158	6,095	-	6,095	2,798,063
External TOTAL	348,011	1,233	-	1,233	346,778
IMPERIAL BEACH TOTAL	118,284	215	-	215	118,069
LA MESA TOTAL	1,816,617	22,479	-	22,479	1,794,138
LEMON GROVE TOTAL	824,528	9,186	-	9,186	815,342
NATIONAL CITY TOTAL	1,637,674	23,317	-	23,317	1,614,357
OCEANSIDE TOTAL	3,187,796	2,198	-	2,198	3,185,598
POWAY TOTAL	1,107,444	2,234	-	2,234	1,105,210
SAN DIEGO TOTAL	38,508,241	983,410	25,979	957,385	37,488,977
SAN MARCOS TOTAL	2,058,102	1,890	-	1,890	2,056,212
SANTEE TOTAL	855,495	2,757	-	2,757	852,738
SOLANA BEACH TOTAL	567,459	3,108	-	3,108	564,351
Unincorporated TOTAL	17,470,189	44,274	-	44,274	17,425,915
VISTA TOTAL	1,712,782	279	-	279	1,712,503
Summary	85,072,545	1,165,839	25,979	1,139,814	83,870,852

Validate the VMT data by summarizing and cross-checking it via other sources such as the post-forecast report "postlod2.pr", previously discussed. ***Figure 2–19*** shows this comparison.

Figure 2–19
Validation by Summary Cross-Check

REGIONAL VALIDATION BY SUMMARY BASE YEAR 2008		
Reported:	Post-forecast VMT report (postlo2.pr)	85,057,878
Assigned:	Assigned sum of all VMT	85,072,545
Disaggregated:	Sum of all VMT using this method	85,036,645
SUMMARY 1: (ASSIGNED – REPORTED)		
Absolute VMT Difference		(15,333)
Percent VMT Difference		-0.01802%
SUMMARY 2: (DISAGGREGATED – REPORTED)		
Absolute VMT Difference		(51,233)
Percent VMT Difference		-0.06021
SUMMARY 3: (DISAGGREGATED – ASSIGNED)		
Absolute VMT Difference		35,900
Percent VMT Difference		-0.04222%

Compare the calculated 24-hour VMT with reports or some metric from the travel demand model. This table, shown above in *Figure 2–19*, compares three levels of VMT calculations: "Reported" VMT is generated after each model scenario and is included in the "postload2.pr" reports provided in *Appendix D*. "Assigned" includes calculating total VMT via a travel demand model, a GIS or a spread sheet. "Disaggregated" is the result of the methodology described in this white paper. If any of these three comparisons result in more than a 0.1% difference, it indicates a typo or an error during this analysis.

Complete statistical results of this methodology shown in graphical format are documented in ***Appendix E.***

Figures 2–20 through ***2–26*** show a summary of the final results of the VMT calculations normalized by different factors: population, employment, dwelling units, person trips, lane miles, and acreage.

Figure 2–20 Final VMT, Population, Employment, Dwelling Units and Person Trips Generated						
Alternative	Total VMT	Total North Park VMT	North Park Population	North Park Jobs	North Park Total Units	North Park Person Trips Generation
2008	573,563	212,850	47,548	8,697	24,795	375,074
2050 A	768,798	282,006	71,777	11,346	35,258	496,800
2050 B	775,137	290,202	73,475	11,614	36,092	519,036
2050 C	775,972	290,707	73,475	11,614	36,092	519,036

Figure 2–21 Final Results of the Methodology Normalized by Population		
Alternative	Total VMT Per Capita	North Park Total VMT Per Capita
2008	12.06	4.48
2050 A	10.71	3.93
2050 B	10.55	3.95
2050 C	10.56	3.96

Figure 2–22 Final Results of the Methodology Normalized by Employment		
Alternative	Total VMT Per Job	North Park Total VMT Per Job
2008	65.95	24.47
2050 A	67.76	24.86
2050 B	66.74	24.99
2050 C	66.81	25.03

Figure 2–23 Final Results of the Methodology Normalized by Dwelling Units		
Alternative	Total VMT Per Dwelling Unit	North Park Total VMT Per Dwelling Unit
2008	23.13	8.58
2050 A	21.80	8.00
2050 B	21.48	8.04
2050 C	21.50	8.05

Figure 2–24 Final Results of the Methodology Normalized by Person Trips Generated		
Alternative	Total VMT Per Person Trips Generated	North Park Total VMT Per Person Trips Generated
2008	1.53	0.57
2050 A	1.55	0.57
2050 B	1.49	0.56
2050 C	1.50	0.56

Figure 2–25 Final Results of the Methodology Normalized by Lane Miles					
Alternative	Lane Miles	Total VMT	Total VMT per Lane Mile	North Park Total VMT	Total North Park VMT per Lane Mile
2008	104.0	573,563	5,515.0	212,850	2,046.6
2050 A	111.5	768,798	6,895.0	282,006	2,529.2
2050 B	111.5	775,137	6,951.9	290,202	2,602.7
2050 C	113.0	775,972	6,867.0	290,707	2,572.6

Figure 2–26 Final Results of the Methodology Normalized by Acreage					
Alternative	Study Area Acreage	Total VMT	Total VMT per Acre	North Park Total VMT	Total North Park VMT per Acre
2008	2257.4	573,563	254.1	212,850	94.3
2050 A	2257.4	768,798	340.6	282,006	124.9
2050 B	2257.4	775,137	343.4	290,202	128.6
2050 C	2257.4	775,972	343.7	290,707	128.8

3.0 APPLICATION

Once all modeling work has been completed to generate disaggregated VMT for the study area, the information produced is then applied to the significance findings of the Environmental Impact Report (EIR) Climate Action Plan (CAP). The CAP focuses on the greenhouse gas (GHG) emissions on a pre- and post-project basis. VMT is a primary factor in measuring GHG as it relates to carbon dioxide emissions and the associated significant environmental impacts. As previously mentioned in the introduction to this paper, VMT is disaggregated in three categories:

- Internal-Internal (I-I): all VMT should be included in the analysis
- Internal-External (I-E) or External-Internal (E-I): 50% of VMT should be included in the analysis
- External-External (E-E): all VMT should be excluded in the analysis

The Methodology section describes the regional traffic modeling software's ability to derive the needed VMT information for a specific study area. The application of the VMT modeling output is covered in this section, with the continued use of North Park as the study area.

The key reasoning for disaggregating VMT into three separate types is to accurately evaluate North Park's estimated VMT, excluding the effect of other nearby jurisdictions. The community-wide inventory includes the VMT for all trips that begin and/or end within the Community limits of which are then split into the three categories. North Park would only be accountable for all trips within the Community limits (I-I), while it would share accountability with other jurisdictions for trips that have only one end point in the Community (I-E & E-I). All pass-through trips (E-E), would be excluded from the VMT results as the trips are not generated by land uses within the Community. This methodology is supported by the SB 375 Regional Targets Advisory Committee and ICLEI-Local Governments for Sustainability.

The current way the I-E and E-I trips are included in the CAP evaluation is by halving the results; North Park would be responsible for generating approximately 50% of the I-E and E-I trips. While this approach may over or under estimate North Park's contribution to Community VMT, it is presently the only viable approach given the difficulty in determining the origin or destination for an externally-oriented trip.

The data results of the I-I trips and half of the I-E and E-I trips are then input into the Urban Emissions Model (URBEMIS) or similar software, along with other determining factors, to estimate the projected emissions generated by North Park VMT. The thresholds set forth by AB 32 are used to measure the significance of emission levels between pre- and post-project conditions.

4.0 CONCLUSION

This paper provides an introduction discussing the recently adopted State legislation to reduce greenhouse gas (GHG) emissions to 1990 levels. As a result of these acts, environmental documents are required to evaluate the GHG levels proposed by projects (large-scale projects such as general plans and specific plans) as part of the CEQA process. As recommended to calculated GHG by the September 2009 Report to CARB by the SB 375 Regional Targets Advisory Committee and ICLEI's Community Protocol, VMT is defined as a unit to measure vehicle travel made by any individual vehicle, as classified by the three types of trips: Internal-Internal, Internal-External or External-Internal, and External-External. In order to disaggregate VMT into such classes, SANDAG has developed a modeling process to generate these results.

The Methodology section of this white paper discusses the technical approach to using the traffic model to generate the three types of VMT trips. Listing of the tools needed, the data input, general assumptions, and the steps required are discussed in detail in this section. The methodology used generates the three VMT trip categories using a select-zone assignment approach to separate out, as accurately as possible, the trips produced by North Park land uses and the trips produced by outside jurisdictions. Observed VMT from the field is extremely difficult to calculate accurately, thus the method outlined in this white paper is compared to other computational methods of calculating VMT. To measure the margin of error for this type of data analysis, comparisons can be drawn between the calculated 24-hour VMT from the assignment, the select-zone assignment and the post-modeling report from the travel demand model. As shown in this paper, the methodology developed by SANDAG results in a 0.06% margin of error, which is well below the 0.1% margin of error threshold set by SANDAG.

The data produced through the SANDAG modeling process are then input into the Urban Emissions Model to conclude whether the project will result in a significant GHG impact.

Environmental documents prepared for the cities of La Mesa and Escondido have found success in implementing the methodology applied by SANDAG through the use of the travel demand model. The Final Environmental Impact Analysis (FEIR) for the Escondido General Plan Update, certified December 2011, utilized this technique for calculating GHG for the entire jurisdiction.

This paper has provided a quantitative approach for disaggregating VMT. The use of this information can be applied toward community-wide GHG inventories as well as at the large- to medium-scale project level (Initial Studies, Mitigated Declarations, Negative-Mitigated Declarations, Environmental Impacts Reports, and Environmental Impact Studies). However, it is recognized that other approaches to VMT calculations are in existence. The goal of this technical paper is to provide a more accurate approach for calculating VMT which would set the standard for VMT analyses in the San Diego Region as well as to influence other State and National agencies and institutions to adopt and utilize this methodology in their long-term VMT/GHG planning efforts.

5.0 NEXT STEPS

1. Validation and refinement: This white paper shall continue to be refined and validated on an as-needed basis in terms of methodology and application. The document shall be updated with data developed in support of General Plan and Community Plan updates for jurisdictions in genuine applications.
2. Travel demand model migration: This method shall remain valid for both a traditional 4-step travel demand model (trip-based) and for an Activity Based Model (tour-based). The primary reason for this methodology being portable is that it utilizes trip tables input into the traffic assignment stage as well as assigned traffic as an output of the traffic assignment stage. Since trip tables and traffic assignment are required steps for either model paradigm, this methodology will remain valid for either generation of travel demand models.
3. GIS migration: The AML script developed for this analysis using Arc/INFO workstation shall be ported to the ArcPy (Python) script language for use in ArcGIS.
4. Publication: This white paper shall continue to be vetted through the ITE Task Force for publication. It shall also be vetted through several of SANDAG's working committees including SANTEC (San Diego Traffic Engineers' Council) and TWG (Regional Planning Technical Working Group). If accepted, it shall be presented at a TRB conference and forwarded to ICLEI for inclusion in the U.S. Community Protocol for Accounting and Reporting GHG Emissions.
5. Directional VMT: This method shall be further developed to allow for the analysis of directional VMT.
6. Trip Purpose VMT: This method shall also be further developed to factor VMT by trip purpose (i.e. home-to-work, home-to-school, etc).

Appendix B Vehicle Miles Travel Report for Transportation Impact Analysis (SB 743 metrics for residential and employment)

Vehicle Miles of Travel Report

Scenario ID **983** **Kearny Mesa CPU - 2012 Cal 4 - Base Year**

VMT per Resident						
		Residents	**Total Trips**	**Person Miles of Travel**	**Vehicle Miles of Travel**	**VMT per Resident**
Regionwide		3,119,271	11,163,146	72,661,334	53,997,334	17.3
Jurisdiction	SAN DIEGO	1,308,024	4,676,126	26,965,973	19,688,397	15.1
CPA	Kearny Mesa	6,387	23,664	136,646	98,293	15.4
TAZ List	N/A					

VMT per Employee						
		Employees	**Total Trips**	**Person Miles of Travel**	**Vehicle Miles of Travel**	**VMT per Employee**
Regionwide		1,485,425	5,204,165	43,077,518	37,726,774	25.4
Jurisdiction	SAN DIEGO	788,396	2,694,862	22,463,536	19,860,024	25.2
CPA	Kearny Mesa	86,861	310,175	2,648,543	2,360,303	27.2
TAZ List	N/A					

Report Generated: 05/03/19

Vehicle Miles of Travel Report

Scenario ID **1136** **Kearny Mesa CPU - Proposed Project**

VMT per Resident						
		Scenario ID	**Residents**	**Total Trips**	**Person Miles of Travel**	**Vehicle Miles of Travel**	**VMT per Resident**
Regionwide		1136	4,136,713	14,793,744	87,108,465	60,193,855	14.6
Jurisdiction	SAN DIEGO	1136	1,845,727	6,620,768	34,669,519	23,154,579	12.5
CPA	Kearny Mesa	1136	57,516	209,895	871,896	526,403	9.2
TAZ List	N/A						

VMT per Employee						
		Scenario ID	**Employees**	**Total Trips**	**Person Miles of Travel**	**Vehicle Miles of Travel**	**VMT per Employee**
Regionwide		1136	1,748,510	5,696,676	43,893,249	37,538,085	21.5
Jurisdiction	SAN DIEGO	1136	907,629	2,817,674	20,971,912	18,101,744	19.9
CPA	Kearny Mesa	1136	106,927	337,350	2,505,077	2,195,904	20.5
TAZ List	N/A						

Report Generated: 10/1/2019

Appendix C Disaggregated VMT for Kearny Mesa Select Zone (VMT for GHG Analysis)

2012 Final Base Year Calibration (983)

JURISDICTION	TOTAL VMT	TOTAL Series 13 VMT	Two Trip End Series 13 VMT	One Trip End Series 13 VMT	NON-Series 13 VMT	Series 13 Intra-Zonal VMT
		I-I, I-E and E-I	I-I	I-E and E-I	E-E	INTRA
32nd Street Naval Station TOTAL	55,638	1,401	-	1,401	54,237	
Balboa Park TOTAL	392,288	22,507	-	22,507	369,781	
Barrio Logan TOTAL	394,116	10,578	-	10,578	383,538	
Black Mountain Ranch TOTAL	160,322	773	-	773	159,549	
CARLSBAD TOTAL	3,121,411	50,495	-	50,495	3,070,916	
CHULA VISTA TOTAL	3,604,144	85,676	-	85,676	3,518,468	
CORONADO TOTAL	434,352	10,423	-	10,423	423,929	
Carmel Mountain Ranch TOTAL	508,195	30,871	-	30,871	477,324	
Carmel Valley TOTAL	696,318	25,093	-	25,093	671,225	
Centre City TOTAL	688,613	11,624	-	11,624	676,989	
Clairemont Mesa TOTAL	1,587,082	188,747	-	188,747	1,398,335	
College Area TOTAL	574,747	50,135	-	50,135	524,612	
DEL MAR TOTAL	73,519	1,016	-	1,016	72,503	
Del Mar Mesa TOTAL	6,546	201	-	201	6,345	
EL CAJON TOTAL	1,945,859	56,361	-	56,361	1,889,498	
Southeastern:Encanto Neighborhoods TOTAL	683,507	42,064	-	42,064	641,443	
ENCINITAS TOTAL	1,734,445	60,419	-	60,419	1,674,026	
ESCONDIDO TOTAL	2,676,146	68,698	-	68,698	2,607,448	
East Elliott TOTAL	126,164	24,232	-	24,232	101,932	
External TOTAL	172,428	2,428	-	2,428	170,000	
Fairbanks Country Club TOTAL	24,204	268	-	268	23,936	
Flower Hill TOTAL	33,257	1,646	-	1,646	31,611	
Greater Golden Hill TOTAL	244,494	3,909	-	3,909	240,585	
Greater North Park TOTAL	531,194	64,182	-	64,182	467,012	
Harbor TOTAL	92,118	2,959	-	2,959	89,159	
IMPERIAL BEACH TOTAL	94,129	1,293	-	1,293	92,836	
Kearny Mesa TOTAL	2,027,161	902,533	83,026	819,507	1,124,628	570
LA MESA TOTAL	1,584,691	73,361	-	73,361	1,511,330	
LEMON GROVE TOTAL	817,442	15,251	-	15,251	802,191	
La Jolla TOTAL	586,868	27,461	-	27,461	559,407	
Linda Vista TOTAL	553,686	79,251	-	79,251	474,435	
Lindbergh Field TOTAL	158,289	1,800	-	1,800	156,489	
Los Penasquitos Canyon Preserve TOTAL	68	-	-	-	68	
Mid-City:City Heights TOTAL	1,273,705	142,600	-	142,600	1,131,105	
Mid-City:Eastern Area TOTAL	473,418	13,748	-	13,748	459,670	
Mid-City:Kensington-Talmadge TOTAL	301,201	37,348	-	37,348	263,853	
Mid-City:Normal Heights TOTAL	233,432	36,536	-	36,536	196,896	
Midway-Pacific Highway TOTAL	614,236	13,653	-	13,653	600,583	
Mira Mesa TOTAL	1,795,918	137,228	-	137,228	1,658,690	
Miramar Air Station TOTAL	2,228,749	438,929	-	438,929	1,789,820	
Miramar Ranch North TOTAL	454,133	50,530	-	50,530	403,603	
Mission Bay Park TOTAL	495,080	5,732	-	5,732	489,348	
Mission Beach TOTAL	29,256	612	-	612	28,644	
Mission Valley TOTAL	2,434,899	273,592	-	273,592	2,161,307	
NATIONAL CITY TOTAL	1,576,509	68,091	-	68,091	1,508,418	

2050 Proposed_prop1B (1136)

JURISDICTION	TOTAL VMT	TOTAL Series 13 VMT	Two Trip End Series 13 VMT	One Trip End Series 13 VMT	NON-Series 13 VMT	Series 13 Intra-Zonal VMT
		I-I, I-E and E-I	I-I	I-E and E-I	E-E	INTRA
32nd Street Naval Station TOTAL	54,908	2,375	-	2,375	52,533	
Balboa Park TOTAL	437,427	32,520	-	32,520	404,907	
Barrio Logan TOTAL	437,437	13,498	-	13,498	423,939	
Black Mountain Ranch TOTAL	248,347	2,041	-	2,041	246,306	
CARLSBAD TOTAL	3,649,212	84,365	-	84,365	3,564,847	
CHULA VISTA TOTAL	5,249,104	106,380	-	106,380	5,142,724	
CORONADO TOTAL	405,635	13,066	-	13,066	392,569	
Carmel Mountain Ranch TOTAL	557,212	41,236	-	41,236	515,976	
Carmel Valley TOTAL	800,523	36,097	-	36,097	764,426	
Centre City TOTAL	800,684	17,180	-	17,180	783,504	
Clairemont Mesa TOTAL	1,774,076	298,600	-	298,600	1,475,476	
College Area TOTAL	692,682	67,286	-	67,286	625,396	
DEL MAR TOTAL	70,375	1,425	-	1,425	68,950	
Del Mar Mesa TOTAL	12,735	323	-	323	12,412	
EL CAJON TOTAL	2,305,487	72,522	-	72,522	2,232,965	
Southeastern:Encanto Neighborhoods TOTAL	795,506	49,700	-	49,700	745,806	
ENCINITAS TOTAL	1,922,772	89,479	-	89,479	1,833,293	
ESCONDIDO TOTAL	3,098,710	101,798	-	101,798	2,996,912	
East Elliott TOTAL	151,085	34,911	-	34,911	116,174	
External TOTAL	278,357	3,645	-	3,645	274,712	
Fairbanks Country Club TOTAL	15,351	284	-	284	15,067	
Flower Hill TOTAL	36,662	2,422	-	2,422	34,240	
Greater Golden Hill TOTAL	290,584	7,248	-	7,248	283,336	
Greater North Park TOTAL	617,029	83,088	-	83,088	533,941	
Harbor TOTAL	92,531	3,715	-	3,715	88,816	
IMPERIAL BEACH TOTAL	97,559	1,163	-	1,163	96,396	
Kearny Mesa TOTAL	2,563,923	1,382,124	205,854	1,176,270	1,181,799	1,625
LA MESA TOTAL	1,921,690	90,265	-	90,265	1,831,425	
LEMON GROVE TOTAL	1,000,334	14,369	-	14,369	985,965	
La Jolla TOTAL	602,729	43,211	-	43,211	559,518	
Linda Vista TOTAL	635,645	116,521	-	116,521	519,124	
Lindbergh Field TOTAL	254,687	5,343	-	5,343	249,344	
Los Penasquitos Canyon Preserve TOTAL	61	1	-	1	60	
Mid-City:City Heights TOTAL	1,490,453	181,907	-	181,907	1,308,546	
Mid-City:Eastern Area TOTAL	589,576	16,674	-	16,674	572,902	
Mid-City:Kensington-Talmadge TOTAL	360,601	49,256	-	49,256	311,345	
Mid-City:Normal Heights TOTAL	270,883	48,375	-	48,375	222,508	
Midway-Pacific Highway TOTAL	711,655	20,570	-	20,570	691,085	
Mira Mesa TOTAL	2,067,738	199,848	-	199,848	1,867,890	
Miramar Air Station TOTAL	2,589,071	660,204	-	660,204	1,928,867	
Miramar Ranch North TOTAL	508,533	67,511	-	67,511	441,022	
Mission Bay Park TOTAL	555,519	10,273	-	10,273	545,246	
Mission Beach TOTAL	34,040	1,000	-	1,000	33,040	
Mission Valley TOTAL	2,828,666	388,035	-	388,035	2,440,631	
NATIONAL CITY TOTAL	1,820,009	86,678	-	86,678	1,733,331	

2012 Final Base Year Calibration (983)

JURISDICTION	TOTAL VMT	TOTAL Series 13 VMT	Two Trip End Series 13 VMT	One Trip End Series 13 VMT	NON-Series 13 VMT	Series 13 Intra-Zonal VMT
		I-I, I-E and E-I	I-I	I-E and E-I	E-E	INTRA
NCFUA Reserve TOTAL	4,391	77	-	77	4,314	
NCFUA Subarea 2 TOTAL	273,538	14,290	-	14,290	259,248	
Navajo TOTAL	774,995	69,274	-	69,274	705,721	
OCEANSIDE TOTAL	2,681,228	18,520	-	18,520	2,662,708	
Ocean Beach TOTAL	99,721	5,785	-	5,785	93,936	
Old San Diego TOTAL	180,239	5,511	-	5,511	174,728	
Otay Mesa TOTAL	687,922	10,744	-	10,744	677,178	
Otay Mesa-Nestor TOTAL	725,197	10,058	-	10,058	715,139	
POWAY TOTAL	887,059	19,913	-	19,913	867,146	
Pacific Beach TOTAL	508,172	13,899	-	13,899	494,273	
Pacific Highlands Ranch TOTAL	240,851	1,809	-	1,809	239,042	
Peninsula TOTAL	369,036	12,887	-	12,887	356,149	
Rancho Bernardo TOTAL	1,697,401	85,291	-	85,291	1,612,110	
Rancho Encantada TOTAL	13,692	498	-	498	13,194	
Rancho Penasquitos TOTAL	1,077,545	66,623	-	66,623	1,010,922	
SAN MARCOS TOTAL	1,893,004	13,570	-	13,570	1,879,434	
SANTEE TOTAL	929,176	84,950	-	84,950	844,226	
SOLANA BEACH TOTAL	580,566	28,135	-	28,135	552,431	
Southeastern:Southeastern San Diego TOTAL	1,203,060	62,617	-	62,617	1,140,443	
Sabre Springs TOTAL	308,939	26,319	-	26,319	282,620	
San Pasqual TOTAL	341,468	9,947	-	9,947	331,521	
San Ysidro TOTAL	368,884	2,905	-	2,905	365,979	
Scripps Miramar Ranch TOTAL	489,471	51,910	-	51,910	437,561	
Scripps Reserve TOTAL	824	22	-	22	802	
Serra Mesa TOTAL	801,844	179,329	-	179,329	622,515	
Skyline-Paradise Hills TOTAL	246,886	3,754	-	3,754	243,132	
Tierrasanta TOTAL	944,507	243,568	-	243,568	700,939	
Tijuana River Valley TOTAL	5,824	32	-	32	5,792	
Torrey Highlands TOTAL	198,176	1,519	-	1,519	196,657	
Torrey Hills TOTAL	467,165	31,439	-	31,439	435,726	
Torrey Pines TOTAL	1,119,229	78,575	-	78,575	1,040,654	
Unincorporated TOTAL	15,882,760	358,098	-	358,098	15,524,662	
University TOTAL	2,392,362	185,293	-	185,293	2,207,069	
Uptown TOTAL	701,731	33,678	-	33,678	668,053	
VISTA TOTAL	1,638,629	2,859	-	2,859	1,635,770	
Via De La Valle TOTAL	12,491	227	-	227	12,264	
REGIONWIDE TOTAL	79,041,960	4,870,180	83,026	4,787,154	74,171,780	570

FOR GHG PURPOSES

Kearny Mesa Proposed Plan VMT 2,477,173

2050 Proposed_prop1B (1136)

JURISDICTION	TOTAL VMT	TOTAL Series 13 VMT	Two Trip End Series 13 VMT	One Trip End Series 13 VMT	NON-Series 13 VMT	Series 13 Intra-Zonal VMT
		I-I, I-E and E-I	I-I	I-E and E-I	E-E	INTRA
NCFUA Reserve TOTAL	6,095	149	-	149	5,946	
NCFUA Subarea 2 TOTAL	308,744	20,917	-	20,917	287,827	
Navajo TOTAL	926,375	95,457	-	95,457	830,918	
OCEANSIDE TOTAL	3,092,489	31,573	-	31,573	3,060,916	
Ocean Beach TOTAL	100,750	7,349	-	7,349	93,401	
Old San Diego TOTAL	209,955	8,932	-	8,932	201,023	
Otay Mesa TOTAL	1,525,216	21,472	-	21,472	1,503,744	
Otay Mesa-Nestor TOTAL	818,813	11,969	-	11,969	806,844	
POWAY TOTAL	1,031,539	29,773	-	29,773	1,001,766	
Pacific Beach TOTAL	546,103	21,304	-	21,304	524,799	
Pacific Highlands Ranch TOTAL	322,603	4,219	-	4,219	318,384	
Peninsula TOTAL	382,670	17,132	-	17,132	365,538	
Rancho Bernardo TOTAL	1,965,852	115,925	-	115,925	1,849,927	
Rancho Encantada TOTAL	15,881	890	-	890	14,991	
Rancho Penasquitos TOTAL	1,226,003	89,834	-	89,834	1,136,169	
SAN MARCOS TOTAL	2,320,016	16,700	-	16,700	2,303,316	
SANTEE TOTAL	1,128,300	126,015	-	126,015	1,002,285	
SOLANA BEACH TOTAL	656,504	40,651	-	40,651	615,853	
Southeastern:Southeastern San Diego TOTAL	1,405,060	82,401	-	82,401	1,322,659	
Sabre Springs TOTAL	355,105	36,222	-	36,222	318,883	
San Pasqual TOTAL	369,454	11,831	-	11,831	357,623	
San Ysidro TOTAL	397,608	3,853	-	3,853	393,755	
Scripps Miramar Ranch TOTAL	555,464	72,721	-	72,721	482,743	
Scripps Reserve TOTAL	1,071	67	-	67	1,004	
Serra Mesa TOTAL	899,380	251,210	-	251,210	648,170	
Skyline-Paradise Hills TOTAL	271,172	3,461	-	3,461	267,711	
Tierrasanta TOTAL	1,189,839	393,687	-	393,687	796,152	
Tijuana River Valley TOTAL	7,828	36	-	36	7,792	
Torrey Highlands TOTAL	255,470	3,172	-	3,172	252,298	
Torrey Hills TOTAL	503,159	45,182	-	45,182	457,977	
Torrey Pines TOTAL	1,238,327	114,827	-	114,827	1,123,500	
Unincorporated TOTAL	21,533,599	623,951	-	623,951	20,909,648	
University TOTAL	2,535,254	283,263	-	283,263	2,251,991	
Uptown TOTAL	797,733	49,977	-	49,977	747,756	
VISTA TOTAL	1,913,969	2,933	-	2,933	1,911,036	
Via De La Valle TOTAL	13,811	363	-	363	13,448	
REGIONWIDE TOTAL	96,525,014	7,187,950	205,854	6,982,096	89,337,064	1,625

FOR GHG

Kearny Mesa Prop1B VMT 3,698,527.18

VMT Deta between Prop1B and Base 1,221,354

49%

Appendix D Alternatives Vehicle Miles Travel Report for Transportation Impact Analysis (SB 743 metrics for residential and employment)

Vehicle Miles of Travel Report

Scenario ID **1076**

Kearny Mesa CPU - No Project Alternative (Adopted Community Plan)

VMT per Resident

		Residents	Total Trips	Person Miles of Travel	Vehicle Miles of Travel	VMT per Resident
Regionwide		4,098,966	14,659,048	86,522,394	59,911,259	14.6
Jurisdiction	SAN DIEGO	1,807,980	6,492,463	34,278,918	22,990,398	12.7
CPA	Kearny Mesa	13,411	51,857	262,446	173,726	13.0
TAZ List	N/A					

VMT per Employee

		Employees	Total Trips	Person Miles of Travel	Vehicle Miles of Travel	VMT per Employee
Regionwide		1,730,665	5,660,716	43,671,169	37,378,961	21.6
Jurisdiction	SAN DIEGO	891,683	2,782,203	20,884,691	18,051,574	20.2
CPA	Kearny Mesa	84,851	276,544	2,143,432	1,883,109	22.2
TAZ List	N/A					

Report Generated: 05/03/19

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Vehicle Miles of Travel Report

Scenario ID **1132**

Kearny Mesa CPU - Alternative 1 (Reduced Density Alternative)

VMT per Resident

		Scenario ID	Residents	Total Trips	Person Miles of Travel	Vehicle Miles of Travel	VMT per Resident
Regionwide		1132	4,111,239	14,696,006	86,805,457	59,989,228	14.6
Jurisdiction	SAN DIEGO	1132	1,820,253	6,524,547	34,375,772	22,954,005	12.6
CPA	Kearny Mesa	1132	32,046	119,422	528,409	324,998	10.1
TAZ List	N/A						

VMT per Employee

		Scenario ID	Employees	Total Trips	Person Miles of Travel	Vehicle Miles of Travel	VMT per Employee
Regionwide		1132	1,736,087	5,660,220	43,728,913	37,398,753	21.5
Jurisdiction	SAN DIEGO	1132	899,995	2,799,209	20,954,290	18,087,113	20.1
CPA	Kearny Mesa	1132	98,725	318,434	2,414,187	2,122,442	21.5
TAZ List	N/A						

Report Generated: 09/24/19

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Vehicle Miles of Travel Report

Scenario ID **1136**

Kearny Mesa CPU - Alternative 2 (Reduced Height Alternative)

VMT per Resident

		Scenario ID	Residents	Total Trips	Person Miles of Travel	Vehicle Miles of Travel	VMT per Resident
Regionwide		1136	4,136,713	14,793,744	87,108,465	60,193,855	14.6
Jurisdiction	SAN DIEGO	1136	1,845,727	6,620,768	34,669,519	23,154,579	12.5
CPA	Kearny Mesa	1136	57,516	209,895	871,896	526,403	9.2
TAZ List	N/A						

VMT per Employee

		Scenario ID	Employees	Total Trips	Person Miles of Travel	Vehicle Miles of Travel	VMT per Employee
Regionwide		1136	1,748,510	5,696,676	43,893,249	37,538,085	21.5
Jurisdiction	SAN DIEGO	1136	907,629	2,817,674	20,971,912	18,101,744	19.9
CPA	Kearny Mesa	1136	106,927	337,350	2,505,077	2,195,904	20.5
TAZ List	N/A						

Report Generated: 10/1/2019

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Vehicle Miles of Travel Report

Scenario ID **1138**

Kearny Mesa CPU - Alternative 3 (Reduced Industrial Employment Alternative)

VMT per Resident							
		Scenario ID	**Residents**	**Total Trips**	**Person Miles of Travel**	**Vehicle Miles of Travel**	**VMT per Resident**
Regionwide		1138	4,136,708	14,790,966	87,306,357	60,289,873	14.6
Jurisdiction	SAN DIEGO	1138	1,845,722	6,616,537	34,576,165	23,032,907	12.5
CPA	Kearny Mesa	1138	57,507	210,628	848,655	501,508	8.7
TAZ List	N/A						

VMT per Employee							
		Scenario ID	**Employees**	**Total Trips**	**Person Miles of Travel**	**Vehicle Miles of Travel**	**VMT per Employee**
Regionwide		1138	1,748,514	5,687,708	43,917,681	37,561,418	21.5
Jurisdiction	SAN DIEGO	1138	927,827	2,878,494	21,596,403	18,659,634	20.1
CPA	Kearny Mesa	1138	138,854	436,533	3,287,150	2,887,608	20.8
TAZ List	N/A						

Report Generated: 10/14/2019

Vehicle Miles of Travel Report

Scenario ID **1075**

Kearny Mesa CPU - Alternative 4 (Residential Option)

VMT per Resident

		Residents	Total Trips	Person Miles of Travel	Vehicle Miles of Travel	VMT per Resident
Regionwide		4,143,076	14,829,294	87,410,687	60,497,373	14.6
Jurisdiction	SAN DIEGO	1,852,090	6,656,490	34,925,441	23,411,123	12.6
CPA	Kearny Mesa	57,525	212,379	905,993	568,263	9.9
TAZ List	N/A					

VMT per Employee

		Employees	Total Trips	Person Miles of Travel	Vehicle Miles of Travel	VMT per Employee
Regionwide		1,752,319	5,723,459	44,148,178	37,777,866	21.6
Jurisdiction	SAN DIEGO	910,414	2,833,133	21,096,599	18,217,803	20.0
CPA	Kearny Mesa	106,622	337,859	2,503,351	2,190,566	20.5
TAZ List	N/A					

Report Generated: 05/03/19

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