



## MEMORANDUM

Date: March 17, 2017  
To: Rita Brandin, Newland Communities  
From: Katy Cole, Greg O'Donnell, and Ronald T. Milam, Fehr & Peers  
Subject: **Newland Sierra VMT Analysis to Respond to SB 743**

SD16-0219

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This memorandum documents the results of the VMT analysis to respond to SB 743 completed by Fehr & Peers for the Newland Sierra development project (Project). This analysis was conducted consistent with the *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA* prepared by the Governor's Office of Planning and Research (OPR), January 20, 2016 (OPR Draft Guidance). The OPR Draft Guidance requires VMT analysis of the Project's land uses and transportation network changes and includes unique VMT recommended forecasting specifications. To comply with these recommendations, we selected geographic specific survey data for the land use analysis and used the OPR induced travel methodology to quantify the VMT change due to the Project's roadway capacity expansion.

This memo is organized as follows:

1. **Project Description** – Provides a brief description of the land uses proposed as part of the Newland Sierra Project and a summary of the transportation setting.
2. **SB 743 Background** – Provides background information regarding the OPR Draft Guidance, including current status.
3. **Land Use VMT** – Provides the baseline VMT, land-use generated VMT, and the impact analysis for each Project land use individually.
4. **Induced Vehicle Travel due to Roadway Capacity Expansion** – Provides an analysis of the potential increase in VMT due to Project-related roadway capacity expansion improvements identified as Project mitigation. The section establishes a baseline, analyzes VMT due to roadway capacity expansion, and describes the impact analysis.



## 1. PROJECT DESCRIPTION

### LAND USES AND TRANSPORTATION SETTING

The proposed Newland Sierra development Project would be developed on a 1,985-acre site located west of I-15, approximately 6.4 miles north of the city of Escondido and approximately 4.6 miles north of the city of San Marcos. The Project would consist of the following Land Uses:

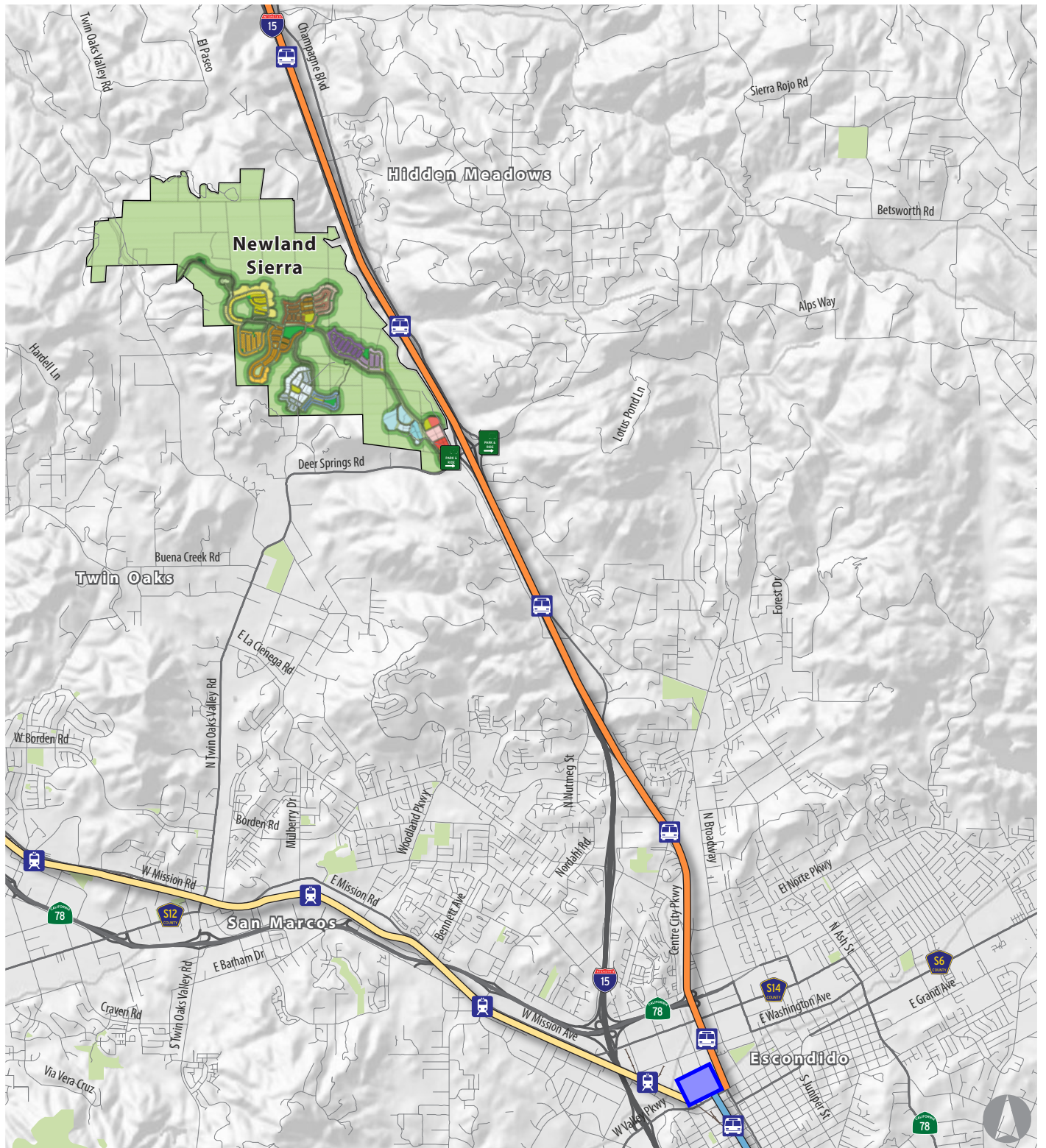
- 875 single family dwelling units
- 935 multi-family dwelling units
- 325 senior adult dwelling units
- 81,000 square feet of neighborhood commercial
- 6-acre, 555-student K-8 school site
- 35.9 acres of parks (12.1 acres of Community Parks, 23.8 acres of Neighborhood Parks)

As shown on Figure 1, the transportation network serving the Project site includes roadways, transit facilities, and park-and-ride facilities. The major roadways include Interstate-15, which is located east of the Project site and runs in a north-south direction, and Deer Springs Road, a two-lane County road located to the south of the Project site that runs east-west. The Project will modify the existing roadway network by widening Deer Springs Road and Twin Oaks Valley Road. Intersection improvements will also be made along these roadways and two other local roadways, Buena Creek Road and Sarver Lane. In addition, Caltrans is working with the applicant through a separate project study process to expand the capacity of the I-15/Deer Springs Road interchange. Specific transit and park-and-ride facilities serving the Project are listed below.

- **Transit** – The undeveloped Project site is not presently served by transit, however six transit stations, including five Sprinter stations (the Buena Creek Station, the Palomar College Station, the San Marcos Civic Center Station, the Cal State San Marcos Station, and the Nordahl Road Station) and the Escondido Transit Center (also a Sprinter station) are within six miles of the Project Site. The nearest bus service is the North County Transit District (NCTD) BREEZE Bus Route 389 on I-15 directly east of the Project site with stops at the Escondido Transit Center, the park-and-ride at I-15/SR-76 interchange, and the Pala Casino. The Escondido Transit Center, approximately 6 miles from the Deer Springs Road/I-15 Interchange, provides connections to BREEZE bus, LIFT shuttle, and SPRINTER light rail lines operated by NCTD.



- **Park-and Ride** - To the southeast of the Project site, there are two existing Park-and-Ride lots that reside on both sides of I-15, one at the Deer Springs Road/Mesa Rock Road intersection and the second at the Deer Springs Road/Old Highway 395 intersection.



**Major Transit Connections at Escondido Transit Center**






-  BREEZE Route 389 (Service to/from Pala)
-  BREEZE Rapid Route 350 (Service to/from Del Lago Transit Station - Provides Connections to San Diego)
-  SPRINTER Route (Service to/from Oceanside)
-  Park-and-Ride Lot
-  Escondido Transit Center

Figure 1

Newland Sierra Development Project  
Project Location and Existing Transit Facilities





## 2. SB 743 BACKGROUND

On September 27, 2013, Governor Edmund G. Brown, Jr. signed SB 743 into law, starting a process that is expected to fundamentally change the way transportation impact analysis is conducted under CEQA. Within the State's CEQA Guidelines, these changes will include elimination of auto delay, level of service (LOS), and similar measurements of vehicular roadway capacity and traffic congestion as the basis for determining significant impacts. In January 2016, OPR issued the Draft Guidance, which provided initial recommendations for updating the State's CEQA Guidelines in response to SB 743 and contained recommended specifications for VMT analysis in an accompanying "Technical Advisory on Evaluating Transportation Impacts in CEQA" ("Technical Advisory"). The guidance recommended use of *automobile* Vehicle Miles Traveled, or VMT, as the preferred CEQA transportation metric, along with the elimination of auto delay/LOS for CEQA purposes statewide. For land use projects, the Technical Advisory recommends that automobile VMT be measured by land use type for specific trip purposes or tours depending on the type of forecasting model being used. The OPR Draft Guidance is presently being revised in response to comments and OPR plans to submit new materials to the Resources Agency for formal rulemaking in early 2017. The Resources Agency will then provide the revised CEQA Guidelines for public review and comment with formal approval expected sometime in mid- to late- 2017. Based on the Draft OPR Guidance, lead agencies will have up to two years to implement the revised CEQA Guidelines upon their formal approval.

OPR's Technical Advisory contains recommended specifications for VMT analysis methodology and recommendations for significance thresholds. The Draft OPR Guidance contains sufficient information to inform lead agencies about how to prepare for the upcoming transition to VMT. However, the final implementation steps for SB 743 have not yet been completed and, therefore, compliance with the OPR Draft Guidance is not mandatory.

Notwithstanding the draft status of OPR's VMT Guidance, Caltrans has already begun transitioning to the new VMT approach for measuring transportation impacts, issuing interim guidance that relates to Caltrans' review of CEQA documents for local agency development projects. Based on the Caltrans interim guidance, Caltrans is requesting VMT impact analysis in new transportation impact studies despite the revised CEQA Guidelines still being in draft form. As noted above, OPR is expected to complete their implementation process in mid- to late 2017, which is likely to include a two-year grace period for lead agencies to implement the new VMT requirements.

In summary, while not required by CEQA, this memorandum presents an evaluation of the potential VMT-related impacts of the Project consistent with and based on the OPR Draft Guidance.



### 3. OPR PROPOSED VMT GUIDELINES & TECHNICAL ADVISORY

#### DETERMINATION OF SIGNIFICANCE

OPR proposes to add Section 15064.3, “Determining the Significance of Transportation Impacts” to the State’s CEQA Guidelines (“Proposed CEQA Guidelines”). The Proposed CEQA Guidelines state that “generally, vehicle miles traveled (VMT) is the most appropriate measure of a project’s potential transportation impacts” and define VMT as “the amount and distance of automobile travel attributable to a project”. The Proposed CEQA Guidelines are accompanied by the Technical Advisory described above, which includes specifications for how to estimate and forecast VMT. For a project with multiple land uses, such as residential, commercial, etc., the automobile VMT associated with each land use should be quantified separately. Further, the automobile VMT from specific trip purposes or travel tours should be isolated. The draft guidelines also define what may constitute a significant impact, stating that:

*A development project that results in vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, development projects that locate within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor may be presumed to cause a less than significant transportation impact. Similarly, development projects that decrease vehicle miles traveled in the project area compared to existing conditions may be considered to have a less than significant transportation impact.*

While the Proposed CEQA Guidelines themselves do not establish a significance threshold, OPR’s Technical Advisory does provide a recommended threshold of significance for residential and office land uses, stating that “OPR finds, absent any more project-specific information to the contrary, that per capita (for residential) or per employee (for office) VMT fifteen percent below that of existing development may be a reasonable threshold.”

In addition to the VMT directly generated by a project, the Proposed CEQA Guidelines would require the analysis of “induced VMT” that could result from transportation network capacity expansion projects, stating that:

*Additional lane miles may induce automobile travel, and vehicle miles traveled, compared to existing conditions. Transportation projects that reduce, or have no impact on, vehicle miles traveled may be presumed to cause a less than significant transportation impact.*





## METHODOLOGY & DEFINITIONS

The OPR Draft Guidance does not require that a specific methodology be used when calculating VMT. Instead, the Proposed CEQA Guidelines state that “a lead agency should not confine its evaluation to its own political boundary” and that “a lead agency may use models to estimate a project’s vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence”, and “any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project”. In essence, the Proposed CEQA Guidelines defer to a local agency’s professional judgment supported by substantial evidence when deciding how best to model VMT, stating that “a lead agency’s evaluation of the vehicle miles traveled with a project is subject to a rule of reason”.

The County of San Diego has not adopted methodologies for performing VMT analysis per SB 743 since the OPR Draft Guidance is not yet final nor has it been approved and adopted by the Natural Resources Agency. Therefore, the methodologies suggested in the OPR Draft Guidance are applied to the analysis presented in this report.

Environmental documents prepared under CEQA are required to include project VMT estimates when addressing analysis of multiple resource areas, including air quality, greenhouse gas emissions, and energy, with varying metrics used for each (e.g., total VMT, average daily VMT, etc.). Thus, VMT is presented in numerous different forms depending on the analysis being conducted. The following definitions describe how VMT is referred to, calculated, and accounted for differently throughout the CEQA document, including how it would be referred to in connection with the SB 743 VMT analysis.

*Vehicle Miles of Travel (VMT):* VMT is a measure of network use or efficiency. It can be calculated by multiplying all vehicle trips generated by their associated trip lengths or by multiplying traffic volumes on roadway links by the associated trip distance of each link. VMT is often estimated for a typical weekday. For purposes of SB 743, the focus is on automobile VMT, which includes passenger cars and light trucks.

*VMT Per Capita:* The average number of miles traveled by each person, i.e., per capita, during a specified time period. Daily VMT/capita is calculated by dividing the total weekday VMT for a defined area by the population of that area (a ratio) or total weekday VMT generated by a defined residential population (a rate).

*Home-Based VMT:* The sum of the distances for all trips per weekday originating from or destined for a residential land use.



*Non Home-Based VMT:* The sum of the distances for all trips per weekday originating from a non-residential land use (such as leaving work to go to lunch and returning to work OR an appliance repair person leaving their office to go to a job and returning to their office).

*Home-Based Automobile Vehicle Miles of Travel Per Capita:* The sum of all distances of all automobile trips per weekday originating from or destined for a residential land use (i.e. the trip crosses the homes driveway) within a defined area divided by the population of the area. ***This is the number used to evaluate the residential land use VMT for SB 743 purposes.*** This is a roundtrip number and includes the miles associated with the outbound trip and the inbound trip.

*Total Project VMT:* The sum of the distance for all trips generated by all vehicle types and trip purposes (home-based work, home-based other, non-home-based, etc.) for all uses within the project site. ***This is the number used to evaluate a project's potential GHG and Air Quality impacts.***

*Average Project Trip Length:* Total Project VMT divided by total project trips (both inbound and outbound).

The following simplified, hypothetical example for a single household demonstrates the difference between the various VMT accounting methods:

- Household A:
  - Total Residents: 3 with 2 working adults and 1 child.
  - Total Daily Trips: 10: 5 in and 5 out
  - Summary of Distances to Residents' Destinations
    - Adult 1 distance to work = 10 miles
    - Adult 2 distance to work = 15 miles
    - Distance to grocery store = 3 miles
    - Distance to gym = 2 miles
    - Distance to school = 3 miles
    - Distance to favorite restaurant = 5 miles
    - Distance that dog walker's office is from Household A = 3 miles

Table 1 summarizes the travel for this household for an average day.





**TABLE 1 VMT DEFINITIONS EXAMPLE**

Travel Activity	Total Number of Trips	Total VMT
Adult 1 drops off child at school and returns home.	2 (1 in/1 out)	6 miles
Adult 1 and Adult 2 each drive separately to work.	2 (out)	25 miles
Dog Walker visits house during day to walk the dog.	2 (1 in/1 out)	6 miles
Adult 2 picks up child on way home from work (which is 3 miles out of the way).	1 (in)	18 miles
Adult 1 stops at gym on way home (which is 2 miles out of the way).	1 (in)	12 miles
Entire household goes to restaurant for dinner.	2 (1 in/1 out)	10 miles
<b>Total Trips</b>		10 trips
<b>Total VMT</b>		77 miles
<b>Total Home-Based VMT (excludes the dog walker because that is a non-home-based trip)</b>		71 miles
<b>Total Home-Based Automobile VMT/Capita (assumes all trips made by passenger car) = Home-based VMT/Population</b>		71/3=23.7 miles/person
<b>Average Trip Length = Total VMT/Total Trips</b>		77/10=7.7 miles
<b>Home-Based Work VMT</b>		50 miles
<b>Average Home-Based Work Trip Length=Home-Based Work VMT/Work Trips</b>		50/4=12.5 miles
<b>Home-Based Other VMT</b>		21 miles
<b>Average Home-Based Other Trip Length</b>		21/4=5.25 miles

Source: Fehr & Peers, 2016.

In this example, the greenhouse gas analysis would be based on the Total VMT of 77 miles and the VMT for SB 743 purposes is based on the total home-based Automobile daily VMT per capita of 23.7 miles.

### Land Use SB 743 VMT Analysis Methodology

Within San Diego County, there are two primary options for calculating baseline and land use related VMT for SB 743 purposes: using the SANDAG regional travel demand model or using region specific household survey data. The SANDAG Series 12 regional travel demand model, which was used to generate total



Project VMT for the analysis of the Project's impacts relative to air quality, greenhouse gas emissions, and energy, is not able to isolate home-based automobile VMT for either the Project or the region. Therefore, survey data and the Project trip generation as reported in the *Sierra Traffic Impact Analysis (TIA)* prepared by Linscott, Law & Greenspan Engineers was used.

The OPR Draft Guidance suggests that land use VMT analysis be conducted for each individual land use within a project. The proposed Newland Sierra Project would have four different land uses: residential, retail/commercial, school, and parks. The primary land use is residential, and as such, the residential uses have the primary effect on regional VMT. The retail/commercial, school, and park land uses are included in the Project to help minimize off-site automobile trips to the region. The effect on VMT for each land use is analyzed, consistent with OPR Draft Guidance, as follows:

1. Residential Land Use: The home-based automobile VMT/Capita is calculated for the Project's residential uses and compared to the region (and sub-region) home-based automobile VMT/Capita to determine the impact.
2. Retail/Commercial Land Use: Since the retail/commercial land use is included in the Project to minimize off-site residential trips, the effect that the retail/commercial land use has on the Project's home-based automobile VMT/Capita was evaluated. To calculate the effect, project home-based automobile VMT/Capita (the value calculated for the residential land use; see item 1 above) is first calculated, with the retail/commercial's effect then calculated by removing the retail/commercial uses from the project and recalculating the project home-based automobile VMT/Capita.
3. School Land Use: Since the school land use is included in the Project to minimize off-site school related residential trips, the effect that the school land use has on the Project's home-based automobile VMT/Capita was evaluated. To calculate the effect, project home-based automobile VMT/Capita (the value calculated for the residential land use; see item 1 above) is first calculated with the school's effect, and then calculated by removing the school use from the project and recalculating the project home-based automobile VMT/Capita.
4. Parks: Since the parks are included in the Project to minimize off-site residential trips (and as an amenity to residents), the effect that the parks have on the Project's home-based automobile VMT/Capita was evaluated. To calculate the effect, project home-based automobile VMT/Capita (the value calculated for the residential land use; see item 1 above) is first calculated with the park's effect, and then calculated by removing the park use from the project and recalculating the project home-based automobile VMT/Capita.



To calculate *project* residential home-based trips per capita and, separately, *regional/sub-regional* residential home-based trips per capita to establish existing VMT from which the significance threshold can be identified, the following data sources were used:

*Project Residential Automobile Home-based Trips Per Capita*

- Project Trip Rates for Residential Land Uses: *Sierra TIA* (per the SANDAG trip generation rates)
  - Single Family Residential Trip Rate: 10 trips/unit
  - Multi-Family Residential Trip Rate: 8 trips/unit
  - Senior Residential Trip Rate: 4 trips/unit
- Project Trip Internalization (due to the mix of land uses): *Sierra TIA* trip generation table. For purposes of the SB 743 analysis, all internal trips are treated as home-based other trips since all internal trips originate from and return to a residential use. As a result, 100% of internal trips are assigned to the residential uses.
- Trip Purpose Ratios: National Cooperative Highway Research Program (NCHRP) Report 716. The following trip purpose ratios were applied to the residential trip generation to estimate total home-based trip by purpose:
  - Home-based Work: 25% of residential trips
  - Home-based Other: 70% of residential trips
  - Non-Home-based: 5% of residential trips
- Average External Trip Lengths by Trip Purpose for the Project Site: California Household Travel Survey (CHTS) Data, 2012. The following trip lengths were obtained from the data aggregated based on the geographic location (2010 Census Major Statistical Area: North County East) of the Project:
  - Single Family Home-based Work: 12.9 miles per trip
  - Single Family Home-based Other: 7.0 miles per trip
  - Multi-Family and Senior Home-based Work: 10.4 miles per trip
  - Multi-Family and Senior Home-based Other: 8.6 miles per trip
- Average Internal Trip Lengths by Trip Purpose for the Project Site: Based on Project site plan and approximate mid-point distance from the residential to the non-residential land uses.
  - Single-Family, Multi-Family, and Senior Home-based Other: 0.75 miles per trip
  - Note that all internal trips are Home-based Other trips.
- Project Population: 2.84 residents per household or 6,063 total (2,135 residential units\*2.84), consistent with population utilized for other resource areas in the Project's EIR.



*Regional Residential Automobile Home-based Trips Per Capita (to determine Baseline and Significance Threshold)*

Two baseline scenarios were evaluated:

1. SANDAG region average home-based VMT/Capita: The OPR guidelines indicate that for a residential use in an unincorporated area, the suggested baseline is the regional average. The Scenario 1 significance threshold is set as 15% below the regional baseline.
2. North County East sub-region (Census designated Major Statistical Area including the Cities of Escondido, San Marcos, and Vista, and the unincorporated communities of Twin Oaks, Bonsall, Hidden Meadows, Valley Center, Fallbrook, and Rainbow) average home-based VMT/Capita: Use of this sub-region, which contains the project Site, to determine existing VMT is presented because the overall intent of SB 743 is to evaluate how a project would perform relative to existing proximate land uses. This sub-region was identified because San Diego County comprises 18 cities and 107 towns and communities in the unincorporated area alone, and a land area of over 4,500 square miles; therefore, travel characteristics vary widely across the region and even between individual cities and communities. For example, the community of Ramona in the unincorporated area of the County is surrounded by open space, agricultural lands, and greenbelts. Yet, the Ramona Community Planning Area has a population approaching 40,000 people; the County has zoned land within and around Ramona to support residential development, and the community will continue to grow. Residential projects in Ramona should arguably be tested against a VMT/Capita threshold that is more reflective of the inherent travel patterns in Ramona, not the San Diego Region as a whole. Communities that are adjacent to incorporated areas have inherent travel patterns reflective of those communities and their surroundings (i.e., their sub-region). Likewise, the Project would be located in the North County East sub-region; therefore, the sub-region presents an appropriate baseline for comparison of the Project to existing proximate land uses. The Scenario 2 significance threshold is set as 15% below the sub-region baseline.

The SANDAG region and North County East sub-region are depicted on Figures 2 and 3, respectively.

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-  Project Location
-  SANDAG Region
-  Freeways / Highways



Figure 2  
Project Location within the SANDAG Region








-  Project Location
-  North County East Sub-Region
-  Freeways / Highways



Figure 3

Project Location within the North County East Sub-Region





The following data sources were used to calculate the region (Scenario 1) and sub-region (Scenario 2) average home-based VMT/Capita:

- SANDAG Trip Rates for Residential Land Uses:
  - Single Family Residential Trip Rate: 10 trips/unit
  - Multi-Family Residential Trip Rate: 8 trips/unit
  - Senior Residential Trip Rate: 4 trips/unit
- Trip Purpose Ratios: National Cooperative Highway Research Program (NCHRP) Report 716. The following trip purpose ratios were applied to the residential trip generation to estimate total home-based trip by purpose:
  - Home-based Work: 25% of residential trips
  - Home-based Other: 70% of residential trips
  - Non-Home-based: 5% of residential trips
- Average External Trip Lengths by Trip Purpose for the **SANDAG Region (Scenario 1)**: California Household Travel Survey (CHTS) Data, 2012. The following trip lengths were obtained from the data aggregated based on the geographic location (entire SANDAG region):
  - Single Family Home-based Work: 12.6 miles per trip
  - Single Family Home-based Other: 6.2 miles per trip
  - Multi-Family and Senior Home-based Work: 11.2 miles per trip
  - Multi-Family and Senior Home-based Other: 5.2 miles per trip
- Average External Trip Lengths by Trip Purpose for the **North County East Sub-Region (Scenario 2)**: California Household Travel Survey (CHTS) Data, 2012. The following trip lengths were obtained from the data aggregated based on the geographic location (2010 Census Major Statistical Area: North County East):
  - Single Family Home-based Work: 12.9 miles per trip
  - Single Family Home-based Other: 7.0 miles per trip
  - Multi-Family and Senior Home-based Work: 10.4 miles per trip
  - Multi-Family and Senior Home-based Other: 8.6 miles per trip
- Regional Population Per Household: 2.84 people per household.

The resulting residential automobile home-based VMT/Capita baseline and significance threshold for each Scenario by residential land use type are shown in Table 2. Attachment A provides the CHTS data for the region, North County East Sub-Region, and a sample of other San Diego County communities (for comparison purposes).



**TABLE 2 RESIDENTIAL DAILY HOME-BASED AUTOMOBILE VMT PER CAPITA  
 BASELINE AND THRESHOLD VALUES**

Residential Land Use Type	Scenario 1 SANDAG Region Home Based VMT/Capita		Scenario 2 North County East Sub-Region Home Based VMT/Capita	
	Region Average	Threshold (15% below region average)	Sub-Region Average	Threshold (15% below sub-region average)
Single Family	26.37	22.41	28.61	24.32
Multi Family	18.14	15.42	24.28	20.64
Senior	9.07	7.71	12.14	10.32

Source: Fehr & Peers, 2017.

### *Mitigation Measures*

The OPR Draft Guidance identifies travel demand management (TDM) strategies as an appropriate mitigation measure to reduce project related VMT impacts. In this case, the Project has developed a TDM program to implement feasible measures to reduce Project-related VMT.

### **Induced Vehicle Travel Due to Roadway Infrastructure SB 743 VMT Analysis Methodology**

The OPR Draft Guidance recommends that a VMT analysis be conducted for major roadway capacity expansion projects and that the analysis address potential induced travel effects. One option for addressing these effects is to use an elasticity-based analysis technique described in the OPR Draft Guidance.

The elasticity-based analysis is derived directly from academic research on the topic of induced travel and estimates the percent change in baseline (i.e., existing) VMT based on the percent change in lane-miles associated with the Project. The elasticity data includes short-term and long-term effects. Because the elasticity relationship is one where a positive increase in lane miles will always result in a positive increase in VMT, the methodology is not fully sensitive to travel time changes. For example, a new bridge or interchange could shorten both the distance and time for existing trips, thereby reducing VMT, but the elasticity method would only be sensitive to how many lane-miles were added and report a positive increase; as such, this methodology may, depending on the circumstances, overstate induced VMT.



The following data sources were used to calculate induced vehicle travel demand:

- Total County Lane Miles: *2014 California Public Road Data*, Statistical Information derived from the Highway Performance Monitoring System, Caltrans, 2014. This data was used to calculate the baseline total roadway VMT for San Diego County.
- Elasticities: *Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Green House Gas Emissions*, Policy Brief, Susan Handy and Marion G. Boarnet, Air Resources Board, September 20014. Individual elasticity estimates based on Table 1, Page 4.

#### *Mitigation Measures*

The OPR Draft Guidance identifies TDM strategies or modification of the roadway capacity expansion projects as appropriate mitigation measures to reduce induced vehicle travel VMT impacts. As previously noted, the Project includes a TDM program that will reduce VMT to the maximum extent feasible.

## 4. PROJECT VMT ANALYSIS

The proposed Project includes four major land use types: residential, retail/commercial, school (K-8 school site), and parks/open space. This portion of the memorandum analyzes the potential impacts associated with the VMT that would be generated by each of these land uses.

### RESIDENTIAL VMT ANALYSIS

#### *Significance Threshold*

As described above, two baseline scenarios are included in this analysis: the SANDAG region average automobile home-based VMT/Capita and the North County East Sub-region average automobile home-based VMT/Capita. Based on the OPR Draft Guidance, the significance threshold applied in this analysis is 15% below each baseline scenario, as follows:



1. Significance Threshold Scenario 1, SANDAG region average home-based VMT/Capita:
  - o Single Family: 22.41 automobile home-based VMT/Capita ( $26.37 \times 0.85$ )
  - o Multi-Family: 15.42 automobile home-based VMT/Capita ( $18.14 \times 0.85$ )
  - o Senior: 7.71 automobile home-based VMT/Capita ( $9.07 \times 0.85$ )
2. Significance Threshold Scenario 2, North County East Sub-region average home-based VMT/Capita:
  - o Single Family: 24.32 automobile home-based VMT/Capita ( $28.61 \times 0.85$ )
  - o Multi-Family: 20.64 automobile home-based VMT/Capita ( $24.28 \times 0.85$ )
  - o Senior: 10.32 automobile home-based VMT/Capita ( $12.14 \times 0.85$ )

As described previously, the OPR Draft Guidance does not require a specific methodology to be used when calculating VMT. Rather, the OPR Draft Guidance defers to a local agency's professional judgment supported by substantial evidence when deciding how best to model VMT, stating that "a lead agency's evaluation of the vehicle miles traveled with a project is subject to a rule of reason".

As noted above, in light of the fact that the OPR Draft Guidance is not yet final and lead agencies, in any event, will have up to two years to implement the appropriate procedures, the County of San Diego and most other California Counties and Cities have not yet adopted methodologies for performing VMT analysis within the context of SB 743. Therefore, the methodologies suggested in the OPR Draft Guidance are applied to the analysis presented in this report. While using a sub-regional area to establish baseline values for home-based VMT/Capita is not specified in the OPR Draft Guidance, because the Project site is located in the North County East Sub-region, application of the sub-region home-based VMT/Capita as the baseline to derive the significance threshold is consistent with the overall intent of SB 743 and the Draft Guidance, which is to evaluate how a project would perform relative to existing proximate land uses. As such, use of the sub-region as compared to the entire SANDAG region provides a more accurate baseline against which to assess impacts since it results in a comparison to residential uses in a similar context.

#### *Project Residential Home-Based Automobile VMT/Capita Impact Analysis*

To calculate the Project's residential home-based automobile VMT/Capita, we used the approach and National and California survey data described in the Methodology section and the trip generation estimates presented in the TIA Report. Home-based automobile VMT/Capita is the sum of all distances of all automobile trips per weekday originating from or destined for a residential land use (i.e. the trip crosses the home's driveway) within a defined area, divided by the population of the area. This is a



roundtrip number and includes the miles associated with 100% of both the outbound trips and the inbound trips assigned to the residence.

Table 3 summarizes the Project's home-based automobile VMT/Capita for each of the three residential land use types (single-family, multi-family, and senior), along with the corresponding significance thresholds under Scenarios 1 (SANDAG region) and 2 (North County East sub-region). Detailed calculations are provided in Attachment B. Table 3 also illustrates whether Project VMT would exceed the applicable thresholds, thereby resulting in a significant impact.

**TABLE 3 RESIDENTIAL DAILY HOME-BASED AUTOMOBILE VMT PER CAPITA  
(WITHOUT IMPELMENTATION OF PROJECT TDM MEASURES)**

Residential Land Use Type	Project Home-Based VMT/Capita	Scenario 1 Region Home Based VMT/Capita			Scenario 2 Sub-Region Home Based VMT/Capita		
		Region Average	Threshold	Exceeds Threshold?	Sub-Region Average	Threshold	Exceeds Threshold?
Single Family	<b>25.73</b>	26.37	<b>22.41</b>	Yes	28.61	<b>24.32</b>	Yes
Multi Family	<b>21.39</b>	18.14	<b>15.42</b>	Yes	24.28	<b>20.64</b>	Yes
Senior	<b>10.69</b>	9.07	<b>7.71</b>	Yes	12.14	<b>10.32</b>	Yes

Source: Fehr & Peers, 2017.

As shown in Table 3, the Project VMT/capita for the residential land use types would exceed the corresponding thresholds for each residential type under Scenario 1. Under Scenario 1, Project VMT would exceed the region-wide thresholds by approximately 17% for single-family and 30% for multi-family and senior residences.

Under Scenario 2, Project VMT/Capita would exceed the sub-region thresholds for each residential type. Under Scenario 2, Project VMT would exceed the region-wide thresholds by approximately 6% for single-family and 4% for multi-family and senior residences. As a result, based on the thresholds provided in the OPR Draft Guidance, the proposed Project would result in a significant impact related to automobile home-based VMT/Capita for all residential land use types when compared to the SANDAG region-wide threshold and the North County East sub-region threshold.



The proposed Project includes a TDM program that includes all feasible VMT-reduction measures. The TDM quantification analysis completed for the Project estimates a 6.1 percent VMT reduction specific to residential land uses resulting from implementation of the TDM Program (*Newland Sierra TDM Program - VMT Reduction Evaluation Technical Memorandum*, Fehr & Peers, September 9, 2016 – provided in the Appendix of the Draft EIR). Based on CAPCOA *Quantifying Greenhouse Gas Mitigation Measures Report*, the proposed TDM program maximizes the VMT reduction for the projects land use context.

Table 4 summarizes the residential land use home-based automobile VMT/Capita for the Project with the 6.1% reduction for implementation of the TDM Program applied. The table also shows the corresponding significance thresholds under Scenario 1 (region-wide) and Scenario 2 (sub-region).

**TABLE 4 RESIDENTIAL DAILY HOME-BASED AUTOMOBILE VMT PER CAPITA  
(WITH IMPLEMENTATION OF PROJECT TDM MEASURES)**

Residential Land Use Type	Project Home-Based VMT/Capita With TDM Mitigation	Scenario 1 Region Home Based VMT/Capita			Scenario 2 Sub-Region Home Based VMT/Capita		
		Region Average	Threshold	Exceeds Threshold?	Sub-Region Average	Threshold	Exceeds Threshold?
Single Family	<b>24.16</b>	26.37	<b>22.41</b>	Yes	28.61	<b>24.32</b>	<b>No</b>
Multi Family	<b>20.08</b>	18.14	<b>15.42</b>	Yes	24.28	<b>20.64</b>	<b>No</b>
Senior	<b>10.04</b>	9.07	<b>7.71</b>	Yes	12.14	<b>10.32</b>	<b>No</b>

Source: Fehr & Peers, 2017.

As shown in Table 4, with the TDM program, although Project VMT/Capita would be reduced, Project VMT/capita for the residential land use types would continue to exceed the corresponding thresholds for all residential types under Scenario 1. Specifically, under Scenario 1, Project VMT would exceed the region-wide thresholds by approximately 9% for single-family and approximately 22% for multi-family residences and active adult residences. Therefore, the impact would remain significant and unavoidable for all residential types using the SANDAG region as the baseline. The Project's proposed TDM program maximizes VMT reduction; therefore, additional TDM strategies would not reduce the impact to less than significant. Other options for mitigating the impacts to less than significant could possibly include changes to the surrounding built environment, which are not feasible for the Project to implement.

Under Scenario 2, with the TDM program, Project home-based VMT/capita for all residential types would be below the corresponding thresholds. Therefore, using the sub-region thresholds, Project VMT/Capita under Scenario 2 for all residential types would be less than significant.





### *Comparison to VMT Analysis for Greenhouse Gas Analysis*

For comparative purposes, the following is a summary of the various VMT calculations utilized in conducting the various environmental impact analyses for the Project:

*Home-Based Automobile VMT (without TDM Program):* 130,597. This value is calculated by summing the Project's total home-based VMT for each residential land use type. The following summarizes the calculation (see Attachment B for the detailed calculation):

- Single family total home based automobile VMT: 63,935 miles+
- Multi-family total home-based automobile VMT: 56,791 miles+
- Senior total home-based automobile VMT: 9,870 miles+
- Project total home-based automobile VMT: 130,597 miles

*Home-based Automobile VMT/Capita (without TDM Program):* 25.73 for single family, 21.39 for multi-family, and 10.69 for senior (as shown in Table 3). *These are the numbers used in the SB 743 analysis presented in this memorandum.* The weighted average home-based automobile VMT/Capita for all residential types is 21.54 miles. This value is calculated by dividing the total home-based automobile VMT by the total project population:

- Weighted average total home-based automobile VMT/Capita:  $130,597/6,063(\text{project population})=21.54$

*Total Project VMT:* 294,804. *This is the number used to evaluate GHG emissions.*

*Total Project VMT Per Capita:* 48.6 miles (294,804/6,063 population). This value is used as a comparison to the home-based VMT/Capita. Since the project has a mix of land use types, total project VMT/Capita should be a larger value than home-based VMT/Capita, which is the case.

*Average Project Trip Length:* 10.21 miles (294,804/28,862 daily vehicle trips). This length is also reported in the GHG emissions analysis.

## RETAIL/COMMERCIAL VMT ANALYSIS

### *Threshold*

The Project includes 81,000 square feet of commercial/retail uses. The OPR Draft Guidance recommends that VMT analysis be performed for all commercial/retail centers that are greater than 50,000 square feet in size.



Since the retail/commercial land use is included in the Project to minimize off-site residential trips by providing retail opportunities within the Project site, the effect that the retail/commercial land use would have on the Project's home-based automobile VMT/Capita is evaluated for the analysis. To calculate the effect, the Project home-based automobile VMT/Capita for all residential types of **21.54** miles is compared to the home-based automobile VMT/Capita result if the retail/commercial uses were removed. The analysis is intended to determine whether the retail/commercial uses would be beneficial to reducing the Project VMT because it reduces home-based automobile VMT/Capita. That is, without the retail/commercial uses, would the Project's home-based automobile VMT/Capita be higher.

*Project's Retail/Commercial Effect on Residential Home-Based Automobile VMT/Capita Impact Analysis*

If the retail/commercial component of the Project were not constructed, a portion of the residential home-based other trips that are presently internal to the Project would need to travel farther away to satisfy retail/commercial needs.

If the Project did not include a retail/commercial component, the residential home-based automobile VMT/Capita would be **23.24**. This number is calculated by eliminating all internal retail trips, which are a portion of the home-based other trip category, and assigning those trips as external retail trips. External trips have a longer trip length than internal trips; therefore, the resulting home-based automobile VMT/Capita increases with elimination of the retail uses. Detailed calculations are provided in Attachment B.

Thus, if the retail/commercial uses were removed from the Project, the residential home-based automobile VMT/Capita would increase from 21.54 to 23.24 miles, an increase of approximately 8%. In addition to reducing the project's VMT, due to the lack of a neighborhood shopping center with a grocery store component in or near the Community of Twin Oaks, the Community of Hidden Meadows, Champagne Village, or the Lawrence Welk Resorts, by providing a nearby place to shop for these communities, the project's retail/commercial uses would also have the benefit of reducing VMT for these existing communities. Therefore, the retail/commercial uses have a beneficial effect on the Project's residential home-based automobile VMT/Capita and that of surrounding communities and impacts related to retail/commercial uses would be less than significant.



## SCHOOL VMT ANALYSIS

### *Threshold*

The Project includes a K-8 charter school site that is expected to serve approximately 555 students. The OPR Draft Guidance does not provide guidance for evaluating VMT associated with schools for SB 743 purposes.

Since the school is included in the Project to minimize off-site residential trips by providing a school within the Project site, the effect that the school would have on the Project's home-based automobile VMT/Capita is evaluated for the analysis. To calculate the effect, the Project home-based automobile VMT/Capita for all residential types of **21.54** miles is compared to the home-based automobile VMT/Capita result if the school were removed. The analysis is intended to determine whether the school would be beneficial to reducing Project VMT/Capita because it reduces home-based automobile VMT/Capita. That is, without the school, would the Project's home-based automobile VMT/Capita be higher.

### *Project's School Effect on Residential Home-Based Automobile VMT/Capita Impact Analysis*

If the school component were not constructed as part of the Project, a portion of the residential home-based other trips that presently are internal to the Project site would need to travel farther away to satisfy school trips.

If the Project did not include a school component, the residential home-based automobile VMT/Capita would be **21.88**. This number is calculated by eliminating all internal school trips, which are a portion of the home-based other trip category, and assigning those trips as external school trips. External trips have a longer trip length than internal trips; therefore, the resulting home-based automobile VMT/Capita increases with elimination of the school. Detailed calculations are provided in Attachment B.

Thus, if the school was removed from the Project, the residential home-based automobile VMT/Capita would increase from 21.54 to 21.88 miles, a VMT/Capita increase of approximately 2%. Therefore, the school has a beneficial effect on the Project's residential home-based automobile VMT/Capita and impacts related to school uses would be less than significant.



## PARKS VMT ANALYSIS

### *Threshold*

The Project includes approximately 37 acres of parks. The OPR Draft Guidance does not provide guidance related to evaluating VMT associated with parks for SB 743 purposes.

Since the parks are included within the Project site to minimize off-site residential trips related to park use and are provided as an amenity, the effect that the parks have on the Project's home-based automobile VMT/Capita is evaluated for the analysis. To calculate the effect, the Project home-based automobile VMT/Capita for all residential types of **21.54** miles is compared to the home-based automobile VMT/Capita result if the parks were removed. The analysis is intended to determine whether the parks are beneficial to reducing the Project VMT/Capita because they would reduce home-based automobile VMT/Capita. That is, without the parks, would the Project's home-based automobile VMT/Capita be higher.

### *Project's Park Effect on Residential Home-Based Automobile VMT/Capita Impact Analysis*

If the parks were not constructed, a portion of the residential home-based other trips that are internal to the Project would need to travel farther away to satisfy recreation needs.

If the Project did not include a park component, the residential home-based automobile VMT/Capita would be **22.17**. This number is calculated by eliminating all internal park trips, which are a portion of the home-based other trip category, and assigning those trips as external park/recreation trips. External trips have a longer trip length than internal trips; therefore, the resulting home-based automobile VMT/Capita increases with elimination of the parks. Detailed calculations are provided in Attachment B.

Thus, if the parks were removed from the Project, the residential home-based automobile VMT/Capita would increase from 21.54 to 22.17 miles, a VMT/Capita increase of approximately 3%. Therefore, the parks have a beneficial effect on the Project's residential home-based automobile VMT/Capita and impacts related to park uses would be less than significant.



## 5. INDUCED VEHICLE TRAVEL DUE TO ROADWAY CAPACITY EXPANSION

The Project includes proposed roadway capacity expansion projects including the widening of Deer Springs Road and Twin Oaks Valley Road. The Project also includes road improvements along Sarver Lane and Mesa Rock Road and intersection improvements along Buena Creek Road. The Sarver Lane improvements include upgrading the road to meet the County's Public Road Standards, improving and signalizing its intersection with Deer Springs Road, removing portions of the road from the floodplain, and incorporating a multi-use bicycle/pedestrian pathway into the Sierra Project. The Mesa Rock Road improvements would also meet the County's Public Road Standards and include additional turn lanes and capacity for its signalized intersection with Deer Springs Road. These road improvements at Sarver Lane and Mesa Rock Road are limited to providing the capacity necessary to serve the Project's traffic volumes and existing uses along these roads. These roads would also not facilitate any cut-through or regional traffic as they effectively dead end in the Sierra Project. Therefore, these road improvements would not expand the road's capacity in a way that induces VMT. The intersection improvements at Deer Springs Road for these two road would be done as part of the capacity enhancements proposed to Deer Springs Road analyzed below.

The Project's proposed intersection improvements along Buena Creek Road are limited to mitigating the Project's direct and cumulative impacts and would not change Buena Creek Road in a manner that would induce demand/induced VMT in accordance with OPR's draft guidelines.

In addition to the Project's proposed improvements noted above, Caltrans is working with the applicant on a separate project in connection with the design and construction of improvements to the I-15/Deer Springs Road interchange. The OPR Draft Guidance recommends that a VMT analysis be conducted for major roadway capacity expansion projects and that the analysis address potential induced travel effects.

One option for addressing these effects is to use an elasticity-based analysis technique that is described in the OPR Draft Guidance. The roadway improvement projects that would add capacity are the Deer Springs Road/Twin Oaks Valley Road widening and the Caltrans Deer Springs Road/I-15 interchange improvements. Therefore, these two improvements are the focus of the analysis presented below.

The elasticity-based analysis is derived directly from academic research (*Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions Policy Brief*, Susan Handy and Marlon G. Boarnet, September 30, 2014) on the topic of induced travel and estimates the percent change



in baseline VMT based on the percent change in lane-miles associated with the Project. The elasticity data includes short-term and long-term effects. Because the elasticity relationship is one where a positive increase in lane miles will always result in a positive increase in VMT, the methodology is not fully sensitive to travel time changes. For example, a new bridge or interchange could shorten both the distance and time for existing trips, thereby reducing VMT, but the elasticity method would only be sensitive to how many lane-miles were added and report a positive increase; as such, this methodology may, depending on the circumstances, overstate induced VMT.

### **Baseline**

Elasticity data exists for short-term and long-term conditions so that a range of VMT changes can be estimated based on the Project's alterations to the baseline roadway network. For purposes of this analysis, the baseline roadway network includes all public roadway lane-miles in San Diego County as measured in the *2014 California Public Road Data*, Statistical Information derived from the Highway Performance Monitoring System, Caltrans. 2014 is the latest year for available data. For San Diego County, the total maintained lane-miles was 10,370.11 with 77,484,940 daily VMT.

### **Project Roadway Capacity Expansion VMT**

As previously noted, the Project will construct the Deer Springs Road/Twin Oaks Valley Road widening. Additionally, as a separate project, Caltrans will construct the I-15/Deer Springs Road interchange expansion, which will support the Deer Springs Road/Twin Oaks Valley Road widening. Combined, these improvements will add 6.04 publicly maintained lane-miles within San Diego County based on the roadway widening plans and measured using aerial photography from the northbound ramp terminal intersection of the Deer Springs Road/I-15 interchange to the existing 4-lane section of Twin Oaks Valley Road.

The projected change in VMT related to the increased lane-miles, based on the OPR elasticity method, is shown in Table 5 below. As shown in Table 5, short-term daily VMT increases would range from 4,513 to 27,078, and the long-term VMT increase under this method would be 46,484. Note that the new road lane miles that would be constructed within the Project site are not included within the analysis because these internal roads will not induce new VMT beyond Project VMT since they are designed to serve only the Project site and, therefore, these roads would not generate any additional VMT beyond that already considered and analyzed under Section 4.





**TABLE 5 ROADWAY CAPACITY EXPANSION PROJECTS DAILY VMT**

Variable	Short-Term VMT (Low)	Short-Term VMT (High)	Long Term VMT
Baseline Lane-Miles (a)	10,370.11 miles		
Project Added Lane-Miles	6.04 miles		
Percent Change in Lane-Miles	0.058%		
Baseline VMT (a)	77,484,940		
Elasticity (b)	0.1	0.6	1.03
Induced Daily VMT (c)	4,513	27,078	46,484
Induced Annual VMT (d)	1,647,245	9,883,470	16,966,660

Notes: (a) 2014 California Public Road Data, Statistical Information Derived from the Highway Performance Monitoring System, Caltrans.  
 (b) Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Green House Gas Emissions, Policy Brief, Susan Handy and Marion G. Boarnet, Air Resources Board, September 20014. Individual elasticity estimates based on Table 1, Page 4.  
 (c) Induced VMT Calculation = Percent Change in Lane-Miles \* Baseline VMT \* Elasticity  
 (d) Induced Daily VMT \* 365 days

Source: Fehr & Peers, 2016

## Impact Analysis

### Near Term Analysis

Determining whether the increase in VMT reported in Table 5 above constitutes a significant impact requires consideration of a number of factors. The first factor to consider in assessing impact significance is whether, upon opening, the roadway capacity expansion projects will generate new VMT. Per the OPR Draft Guidance, if a roadway project generates 2,075,220 VMT annually, the impact is significant.

Based on the information presented in Table 5, the roadway capacity expansion would generate 1,647,245 to 9,883,470 VMT annually (daily VMT multiplied by 365 days) under the short-term scenario. Therefore, under the short-term low range estimate (1,647,245), induced VMT would be below the 2,075,220 threshold and impacts would be less than significant. However, under the high end annual short-term VMT estimate (9,883,470), VMT would exceed the threshold (2,075,220) and the near term impact would be significant.



Potential mitigation to reduce the identified significant near-term impact, based on the OPR Draft Guidance threshold, includes reducing VMT through TDM measures. As noted above, the Project includes a TDM Program that would implement all feasible TDM strategies. However, these strategies would reduce the Project VMT by 6.1% to a range of approximately 1,546,763 (annual low-end VMT of 1,647,763 reduced by 6.1%) to 9,280,578 (annual high-end VMT of 9,883,470 reduced by 6.1%) under the near-term scenario and, therefore, would not reduce the induced demand VMT below the OPR Draft Guidance threshold to less than significant levels. Moreover, because the subject roadway improvements are included in the San Diego County General Plan, not moving forward with the roadway capacity expansion would be inconsistent with the General Plan. Since there is no feasible mitigation, the impact would be significant and unavoidable.

### *Cumulative Analysis*

Based on the OPR draft guidelines, cumulative conditions analysis of induced travel due to roadway infrastructure expansion can be evaluated in two ways:

- Method 1: Evaluating cumulative (long term) VMT.
- Method 2: The OPR Draft Guidance indicates that an RTP/SCS consistency check be performed. If the subject roadway improvement is included in the RTP/SCS (which is designed to achieve satisfactory environmental conditions for air quality and greenhouse gases) and the improvement is represented in the regional travel model, no further analysis is required and the impact is considered less than significant.

#### Method 1:

Based on the information presented in Table 5, the roadway capacity expansion would generate 16,966,660 VMT under the long-term scenario. Therefore, under the long-term estimate (16,966,660), VMT would exceed the threshold (2,075,220) and the near term impact would be significant.

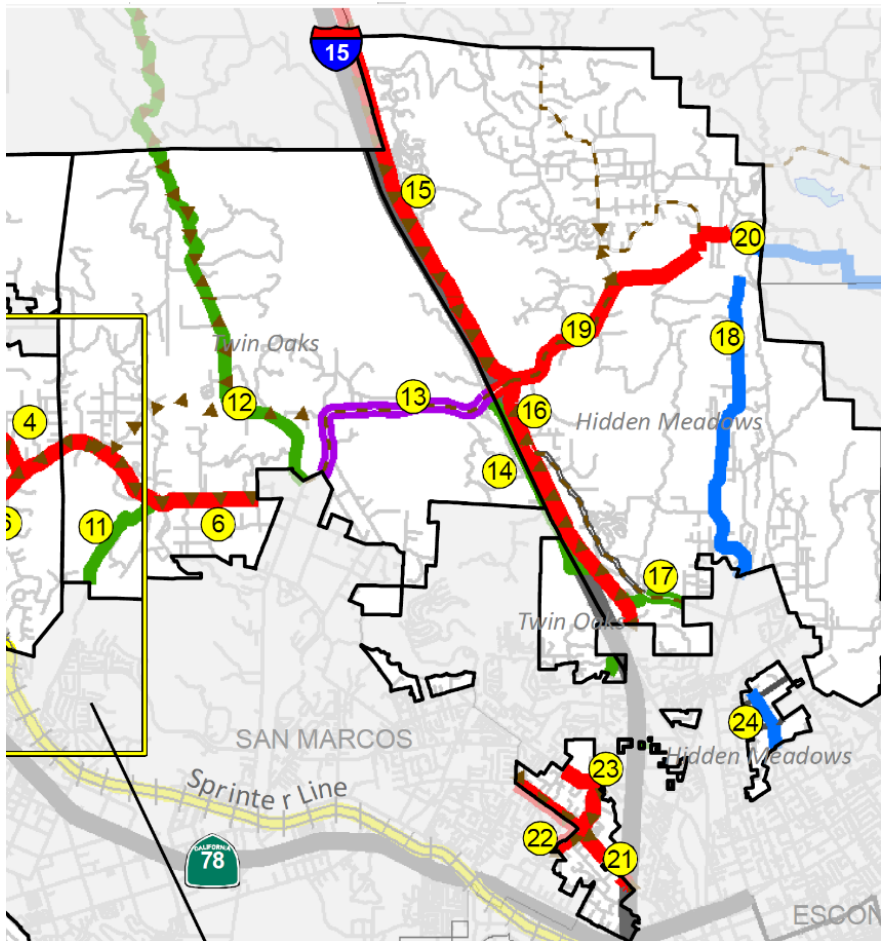
Potential mitigation to reduce the identified significant cumulative impact, based on the OPR Draft Guidance threshold, includes reducing VMT through TDM measures. As noted above, the Project includes a TDM Program that would implement all feasible TDM strategies. However, these strategies would reduce the long-term Project VMT by 6.1% to 15,931,694 (long-term VMT of 16,966,660 reduced by 6.1%); therefore, would not reduce the induced demand VMT below the OPR Draft Guidance threshold to less than significant levels. Moreover, because the subject roadway improvements are included in the San Diego County General Plan, not moving forward with the roadway capacity expansion would be



inconsistent with the General Plan. Since there is no feasible mitigation, the impact would be significant and unavoidable.

#### Method 2:

Another factor to consider is whether the roadway capacity expansion projects considered as part of this analysis are included in the regional transportation plan/sustainable community's strategy (RTP/SCS) prepared by SANDAG. Through the RTP/SCS process, SANDAG demonstrates the region's ability to achieve federal air quality conformity and meet state greenhouse gas reduction targets. In this case, the subject roadway capacity expansion projects (Deer Springs Road/Twin Oaks Valley Road widening) are included in the San Diego County General Plan and are incorporated into the SANDAG RTP/SCS. The images presented in Figure 4a and Figure 4b are from the San Diego



**Figure 4a: San Diego County General Plan Mobility Element Transportation Project Map**

County General Plan Mobility Element and show that the ultimate plan for Deer Springs Road/Twin Oaks Valley Road is widening from two-lanes to six-lanes. The Project would widen the roadways to four-lanes and, therefore, is consistent with the Mobility Element. The I-15 interchange improvements would support the Deer Springs Road/Twin Valley Oaks Road widening. Since I-15 is a Caltrans facility and the interchange is under Caltrans jurisdiction, the General Plan does not specify changes to the I-15/Deer Springs Road interchange. However, changes to the interchange are identified in *Caltrans I-15 Transportation Concept Summary* (June 2012) and the *Caltrans Ramp Metering Development Plan* (May 2016) which lists the Deer Springs Road/I-15 SB Ramp as a planned ramp meter project. Additionally, the I-15/Deer Springs Road interchange improvements are included in San Diego County's Transportation



Impact Fee program (TIF)/Transportation Needs Assessment Report (2012) as a necessary improvement that will be partially funded by development.

MOBILITY ELEMENT NETWORK APPENDIX			
Mobility Element Network—North County Metro Subregion Matrix			
ID*	Road Segment	Designation/Improvement #.#X = [# of lanes].[roadway classification][improvement]	Special Circumstances
10	<b>Rancho Santa Fe Road</b> Segment: Melrose Drive (Vista) to San Marcos Boulevard (San Marcos)	6.2 Prime Arterial	None
11	<b>Las Posas Road</b> Segment: Buena Creek Road to San Marcos city limits	2.2C Light Collector Intermittent Turn Lanes	North County Parkway Plan Roadway
12	<b>Twin Oaks Valley Road (SC 1170)</b> Segment: Bonsall CPA boundary to San Marcos city limits (near Deer Springs Road)	2.2C Light Collector Intermittent Turn Lanes	None
13	<b>Deer Springs Road (SF 1414)</b> Segment: San Marcos city limits (near Twin Oaks Valley Road) to Centre City Parkway	6.2 Prime Arterial San Marcos city limits to I-15 NB Ramp 4.1B Major Road Intermittent Turn Lanes—I-15 NB Ramp to Centre City Parkway	Accepted at LOS F I-15 northbound ramp to N. Centre City Parkway North County Parkway Plan Roadway

**Figure 4b: San Diego General Plan Mobility Element Transportation Project Matrix**

Since the I-15/Deer Springs Road interchange widening would support the Deer Springs Road/Twin Oaks Valley Road widening and is included in the Caltrans I-15 Transportation Concept Summary, Ramp Metering Development Plan, and the County's TIF program and the Deer Springs Road/Twin Oaks Valley Road widening projects are included in the County General Plan, referenced in the RTP/SCS, and included in the SANDAG Series 12 and Series 13 regional travel demand models for horizon years 2020 and beyond, the subject roadway improvement projects are consistent with the RTP/SCS and, therefore, impacts are considered less than significant under Method 2 cumulative conditions analysis.

# **Attachment A**

## **California Household Travel Survey Data**

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ATTACHMENT A  
California Household Travel Survey Data

	All = All Residential Types; SF = Single Family; MF = Multi-Family	Sample Size (persons)	Sample Size (households)	Household size	Vehicle Trip Length: HBW	Vehicle Trip Length: HBO	Vehicle Trip Length: NHB	Vehicle Trip Length: All purposes
All unincorporated San Diego County	All	444	155	2.9	13.9	9.0	9.0	10.3
	SF	386	134	2.8	14.9	7.9	9.0	9.9
	MF	58	21	3.1	4.3	17.9	10.3	14.1
North County East	All	500	169	3.0	12.3	7.4	7.5	8.5
	SF	397	135	2.9	12.9	7.0	8.2	8.7
	MF	103	34	3.3	10.4	8.6	5.6	8.0
East Suburban	All	386	146	2.6	13.1	5.9	5.9	7.5
	SF	326	116	2.8	13.2	6.1	6.2	7.6
	MF	60	30	2.0	12.4	5.3	4.1	6.6
East County	All	28	11	2.5	38.0	14.8	13.9	20.9
	SF	28	11	2.5	38.0	14.8	13.9	20.9
	MF	0	0					
Fallbrook, Pauma, Valley Center, Ramona, Lakeside, Harbison Crest, Alpine, Jamul	All	234	81	2.9	14.6	10.7	12.5	12.0
	SF	201	69	2.8	15.9	8.5	12.7	11.2
	MF	33	12	3.3	2.0	23.6	10.4	18.1
North County East + East County + East Suburban	All	914	326	2.8	13.4	6.9	6.8	8.3
	SF	751	262	2.9	13.8	6.8	7.2	8.4
	MF	163	64	2.7	11.2	7.4	5.1	7.5
SANDAG region	All	3,099	1,142	2.8	12.3	6.0	6.1	7.2
	SF	2,476	864	2.9	12.6	6.2	6.4	7.5
	MF	623	278	2.7	11.2	5.2	4.9	6.2

Light Grey denotes a small sample size - use with caution  
Dark grey denotes a very small sample size - do not use in isolation

HBW = Home based work  
HBO = Home based other  
NHB = None home based

This summary shows averge trip length (miles) by trip purpose.  
Geographies summarized: San Diego County, Census Designated Places contained in San Diego County, Census Tracts in San Diego County, and custom geographies (definitions by tract or place attached).

Data source: 2012 California Household Travel Survey  
For more information, contact Jennifer Ziebarth.

Purposes are split into Home-based Work (HBW), Home-based Other (HBO), and Non-home-based (NHB). The two home-based categories are also reported together as (HB).

Data includes weekday trips only.  
Data includes trips from the full year (data collected between 2/1/12 and 1/31/13).







# **Attachment B**

## **Project Land Use VMT Analysis**

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NEWLAND SIERRA VMT ANALYSIS  
BASELINE AND THRESHOLD DEVELOPMENT

BASELINE AND THRESHOLD DEVELOPMENT						CHTS DATA							
A	B	C	D	E	F	G	H	I	J	K	L	M	N
RESIDENTIAL LAND USE	POPULATION PER HOUSEHOLD (HH)	TOTAL VEHICLE TRIP RATE PER HH	HOUSEHOLD TRIP RATES BY PURPOSE			VEHICLE TRIP LENGTH BY PURPOSE		VMT BY TRIP PURPOSE		HOME-BASED VMT	HOME-BASED VMT/CAPITA	HOME-BASED VMT/TRIP	HOME-BASED VMT/CAPITA THRESHOLD
			HBW	HBO	NHB	HBW	HBO	HBW	HBO				
								(G*D)	(H*E)	(I+J)	(K/B)	[K/(D+E)]	(0.85*L)
SCENARIO 1 (SANDAG REGION)													
Data Sources: SANDAG trip generation rates, NCHRP 716 TRIP PURPOSE SPLITS, and CHTS TRIP LENGTHS for the SANDAG REGION													
Single Family Household	2.84	10.00	2.50	7.00	0.50	12.60	6.20	31.50	43.40	74.90	26.37	7.9	22.41
Multi-Family Household	2.84	8.00	2.00	5.60	0.40	11.20	5.20	22.40	29.12	51.52	18.14	6.8	15.42
Senior Household	2.84	4.00	1.00	2.80	0.20	11.20	5.20	11.20	14.56	25.76	9.07	6.8	7.71
SCENARIO 2 (NORTH COUNTY EAST SUB REGION)													
SANDAG RATES + TIA HH SIZE + NCHRP 716 TRIP PURPOSE SPLITS + CHTS TRIP LENGTHS (NORTH CO SUBREGION)													
Single Family Household	2.84	10.00	2.50	7.00	0.50	12.90	7.00	32.25	49.00	81.25	28.61	8.6	24.32
Multi-Family Household	2.84	8.00	2.00	5.60	0.40	10.40	8.60	20.80	48.16	68.96	24.28	9.1	20.64
Senior Household	2.84	4.00	1.00	2.80	0.20	10.40	8.60	10.40	24.08	34.48	12.14	9.1	10.32

Notes

Denotes small sample size for specific residential land use so trip data from all households in the geographic area are used.

Denotes small sample size for specific residential land use so trip data from the MF households in the geographic area are used.

HBW = Home Based Work  
HBO = Home Based Other  
NHB = Non Home Based

NEWLAND SIERRA VMT ANALYSIS - RESIDENTIAL LAND USE  
PROJECT ANALYSIS

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
RESIDENTIAL LAND USE	NUMBER OF HOUSEHOLDS (HHs)	POPULATION PER HH	SANDAG TOTAL VEHICLE TRIP RATE	VEHICLE TRIP RATES BY PURPOSE			EXTERNAL VEHICLE TRIPS			INTERNAL VEHICLE TRIPS	VEHICLE TRIP LENGTH BY PURPOSE			VMT BY TRIP PURPOSE			HOME-BASED VMT/CAPITA W/INTERNALIZATIO N	HOME-BASED VMT/CAPITA W/MITIGATION	SCENARIO 1 THRESHOLD: SANDAG REGION		SCENARIO 2 THRESHOLD: NORTH COUNTY EAST SUB-REGION		
				HBW	HBO	NHB	HBW	HBO	NHB	HBO	HBW - External	HBO - External	HBO - Internal	HBW	HBO	HOME-BASED VMT			TOTAL POPULATION	HOME-BASED VMT/CAPITA THRESHOLD	SIGNIFICANT IMPACT?	HOME-BASED VMT/CAPITA THRESHOLD	SIGNIFICANT IMPACT?
DATA SOURCES: SIERRA TIA + NCHRP 716 TRIP PURPOSE SPLITS + CHTS TRIP LENGTHS (North County East Sub-Region)																			6.1% VMT reduction				
Single Family Household	875	2.84	10	2.5	7	0.5	2,188	4,980	438	1,145	12.90	7.00	0.75	28,219	35,716	63,935	2,485	25.73	24.16	22.41	YES	24.32	NO
Multi-Family Household	935	2.84	8	2	5.6	0.4	1,870	4,257	374	979	10.40	8.60	0.75	19,448	37,343	56,791	2,655	21.39	20.08	15.42	YES	20.64	NO
Senior Household	325	2.84	4	1	2.8	0.2	325	740	65	170	10.40	8.60	0.75	3,380	6,490	9,870	923	10.69	10.04	7.71	YES	10.32	NO
All Households	2,135	2.84					4,383	9,976	877	2,295	12.30	7.40	0.75	51,047	79,550	130,597	6,063	21.54	20.22				

Notes

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Denotes small sample size for specific residential land use so trip data from the MF households in the geographic area are used.

NEWLAND SIERRA VMT ANALYSIS - RESIDENTIAL LAND USE

PROJECT ANALYSIS - No Retail

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
RESIDENTIAL LAND USE	NUMBER OF HOUSEHOLDS (HHs)	POPULATION PER HH	SANDAG TOTAL VEHICLE TRIP RATE	VEHICLE TRIP RATES BY PURPOSE			EXTERNAL VEHICLE TRIPS			INTERNAL VEHICLE TRIPS	VEHICLE TRIP LENGTH BY PURPOSE			VMT BY TRIP PURPOSE		HOME-BASED VMT/CAPITA W/INTERNALIZATION	HOME-BASED VMT/CAPITA W/MITIGATION	SCENARIO 1 THRESHOLD: SANDAG REGION		SCENARIO 2 THRESHOLD: NORTH COUNTY EAST SUB-REGION			
				HBW	HBO	NHB	HBW	HBO	NHB	HBO	HBW - External	HBO - External	HBO - Internal	HBW	HBO			VMT	TOTAL POPULATION	HOME-BASED VMT/CAPITA THRESHOLD	SIGNIFICANT IMPACT?	HOME-BASED VMT/CAPITA THRESHOLD	SIGNIFICANT IMPACT?
	(H*K) (I*M)+(K*N) (O+P) (B*C) (Q/R) (S*.939)																		(T>U?)		(T>W?)		
SANDAG RATES + NCHRP 716 TRIP PURPOSE SPLITS + CHTS TRIP LENGTHS (NORTH CO SUBREGION)																							
Single Family Household	875	2.84	10	2.5	7	0.5	2,188	5,708	438	417	12.90	7.00	0.75	28,219	40,268	68,487	2,485	27.56	25.88	22.41	YES	24.32	YES
Multi-Family Household	935	2.84	8	2	5.6	0.4	1,870	4,879	374	357	10.40	8.60	0.75	19,448	42,231	61,679	2,655	23.23	21.81	15.42	YES	20.64	YES
Senior Household	325	2.84	4	1	2.8	0.2	325	848	65	62	10.40	8.60	0.75	3,380	7,340	10,720	923	11.61	10.91	7.71	YES	10.32	YES
All Households	2,135	2.84					4,383	11,435	877	836	12.30	7.40	0.75	51,047	89,838	140,885	6,063	23.24	21.82				

Notes

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ATTACHMENT B  
NEWLAND SIERRA VMT ANALYSIS - RESIDENTIAL LAND USE  
PROJECT ANALYSIS - No School

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X				
INTERNAL VEHICLE TRIPS																				SCENARIO 1 THRESHOLD: SANDAG REGION		SCENARIO 2 THRESHOLD: NORTH COUNTY EAST SUB-REGION					
RESIDENTIAL LAND USE	NUMBER OF HOUSEHOLDS (HHs)	POPULATION PER HH	SANDAG TOTAL VEHICLE TRIP RATE	VEHICLE TRIP RATES BY PURPOSE			EXTERNAL VEHICLE TRIPS			INTERNAL VEHICLE TRIPS	VEHICLE TRIP LENGTH BY PURPOSE			VMT BY TRIP PURPOSE		HOME-BASED VMT/CAPITA W/INTERNALIZATION	HOME-BASED VMT/CAPITA W/MITIGATION	HOME-BASED VMT/CAPITA THRESHOLD	SIGNIFICANT IMPACT?	HOME-BASED VMT/CAPITA THRESHOLD	SIGNIFICANT IMPACT?						
				HBW	HBO	NHB	HBW	HBO	NHB		HBO	HBW - External	HBO - External	HBO - Internal	HBW							HBO	HOME-BASED VMT	TOTAL POPULATION			
																		(H*K)	(I*M)+(K*N)	(O+P)	(B*C)	(Q/R)	(S*.939)	(T>U?)		(T>W?)	
SANDAG RATES + NCHRP 716 TRIP PURPOSE SPLITS + CHTS TRIP LENGTHS (NORTH CO SUBREGION)																											
Single Family Household	875	2.84	10	2.5	7	0.5	2,188	5,126	438	999	12.90	7.00	0.75	28,219	36,631	64,850	2,485	26.10	24.50	22.41	YES	24.32	YES				
Multi-Family Household	935	2.84	8	2	5.6	0.4	1,870	4,382	374	854	10.40	8.60	0.75	19,448	38,326	57,774	2,655	21.76	20.43	15.42	YES	20.64	NO				
Senior Household	325	2.84	4	1	2.8	0.2	325	762	65	148	10.40	8.60	0.75	3,380	6,661	10,041	923	10.88	10.21	7.71	YES	10.32	NO				
All Households	2,135	2.84					4,383	10,270	877	2,001	12.30	7.40	0.75	51,047	81,618	132,665	6,063	21.88	20.54								
Total Trip Ends Check										17,530																	

Notes

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ATTACHMENT B  
NEWLAND SIERRA VMT ANALYSIS - RESIDENTIAL LAND USE  
PROJECT ANALYSIS - No Parks

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T		U	V	W	X		
RESIDENTIAL LAND USE	NUMBER OF HOUSEHOLDS (HHs)	POPULATION PER HH	SANDAG TOTAL	VEHICLE TRIP RATES BY PURPOSE			EXTERNAL VEHICLE TRIPS			INTERNAL VEHICLE TRIPS	VEHICLE TRIP LENGTH BY PURPOSE			VMT BY TRIP PURPOSE			HOME-BASED VMT/CAPITA W/INTERNALIZATION	HOME-BASED VMT/CAPITA W/MITIGATION	THRESHOLD BASED ON ALL CHTS DATA		SCENARIO 1 THRESHOLD: SANDAG REGION		SCENARIO 2 THRESHOLD: NORTH COUNTY EAST SUB-REGION			
			VEHICLE TRIP RATE	HBW	HBO	NHB	HBW	HBO	NHB	HBO	HBW - External	HBO - External	HBO - Internal	HBW	HBO	HOME-BASED VMT			TOTAL POPULATION	VMT/CAPITA THRESHOLD (0.85*OPTION 1)	SIGNIFICANT IMPACT?	HOME-BASED VMT/CAPITA THRESHOLD	SIGNIFICANT IMPACT?	HOME-BASED VMT/CAPITA THRESHOLD	SIGNIFICANT IMPACT?	
SANDAG RATES + NCHRP 716 TRIP PURPOSE SPLITS + CHTS TRIP LENGTHS (NORTH CO SUBREGION)																										
Single Family Household	875	2.84	10	2.5	7	0.5	2,188	5,251	438	874	12.90	7.00	0.75	28,219	37,412	65,631	2,485	26.41	24.80	12.22	YES	22.41	YES	24.32	YES	
Multi-Family Household	935	2.84	8	2	5.6	0.4	1,870	4,489	374	747	10.40	8.60	0.75	19,448	39,164	58,612	2,655	22.07	20.73	7.26	YES	15.42	YES	20.64	YES	
Senior Household	325	2.84	4	1	2.8	0.2	325	780	65	130	10.40	8.60	0.75	3,380	6,807	10,187	923	11.04	10.36	7.26	YES	7.71	YES	10.32	YES	
All Households	2,135	2.84					4,383	10,520	877	1,751	12.30	7.40	0.75	51,047	83,383	134,430	6,063	22.17	20.82	11.56	YES					
Total Trip Ends Check										17,530																

Notes

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