CITY OF EL PASO DE ROBLES

GENERAL PLAN 2010

CIRCULATION ELEMENT

FINAL ENVIRONMENTAL IMPACT REPORT

SCH No. 2010071065

Volume II of II
Technical Appendices C–J

Prepared for:

CITY OF EL PASO DE ROBLES
COMMUNITY DEVELOPMENT DEPARTMENT
PLANNING DIVISION
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SAN LUIS OBISPO, CA 93401-2725

FEBRUARY 2011

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VOLUME II TECHNICAL APPENDICES

APPENDIX C

ISSUES AND CONSTRAINTS MEMO

MEMO

To: John Falkenstien, City Engineer
Susan DeCarli, Planner
CITY OF EL PASO DE ROBLES

From: Barb Kinison Brown, Project Manager

Cc: Tad Stearn, Principal

Date: July 22, 2010

Re: Issues and Constraints Memo

This memo summarizes existing setting and natural resource information, identifies background and technical data sources, and helps to prioritize the importance of environmental and process issues that we may encounter during the preparation of the City of El Paso de Robles General Plan 2010 Circulation Element Environmental Impact Report (EIR). The intent of this document is to identify any global issues related to policy provided in the proposed Circulation Element as well as, physical resources that may pose issues/constraints for planned system improvements. This preliminary evaluation is based on readily available City and regional documents including, but are not limited to: the *City of El Paso de Robles General Plan* (GP) (Paso Robles 2003), *City of El Paso de Robles General Plan Environmental Impact Report* (*GP EIR*) (Paso Robles/Rincon 2003), *City of El Paso de Robles Zoning Maps* (Paso Robles 2004), *City of Paso Robles Hazards Mitigation Study* (Paso Robles/URS 2005), the *Revised Storm Water Management Plan* (Paso Robles 2010), *Urban Water Management Plan* (UWMP) (Paso Robles/Todd Engineering 2005), *Vision 2025: The Regional Transportation Plan for San Luis Obispo County* (RTP) (SLOCOG 2005), and *2001 Clean Air Plan San Luis Obispo County* (CAP) (SLOAPCD 2001).

EXISTING CONDITIONS OF FUTURE ROADWAYS IMPROVEMENT AREAS

The proposed Circulation Element identifies several future roadway improvements. Most of the planned improvements lie within the City limits and all lie within the planning impact area (PIA). Planned improvements and existing conditions of those improvement areas are described below.

1. **Dry Creek Road between Airport Road and N. River Road** – Planned improvements propose a 3-lane arterial roadway between Airport Road and Golden Hill Road and a 2-lane arterial roadway between Golden Hill Road and N. River Road. These planned improvements are along an existing roadway and would create new roadways partially within the City limits and partially within the County of San Luis Obispo (SLO) but within the City's PIA. The improvement area is undeveloped land partially located within the County's jurisdiction, and partially located within the City limits (including a portion of the City's Borkey Area Specific Plan area). Along this improvement area the following features exist: a vacant former Youth Correction Facility that is planned to be converted to a common correctional facility in the

future; Huerhuero Creek and associate riparian habitat, agriculture/rural land, non-native annual grassland, and Salinas River riparian habitats; a storage yard, oak trees.

2. **Buena Vista Drive between Circle B Road and future Dry Creek Road –** Planned improvements propose a 2-lane arterial roadway between Circle B Road and Dry Creek Road along the existing roadway alignment, which is located along the City limits line. Within the improvement area there currently is agriculture/rural habitat and oak trees.

3. **Union Road between Airport Road and Golden Hill Road** – Planned improvements propose a 3-lane arterial roadway along the existing roadway alignment, which is located within the City limits. The improvement area is adjacent to urban habitat consisting of industrial/commercial uses near Golden Hill Road, agricultural/rural lands, non-native grassland habitat; Huerhuero Creek riparian habitat, and urban lands consisting of improved recreation areas (parks/fields) near Airport Road.

4. **Union Road between Highway 46 and Dry Creek Road** - Planned improvements propose a 3-lane arterial roadway north of Highway 46 East, within an area that is primarily undeveloped land within the City limits. The improvement area is surrounded by rural and industrial land uses to the southwest such as industrial development; and vegetative habitat, such as, non-native grassland habitat, oak woodland/savannah habitat, Huerhuero Creek riparian, and agriculture (vineyards) /rural habitat in all other areas.

5. **Wisteria Road-Engine Road between future Union Road and Buena Vista Drive** – Planned improvements propose a 3-lane arterial roadway along the existing roadway, which is located partially within the City limits and partially within the County. The roadway would be extended within an undeveloped area of the County to connect with the existing Dallons Drive, which is located within the City to the southwest. Along this improvement area there is a mix of urban lands containing developed industrial/commercial uses, and undeveloped agricultural/rural lands and non-native grasslands.

6. **Golden Hill between future Wisteria Road-Engine Road and future Dry Creek Road** – Planned improvements propose a 3-lane arterial roadway along the existing roadway and extending the 3-lane roadway along the City limit line through primarily undeveloped land where it would connect with the proposed Dry Creek Road extension. The improvement area contains rural /agricultural uses, non-native grassland habitat, oak woodland/savannah habitat, and Huerhuero Creek riparian area.

7. **Highway 46 East between Airport Road and Jardine Road** – Planned improvements propose, and are currently under construction, a 4-lane expressway along the existing alignment, which is primarily located within the City limits. However, the northeastern most portion of this planned improvement (between approximately Dry Creek (the water feature not roadway) and Vintage Hills Way) is located within the County and the City's PIA. The improvement area contains or is adjacent to agriculture (vineyards) rural habitat, oak woodland/savanna, urban habitat consisting of golf course, and non-native grassland habitat.

8. **Airport Road between Union Road and Creston Road** – Planned improvements propose a new 3-lane arterial roadway that extends southerly along the eastern boundary of City limits from Union Road through the Chandler Ranch area to Linne Road. At that point the roadway will join the existing Airport Road. The new segment will continue again at Meadowlark Road and extend south to Creston Road. The improvement area is located within the City limits, except for a small portion near Sherwood Road that lies within the County. The improvement area contains and is also surrounded by the following: non-native grassland to west and agriculture/rural lands to east between Union Road and Linne Road, residential on both sides

between Linne Road and Meadowlark Road; and non-native grassland habitat between Meadowlark Road and Creston Road that is identified in the City's GP as a growth area.

9. **Gilead Lane between Airport Road and Golden Hills Road** – Planned improvements propose a 3-lane arterial roadway extension of the existing roadway that would continue eastward through undeveloped land within the City's Chandler Ranch area and connect with the proposed Airport Road. The area of proposed improvements is currently undeveloped and contains non-native grassland and oak woodland/ savanna.
10. **Sherwood Road between Creston Road and future Airport Road –** Planned improvements propose a 4-lane arterial roadway along the existing alignment, which is located within the City limits. From Fontana Road the 4-lane arterial would extend eastward towards the proposed Airport Road, in an area containing undeveloped land that consists of non-native grassland habitat and urban habitat with possible seasonal drainage basin.
11. **Sherwood Road/Linne Road between future Airport Road and future Airport Road (loop) –** East of the Sherwood Road/Airport Road intersection, the roadway will likely be referred to as Linne Road. This improvement proposes a 3-lane arterial route extending from Linne Road to south Meadowlark Road within the Olsen annexation area and connects back to Airport Road within the Beechwood annexation south of Meadowlark Road. These improvements are proposed within an area that is primarily undeveloped land partially located within the City's Olsen and Beechwood annexation areas and partially within the County and the City's PIA. The area currently consists of rural residential land uses, and possible seasonal creeks.
12. **Creston Road between Scott Street and Sherwood Road-Niblick Road –** Planned improvements propose a 3-lane arterial roadway along the existing alignment, which is located within a developed area of the City. The area of proposed improvements contain urban habitat consisting of residential, office, public/quasi public (2 schools), commercial, and improved recreation areas (park and golf course).
13. **Creston Road between Walnut Drive and S. River Road –** Planned improvements propose a 3-lane arterial roadway within a developed area of the City. The area of proposed improvements contains urban lands, primarily residential uses.

ISSUES AND CONSTRAINTS ANALYSIS

The following is a summary of the environmental resources within the City and an identification of primary constraints associated with each resource.

AESTHETICS

Existing Resources

Visual resources within the City include prominent ridgelines (as identified in Figure 4.1-1 of the GP Plan EIR (Paso Robles 2003b), gateways, visual corridors, natural landmarks and open space view sheds (as identified in Table C-1 of the GP (Paso Robles 2003a)). Primary roadway corridors define the vantage point for the largest number of views. U.S. Highway 101 and Highway 46 are the primary regional highways serving the area. Spring Street is the major north-south roadway within the western portion of the City. Niblick Road and Union Road are the major east-west roadways within the existing City limits. Creston Road has been identified as an easterly gateway to the City. In addition, the Union Pacific railroad traversing the City provides another view corridor. According to the California Scenic Highway Program website (accessed on July 7, 2010), there are no State designated Scenic Highways within the City's PIA.

Primary Constraints

Important visual resources within the City such as gateways, visual corridors, natural landmarks and open space view sheds may be affected by the construction of roadway improvements. In addition, increased lighting and glare could come from streetlights and increased volume of automobiles traveling along the roadways. The eastern portion of the City contains rural areas/rural landscapes, wineries/vineyards, equestrian properties, and visual resources such as prominent oak trees that could be altered by the introduction of new facilities.

AGRICULTURE AND FORESTRY RESOURCES

Existing Resources

According to the GP there are approximately 1,067 acres designated for "Agricultural" land uses within the City. According to the San Luis Obispo Important Farmland Map, the future improvements along Buena Vista Road; Dry Creek Road; Highway 46; Airport Road; and Sherwood Road are located in the vicinity of land designated as "Unique Farmland," and/or "Statewide Importance Farmland" (DOC 2008). According to the San Luis Obispo Williamson Act Map 2009, it appears that land adjacent to the future Dry Creek Road improvements outside the City Limits is designated as "Williamson Act - Prime Agricultural Land" and "Williamson Act – Agricultural Preserve" (DOC 2009) According to the City's Zoning Map, future Dry Creek Road improvements within the Borkey Area Specific Plan area (Zoning Map for Subarea 3 (Paso Robles 2004c)) are designated within an "Agriculture" zoning district.

According to the *Fire Resource and Assessment Program (FRAP) Land Management Map*, there are no forest resources located within the vicinity of the City of Paso Robles (CDF 2003). According to the City's Zoning Map there are no areas within the City limits that are designated within a "Forest" zoning district (Paso Robles 2004).

Primary Issues/Constraints

The planned improvements along Buena Vista Road; Dry Creek Road; Highway 46; Airport Road; and Sherwood Road may potentially result in the conversion of "Unique Farmland," and/or "Statewide Importance Farmland." In addition, implementation of future Dry Creek Road improvements proposed within the County (City's PIA) may result in potential indirect impacts to land designated as "Williamson Act - Prime Agricultural Land" and "Williamson Act – Agricultural Preserve." Furthermore, the Dry Creek Road improvements proposed within the Borkey Area Specific Plan area (Zoning Map for Subarea 3) may potentially conflict with City's "Agriculture" zoning district policy.

AIR QUALITY

Existing Resources

The City is located within San Luis Obispo County, which is part of the South Central Coast Air Basin (SCCAB). The climate of the county is characterized as Mediterranean, with warm, dry summers and cooler, relatively damp winters. Along the coast, mild temperatures prevail most of the year due to the moderating influence of the Pacific Ocean. The effects of the Pacific Ocean are diminished inland and by major intervening terrain features such as the coastal Santa Lucia Mountain Range.

According to the San Luis Obispo Air Pollution Control District (APCD) Clean Air Plan (SLOAPCD 2001), the air basin is designated as 'non-attainment' for state standards of respirable particulate matter (PM10) and Ozone (O3) and 'unclassified/attainment' for federal standards of O3, PM10 and fine particulate matter (PM2.5). According to APCD, the largest contributors of air pollution are motor vehicles. Emission sources of reactive organic gasses (ROG) and oxides of nitrogen (NOx), the main precursors for ozone formation, are approximately 20% from automobiles, 27% from trucks/buses and approximately 25% from airplanes, boats and trains. Particulate matter has many natural sources;

however, vehicle exhaust, road dust, grading, and demolition are major contributors to exceedance of PM standards in the county.

The SLOAPCD's California Environmental Quality Act (CEQA) Handbook (APCD 2003) provides information on the District's significance thresholds for determining potential air quality impacts from proposed development and provides recommendations on the level of mitigation necessary to reduce those impacts. SLOAPCD's CEQA Handbook specifically addresses those projects predicted to generate significant levels of traffic or congestion. These types of projects may require a carbon monoxide (CO) hotspot analysis. The CALINE4 model was developed by Caltrans to determine pollutant concentrations near roadways. It is primarily used to predict concentrations of CO near congested roadway segments or intersections; however, it can also be used to calculate ambient levels of nitrogen oxides (NOx), PM10, and other inert gaseous pollutants. Given source, site, and meteorological characteristics, the model can predict impacts on receptors within 150 meters of the roadway. Use of CALINE4 is generally required whenever a project is expected to cause significant queuing of vehicles at an intersection, or is predicted to cause the Level of Service (LOS) on a roadway segment to degrade to LOS D or lower.

Primary Issues/Constraints

Planned roadway improvements are intended to accommodate increased vehicle capacity, which will increase mobile source emissions on certain facilities. By year 2025, four roadway segments are projected to have a demand that exceeds design capacity and three roadway segments are projected to have a utilization of between 90 and 100 percent. These roadway segments will have increased mobile source emissions as a result. The four roadway segments that will operate above 100 percent utilization include: Highway 46 between Union Road and U.S. 101 and between Union Road and Airport Road; Niblick Road between Spring Street and South River Road; and Spring Street between 3rd Street and 4th Street. The three roadway segments that will operate between 90 and 100 percent utilization include 13th Street between Riverside Avenue and South River Road; and two segments of Spring Street between 6th Street and 17th Street. Along these specific roadways and corridors, greater concentrations of emissions can be expected. Land uses along urbanized facilities would be most affected, particularly if land uses are sensitive to emissions such as schools, hospitals, etc.

The indirect impact of increased mobile source emissions may result in cumulative increases in mobile source criteria pollutants for which the region is non-attainment. In addition, construction generated emissions may expose nearby sensitive receptors to substantial pollutant concentrations in the vicinity, especially along Creston Road (i.e. nearby schools and residences) and Dry Creek Road (i.e. Youth Detention Center).

BIOLOGICAL RESOURCES

Existing Resources

According to the GP EIR, the City is composed of a mosaic of the following vegetative communities: oak woodlands and savannas, riparian vegetation along stream courses, chaparral, coastal scrub, grasslands, urban vegetation and agricultural areas (row crops, orchards, vineyards, fallow agricultural and ranchland). The agricultural areas are comprised largely of rangelands containing non-native annual grassland along with vineyards, orchards, and annually cultivated crops.

The Salinas River, a river of regional importance, and Huerhuero Creek traverse the City. The Salinas River flows south to north through the western portion of the city, along Highway 101. Huerhuero Creek is an ephemeral drainage that runs northwest across the northeastern portion of the City and terminates at its confluence with the Salinas River, just north of the City of Paso Robles. In addition,

there are drainages and tributaries within the City that could be determined as wetlands and/or waters of the United States under the jurisdiction of the United States Army Corps of Engineers (Corps), and waters of the State under California Department of Fish and Game jurisdiction.

The Salinas River, Huerhuero Creek, Chandler Ranch, and the airport area represent important regional wildlife movement corridors. Wildlife migration corridors are areas used by wildlife to gain access through or to areas of preferred foraging, nesting, or spawning habitat. These corridors become increasingly important as urbanization continues to block passage by encroaching upon important movement pathways. The eastern area of the City north and south of Highway 46, including the Chandler Ranch, are an important linkage area for satellite populations of the San Joaquin kit fox (SJKF) (*Vulpes macrotis mutica;* SJKF) that occur in areas northwest of the City at Camp Roberts and to southeast in the Carrizo Plains. The Salinas River also provides a movement corridor for wildlife including potential habitat for steelhead (*Oncorhynchus mykiss*).

The native and naturalized communities are generally restricted to the Salinas River, Huerhuero Creek, Chandler Ranch, and to the undeveloped hillsides that straddle the existing City limits and existing sphere of influence to the west. Biologically, the most important natural communities are the native riparian, oak woodland/oak savanna, and mixed native habitats. However, non-native annual grassland habitat can support special-status plant and wildlife species.

Non-native annual grassland may also support vernal pools and native perennial bunchgrass habitat, which are considered to be plant communities of special concern. In addition, wetland and riparian habitats are considered to be plant communities of special concern and may occur within the riparian areas.

Primary Issues/Constraints

Non-Native Annual Grassland

Non-native annual grasslands support several special status species and two plant communities of special concern. Planned improvements within this habitat may disturb special status plant and wildlife species. Special status plant species that may occur in non-native grassland habitats include the following: Jared's pepper-grass (however, specific alkali flats or adobe soils must be present), shining navarretia (associated with vernal pool habitats or moist grasslands), oval-leaved snapdragon (*Antirrhinum ovatum*), round leaved filaree (*Erodium macrophyllum*) and dwarf calycadenia (*Calycadenia villosa*). All four species may also occur in oak woodland /oak savanna communities because grassland is a component in the understory of these two habitat types. Special status wildlife species that may occur in non-native grassland habitats include the following: northern harrier (*Circus cyaneus*), California horned lark (*Eremophila alpestris actia*), and the burrowing owl (*Athene cunicularia*), Loggerhead shrikes (*Lanius ludovicianus*), Southwestern pond turtle (*Clemmys marmorata pallida*), California tiger salamander (*Ambystoma californiense*; CTS), Golden Eagles, Western spadefoot toad (*Spea hammondii*), California red-legged frog (*Rana aurora draytonii*; CRLF), SJKF, American badger (*Taxidea taxus*), and San Joaquin pocket mouse (*Perognathus inornatus*) (Paso Robles 2003b). In addition, the proposed improvements may also disturb plant communities such as vernal pools and native perennial bunchgrass habitats, which are considered to be plant communities of special concern. Furthermore, nests of migratory and protected birds species may be present within the vicinity of the improvement areas.

Planned improvements that are located in the vicinity of non-native annual grasslands include: Dry Creek Road between Airport Road and N. River Road; Union Road; Wisteria Road-Engine Road between future Union Road and Buena Vista Drive; Golden Hill between future Wisteria Road-Engine Road and future Dry Creek Road; Highway 46 East between Airport Road and Dry Creek Road;

Airport Road between Union Road and Creston Road; Gilead Lane between Airport Road and Golden Hill Road; and Sherwood Road between Creston Road and future Airport Road. In addition, improvement areas along Sherwood Road may be located where seasonal drainage basins may occur. Closer examination of these areas may be necessary to determine the presence or absence of special status species or habitats of special concern.

Water Courses, Wetlands, and Riparian Habitat

Water courses and riparian habitat support an unusually high variety and abundance of special status species, are considered a plant community of special concern and provide movement and migration corridors for a wide range of wildlife species. The proposed improvements may disturb special status plant and wildlife species located within the water courses and riparian habitat. Special status plant species that may occur in water courses and riparian habitats include the following: Jared's pepper-grass (specific alkali flats or adobe soils must be present), Hardham's Evening-Primrose (*Camissonia hardhamiae*), steelhead, Cooper's hawk, sharp-shinned hawk (*Accipiter striatus*), least bell's vireo (*Vireo bellii pusillus; LBV*), yellow warbler, arroyo toad (*Bufo californicus*), California Red Legged Frog, California tiger salamander, western spadefoot toad, southwestern pond turtle, coast horned lizard (*Phrynosoma coronatum*), Monterey dusky-footed woodrat, and San Joaquin Kit Fox (SJKF) (Paso Robles 2003b). The sandy flats of the Salinas River and Huerhuero Creek may also act as important corridors for SJKF. Closer examination of drainages and ephemeral or intermittent streams and associated habitat would be necessary to determine the absence/presence of special status species and if they are considered wetlands or non-wetland waters of the United States and are within the regulatory jurisdiction of the Corps is necessary in areas proposed for development.

Planned improvements that are located in the vicinity of water courses, wetland and riparian habitat include: Dry Creek Road between Airport Road and N. River Road; Union Road; and Golden Hill between future Wisteria Road-Engine Road and future Dry Creek Road. In addition, improvement areas along Sherwood Road may be located where seasonal drainage basins may occur.

Oak Woodland /Oak Savanna (Flora)

Oak woodland/oak savanna habitat supports a variety of special status species and may support the Valley Oak Woodland Habitat, which is considered a plant community of special concern. The proposed improvements may disturb special status plant and wildlife species located within the oak woodland/oak savanna habitat, which would include those species found within grasslands because oak woodland/oak savanna habitats often have grasslands within the understory. In addition, oak woodland/oak savanna habitat also may support the following special status species: white-tailed kite (*Elanus leucurus),* Cooper's hawk, sharp-shinned hawk, and Monterey dusky-footed woodrat (MDFW). Furthermore, oak woodlands and oak savannas provide nesting sites for birds.

Planned improvements that are located in the vicinity of oak woodland/oak savanna habitat include: Union Road between Highway 46 and Dry Creek Road; Golden Hill between future Wisteria Road-Engine Road and future Dry Creek Road; Highway 46 East between Airport Road and Dry Creek Road; Airport Road between Union Road and Creston Road; and Gilead Lane between Airport Road and Golden Hill Road. In addition, oak trees may be located within the vicinity of the planned improvements along Dry Creek Road between Airport Road and N. River Road and Buena Vista Drive between Circle B Road and Future Dry Creek Road.

Wildlife Corridors

Wildlife corridors are connections between habitat patches that allow for physical and genetic exchanges between isolated animal populations. A portion of the Salinas River is identified as a regional wildlife corridor that connects areas south of the city to areas to the north and to the Pacific Ocean. Large animal such as deer, coyote, and mountain lion. It is possible that the federally endangered SJKF also move along this river, although DFG staff has indicated that SJKF do not use the Salinas River within the Paso Robles boundary for a corridor (Susan Di Carli, email July 16, 2010). . The Salinas River is also a known migratory corridor and has been designated as critical habitat for the federally endangered steelhead trout. Wildlife movement within Huerhuero Creek also serves as an important wildlife corridor; however, it may not be suitable for aquatic or terrestrial wildlife needing water or dense vegetative cover. Species that potentially use the Paso Robles area as a migratory corridor include, but are not limited to: western kingbird, Cooper's hawk, LBV, sharp-shinned hawk (Accipiter striatus), ferruginous hawk (Buteo regalis), numerous warblers, SJKF, and steelhead. Roadway improvement may disturb the movement of wildlife through the City.

In addition, the City supports regional efforts to prepare a Habitat Conservation Plan for the SJKF. Roadway improvements would be required to be evaluated for consistency with any adopted HCP. However, according to the US Fish and Wildlife website (accessed on July 7, 2010), an HCP has not yet been prepared for the area.

CULTURAL RESOURCES

Existing Resources

Paso Robles lies within the historic territory of the Native American Indian group known as the Chumash. The Obispeño were the northernmost Chumash group, occupying area around Paso Robles. The Chumash way of life was forever altered with Spanish colonization.

In 1596, Sebastian Rodriguez Cermeno arrived at Port San Luis, which was the first European contact to the area. In 1769, Gaspar de Portola and Fray Crespi traveled between San Diego and Monterey to establish five missions. By 1772, Father Serra founded the nearby Mission San Luis Obispo de Tolosa and by 1797, the Mission San Miguel Archangel was built. Spanish rule came to an end in 1821 with Mexican Independence and the missions were secularized in 1832. By 1834, the Chumash population had been decimated by disease and declining birthrates.

The Juan Bautista De Anza Trail, a 1210- mile long National Park Service Historic Trail, traverses the City near 24th Street along the southern portion of the Salinas River. This trail commemorates the route followed by Anza to found a presidio and mission on the San Francisco Bay.

A number of eligible and potentially eligible historic resources exist within the City and there may potentially be buried historic archaeological resources within the City's PIA. There are a number of documented archaeological resources within and surrounding the City at the base of hills, ridgelines, at the mouths of canyons and along creeks, rivers and watercourses.

Primary Constraints

Implementation of any of the planned improvements may disturb eligible or potentially eligible historic resources, and yet undiscovered human remains, archaeological and/or paleontological resources. Historic structures in the downtown area may feel the pressure of increased utilization of existing roads, but are less likely to be directly affected by widening under this plan.

GEOLOGY AND SOILS

Existing Resources

Paso Robles is bordered on the south and west by the rugged mountainous ridges of the Santa Lucia Coastal Range, to the east by the low hills of the La Panza and Temblor Ranges, and to the north by the low hills and flat-topped mesas of the Diablo Range. The highest elevations are found in the Santa Lucia Coastal Range, which reach up to 3,400 feet above mean sea level. Substantial ridgelines are distributed throughout the western, southern, and eastern portions of the City (as shown in Figure 4.1-1 of the GP EIR).

The geology of the area consists primarily of sedimentary rock. The Salinas River Valley is underlain by deposits of non-marine sediment and alluvial deposits. The areas east and west of the Salinas River are underlain by later Pleistocene terrace sands and gravels. The low hills along the western edge of the City and the eastern bank of the Salinas River are underlain by the Pliocene-age Paso Robles Formation. Just west of the City, near Terrace Hill Drive, there are outcrops of Monterey Shale.

The area is exposed to seismic hazards associated with several regional faults including: the San Andreas, Rinconada, Hosgri and "Offshore Faults" (as shown in Figure 4.5-2 of GP EIR (Paso Robles 2003b)). A majority of the earthquakes detected in area have originated from movement along the San Andreas Fault, which is located approximately 38 miles northeast of the City. The Jolon Fault transects the southwestern portion of the City, and converges with the Rinconada Fault to form one fault or fault zone near Mountain Springs Road. The Rinconada Fault may be capable of producing a maximum credible earthquake (MCE) of 7.0. According to the GP EIR, neither of these faults is active with respect to fault rupture (Paso Robles 2003b).

Primary Issues/Constraints

The planned improvements may be subject to seismic related hazards, soil related hazards and geologic hazards.

Seismic Hazards

Planned improvements would be placed in an area that may be subject to seismic ground shaking generated by earthquake generated by the following faults: "Offshore Faults," and the Rinconada, San Andreas, and Hosgri Faults. In the Paso Robles Area, the Rinconada Fault and San Andreas Fault are identified as the primary sources of potential ground shaking. According to the GP EIR, the City would experience a maximum ground acceleration of 0.4g-0.6g during a Magnitude 7.5 earthquake on the Rinconada Fault and a maximum ground acceleration of 0.2 to 0.3g with a 30 to 50 second duration of strong shaking with a Magnitude 8.25 earthquake on the San Andreas Fault.

Exposure to earthquake may result in seismic related hazards including ground rupture and liquefaction. According to GP EIR, there are no Alquist-Priolo Earthquake Fault Zones located within the City (Paso Robles 2003b). Therefore, ground rupture is not likely. However, areas along the Salinas River corridor and, Huerhuero Creek corridor and along Niblick Road have high liquefaction risk conditions.

Soil Related Hazards

Various soil conditions exist throughout the City. The City is an area of moderately expansive soils. According to the GP EIR, Cropley Clay (132) soil series has high shrink-swell potential, Linne-Calodo Complex (152, 153, 154) and Lockwood Shaley Loam (158) soil series have moderate shrink-swell potential, and the Arbuckle Fine Sandy Loam (100) soil series has low to moderate shrink-swell potential (Paso Robles 2003b). Locations of these soils are shown in Figures 6-7 and 5-2 of the City of Paso

Robles Hazards Mitigation Study (Paso Robles 2005). Construction in areas of expansive soils may require major sub-excavation and replacement of existing materials with more stable soils. In addition, planned improvement in areas underlain by relatively thick sections of loose, recent alluvium such as that found in the channel of the Salinas River corridor, may be susceptible to settlement.

Geologic Hazards

Areas susceptible to landslide hazards are shown in Figure 6-14 of the *City of Paso Robles Hazards Mitigation Study* (Paso Robles 2005). The low hills east and west of the Salinas River are susceptible to potential landslides. In addition, the weak sandstones and shale of the Monterey Formation, west of the City, are subject to the greatest landslide potential. Land development near or at the base of canyons, cliffs, or landslides should take these hazards into consideration during the planning, construction and estimated life of the development. Planned improvements along Dry Creek Road near N. River Road are proposed in an area known to be historically susceptible to landslides. In addition, proposed improvement along Airport Road, Gilead Road, Golden Hill Road and Highway 46 East are partially located in areas with moderate potential for landslides.

Soils in the City are classified as having moderate to high susceptibility to erosion. In the low-lying areas surrounding the Salinas River, erodability is associated with river scouring and flooding. In the steep upland areas of the City, soils are subject to erosion from wind, rain, grazing, and human disturbance or soil and vegetation. According to the *GP EIR*, the Linne-Calodo Complex (152, 153, 154) soil series has a high erosion hazard, while the Lockwood Shaley Loam (158), and Hanford and Greenfield Gravelly Sandy Loam (150) soil series have moderate erosion hazards (Paso Robles 2003b). Locations of these soils are shown in Figure 5-2 of the *City of Paso Robles Hazards Mitigation Study* (Paso Robles 2005).

GREENHOUSE GAS EMISSIONS

Existing Resources

Scientific consensus holds that the world's population is releasing greenhouse gases faster than the earth's natural systems can absorb them. These gases are released as byproducts of fossil fuel combustion, waste disposal, energy use, land-use changes, and other human activities. This release of gases, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), creates a blanket around the earth that allows light to pass through but traps heat at the surface preventing its escape into space. Known as the greenhouse effect, models show that this phenomenon could lead to a 2°F to 10°F temperature increase over the next 100 years. The Intergovernmental Panel on Climate Change (IPCC) warns that most of the warming observed over the last 50 years is attributable to human activities.

In April 2010, PMC prepared for the APCD a *2005 Baseline Greenhouse Gas Emissions Inventory (GHG Inventory)* for the City of Paso Robles as part of a community wide effort to establish baseline conditions within the air district. This Inventory estimates the quantity of GHGs in 2005 in order to establish a baseline against which to measure future emissions and in order to understand where the highest percentages of emission are being generated. According to the GHG Inventory, the community emitted approximately 155,106 metric tons of CO_2e (equivalent carbon dioxide units) in calendar year 2005. The largest emitter was the transportation sector. The majority of emissions from the transportation sector were the result of gasoline consumption in private vehicles traveling on local roads, U.S. Highway 101, and state highways.

As with the majority of California municipalities, travel by on-road motorized vehicle constitutes the greatest percentage of greenhouse gas emissions within the city (44.6%). Approximately 62% of the emissions (42,945 CO_2e (metric tons)) in the transportation sector came from travel on local roads.

In 2005, emissions in California were estimated to be 13.6 metric tons CO_2e per capita, and. 23.5 metric tons CO_2e per capita in the U.S. According to the GHG Inventory, the City had emissions estimated to be approximately 5.50 metric tons CO_2e per capita (APCD 2010).

According to the GHG Inventory, if behavior and consumption trends continue as business-as-usual, it is estimated that emissions may reach approximately 197,651 metric tons of CO_2e by 2020, which represents a 28.5% increase over 2005 baseline levels (based on household, job, and population growth rates). By 2025, emissions may reach approximately 214,640 metric tons of CO_2e, or a 39.6% increase over 2005 baseline levels (APCD 2010).

Primary Issues/Constraints

Planned improvements and also planned increase of LOS on other roadways would likely result in the generation of both short-term construction and long-term operational GHG emissions.

Construction Generated Emissions

During construction, the planned improvements would result in short-term emissions of GHGs. These emissions, primarily CO_2, CH_4, andN_2O, would be a result of fuel combustion by construction equipment and motor vehicles. Although GHGs are generated during construction and are accordingly considered one-time emissions, it is important to include construction-related GHG emissions when assessing all of the long-term GHG emissions associated with a project.

Long Term Operational Emissions

Implementation of the proposed Circulation Element would likely result in an increase in long-term operational GHG emissions generated by both mobile and stationary sources.

MOBILE SOURCE EMISSIONS

Implementation of planned improvements and anticipated increased utilization of existing roadways would result in increased vehicles, which would subsequently increase mobile sources GHG emissions.

STATION SOURCE EMISSIONS

Planned improvements would likely increase the number of traffic signals and streetlights within the City, which would contribute to increased stationary source GHG emissions.

HAZARDS/HAZARDOUS MATERIALS

Existing Resources

Potential hazards within the City that may affect human health are those related to high-voltage transmission lines (electro-magnetic fields), airport hazards, businesses that handle hazardous materials, railroad or truck accidents involving hazardous materials, and wildland fires.

Transmission Lines

PG&E provides the City with electricity through a series of electrical lines, including a set of high voltage transmission lines located just east of the City, and runs in a northeast-southwest direction. Electric transmission lines create electric and magnetic fields. Electric fields produce very little biological effects because these fields are not strong enough to penetrate through structures or even human skin. In contrast, magnetic fields are able to easily penetrate buildings and people. It is the development of magnetic fields by electric currents that have the potential to affect biological systems. In general, magnetic fields are elevated in structures near power lines whereas electrical fields are not.

Airport Hazards

The Paso Robles Municipal Airport is a basic transport airport that is used extensively for recreational and business purposes by both single- and multi-engine aircraft, including helicopters and occasional jets. The airport accommodates about 30,000 aircraft operations (take-offs and landings) annually. Additionally, the airport accommodates an average of 500 California Department of Forestry (CDF) air tanker flights per year, as well as occasional C-130 military aircraft flights serving Camp Roberts and Camp San Luis Obispo military operations. Air tanker departures are restricted by the FAA to a flight pattern that turns to the southeast, following Huerhuero Creek. The Paso Robles Municipal Airport has designated clear zones and approach and "climbout" extensions from the ends of the active runway. The airport land use planning area extends 10,000 feet (about 1.9 miles) from each end of the airport runway.

Agricultural Operations

Agricultural operations are concentrated in the north-central portion of the City, north of Highway 46 East. Orchards in particular are often sprayed with various pesticides, which can contaminate the soils. Potential agricultural contaminants can include DDT, lead and arsenic.

Asbestos

Asbestos is a highly crumbly material often found in older buildings, typically used as insulation in walls or ceilings. In addition, naturally occurring asbestos may occur in serpentine rock, which is known to occur in portions of the City. Asbestos can pose a health risk when very small particles become airborne. Inhalation of asbestos may result in the development of lung cancer or mesothelioma. The state Air Resources Board (ARB) has identified asbestos as a toxic air contaminant.

Hazardous Materials

Many of the commercial and industrial businesses that store or use hazardous materials as shown in Figure 6-13 of the City of Paso Robles Hazards Mitigation Study (Paso Robles 2005). San Luis Obispo County's Hazardous Waste Management Plan (HWMP) addresses the treatment, storage and disposal of hazardous materials. Specific information regarding the location of businesses and types and quantities of hazardous substances used or stored can be obtained through the San Luis Obispo County Environmental Health Division.

Most minor and major hazardous materials spills and incidents are related to the increasing transport of chemicals over roadways or through industrial accidents. Highway 101, Highway 46 East and a rail corridor are major transportation corridors through Paso Robles. Trains and trucks commonly carry a variety of hazardous materials, including gasoline and various crude oil derivatives, and other chemicals known to cause human health problems. In the event of an accident or derailment, such materials may be released, either in liquid or gas form. Traffic accidents involving large trucks hauling hazardous materials on the highways passing through the City could result in a public safety hazard. Hazardous material containers not properly secured could be tipped over and/or ruptured. Improperly segregated materials could result in toxic or explosive reactions. Although standard accident and hazardous materials recovery procedures are enforced by the state and followed by private transportation companies, the City is at relatively high risk because of its location along interstate rail and highway corridors.

Wildland Fires

There is potential for wildland fires within the City especially during the dry summer and fall months. The extensive grasslands and oak woodlands on rolling terrain are conducive to the spread of wildland fires, especially during the summer. According to the California Department of Forestry (CDF) and Fire

Protection San Luis Obispo County Fire Hazard Map, the hillsides south of Highway 46 East, and the areas of the City north of Highway 46 East are located within "Wildland Areas that may contain substantial fire hazards and risks" (Paso Robles 2003b)

Primary Issues/Constraints

Transmission Lines - Planned improvements on Sherwood Road and Airport Road south of Linne Road would transect the existing PG&E high voltage transmission lines located in the southeastern section of the City. The siting of roadways will need to consider the existing transmission lines.

Airport Hazards - Hazards associated with the airport are primarily related to the risk of aircraft accident and to the aircraft noise levels along primary flight paths. Planned improvements along Dry Creek Road, Union Road and Highway 46 East may be located within the flight paths of the airport. Any proposed streetlights within the planning area must be consistent with the Airport Land Use Plan.

Agricultural Contaminants - Planned improvements north of Highway 46 East may be located in areas with soils contaminated by agricultural operations. Surveys for Potential presence of agricultural chemicals, lead and arsenic may be warranted prior to ground disturbance.

Asbestos-It is unknown at this time if planned improvements would result in the demolition of any existing structures. However, planned improvements that require the demolition of structures built prior to 1979 may result in exposure to asbestos containing materials. Surveys of structures built prior to 1979 may be warranted. In addition, prior to any grading activities at a development site, a geologic analysis is required to determine if serpentine rock is present in order to evaluate the presence of naturally occurring asbestos. If serpentine rock containing naturally occurring asbestos is identified at a development site, an Asbestos Health and Safety Program and an Asbestos Dust Mitigation Plan is required to be approved by the APCD before construction begins.

Hazardous Materials-The planned improvements are exposed to relatively high risk of exposure to accidental release of hazardous materials due to hazardous materials being stored in around the airport, the high volume of hazardous materials being transported through the area via Highway 46 East, U.S. 101, and the Union Pacific Railroad. In addition, during construction it is likely that hazardous materials will be used to construct the planned improvements.

Wildland Fires-Planned improvements along Highway 46 East are located within an area designated by CDF as "Wildland Areas that may contain substantial fire hazards and risks." Figure 6-18 of the *City of Paso Robles Hazards Mitigation Study* show the wildland fire hazard ratings for the area (Paso Robles 2005).

HYDROLOGY/WATER QUALITY

Existing Resources

Important component of hydrologic resources within the City include the surrounding watershed and surface waters, groundwater, water quality, and flood hazards.

Watershed and Surface Water

Paso Robles is located in the Salinas River watershed. The river originates in the La Panza Mountains south of the City and discharges approximately 130 miles to the north in Monterey Bay. The River's overall watershed encompasses approximately 4,400 square miles, approximately 390 square miles of which are located upstream from Paso Robles. The river channel within the City varies from 300- to 350-feet wide. Riverbed elevations go from approximately 270 feet above mean sea level (msl) at the southern part of the City to approximately 682 feet above msl in the northern part of the City. The

topography is characterized by a gently sloping alluvial terrace rising to the gently rolling hillsides west of the riverbed and low, undulating hills including relatively flat grassy plateaus, ridges, and steep oak tree-covered canyons and creek basins east of the riverbed.

In addition to the Salinas River, several intermittent creeks flow through the area. These creeks carry runoff from hills east and west of the City and discharge to the Salinas River. Runoff from the northeastern portion of the City flows to Huerhuero Creek, which ultimately discharges to the Salinas River.

Groundwater

The City obtains potable water via 19 wells pumping groundwater from the Salinas River underflow and a regional aquifer known as the Paso Robles Groundwater Basin (PRGB). The PRGB sediments consist of recent-age alluvium and the Plio-Pleistocene age Paso Robles Formation. These formations reach a maximum thickness in the basin of more than 2,500 feet. The outlet of the PRGB occurs downstream of community of Bradley, where the basin sediments are shallow and the surface expression of the non-water bearing units extend nearly to the Salinas River. According to the *GP EIR* the perennial yield of the basin is 90,000 to 95,000 AFY and in 1997 the City was pumping 7,500 AFY.

Water Quality

The primary sources of pollution to surface and groundwater resources include stormwater runoff from urban areas, which can contain hydrocarbons, sediments, pesticides, herbicides, toxic metals, and coliform bacteria. Seepage from sewage treatment lagoons or improperly placed septic tank leach fields can further contribute to degraded water quality in the form of elevated nitrate levels. Illegal dumping of hazardous materials can introduce contaminants such as gasoline, pesticides, herbicides and other harmful chemicals.

Total dissolved solids (TDS) are a measure of the general mineral quality of water. In general, City water quality is good, but has relatively high TDS and hardness. According to the *Urban Water Management Plan*, TDS concentrations generally range from 300 to 1,000 parts per million (ppm) with an of approximately 650 ppm within the Paso Robles Groundwater Basin wells, while the average is approximately 475 ppm within the City's Wells. According to the *GP EIR*, local drinking water met or exceeded all state and federal drinking water requirements in 2002.

The primary regulatory control relevant to the protection of water quality is the National Pollution Discharge Elimination System (NPDES) permit administered by the State Water Resources Control Board. This board establishes requirements prescribing the quality of point sources of discharge and establishes water quality objectives. The NPDES permits are issued to point source dischargers of pollutants to surface waters and are issued pursuant to Water Code Chapter 5.5 that implements the Federal Clean Water Act.

Flood Hazards

The City is prone to flooding when storm flows exceed the transport capacity of creek and river channels, especially near the Salinas River floodplain (as shown in Figure LU-5 of the GP). Flood hazards are most likely along areas adjacent to the Salinas River and Huerhuero Creek, as well as behind culverts that have become temporarily clogged during a storm.

100-YEAR STORM EVENT

Several areas within the City have been identified within the FEMA 100-year floodplain, which are subject to inundation during a 100-year storm event. According to the *GP EIR*, areas within the 100-year floodplain include:

- The Salinas River from the current southern boundary of the City north to 38th Street, between Highway 101 and River Road.
- From 18th Street north to Ysabel Street, between Highway 101 and Riverside Avenue.
- Highway 101 from 12th Street to 14th Street.
- The lengths of the unnamed creek east of South River Road and north of Charolais Road.
- Highway 46 East west of Airport Road, where it intersects Huerhuero Creek.
- Airport Road, where it intersects Huerhuero Creek, midway between Highway 46 East and Dry Creek Road.
- Creston Road from Cedarwood Road north to Santa Ynez Avenue.
- Areas south of Mountain Springs Road at Lake Nacimiento Drive, southeast from 24th to 21st Streets.
- Peachy Canyon Creek between 3rd and 4th Streets, east to Spring Street.
- 21st Street west from Park Street to Railroad Street, and diagonally northeast to 24th Street and Riverside Avenue.
- The southeast portion of this area is subject to flooding from Huerhuero Creek, which flows approximately to the southeast. The western border is also subject to flooding from the Salinas River.
- The area south of the airport is subject to flooding from Dry Creek, a tributary to Huerhuero Creek.
- The northwest and central portion of this Subarea may be flooded due to overtopping of Huerhuero Creek and Dry Creek.
- The northern boundary along Linne Road is subject to flooding from Huerhuero Creek.
- The eastern boundary of this subarea may be flooded from high flows in an unnamed tributary of Huerhuero Creek.
- Flooding may occur in this subarea in the vicinity of Marquita Road, east of Highway 101.
- The area bounded by Herdsman Way to the south, West Bethel Road to the west, and Highway 46 West to the north, is subject to flooding.
- Flooding may occur in an area north of Highway 46 West, west of Arbor Road, and south of Live Oak Road.

DAM INUNDATION

Paso Robles is not in a dam inundation area for any major stream or river in the region. The Santa Margarita Reservoir Dam is located a sufficient distance (i.e., approximately 20 miles) from the City to preclude potential inundation. There are no other dams or reservoirs (except small local detention facilities) upstream of Paso Robles on any tributary of the Salinas River or Huerhuero Creek. Paso Robles is not subject to potential damage from dam inundation.

Primary Issues/Constraints

Planned improvements may result in erosion, degradation of water and may alter or disrupt drainage patterns and/or flood flows.

Soil Erosion

According to the *GP EIR*, soils in the City are classified as having moderate to high susceptibility to erosion. Linne-Caodo Complex (152, 153, 154) soil series has a high erosion hazard rating, while

Lockwood Shaley Loam (158), and Hanford and Greenfield Gravelly Sandy Load (150) have moderate erosion hazard ratings. Planned improvements in areas containing these soils may result in excessive erosion. Vegetation removal and disturbance of soil during construction of the planned improvements may result in increased erosion and sedimentation of nearby surface waters. Implementation of a Stormwater Management Plan that is consistent with NPDES Permit requirements would be required during construction.

Drainage Patterns

Planned improvements will result in construction of impervious surfaces, which may alter existing drainage patterns and increase stormwater runoff. Generation of increased runoff would require the roadways be designed to include a stormwater water drainage system that is consistent with the *Revised Storm Water Management Plan* (Paso Robles 2010).

Other Water Quality Issues

As noted above, planned improvement will increase the amount of impervious surface area within the city. This would result in increased runoff that may contain urban contaminates that could impact surface waters and subsequently the groundwater basin.

Impede floodwater flows

Planned improvements to Dry Creek Road, Airport Road, and Golden Hill Road are partially located within the 100-year floodplain of either Huerhuero Creek of Salinas River or both. These improvements may impede floodwater flows during a 100-year storm event. In addition, improvements to Airport Road south of Linne Road, Creston Road south of Niblick Road-Sherwood Road and Sherwood Road are located within the 500-year floodplain. These improvements may impede floodwater flows during a 500-year storm event.

LAND USE/PLANNING

Existing Resources

Most of the proposed roadways are located within the City limits. However, a portion of the proposed improvements to Dry Creek Road are located within the County of San Luis Obispo. In addition, policies proposed within the Circulation Element should be consistent with other applicable policies/plans. Other applicable plans include the following:

- City of Paso Robles General Plan;
- City of Paso Robles Airport Land Use Plan;
- County of San Luis Obispo General Plan;
- San Luis Obispo Council of Governments Regional Transportation Plan;
- San Luis Obispo Air Pollution Control District Clean Air Plan; and
- San Luis Obispo Air Pollution Control District CEQA Handbook.

PRIMARY Issue/CONSTRAINT

The primary issue would be consistency with various applicable plans, policies or regulations in the documents listed above.

MINERAL RESOURCES

Existing Resources

Surface mining of sand and gravel is a conditional use within the Salinas River and Huerhuero Creek. In addition, areas designated as 'MRZ-2' are Portland cement concrete aggregate mineral resources classified by the State Geologist as being important mineral deposits.

Primary Issues/Constraints

Improvements planned in the area of the Huerhuero Creek may affect mining of sand gravel from this creek. General Plan Policy C-4A references a MRZ-2 zone (Portland cement concrete aggregate mineral resources classified by the State Geologist as being important mineral deposits); however, this zoning district is not mapped and it is not evaluated in the GP EIR.

NOISE

Nearby Sensitive Receptors

Sensitive receptors are the segment of the public that are most sensitive to noise intrusion. Residences, hospitals, schools, guest lodging, libraries, and parks have more stringent noise exposure targets than manufacturing or agricultural use. In Paso Robles, noise sensitive uses are primarily concentrated along downtown urban such as portions of Spring Street 13th Street and 24th Street. In addition, several schools are also located along Creston Road.

Existing Noise Sources

Primary sources of noise with the City include the roadways, airport, railroad and commercial and industrial operations. However, the Circulation Element primarily relates to roadway, airport and railroad noise levels, which are each described below.

Roadways

Roadway traffic is the primary source of noise in the City. U.S. 101 and Highway 46 East experience the highest volume of vehicle traffic, which results in higher roadway noise levels. The existing 65 dBA Ldn contour from U.S. 101 ranges between 264 to 494 feet from centerline, while the existing 65 dBA Ldn contour from Highway 46 East ranges between 166 to 202 feet from centerline. Other roadways that carry enough traffic to produce audible noise at a substantial distance include: 24th Street, 13th Street, Creston Road, Golden Hill Road, Nacimiento Lake Drive, Niblick Road, Sherwood Road, South River Road, Spring Street and Union Road. The existing 60 dBA Ldn contour for these roads typically ranges from 50 to 160 feet, and less where there are intervening structures, vegetation and/or topography. Airport Road, Buena Vista Drive, Charolais Road, Dry Creek Road, Linne Road, Nickerson Drive, North River Road, Pine Street, Rolling Hills Road, Ramada Drive, Rambouillet Road, Theater Drive, and Vine Street carry moderate traffic (1,000-5,000 ADT), but do not produce far-reaching audible noise. According to the GP EIR, the 60 dBA Ldn contour would be predicted at less than 100 feet from the center of those roadways under existing and future conditions.

Airport

The Paso Robles Municipal Airport is located in the northeastern part of the City. Noise contours associated with airport operations were developed as part of 1994 Noise Element of the General Plan. Figure 4.8-3 in the GP DIER illustrates the current CNEL contours based on projected increases in aircraft use. Roadways located within the 60 Ldn contour of the airport include the northern section of Airport Road, a portion of the existing Dry Creek Road, and Union Road south of Highway 46 East.

Railroad

Union Pacific Railroad (UPRR) transects the City in a north-south direction primarily west of U.S. 101. It is estimated that about four freight and two passenger trains travel through this area daily. A variety of railroad operating conditions occur within the City due to the presence of grade crossings, curves, grades, and congested areas. Therefore, speeds and the use of the warning horn vary considerably from location to location. Based on a noise study prepared for the *GP EIR*, the noise levels at 100-feet were 61.6 Ldn for freight trains and 59.9 Ldn for passenger trains. Trains also generate ground-borne vibration and noise, which varies depending on the type of train, weight of load haulage, track conditions, and other factors. According to the *GP EIR*, future (2025) noise levels at 100 feet were estimated to be 67.1 Ldn for freight trains and 56.6 Ldn for passenger trains.

Primary Issues/Constraints

Primary issues associated with noise include both short-term (construction) and long-term (operational) noise emissions.

Short-term Noise

Implementation of the planned improvements will generate short-term construction noise, primarily due to use of heavy equipment used during grading operations. Noise levels associated with heavy equipment typically range between 75 – 95 dBA at 50 feet from the source (EPA, 1971). Continuous operation of this equipment can cause high noise levels above the present ambient levels. Construction noise would be a short-term impact for any individual project. Noise may a significant concern especially the case along Creston Road where several schools are located.

In addition, construction workers installing roadway improvements near the airport would temporarily be exposed to excessive noise levels generated by airport operations.

Long-Term Noise

Planned improvement will increase capacity of existing roadways and extend roadways to undeveloped area, which will result in increased noise levels generated by vehicle traffic. Therefore, existing and future residents and other sensitive receptors may be exposed to noise levels greater than 65 dBA Ldn. Table 4.8-4 of the GP EIR summarizes predicted roadway noise levels for the year 2025 (Pasor Robles 2003b). Sensitive receptors located near U.S. 101 and Highway 46 East would experience the greatest increase in noise levels associated with increased traffic from future development. Approximately 32 City roadway segments would also experience increased noise levels that would expand the 65 dBA contour onto adjacent properties.

POPULATION/HOUSING

Existing Resources

According to the 2000 Census, in 2000 the City's population was 24,300, there were 8,556 households, and the average household size was 2.73 persons. According to the Housing Element (2005), the average annual rate of growth was 2.7% between 1990 and 2000 and 3.4% between 2000 and 2002. To accommodate future growth the City of Paso Robles is responsible for providing a total of 646 residential units by 2015 in order to meet the regional housing needs (SLOCOG 2008). The Circulation Element provides a master system of transportation facilities needed to serve existing and future residential, commercial, industrial, and tourist populations.

Primary Issues/Constraints

It is understood that circulation system is designed to fully support the General Plan land use concept, and therefore would not be "growth inducing" (exceeding planned growth and/or facilitating

development in areas not identified for growth) thus resulting in impacts to population and housing. Most of the roadway improvements are planned along existing alignments or undeveloped areas so it is not anticipated that planned improvements would displace substantial numbers of housing or people necessitating the construction of new homes.

PUBLIC SERVICES

Existing Resources

Emergency Service Providers

The Paso Robles Police Department (PRPD) provides police protection services for the City. The Public Safety Center is located at 900 Park Street. The PRPD is staffed with 37 sworn officers, 11 non-sworn full-time positions and seven non-sworn part-time positions, with twelve patrol vehicles. According to PRPD, the department serves the entire population at a ratio of 1.4 to 1.6 officers per 1,000 residents. On average, an officer from PRPD responds to around 6 to 8 calls per day. According to PRPD, the acceptable time to respond to calls is three to five minutes.

Fire protection is provided by the City of Paso Robles Department of Emergency Services (PRDES). PRDES provides fire suppression, emergency medical care, hazardous materials emergency intervention and control, water rescue, entrapment extrication, ~~fire safety inspections of businesses,~~ public fire safety education, fire investigation, disaster management and planning, and fire code enforcement~~weed abatement~~ services. PRDES operates from three fire stations. Fire Station One is located at 900 Park Street, Fire Station Two is located at 235 Santa Fe Avenue, and Fire Station Three is located at Buena Vista Extension and is unstaffed. Total PRDES staff includes one fire chief, one battalion chief, ~~one contract fire marshal, nine~~15 career firefighters, one secretary, and ~~three~~ six fire captains~~, and 15 volunteer firefighters~~. ~~PRDES~~The City has adopted a response time goal of 4 minutes for 90% of all calls. Currently, the desired level of emergency service resources is stated as 1 to 1.3 firefighters per 1,000 population.

The California Department of Forestry provides mutual aid and automatic aid supporting the City of Paso Robles, while the United States Department of Forestry has no obligations within the Study Area.

Schools

The Paso Robles Joint Unified School District (PRJUSD) serves kindergarten through 12th grade. Additionally, an area of the City along Theater Drive, south of Highway 46 West, is served by the Templeton Unified School District. In Paso Robles, there are six elementary schools, two middle schools, a high school, a continuation high school, two Community Day Schools (serving grades 4-6 and grades 7-12), and an Independent Study School (grades K-12). In 2001, the PRJUSD served a total of 6,682 students (2,890 elementary students, 1,519 middle school students, and 2,273 high school students)

The Cuesta College North County Campus, located at 2800 Buena Vista Drive on a 105-acre site, is part of the San Luis Obispo County Community College District. According to the North County Campus Master Plan, 3,300 students are expected to be enrolled by 2005, increasing to 4,000 students by 2015.

Parks/Recreation

The City currently owns and operates 13 park sites, including Barney Schwartz Park, Centennial Park, Paso Robles City Park, Lenco Park, Mandella Park, Melody Park, Lawrence Moore Park, Oak Creek

Park, Pioneer Park, Robins Field, Royal Oak Meadows Park, Sherwood Park, and Turtle Creek Park. Additional public recreation facilities, such as Paso Robles Municipal Pool, and privately owned recreational facilities, such as the Paso Robles Golf Club, the Links Course at Paso Robles, and Hunter Ranch Golf Course, also accommodate demand for parks and recreation. Bikeways, hiking and equestrian trails provide additional recreational opportunities for residents. Ball fields and playgrounds on public school sites are available for public use. The City has a standard requirement of 5 acres per 1,000 residents (Paso Robles 2003b).

Other/Library

The Paso Robles Library is located at 1000 Spring Street. The approximately 18,000-square-foot library operates from the bottom floor of a two-story building, where City Hall occupies the second floor. There are future plans for the library to expand to the second floor. There are 65,000 items within the library that include books, periodicals, videos and CD's, and government documents. The library is open Monday through Friday from 10:00am to 8:00 pm, and Saturdays from 10:00 am to 5:00 pm. The library is staffed with four full-time librarians (including the City Librarian), one full-time library assistant, and thirteen part-time staff.

In addition, the library has a Study Center at the Youth Arts Center located at 3201 Spring Street. The Study Center is open from 2:30 pm until 6:00 pm Monday through Thursday, and is staffed with two part time employees (each working a solo shift).

Primary Issues/Constraints

It is understood that the intent of the circulation system is to support the General Plan land use concept and as such, would not be considered growth inducing thus prompting the need for additional public services. It is anticipated that planned improvements will improve or provide emergency access to certain areas of the City. Planned improvement may also improve access to many of the existing schools, parks, library and other community services. On the other hand increased congestion/facility use along certain roadways may result in a constraint to emergency providers.

TRANSPORTATION/TRAFFIC

Existing Circulation System

The circulation system within the City includes roadways, bicycle and pedestrian facilities, public transit system, railroad facilities and an airport.

Roadways

The City is located at the intersection of Highway 101 and Highway 46. The older part of the City, which lies west of U.S. 101, has a grid pattern of downtown streets. East of Highway 101, a more suburban pattern of development has evolved, using a hierarchy of local, collector and arterial streets in a curvilinear design. The overall condition of the local street system, as well as the standards to which the improvements were originally constructed, varies by location. The local and regional roadways are described in more detail below.

LOCAL ROADWAYS

Spring Street constitutes the principal north-south arterial that serves as the downtown "spine." 13th Street and 24th Street are other major downtown streets that provide east-west circulation. Creston Road and Niblick Road are important corridors that serve suburban residential and commercial development east of the Salinas River. Union Road, Golden Hill Road, Charolais Road and River Road are other important roadways within the area.

REGIONAL ROADWAYS

In San Luis Obispo County the most important part of the regional highway system is US 101. It accommodates interregional, regional and urban traffic. Trip purposes along this corridor include personal mobility relating to business and government activities, recreation, tourism, and journey-to-work. The entire route is included in the National Highway System (NHS). It is a State Highway Extra Legal Load (SHELL) Route and a National Security Route. Caltrans' Interregional Transportation Plan (ITP) classifies US 101 as a "High Emphasis" and "Focus Route." US 101 is also identified as a Strategic Highway Network (STRAHNET) Route by the Department of Defense. For goods movement it is classified as part of the National Truck Network for its Surface Transportation Assistance Act (STAA) designation. US 101 is a four-lane facility throughout the county with the exception of the 6-lane segment along the Cuesta Grade. According to the RTP, all of Segment 9 of US 101 is located entirely within the City. Future growth in the City is anticipated to increase population by approximately 40,000 people over by 2025, which will impact US 101 and its interchanges. This segment of US 101 will continue to see traffic volumes rise from a 38,000 to approximately 66,000 AADT in 2025.

Highway 46 is the major east-west corridor in San Luis Obispo County, connects the Central Valley to the Central Coast. The highway traffic is largely interregional, serving a substantial amount of recreational, tourist, and truck traffic to and from the Central Valley. According to the *RTP*, the East Urban Corridor section of Highway 46 between US 101 and Jardine Road (RTP HIGHWAY 46 East Segment 2), is approximately 5 miles in length, and is predominantly within the city limits. It is a four-lane facility from US 101 to Airport Road where it narrows to a two lane highway. Signalized intersections are located at the northbound and southbound ramps of the US101/SR46 Interchange, Buena Vista Drive, and Golden Hill Road.

Bicycle and Pedestrian Facilities

The City's existing bikeways consist of a system of Class I bike paths, Class II bike lanes on major streets and sporadic signage of Class III bike routes. According to the *PRBMP*, there are existing bike lanes on Vine Street, Niblick Road, Creston Road, and Union Road (Paso Robles 2009a). An off-street (Class I) bikeway exists from Centennial Park to Larry Moore Park. A few smaller bikeways exist in various neighborhood open space areas. The existing bicycle system is not continuous and lacks connectivity through the City.

Pedestrian activity is visible in the downtown area, where development densities are high. The City desires to encourage and promote a pedestrian-friendly downtown environment. A 10-foot commercial sidewalk and 5-foot residential sidewalk are design standards currently maintained by the City.

Public Transit

The City's public transit system includes two types of services: fixed-route (Paso Robles City Area Transit Service, PRCATS) and demand-response (Paso Robles Dial-a-Ride, DAR). Regional inter-community transit is also available.

FIXED ROUTE SYSTEM

The fixed-route system operates two lines (Routes A and B) offering bi-directional service along an established loop. Service operates on 60-minute headways from 7:00 A.M. to 6:00 P.M., Monday through Saturday. Route A travels in a clockwise direction, extending from the community's northwest corner (34th Street) to the southwest corner (Commerce Way and Scott Street intersection). Route B travels along the same path in a counter-clockwise direction.

DEMAND-RESPONSE SERVICE

The demand-response service provides curb-to-curb travel within City limits between 7:00 AM to 8:00 P.M, Monday through Friday. The demand-response service also offers up to three deviated fixed-route trips. This on demand service links central Paso Robles with the Twin Cities Medical Center in neighboring Templeton.

REGIONAL/INTER-REGIONAL TRANSIT

The Central Coast Area Transit (CCAT) and Runabout represent two additional regional public transit programs available in Paso Robles, which are administered by the San Luis Obispo Regional Transit Authority (SLORTA). CCAT is a regional fixed-route service linking Paso Robles with other communities throughout San Luis Obispo County. Runabout is a regional demand-response service primarily intended to serve ADA certified persons.

Inter-regional public transit through the City is provided by Greyhound Bus lines. The Greyhound Bus Station is located on Pine Street. Greyhound's pacific coastal route line traverses through the City, and provides connection to the San Francisco Bay Area to the north and the Los Angeles urban basin to the south. At least four scheduled Greyhound bus arrival/departures are available daily.

Railroad Facilities

The Union Pacific Railroad (UPRR) line runs north-south across the City providing passenger and freight rail service. The City's Amtrak rail station is an un-staffed station located on Pine Street. Amtrak operates the inter-regional "Coast Starlight" rail service daily connecting between Seattle and Los Angeles.

Airport

As noted above, the City of Paso Robles Municipal Airport is located in the northeastern portion of the City, north of the Highway 46 East highway, with primary access provided via Airport Road. The San Luis Obispo County Airport Land Use Commission adopted the City of Paso Robles Airport Land Use Plan first in 1977, which was most recently updated in 2005. Above and beyond regular passenger flights, the City's Airport provides flight instruction, skydiving, and aircraft rental services. Approximately 87 aircraft operations occur daily, with the majority of the flights serving local general aviation.

Existing Roadway Conditions

According to the *GP EIR*, overall Levels of Service "C" or better peak hour traffic operations exists within the City. However, the River Road/Creston Road intersection operates at deficient levels of service (LOS D or E) and would need improvements to correct existing deficiencies. In addition, signalization may be necessary upon meeting warrants at the following intersections: Niblick Road/Nicklaus Street; and Niblick Road/Nickerson Drive.

According to the RTP, the 46E/US101 interchange has capacity problems, primarily with SR46 westbound to US101 southbound movement of vehicles through the interchange. During the weekend summer peak periods the SR46E/US101 interchange operates at LOS F. Both interchanges are currently experiencing deteriorating LOS during peak periods which, if improvements are not made, will continue to worsen as local, regional, and interregional traffic demands increase. In addition, the East Urban Corridor section of Highway 46 East between US 101 and Jardine Road (RTP HIGHWAY 46 East Segment 2) operates at LOS C during the weekday peak periods.

Applicable Plans

The Circulation Element will be evaluated for consistency with other traffic and circulation plans including: the *Regional Transportation Plan* (RTP) (SLOCOG 2010), the *Residential and Arterial Road Traffic Calming Program* (TCP) (2004) or *Bike Master Plan (2009)*. These plans are briefly described below.

Regional Transportation Plan (RTP) (SLOCOG 2005)

The *RTP* is the region's blueprint for a transportation system that enhances the quality of life and meets current and future mobility needs. A goal of the *RPT* is "a fully integrated and intermodal transportation system which facilitates the safe movement of people, goods, and information within and through the region." The *RTP* identifies planned improvements to both US 101 and Highway 46 East. According to the *RTP*, planned improvements along US 101 (segments 7, 8, and 9) include: auxiliary lanes; reconstructing interchanges to increase capacity and accommodate future widening of US 101 to six lanes as operations and/or safety warrants; improving the regional frontage and parallel road system, with emphasis on intercommunity connections; improving the regional frontage road system, with emphasis on intercommunity connections; improving the regional park-n-ride lot system and enhance transit express access; implementing recommendations of Central Coast ITS Plan when warranted; and improving and promoting TDM measures (RTP 2005). According to the *RTP*, planned improvements along Highway 46 East include installation of a signal at the newly realigned location of the SR46/Airport Road intersection; extending the four-lane configuration to Whitley Gardens; construction of grade-separated interchanges where feasible; improving of the 46E/US 101 interchange; construction of local frontage and alternative roads to the highway; proving acceleration/deceleration lanes; and providing left- and right-turn channelization and access consolidation.

The *RTP* is currently in the process of being updated with draft Circulation Element and the EIR for the *RTP* is anticipated to be out for public review at the end of August 2010.

Residential and Arterial Road Traffic Calming Program (TCP) (Paso Robles/Omni 2004)

The purpose of *TCP* is to protect the neighborhoods and districts these streets serve. This program addresses the specific traffic calming needs of both local and arterial/collector streets within residential, commercial and school areas. Traffic calming measures include basic traffic calming measures, speed reduction measures, volume reduction measures, and congestion relief measures. Basic traffic calming measures are traffic control devices and programs implemented on a day-to-day basis to regulate, warn, guide, inform, and educate pedestrians, bicyclists and motorists. These measures include, but are not limited to, standard striping and signing measures, minor roadway design measures to improve visibility and safety, and safety education programs. Speed reduction measures are often used in conjunction with basic measures to slow traffic. These measures may include things like speed humps, raised crosswalks and intersection, and roundabouts. Volume reduction measures discourage residential street cut-through traffic. Common volume reduction measures include: diverters, extended medians, and partial and full street closures. Congestion relief measures accommodate and enhance the traffic flow and safety. These measures are similar to those used as speed or volume control measures. School measures are designed for the safe arrival and departure of children at schools. These measures include, but are not limited to, bike and walk pools, staggered bell times, and crossing guards.

Bike Master Plan (Paso Robles 2009)

The *Paso Robles Bicycle Master Plan (PRBMP)* is a comprehensive plan that addresses the needs of both recreational and commuter cyclists. The *PRBMP* outlines bike planning and improvements over the next 10 years. The *PRBMP* is intended to provide measures to help make bike riding accessible and an easy

way for commuting, which will reduce air pollution and vehicle miles traveled by automobiles, and to provide for more recreational opportunities.

The *PRBMP* provides continuous Class II connections along major thoroughfares and in neighborhoods to serve residents traveling to commercial areas, the downtown, and schools. New Class I routes are planned along the Salinas River to provide better connections and also to provide recreational opportunities in a safe, off-street environment. New planning areas on the east side of the City, including the Chandler Ranch Specific Plan and the Olsen Ranch Beechwood Specific Plan, are to planned with integrated bicycle facilities to provide interconnected bikeways internally within the planning areas and to the rest of the City. The specific location of bikeways shall be determined through the Specific Plan design process.

Primary Issues/Constraints

Policies proposed within the Circulation Element need to be consistent with applicable plans including the *Regional Transportation Plan* (RTP) (SLOCOG 2010), the *Residential and Arterial Road Traffic Calming Program* (TCP) (2004) or *Bike Master Plan (PRBMP)* (Paso Robles 2009a). Projected levels of service should be compared to the *RTP* for consistency.

Note: The type of roadway improvements (3 vs. 4 lane arterials and collectors) in the Chandler Ranch Area Specific Plan are somewhat inconsistent with the improvements proposed in the draft Circulation Element. See summary below.

Roadway	CRASP	Circ Element
Union Road	Arterial 4 lanes	Arterial 3 lanes
Airport Road	Arterial 4 lanes (extends to Hwy 46)	Arterial 3 lanes (does not extend to 46)
Gilead Lane	Collector 2 lanes	Arterial 3 lanes
Sherwood Road	Arterial 4 lanes	Arterial 4 lanes west of Airport Arterial 3 lanes east of Airport

UTILITIES/SERVICE SYSTEMS

Existing Resources

Existing Utilities/service systems within the City include water, stormwater, wastewater, solid waste collection and disposal and other miscellaneous utilities (i.e. electricity, cable, etc.)

Water Infrastructure

The City of Paso Robles administers and operates water production, storage and conveyance services, including wells and reservoirs, through its own municipal system, known as the City of Paso Robles Water Division. According to the *2005 Urban Water Management Plan* (Paso Robles 2008), the water system consists of 19 active groundwater wells, five booster pumps, four storage facilities with a total capacity of 12,150,000 gallons, and approximately 148 miles pipelines that distribute water throughout the City.

The 19 active wells include seven wells that procure water along the Salinas River aquifer in the shallow underflow aquifer and twelve wells that are located east of the Salinas River and screened in and produce water from the Paso Robles Basin. Well pumping capacity ranges from 400 to 1,100 gallons per minute (gpm) in the wells pumping river underflow and from 200 to 950 gpm in Paso Robles Basin wells.

In 2005, the City provided water to about 10,720 connections. It is projected that by 2025 water will be provided to approximately 25,560 connections. Subsequently, the water demand will increase from approximately 6,735 acre-feet per year (AFY) to 15,265 AFY. It is estimated that the percentage of total water demand attributed to residential demand will decrease from 72 percent to 68 percent, commercial and industrial demand will increase from 15 percent to 23 percent, and irrigation/other will decrease from 13 percent to 8 percent.

The City has regularly experienced seasonal water supply problems as existing facilities have become unable to deliver peak water demands during hot summer days. These shortages are related to seasonal weather conditions, customer irrigation patterns, and the limitations of the City's facilities. The City is developing two additional water supply sources for the future, which include importing approximately 4,000 AFY from Lake Nacimiento and a recycle wastewater program that will provide approximately 944 AFY.

Stormwater Infrastructure

We have reviewed the City's Storm Water Master Plan (2007), the Revised Stormwater Management Plan (2010 2*008e. Technical Memorandum re: Airport Business Park Drainage Analysis*. April 24, 2008. [Prepared by Schaaf & Wheeler]), and the Chandler Ranch Area SP (CRASP) EIR. For the EIR, we would need to verify stormwater infrastructure locations both existing and planned.

Planned roadway improvements would need to be designed to include LID stormwater collection and infiltration systems. In areas where existing stormwater drainage facilities are located, those facilities may need to be extended and/or improved and ultimately treated in accordance with the SWMP.

In roadway improvement areas where existing wastewater collection pipelines are located, those pipelines may need to be extended and/or improved within the planned improvement right-of-way. The design of these improvements would need to be in accordance with City standards.

Wastewater Infrastructure

The City of Paso Robles owns and operates wastewater collection and disposal services for residential, commercial, and industrial facilities within the City's limits, the airport area, and the Templeton Community Services District (TCSD). According to the *GP EIR*, the sewage collection system consists of approximately 102 miles of public sewer mains ranging in size from 4- inches to 27-inches in diameter, 13 lift stations, ranging in capacity from 100 to 4,900 gpm and a wastewater treatment plant, which is located at 3200 Sulphur Springs Road. The permitted capacity of the City plant is 4.9 million gallons per day (mgd). The current average daily sewage flow into the plant is 2.8 mgd.

Solid Waste Disposal

Solid waste disposal service to the City of Paso Robles is provided by Paso Robles Waste Disposal, Inc. (PRWDI). Solid waste is collected and disposed of at the Paso Robles Landfill, located east of City limits, at 9000 Highway 46 East. The landfill is a Class III facility owned by the City of Paso Robles and managed by Pacific Waste Services, Inc. The 80-acre landfill has been operating since 1970. The landfill accepts construction/demolition, industrial, mixed municipal, sludge, and tire waste. The landfill has a permitted design capacity 6,495,000 cubic yards, with a remaining airspace of 4,533,216 cubic yards, as of June 2001. The facility receives an average of 200 tons of waste daily, with a permitted maximum daily tonnage of 250 tons per day. The landfill is estimated to close in approximately 2034.

Other Utilities

Other existing and planned utilities within the City include cable, telephone, electrical and streetlights. These utilities are commonly located within roadway rights-of-way.

Primary Issues/Constraints

Extension of roadways may be considered "growth inducing" and will need to be evaluated for consistency with the General Plan to ensure planned improvements do not exceed planned growth thus prompting additional Utilities.

Water and wastewater Infrastructure

In areas where existing wastewater collection, potable water distribution and recycled water distribution pipelines are located, those pipelines may need to be extended within the planned improvement right-of-way. The design of these improvements would need to be in accordance with City standards.

Stormwater Infrastructure/Drainage Facilities

Development of proposed roadway improvements would increase the amount of impervious surfaces within the area. These impervious surfaces would increase the amount of runoff following storm events. As rainwater passes overland, contaminants become suspended within the flow. In particular, stormwater runoff from roadways contains various pollutants associated with motor vehicles, including petroleum compounds, heavy metals, asbestos, and rubber. During storm events, these pollutants are transported into drainage systems by surface runoff, which may impact to the water quality of Huerhuero Creek, Salinas River, and ultimately, Monterey Bay.

Regarding the City's approach to dealing with stormwater runoff, there are three primary issues that the EIR should consider:

1) **Proposed roadway improvements within Specific Plan areas**.

According to the CRASP EIR, which includes installing several of the draft Circulation Element's proposed roadway improvements, runoff from paved impervious areas shall be conveyed by impervious conduits via energy dissipaters to existing drainage channels. The size of the conduits shall be determined by development specific drainage plans. There are 20 detention basins proposed within just that SP area. So, we may assume, for Specific Plan Areas, proposed development must design and install detention basins and conveyance system to accommodate runoff from at 100-year storm event.

2) **Proposed roadway improvements in undeveloped areas outside SP areas**.

All drainage is to go to existing drainage courses via either drainage conduits within the roadways or ditches along the roadways depending on the amount of development planned for the area. This approach is identified in the *Technical Memorandum re: Airport Business Park Drainage Analysis prepared by Schaaf & Wheeler (*April 24, 2008). Note – this plan also identifies the need for additional facilities and drainage systems.

3) **Proposed roadway improvements within developed areas.**

The Storm Water Master Plan (2007) addresses these areas and identifies prioritized improvements to correct existing deficiencies. According to the Revised Stormwater Management Plan (2010), all future development needs to capture and retain stormwater runoff onsite so that it may infiltrate back into the aquifer system.

The City may consider specific policies for approach to dealing with runoff associated with proposed roadway improvements for inclusion within in the Element, or alternatively as mitigation in the EIR.

Other Utilities

In areas where existing or planned utilities (i.e. telephone, cable, electrical) are located, those utilities may need to be extended within the planned improvement right-of-way. The design of these improvements would need to be in accordance with City and PUC standards.

GROWTH INDUCEMENT

The Circulation Element identifies several roadway improvements in areas planned for future development. It is anticipated that planned roadway improvements identified in the proposed Circulation Element are to relieve congestion on the highways consistent with the *State Route (SR 46 E) Parallel Routes Study* (Paso Robles/ Fehr & Peers 2008b) and to accommodate future growth identified in the General Plan. If this is the case, the planned improvements would not induce substantial population growth other than what has been anticipated and identified within the General Plan and the plan would not be considered "growth inducing."

CONCLUSION

In summary, the primary global issues for the Circulation Element are potential agricultural land/Williamson Act land impacts, consistency with applicable policies/plans and potential impacts to air quality (including impacts due to greenhouse gas emissions).

Increased congestion/facility use along certain roadways (those not planned for improvement) may result in a constraint to emergency providers, as well as additional noise, traffic congestion and air quality impacts. Planned improvements are constrained by the natural/physical resources present in the improvement areas. These primary natural/physical resources impacted include: aesthetics, agriculture, air quality, biological resources, cultural resources, geology and soils, greenhouse gases, hazards/hazardous materials, hydrology/water quality, noise, and utilities/service systems.

It is anticipated that the proposed Circulation Element would have little to no affect on mineral resources. It is also anticipated that the proposed Element is designed to fully support the General Plan land use concept, and therefore would not be growth inducing. As such, impacts due to additional, unplanned growth are not expected in the areas of public services and utilities.

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APPENDIX D

APPLICABLE REGULATIONS

AESTHETICS AND VISUAL RESOURCES

FEDERAL REGULATIONS

Federal Highway Administration (FHWA) – National Scenic Byways Program

The FHWA National Scenic Byways Program designates selected highways as All American Road (a roadway that is a destination unto itself) or National Scenic Byway (a roadway that possesses outstanding qualities that exemplify regional characteristics).

STATE REGULATIONS

California State Scenic Highways Program

The State Legislature created the California Scenic Highway Program in 1963. Its purpose is to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. Cities and counties can nominate eligible scenic highways for official designation by identifying and defining the scenic corridor of the highway. The municipality must also adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes.

LOCAL REGULATIONS

General Plan

The City's General Plan regulates design and the built environment in Paso Robles and provides the framework for evaluating potential aesthetic impacts. The General Plan prescribes visual resource policies and in some cases, requires development review of projects. The City's Specific Plans provide additional direction for protecting visual resources in those portions of the community. In general, little direction is provided regarding the design of roadways, which are typically subject to adopted Caltrans or local engineering standards related to safety and capacity, rather than aesthetics. Roadway landscaping and lighting are generally reviewed when roadways are part of larger land use development proposals (Paso Robles 2003a).

The City uses a combination of the General Plan, Land Use Ordinances, and California Environmental Quality Act (CEQA) Guidelines, where applicable, to avoid or minimize impacts of development and urbanization to visual resources. The framework for planning includes the following visual resources goal, along with its associated policies and action items, as designated in the City's Conservation Element:

> *GOAL C-5: Visual Resources. Enhance/upgrade the City's appearance.*

Zoning Ordinance

The Zoning Ordinance implements the General Plan by establishing setback, parking, and sign standards, building height limits, hillside development restrictions, and building densities. The City has no formal greenbelt agreements with San Luis Obispo County, but has established a Planning Impact Area (PIA) that surrounds Paso Robles. One purpose of this area is to coordinate with the County when that agency considers projects in this area. The City will review and comment on project proposals in the area, thus providing some measure of visual protection for the community (Paso Robles 2010a).

Oak Tree Ordinance

The City's Oak Tree Ordinance No. 835 N.S. provides for protection and replacement of trees that are disturbed by development, requiring that an Oak Tree Impact Evaluation Report be submitted to the City should a development project have the potential to impact one or more oak trees (Paso Robles 2002a).

AGRICULTURAL RESOURCES

STATE REGULATIONS

Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP) was established in 1982 by the California Department of Conservation (DOC) to continue the Important Farmland mapping efforts begun in 1975 by the NRCS. The intent of the NRCS was to produce agricultural resource maps based on soil quality and land use across the nation.

Important Farmland Maps for California are compiled using the modified LIM criteria, as described above, and current land use information. The minimum mapping unit is 10 acres unless otherwise specified. Units of land smaller than 10 acres are incorporated into the surrounding classification. The Important Farmland Maps identify five agriculture-related categories plus two nonagricultural listings: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban Land, and Other Land. Each of these categories is described briefly below:

- Prime Farmland: Land with the best combination of physical and chemical features able to sustain the long-term production of agricultural crops. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- Farmland of Statewide Importance: Similar to Prime Farmland, but with minor shortcomings, such as greater slopes or with less ability to hold and store moisture. The land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- Unique Farmland: Land containing lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. The land must have been cropped at some time during the four years prior to the mapping date.

- Farmland of Local Importance: Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

- Grazing Land: Land on which the existing vegetation is suited to the grazing of livestock. The minimum mapping unit is set at 40 acres.

- Urban Land: Land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. This land is used for residential, industrial, commercial, and other developed purposes.

- Other Land: Land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; and confined livestock, poultry, or aquaculture facilities.

California Land Conservation Act (Williamson Act)

California Land Conservation Act, also known as the Williamson Act, was adopted in 1965 to encourage the preservation of the state's agricultural lands and prevent their premature conversion to urban uses. The act encourages and enables local governments to enter into contracts with private landowners and restrict specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments, which are much lower than normal because they are based upon farming and open space uses as opposed to full market value. Local governments receive a subsidy for forgone property tax revenues from the state via the Open Space Subvention Act of 1971.

Under Williamson Act contract, the property owner agrees not to develop the property for a period of 10 to 20 years. The contract automatically renews each year for a new 10-year period unless the owner files a Notice of Non-renewal to indicate his or her intention to terminate the contract at the end of the current 10-year period. Williamson Act contracts may also be terminated by a public agency if the property under contract is being acquired for another purpose in the public's interest under eminent domain or other public acquisition procedures.

LOCAL REGULATIONS

General Plan

The Open Space and Land Use elements of the General Plan address agricultural resources, soils, and the city's "Purple Belt," which refers to the city's vineyard lands. The purpose of lands designated as Agriculture is to allow and protect the operation of agricultural uses, provide open space, and provide a viable land use in areas impacted by airport operations. The following General Plan policies, and their associated action items, address agricultural resources in the city:

> *POLICY LU- 2E. "Purple Belt" (Open Space/Conservation Areas Around the City). Create a distinct "Purple Belt" surrounding the City by taking actions to retain the rural, open space, and agricultural areas.*
>
> *POLICY OS-1A. Open Space/Purple Belt. Develop an open space plan/program for establishing an open space/ purple belt (agricultural preserve area) surrounding the City.*

The City of Paso Robles "Right-to-Farm" Ordinance

The City of Paso Robles "Right-to-Farm" Ordinance states that it is the declared policy of the City to enhance and encourage agricultural operations in the city. Section 220 was added to Chapter 21.16J, Agricultural District, of the City Municipal Code relating to agricultural lands, operations, and the right to farm. Paragraph 2 of Section 21.16J.220 (Findings and Policy) states:

> *Where nonagriculture land uses occur near agricultural areas, agricultural operations frequently become the subjects of nuisance complaints due to lack of information about such operations. As a result, agricultural operators may be forced to cease or curtail their operations. Such actions discourage investments in farm improvements to the detriment of agricultural uses and the viability of the city's agricultural industry as a whole.*

The Right-to-Farm Ordinance advises purchasers of residential and other property types adjacent to existing agricultural operations of the inherent potential problems associated with the purchase of such property. Such concerns may include, but are not limited to, the noises, odors, dust, chemicals, smoke, and hours of operation that may accompany agricultural operations (Paso Robles 1995a).

AIR QUALITY

FEDERAL

Federal Clean Air Act and Amendments

The early federal legislative response to air quality concerns consisted of the Air Pollution Control Act of 1955, the Clean Air Act of 1963, and the Air Quality Act of 1967. The goal of the Clean Air Act (CAA) of 1970, as stated by Congress in the 1977 CAA Amendments, was to protect and enhance the quality of the nation's air resources. The CAA Amendments of 1990 are extremely broad. The major titles of the 1990 amendments address attainment of air quality standards, mobile source emissions, air toxics, acid rain, a new federal permit program, enforcement, and protection of stratospheric ozone. The titles that most substantially affect the air quality analysis of the proposed project are Title I (attainment and maintenance provisions) and Title II (mobile source provisions).

STATE

Title I of the Clean Air Act Amendments of 1990

The goal of Title I is to attain federal air quality standards for six criteria pollutants: ozone (O_3), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). These pollutants and associated health effects are summarized in **Table D-1**. The national and California ambient air quality standards for these criteria pollutants are summarized in **Table D-2**. The 1990 CAA Amendments divided the nation into five categories of planning regions, depending on the severity of their pollution, and set new timetables for attaining the air quality standards. The categories range from marginal to extreme. Attainment deadlines are from 3 to 20 years, depending on the category.

TABLE D-1
SUMMARY OF COMMON SOURCES AND EFFECTS OF CRITERIA POLLUTANTS

Pollutant	Description & Common Sources	Health & Welfare Effects
Carbon Monoxide	• A colorless, odorless gas. • Common sources include motor vehicle exhaust, indoor sources include kerosene wood-burning stoves.	• Headaches, reduced mental alertness, heart attack, cardiovascular diseases, impaired fetal development, death. • Contributes to the formation of smog.
Sulfur Dioxide	• A colorless gas that dissolves in water vapor to form acid, and interacts with other gases and particulates in the air. • Common sources include coal-fired power plants, petroleum refineries, manufacture of sulfuric acid and smelting of ores containing sulfur.	• Eye irritation, wheezing, chest tightness, shortness of breath, lung damage. • Contributes to the formation of acid rain, visibility impairment, plant and water damage, aesthetic damage.
Nitrogen Dioxide	• Reddish brown, highly reactive gas. • Common sources include motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels.	• Increased susceptibility to respiratory infections, irritation of the lung and respiratory symptoms (e.g., cough, chest pain, difficulty breathing). • Contributes to the formation of smog, acid rain, water quality deterioration, global warming, and visibility impairment.
Ozone	• Gaseous pollutant formed in the atmosphere from the combination of reactive organic gases and oxides of nitrogen in the presences of sunlight. • Common sources include vehicle exhaust.	• Eye and throat irritation, coughing, respiratory tract problems, asthma, lung damage. • Plant and ecosystem damage.
Lead	• Metallic element. • Common sources include metal refineries, lead smelters, battery manufacturers, iron and steel producers and use of leaded fuels by racing and aircraft industries.	• Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. • Affects animal and plants, affects aquatic ecosystems.
Particulate Matter	• Very small particles of dust, soot, or other matter, including tiny droplets of liquids. • Common sources include diesel engines, power plants, industries, windblown dust, wood stoves.	• Eye irritation, asthma, bronchitis, lung damage, cancer, heavy metal poisoning, cardiovascular effects. • Visibility impairment, atmospheric deposition, aesthetic damage, impaired plant photosynthesis.

Source: USEPA 2010a

Title I also requires each nonattainment area to submit a comprehensive inventory of actual emissions as part of a State Implementation Plan (SIP) revision to demonstrate the means for achieving federal standards by the established deadlines. Each nonattainment area must achieve a 15 percent reduction from its actual 1990 emissions inventory within six years. Thereafter, each area must achieve a 3 percent annual reduction.

Provisions of Section 182 of the 1990 CAA Amendments relate to ozone nonattainment areas, and Sections 186 and 187 relate to carbon monoxide nonattainment areas. These sections emphasize strategies for reducing vehicle miles traveled. Section 182 requires submission of a SIP revision that identifies and adopts specific enforceable transportation control strategies and transportation control measures to offset any growth in emissions from growth in vehicle miles traveled or numbers of vehicle trips in such area to meet statutory requirements for

demonstrating periodic emissions reduction requirements. Section 187 makes the same basic requirement applicable to carbon monoxide nonattainment areas. Section 188 sets forth requirements for PM_{10} nonattainment areas.

TABLE D-2
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[1,3,4]	National Standards[2]	
			Primary[3,5,7]	Secondary[3,6,7]
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	–	Same as Primary
	8-hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	
Respirable Particulate Matter (PM_{10})	AAM	20 µg/m^3	–	
	24-hour	50 µg/m^3	150 µg/m^3	
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m^3	15 µg/m^3	
	24-hour	No Standard	35 µg/m^3	
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	None
	8-hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	
	8-hour (Lake Tahoe)	6 ppm (7 mg/m^3)	–	
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm (56 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
	1-hour	0.18 ppm (338 µg/m^3)	0.100 ppm[8]	
Sulfur Dioxide (SO_2)	AAM	–	0.03 ppm (80 µg/m^3)[9]	–
	24-hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)[9]	–
	3-hour	–	–	0.5 ppm (1,300 µg/m^3)[9]
	1-hour	0.25 ppm (655 µg/m^3)	–	–
Lead[10]	30-day Average	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary
	Rolling 3-Month Average[11]	–	0.15 µg/m^3	
Sulfates	24-hour	25 µg/m^3	No Federal Standards	
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride[10]	24-hour	0.01 ppm (26 µg/m^3)		
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%.		

Notes: AAM = Annual Arithmetic Mean, µg/m^3 = microgram per cubic meter, ppm = parts per million by volume, or micromoles of pollutant per mole of gas.

1. *California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.*

2. *National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact USEPA for further clarification and current federal policies.*
3. *Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.*
4. *Any equivalent procedure which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.*
5. *National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.*
6. *National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.*
7. *Reference method as described by USEPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by USEPA.*
8. *To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).*
9. *On June 2, 2010, USEPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of annual 99th percentile of 1-hour daily maximum concentrations. USEPA also proposed a new automated Federal Reference Methods (FRM) using ultraviolet technology, but will retain the older pararosamiline methods until the new FRM have adequately permeated state and monitoring networks. USEPA also revoked both the existing 24-hour SO_2 standard of 0.14 ppm and the annual primary SO_2 standard of 0.030ppm, effective August 23, 2010. The secondary SO_2 standard was not revised at this time; however, the secondary standard is undergoing a separate review by USEPA. Note that the new standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the new primary national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.*
10. *CARB has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*
11. *National lead standard, rolling 3-month average: final rule signed October 15, 2008.*

Source: CARB 2010b

Title II of the Clean Air Act Amendments of 1990

Title II of the 1990 amendments, which contain provisions to control emissions from mobile sources, includes the following measures to reduce pollutants from mobile sources: (1) mandatory use of cleaner, reformulated gasoline in those cities with the most severe ozone problem; (2) use of cleaner fuels, such as methanol and natural gas, to meet particulate standards, and (3) requirements on auto manufacturers to reduce tailpipe emissions of hydrocarbons and oxides of nitrogen. Section 177 of Title II permits California to adopt stricter vehicle emission standards and allows other states to adopt California's stricter standards.

California Clean Air Act

The California Clean Air Act of 1988 (CCAA), amended in 1992, requires all air districts in the state to endeavor to achieve and maintain state ambient air quality standards for ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, and particulate matter by the earliest practicable date. California's ambient air quality standards are generally stricter than national standards for the same pollutants. California also has established its own standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles (**Table D-2**).

Toxic Air Contaminants

Toxic air contaminants (TACs) in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill (AB) 1807 [Statutes of 1983]) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588 [Statutes of 1987]). AB 1807 sets forth a formal procedure for the California Air Resources Board (CARB) to designate substances as TACs. Research, public

participation, and scientific peer review must occur before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted the U.S. Environmental Protection Agency's list of hazardous air pollutants (HAPs) as TACs. Most recently, diesel PM was added to the CARB list of TACs.

Once a TAC is identified, CARB then adopts an airborne toxics control measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technologies (BACT) to minimize emissions.

Assembly Bill 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

LOCAL

San Luis Obispo County Air Pollution Control District

At the local level, the San Luis Obispo Air Pollution Control District (SLOAPCD) is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws. SLOAPCD's Board consists of 12 members—the Board of Supervisors and one city council representative from each of the seven incorporated cities. The Board is the decision-making body for SLOAPCD and is responsible for adopting rules, setting policies, and providing direction on important air quality issues affecting the South Central Coast Air Basin (SCCAB). SLOAPCD staff monitors regional air quality, reviews land use projects, develops and enforces rules and regulations, issues permits, and creates long-term clean air plans for the county. The district works with government, industry, businesses, and the public to reduce air pollution from stationary sources, such as power plants, corner gas stations, and local dry cleaners. SLOAPCD also implements programs to promote alternative means of transportation, such as carpooling, telecommuting, and use of clean vehicle technologies.

Strategic Action Plan

SLOAPCD's Strategic Action Plan was adopted in January 2004 to ensure that the district's priorities and programs remain properly aligned with its mission, to identify top goals, objectives, and implementation tactics, to ensure resources are best utilized to achieve its mission, and to preserve air quality throughout the SCCAB. The 2007 update to the Strategic Action Plan (SLOAPCD 2007b) included a specific measure regarding the need to build an informed public. A public opinion survey was identified as an effective means to gain a baseline understanding of how residents view air quality and individual actions that can reduce impacts. SLOAPCD consolidated survey efforts with the San Luis Obispo Council of Governments (SLOCOG) to gain insight on a broader range of topics, including transportation and land use.

Clean Air Plan

As part of the CCAA, SLOAPCD is required to develop a plan to achieve and maintain the state ozone standard by the earliest practicable date. Last adopted in March 2002, the Clean Air Plan (CAP) outlines SLOAPCD's strategies to reduce ozone precursor emissions from a wide variety of stationary and mobile sources (SLOAPCD 2001a). Analysis of several long-term air quality trends in the SCCAB demonstrates that ozone air quality in the North County, where Paso Robles is located, appears to be declining. Transportation control measures and land use planning strategies play an important role in the implementation of the CAP.

CEQA Air Quality Handbook

SLOAPCD's CEQA Air Quality Handbook (SLOAPCD 2009a) provides information on the district's significance thresholds for determining potential air quality impacts from proposed development and provides recommendations on the level of mitigation necessary to reduce those impacts. SLOAPCD has established four separate categories of evaluation for determining the significance of project impacts. Full disclosure of the potential air pollutant and/or toxic air emissions from a project is needed for these evaluations, as required by CEQA:

1. Comparison of calculated project emissions to SLOAPCD emission thresholds;
2. Consistency with the most recent CAP;
3. Comparison of predicted ambient pollutant concentrations resulting from the project to state and federal health standards, when applicable; and
4. The evaluation of special conditions that apply to certain projects.

Any proposed development that has the potential to exceed local CEQA construction or operation thresholds for one or more air pollutants should be submitted to SLOAPCD for review. This requirement applies to any project that will include four or more acres of grading. The SLOAPCD evaluation of development projects includes an estimation of air pollution produced during construction of the project (short-term emissions), including diesel emissions and dust, and from new vehicle trips that will result once the development is in operation (long-term emissions). SLOAPCD estimates potential air quality impacts by performing emission calculations and using computer air modeling tools. The estimated emission levels are compared to the district's CEQA significance thresholds and then mitigation measures are suggested as necessary.

PM (Particulate Matter) Report

In 2003, the California Legislature enacted Senate Bill (SB) 656 (Sher) to reduce public exposure to particulate matter (PM_{10} and $PM_{2.5}$, collectively referred to as PM). SB 656 required CARB, in consultation with local air pollution control districts, to develop and adopt a list of PM reduction strategies. SLOAPCD adopted the PM Report (SLOAPCD 2005a) and associated control measures in July 2005. The report identifies PM control for five primary categories and associated measures. The categories include paved and unpaved roads, open burning, fugitive dust, refinery and Calciner activities, and particulate exhaust concentrations. The top five sources of direct PM_{10} emissions are area sources: unpaved road dust, paved road dust, construction and demolition, prescribed burning, and farming operations (dust). These sources contribute 77 percent of the total PM_{10} emissions in the region. Sources most likely to be associated with proposed Circulation Element improvements would be unpaved and paved road dust and construction and demolition activities.

City of Paso Robles General Plan

The City uses a combination of the General Plan, Land Use Ordinances, and CEQA Guidelines, where applicable, to avoid or minimize impacts of development and urbanization to air quality. The framework for planning includes the following air quality goal, along with its associated policies and action items as designated in the City's Conservation Element:

> *GOAL C-2: Air Quality. Seek to maintain air quality by taking actions to reduce traffic congestion, vehicle miles traveled, and air pollutant emissions.*

BIOLOGICAL RESOURCES

FEDERAL

Endangered Species Act

The Endangered Species Act of 1973 (ESA) provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range and the conservation of the ecosystems on which they depend. In general, the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) is responsible for protection of ESA-listed marine species and anadromous fish while other listed species come under U.S. Fish and Wildlife Service (USFWS) jurisdiction. Endangered refers to species, subspecies, or distinct population segments that are in danger of extinction throughout all or a significant portion of their range while threatened species applies to species, subspecies, or distinct population segments that are likely to become endangered in the near future. The law prohibits any action, administrative or real, that results in a "taking" of a listed species or adversely affects habitat. Likewise, import, export, interstate, and foreign commerce of listed species are all prohibited. "Take" is defined in the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species. Harm may include significant habitat modification where it actually kills or injures a listed species through impairment of essential behavior (e.g., nesting or reproduction).

USFWS Candidate Species List

The United States Fish and Wildlife Service (USFWS) also publishes a list of candidate species. Species on this list receive special attention from the federal agencies during environmental review, although they are not protected otherwise under the ESA. The candidate species are taxa for which USFWS has sufficient biological information to support a proposal to list the species as endangered or threatened.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 imposes criminal and civil penalties for persons in the U.S. or within U.S. jurisdiction lands who take, possess, sell, purchase, barter, offer to sell or purchase or barter, transport, export or import a bald eagle or golden eagle, alive or dead, of any part, nest, or egg of these eagle, or violate any permit or regulations issued under the act without the permission of the Secretary of the Interior. The Secretary of the Interior may permit the taking, possession, and transportation of bald and golden eagles and nests for scientific or religious purposes, or for the protection of wildlife, agricultural, or other interests, if such actions are compatible with eagle preservation. The Secretary of the Interior may authorize the take of golden eagle nests that interfere with resource development or recovery operations.

Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703–711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The vast majority of birds found in the study area are protected under the MBTA. Thus, project construction has the potential to directly take nests, eggs, young, or individuals of these protected species. Further, construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to the abandonment of nests, a violation of the MBTA.

Clean Water Act

The federal Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The following discussion gives background information as relevant to biological resources.

Section 404

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States. Waters of the United States refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands. Applicants must obtain a permit from the U.S. Army Corps of Engineers (ACOE) for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity. Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. ACOE cannot issue an individual permit or verify the use of a general nationwide permit until the requirements of the National Environmental Policy Act (NEPA), ESA, and the National Historic Preservation Act (NHPA) have been met. In addition, ACOE cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued pursuant to CWA Section 401.

STATE

Z'berg-Nejedly Forest Practice Act of 1973

The California Forest Practice Rules (Title 14, California Code of Regulations Chapters 4, 4.5, and 10) implement the provisions of the Z'berg-Nejedly Forest Practice Act of 1973. Under the rules, owners of timberland to another use (as defined in Section 1102) must obtain a Timberland Conversion Permit from the California Department of Forestry and Fire Protection.

Oak Woodlands Conservation Act

California State Senate Bill 1334, the Oak Woodlands Conservation Act, became law on January 1, 2005, and was added to the CEQA statutes as Section 21083.4. This statute requires that a county must determine whether a project will result in a significant impact on oak woodlands. If it is determined that a project may result in a significant impact on oak woodlands, the county shall require one or more of the following mitigation measures:

- Conserve oak woodlands through the use of conservation easements.
- Plant an appropriate number of trees, including maintenance of plantings and replacement of failed plantings.
- Contribute funds to the Oak Woodlands Conservation Fund for the purpose of purchasing oak woodlands conservation easements.
- Other mitigation measures developed by the county.

This law protects oak woodlands that are not protected under the California Forest Practice Act. Agricultural projects are exempt from the act because they involve agricultural land that includes land used to produce or process plant or animal products for commercial purposes.

California Endangered Species Act

The California Endangered Species Act (CESA) establishes state policy to conserve, protect, restore, and enhance endangered or threatened species and their habitats. The CESA is administered by the California Department of Fish and Game (CDFG). The CESA prohibits all persons from taking species that are state listed as endangered or threatened except under certain circumstances. Definitions of endangered and threatened species in the CESA parallel those defined in the federal Endangered Species Act. Take authorizations from the California Department of Fish and Game are required for any unavoidable impact on state-listed species resulting from proposed projects. Before considering a species for protected status, CDFG designates the species as a species of special concern. Species of special concern are those species for which CDFG has information to indicate that the species is declining.

California Fish and Game Code

The California Fish and Game Commission protects wildlife and plants listed as endangered or threatened under the California Endangered Species Act. The California Department of Fish and Game (CDFG) administers the CESA. The California Fish and Game Code identifies species that are fully protected and protects all birds and their nests. CDFG also has jurisdictional authority over streams and lakes and the wetland resources associated with these aquatic systems under California Fish and Game Code Sections 1600 et seq.

Fully Protected Species

Certain species are considered fully protected, meaning that the code explicitly prohibits all take of individuals of these species except for take permitted for scientific research. Section 5050 lists fully protected amphibians and reptiles, Section 5515 lists fully protected fish, Section 3511 lists fully protected birds, and Section 4700 lists fully protected mammals. It is possible for a species to be protected under the California Fish and Game Code, but not fully protected. For instance, mountain lion (*Puma concolor*) is protected under Section 4800 et seq., but is not a fully protected species.

Protection of Birds and Their Nests

Eggs and nests of all birds are protected under Fish and Game Code Section 3503, nesting birds (including raptors and passerines) under Sections 3503.5 and 3513, and birds of prey under Section 3503.5. Migratory nongame birds are protected under Section 3800 and other specified birds under Section 3505. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., hawks, owls, eagles, and falcons), including their nests or eggs.

Stream and Lake Protection

The Department of Fish and Game has jurisdictional authority over streams and lakes and the wetland resources associated with these aquatic systems under California Fish and Game Code Sections 1600 et seq. CDFG has the authority to regulate work that will substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

CDFG enters into a streambed or lakebed alteration agreement with the project proponent and can impose conditions in the agreement to minimize and mitigate impacts to fish and wildlife resources. A lake or streambed alteration agreement is not a permit, but rather a mutual

agreement between CDFG and the project proponent. CDFG jurisdiction may be broader than ACOE jurisdiction because CDFG jurisdiction includes streamside habitats that may not qualify as wetlands under the federal Clean Water Act definition. A project proponent must submit a notification of streambed alteration to CDFG before construction. The notification requires an application fee for streambed alteration agreements, with a specific fee schedule to be determined by CDFG. CDFG can enter into programmatic agreements that cover recurring operation and maintenance activities and regional plans. These agreements are sometimes referred to as Master Streambed Alteration Agreements.

Native Plant Protection Act

The Native Plant Protection Act was enacted in 1977 to protect rare and endangered plants. The act directs the California Department of Fish and Game to carry out the Legislature's intent to "preserve, protect, and enhance rare and endangered plants in this State." The act gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants.

Wildlife Corridors

Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link undisturbed areas that would otherwise be fragmented. Maintaining the continuity of established wildlife corridors is important to (a) sustain species with specific foraging requirements, (b) preserve a species' distribution potential, and (c) retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource.

REGIONAL

Regional Habitat Conservation Planning Efforts

Regional scale conservation planning efforts are occurring through the development of habitat conservation plans (HCPs) and natural community conservation plans (NCCPs). Section 10(a) of the Endangered Species Act authorizes HCPs and allows issuance of incidental take permits upon approval of a conservation plan developed by the permit applicants. In 1991, the State of California passed the Natural Community Conservation Planning Act, which established the natural community planning program. NCCPs are carried out under state law and can be even broader than HCPs.

LOCAL

City of Paso Robles General Plan

The City uses a combination of the General Plan, Land Use Ordinances, and CEQA Guidelines, where applicable, to avoid or minimize impacts of development and urbanization to biological resources. The framework for planning includes the following biological resources goal, along with its associated policies and action items, as designated in the City's Conservation Element:

> *GOAL C-3: Biological Resources. As feasible, preserve native vegetation and protected wildlife, habitat areas, and vegetation, through avoidance, impact mitigation, and habitat enhancement.*

Oak Tree Preservation Ordinance

The City's Oak Tree Ordinance No. 835 N.S. provides for protection and replacement of trees that are disturbed by development, requiring that an Oak Tree Impact Evaluation Report be submitted to the City should a development project have the potential to impact one or more oak trees (Paso Robles 2002a).

CULTURAL RESOURCES

FEDERAL

National Historic Preservation Act

The National Register of Historic Places is the nation's official list of cultural resources that warrant preservation. The National Register was authorized under the National Historic Preservation Act of 1966. The National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect the country's historic and archaeological resources.

The National Historic Preservation Act (NHPA) of 1996, as amended, is the primary mandate governing projects under federal jurisdiction that may affect cultural resources. Section 106 of the NHPA requires that, before beginning any undertaking, a federal agency take into account the undertaking's effect on historic properties and afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on these actions. The Section 106 process entails the following six basic steps:

- Initiate consultation and public involvement
- Identify and evaluate historic properties
- Assess effects of the project on historic properties
- Consult with the State Historic Preservation Officer regarding adverse effects on historic properties, resulting in a memorandum of agreement (MOA)
- Submit the MOA to the ACHP for approval
- Proceed in accordance with the MOA

The National Register of Historic Places lists four historically recognized locations in the City of Paso Robles (USNPS 2010a), as follows:

- Bank of Italy
- Brewster-Dutra House
- Paso Robles Carnegie Library

STATE

California Register of Historic Resources

Per Public Resources Code Section 5024.1(a), the California Register of Historic Resources (CRHR) is "an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate which properties are to be protected, to the extent prudent and feasible, from substantial adverse change." The CRHR is overseen and administered by the Office of Historic Preservation in the California State Parks. The criteria for listing resources on the California Register are based on those developed by the National Park Service for listing on the National Register of Historic Places with modifications in order to include a broader range of resources that better reflect the history of California. A resource is considered historically significant if it:

- Is historically or archeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California; and
- Meets any of the following criteria:
  - Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
  - Is associated with the lives of persons important in our past;
  - Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
  - Has yielded, or may be likely to yield, information important in prehistory or history.

The California Register of Historic Resources does not list any locations in the City of Paso Robles.

Regulations Concerning Native American Heritage

California Public Resources Code

California Public Resources Code 5097.9 states that no public agency, or private party on a public property, shall "interfere with the free expression or exercise of Native American religion." The code further states that:

> *No such agency or party [shall] cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine…except on a clear and convincing showing that the public interest and necessity so require. County and city lands are exempt from this provision, expect for parklands larger than 100 acres.*

Senate Bill 18 (Government Code, Sections 65352.3, 65352.4) requires that, prior to the adoption or amendment of a general plan or specific plan proposed on or after March 1, 2005, a city or county must consult with Native American tribes with respect to the possible preservation of, or the mitigation of impacts to, specified Native American places, features, and objects located within that jurisdiction. The intent of Senate Bill 18 is to provide California Native American tribes

an opportunity to participate in local land use decisions at an early stage of planning, for the purpose of protecting, or mitigating impacts to cultural places. These consultation and notice requirements apply to the adoption and amendment of both general plans and specific plans.

Northern Chumash Tribal Council

The Northern Chumash Tribal Council (NCTC) is a nonprofit corporation under the guidelines of California Senate Bill 18 and is recognized by the State of California as a sovereign nation. The members of NCTC are the most likely descendent (MLD) in San Luis Obispo County. The NCTC mission is to offer a foundation for the Chumash people of San Luis Obispo County to bring tribal culture and heritage back to life, create dignity with the people, and educate the public. The NCTC is involved in consultation with county government and local governments to implement protocols for land use issues in San Luis Obispo County that will offer a more complete project analysis for the protection of cultural places and sacred sites.

State Health and Safety Code

Disturbance of human remains without the authority of law is felony (California Health and Safety Code, Section 7052). If the remains are Native American in origin, they are within the jurisdiction of the Native American Heritage Commission (NAHC).

According to state law (California Health and Safety Code Section 7050.5; California Public Resources Code Section 5097.98), if human remains are discovered or recognized in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the coroner of the county has been informed and has determined that no investigation of the cause of death is required.

If the remains are of Native American origin:

- The descendents from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of with appropriate dignity the human remains and any associate grave goods as provided in Public Resources Code Section 5097.98; or

- The NAHC was unable to identify a descendent or the descendent failed to make a recommendation within 24 hours after being notified by the commission.

According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that construction or excavation be stopped near discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the NAHC.

LOCAL

City of Paso Robles General Plan

Historic preservation is addressed in the General Plan in the Land Use, Conservation, and Housing elements. Some of the policies and procedures specifically address historic preservation and the treatment of historic buildings, while others are important considerations to the overall character and appearance of historic properties and neighborhoods or can be used to encourage

preservation practices. The City's Conservation Element includes goals, policies, and action items that strive to preserve and protect the city's important historic and archaeological resources. The Conservation Element requires the protection of cultural resources by implementing the Downtown Design Guidelines, establishing a Vine Street Historic and Architectural Preservation Overlay District, and requiring the preparation of archaeological studies/reports for developments subject to CEQA, with incorporation of mitigation measures as necessary.

City of Paso Robles Zoning Ordinance

The City's Zoning Ordinance Chapter 21.15 is the Historical and Architectural Overlay (HP) District. It is the intent of the HP overlay district to encourage the preservation, restoration, and renovation of buildings and/or neighborhoods of architectural significance or interest. Overlay districts allow for further regulation in various primary zones in order to implement provisions of the general plan and to comply with various state or federal regulations. Paso Robles currently has an HP District bordered by Chestnut Street, Oak Street, 8th Street, and 21st Street, inclusive of both sides of these streets. This overlay zone is referred to as the Vine Street Overlay Zone and/or the Westside Historic District in City documents.

City of Paso Robles Design Guidelines

In order to assist the Development Review Committee and the Planning Commission in their evaluation of projects in Paso Robles, a series of design guidelines has been developed. The guidelines are intended for both new construction and restoration or remodeling of existing buildings to ensure that they complement the historic character of downtown Paso Robles in scale, proportion, and tradition. Traditional building materials, period colors, and ornamentation are encouraged. These guidelines also address compatibility, and specifically discourage the use of contemporary architectural styles, stylistic elements, or materials and encourage the use of the predominant architectural style in a particular area.

Historic Preservation Ordinance

According to the City's Historic Resources Survey (Paso Robles 2010f), the City is in the process of considering a local historic preservation ordinance, which, if adopted, would allow for the designation of historic resources on the local level. The ordinance would include provisions for a Conservation Overlay Zone, which would include the city's central business district. A Conservation Overlay Zone is a concentration of buildings that does not meet the criteria for designation as historic district, but has unique characteristics that should be protected. The Historic Resources Survey identified approximately 74 properties within the boundaries of the district. Of these, 47 properties appear to contribute to the historical character of the proposed Conservation Overlay Zone.

GEOLOGY AND GEOLOGIC HAZARDS

STATE

2001 California and 1997 Uniform Building Code (Title 24)

The California Building Code and the Uniform Building Code (incorporated by reference in the California Building Code) provide standards for testing and building construction, erosion control, and safety measures for development in earthquake-prone areas. Table 16-J of the 1997 California Uniform Building Code requires that a site be classified into one of five soil profile types. These soil profile types are based on the average shear wave velocity of the upper 30 meters, or Standard Penetration Test (SBT) blow counts, or undrained shear strength.

The Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. This state law was a direct result of the 1971 San Fernando earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. The act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides.

The law requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones) around the surface traces of active faults and to issue appropriate maps. [Earthquake Fault Zones were called Special Studies Zones prior to January 1, 1994.] The maps are distributed to all affected cities, counties, and state agencies for their use in planning and controlling new or renewed construction. Local agencies must regulate most development projects in the zones. Projects include all land divisions and most structures for human occupancy. Single-family wood-frame and steel-frame dwellings up to two stories that are not part of a development of four units or more are exempt. However, local agencies can be more restrictive than state law requires.

Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults. A licensed geologist must prepare an evaluation and written report for a specific site. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (generally 50 feet).

LOCAL

Safety Element of the General Plan

The Safety Element of the General Plan establishes goals, policies, and action items to protect the community from risks associated with geologic hazards and other phenomena that put lives and property at risk. The overall goal of the Safety Element is to minimize exposure to natural and manmade disasters, with policies on hazard education, disaster response, hazardous exposure minimization, structural safety, hazardous materials, and electromagnetic field (EMF) exposure.

City Grading Code

The City's Grading Code (Title 20), Section 20.12.010, Permit Requirements, requires the preparation of a soil engineering and engineering geology report for any projects requiring grading. In areas of moderate, high, and very high landslide risks and in areas of high liquefaction potential and subsidence potential as noted in the General Plan, additional soils engineering reports may be required. In addition, a geology report may be required in areas of moderate to high landslide risks and in areas of high liquefaction potential and subsidence potential as noted in the General Plan. The Grading Code also includes Section 20.20.020, Erosion Control, which outlines erosion protection regulations.

GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

FEDERAL

Greenhouse Gases

The U.S. Environmental Protection Agency (USEPA) is the federal agency responsible for implementing the federal Clean Air Act (CAA). Previous to 2007, USEPA did not have regulations addressing greenhouse gases. The U.S. Supreme Court ruled on April 2, 2007, that carbon dioxide (CO_2) is an air pollutant as defined under the CAA and that USEPA has the authority to regulate emissions of greenhouse gases.

In March 2009, USEPA issued a finding declaring greenhouse gases endanger public health and welfare under the Clean Air Act and required monitoring and reporting for greenhouse gas emitters who emit more than 25,000 metric tons of CO_2e per year as of January 2010. Beginning in 2011, new, large sources of greenhouse gas emissions (over 100,000 metric tons of CO_2e per year) will be required to obtain a permit from USEPA (USEPA 2010a).

USEPA and the National Highway Transportation Safety Administration (NHTSA) took additional steps to regulate national greenhouse gas emissions from passenger cars and light-duty trucks in April 2010. Together, USEPA and NHTSA issued a joint ruling to improve fuel economy for passenger cars and light-duty trucks beginning with model year 2012. It is estimated the increase in fuel efficiency will save 1.8 billion barrels of oil over the lifetime of the vehicles sold (USEPA 2010b).

STATE

Assembly Bill 1493

Assembly Bill (AB) 1493 (Pavley) of 2002 requires CARB to develop and adopt the nation's first greenhouse gas (GHG) emissions standards for automobiles. These standards are also known as Pavley I. The California Legislature declared in AB 1493 that global warming is a matter of increasing concern for public health and the environment. It cites several risks that California faces from climate change, including a reduction in the state's water supply, an increase in air pollution caused by higher temperatures, harm to agriculture, an increase in wildfires, damage to the coastline, and economic losses caused by higher food, water, energy, and insurance prices. The bill also states that technological solutions to reduce GHG emissions would stimulate California's economy and provide jobs. In 2004, the State of California submitted a request for a waiver from federal clean air regulations, as the State is authorized to do under the CAA, to allow the State to require reduced tailpipe emissions of CO_2. In late 2007, USEPA denied California's waiver request and declined to promulgate adequate federal regulations limiting GHG emissions. In early 2008, the State brought suit against USEPA related to this denial.

In January 2009, President Obama instructed USEPA to reconsider the Bush Administration's denial of California's and 13 other states' requests to implement global warming pollution standards for cars and trucks. In June 2009, USEPA granted California's waiver request, enabling the State to enforce its greenhouse gas emissions standards for new motor vehicles beginning with the current model year.

Also in 2009, President Obama announced a national policy aimed at both increasing fuel economy and reducing GHG pollution for all new cars and trucks sold in the United States. The new standards would cover model years 2012 to 2016 and would raise passenger vehicle fuel

economy to a fleet average of 35.5 miles per gallon (mpg) by 2016. In May 2010, USEPA and the Department of Transportation formally adopted the proposed fuel economy standards. When the national program takes effect, California has committed to allowing automakers who show compliance with the national program to also be deemed in compliance with state requirements. California is committed to further strengthening these standards beginning in 2017 to obtain a 45 percent GHG reduction from the 2020 model year vehicles.

Executive Order S-3-05

Executive Order S-3-05 proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

The Executive Order directed the Secretary of the California Environmental Protection Agency (Cal-EPA) to coordinate a multi-agency effort to reduce greenhouse gas emissions to the target levels. The Secretary will also submit biannual reports to the governor and state legislature describing (1) progress made toward reaching the emission targets, (2) impacts of global warming on California's resources, and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of CalEPA created a Climate Action Team made up of members from various state agencies and commissions. The Climate Action Team released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government and community actions, as well as through state incentive and regulatory programs.

Assembly Bill 32, the California Global Warming Solutions Act of 2006

Assembly Bill 32 (AB 32) requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. The gases that are regulated by AB 32 include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The reduction to 1990 levels will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

Climate Change Proposed Scoping Plan

In October of 2008, CARB published its Climate Change Proposed Scoping Plan, which is the State's plan to achieve GHG reductions in California required by AB 32. The scoping plan contains the main strategies California will implement to achieve reduction of 169 million metric tons (MMT) of CO_2e, or approximately 30 percent from the state's projected 2020 emission level of 596 MMT of CO_2e under a business-as-usual scenario (this is a reduction of 42 MMT CO_2e, or almost 10 percent, from 2002–2004 average emissions). The scoping plan also includes CARB-recommended GHG reductions for each emissions sector of the state's GHG inventory. The largest proposed GHG reduction recommendations are from improving emission standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e), implementation of the Low Carbon Fuel Standards (15.0 MMT CO_2e), energy efficiency measures in buildings and appliances and

the widespread development of combined heat and power systems (26.3 MMT CO_2e), and a renewable portfolio standard for electricity production (21.3 MMT CO_2e). CARB has not yet determined what amount of GHG reductions it recommends from local government operations; however, the proposed scoping plan does state that land use planning and urban growth decisions will play an important role in California's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions. Meanwhile, CARB is also developing an additional protocol for community emissions. CARB further acknowledges that decisions on how land is used will have significant impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The proposed scoping plan states that the ultimate GHG reduction assignment to local government operations is to be determined. With regard to land use planning, the proposed scoping plan expects approximately 5.0 MMT CO_2e will be achieved associated with implementation of Senate Bill 375, which is discussed further below. The Climate Change Proposed Scoping Plan was approved by CARB on December 11, 2008.

Senate Bill 1368

Senate Bill 1368 (SB 1368) is the companion bill to AB 32. SB 1368 required the California Public Utilities Commission (CPUC) to establish a greenhouse gas emission performance standard for baseload generation from investor-owned utilities by February 1, 2007. The bill also required the California Energy Commission (CEC) to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural-gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

California Climate Action Registry

The California Climate Action Registry (CCAR) was established in 2000 by Senate Bill 1771 and modified in 2001 by Senate Bill 527 as a nonprofit voluntary registry for GHG emissions. The purpose of CCAR is to help companies and organizations with operations in the state to establish GHG emissions baselines against which any future GHG emissions reduction requirements may be applied. CCAR has developed a general protocol and additional industry-specific protocols that provide guidance on how to inventory GHG emissions for participation in the registry. The California Climate Action Registry has now merged its GHG emissions registry with the climate registry and is primarily focused on offset projects and research.

Senate Bill 97

Senate Bill 97 (SB 97), signed August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis under the California Environmental Quality Act (CEQA). This bill directs the California Office of Planning and Research (OPR) to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA by July 1, 2009. The Resources Agency adopted these guidelines in December 2009 and the guidelines took effect on March 18, 2010. This bill also removes, both retroactively and prospectively, as legitimate litigation causes of action any claim of inadequate CEQA analysis of effects of GHG emissions associated with environmental review for projects funded by the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1B or 1E). This provision was repealed by operation of law on January 1, 2010, at which time such projects, if any remained unapproved,

no longer enjoyed the protection against litigation claims based on failure to adequately address climate change issues.

Senate Bill 1078 and Governor's Order S-14-08

Senate Bill 1078 (SB 1078) addresses electricity supply and requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide a minimum 20 percent of their supply from renewable sources by 2017. SB 1078 changed the target date of this bill's implementation to 2010. This Senate Bill would affect statewide GHG emissions associated with electricity generation. In 2008, Governor Schwarzenegger signed Executive Order S-14-08, which set the Renewable Portfolio Standard target to 33 percent by 2020. It directed state government agencies and retail sellers of electricity to take all appropriate actions to implement this target.

Senate Bill 375

Senate Bill 375 (SB 375), signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's Regional Transportation Plan (RTP). CARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. CARB released draft targets for the MPOs in July 2010 and is expected to adopt these targets in late 2010. The draft targets for San Luis Obispo County are the current per capita emissions as identified in the latest model by the San Luis Obispo Council of Governments (SLOCOG) and the San Luis Obispo Air Pollution Control District (SLOAPCD). These reduction targets will be updated every eight years, but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

This bill also extends the minimum time period for the Regional Housing Needs Allocation (RHNA) cycle from five years to eight years for local governments located within an MPO that meets certain requirements. City or county land use policies (including general plans) are not required to be consistent with the RTP (and associated SCS or APS). However, new provisions of CEQA would incentivize qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

Executive Order S-13-08: The Climate Adaptation and Sea Level Rise Planning Directive

On November 14, 2008, Governor Schwarzenegger issued Executive Order S-13-08 in order to reduce and assess California's vulnerability to climate change and sea level rise. The Executive Order initiated four major actions:

- Initiate California's first statewide climate change adaptation strategy that will assess the state's expected climate change impacts, identify where California is most vulnerable, and recommend climate adaptation policies. The California Adaptation Strategy was released in December 2009.

- Request the National Academy of Science establish an expert panel to report on sea level rise impacts in California to inform state planning and development efforts.

- Issue interim guidance to state agencies for how to plan for sea level rise in designated coastal and floodplain areas for new projects.

- Initiate a report on critical existing and planned infrastructure projects vulnerable to sea level rise.

The Executive Order will provide consistency and clarify to state agencies on how to address sea level rise in current planning efforts. The California Natural Resources Agency is currently working with the National Academy of Science to identify impacts and plan for an increase in sea levels.

California Building Energy Efficiency Standards

Title 24, Part 6 of the California Code of Regulations, known as the Building Energy Efficiency Standards, was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The California Energy Commission adopted the 2008 standards on April 23, 2008, and the Building Standards Commission approved them for publication on September 11, 2008. The new standards went into effect on July 1, 2009 (CEC 2008a).

LOCAL

San Luis Obispo County Air Pollution Control District (SLOAPCD)

According to SLOAPCD's CEQA Air Quality Handbook (SLOAPCD 2009a), the district has not yet established significance thresholds for greenhouse gas emissions from project operations. Nonetheless, greenhouse gases (CO_2 and CH_4) from all projects subject to CEQA must still be quantified and mitigated to the extent feasible. The California Office of Planning and Research has provided the following direction for the assessment and mitigation of GHG emissions:

- Lead agencies should make a good-faith effort, based on available information, to calculate, model, or estimate the amount of CO_2 and other GHG emissions from a project, including the emissions associated with vehicular traffic, energy consumption, water usage and construction activities.

- The potential effects of a project may be individually limited but cumulatively considerable. Lead agencies should not dismiss a proposed project's direct and/or indirect climate change impacts without careful evaluation. All available information and analysis should be provided for any project that may significantly contribute new GHG emissions, either individually or cumulatively, directly or indirectly (e.g., transportation impacts).

- The lead agency must impose all mitigation measures that are necessary to reduce GHG emissions to a less than significant level. CEQA does not require mitigation measures that are infeasible for specific legal, economic, technological, or other reasons. A lead agency is not responsible for wholly eliminating all GHG emissions from a project; the CEQA standard is to mitigate to a level that is "less than significant."

HAZARDS AND HAZARDOUS MATERIALS

FEDERAL

The United States Environmental Protection Agency (USEPA) provides leadership in the nation's environmental science, research education, and assessment efforts. USEPA works closely with other federal agencies, including the Occupational Safety and Health Administration (OSHA), the Department of Transportation (USDOT), and the National Institute of Health (NIH), state and local governments and Native American tribes to develop and enforce regulations under existing laws. USEPA is responsible for researching and setting national standards for a variety of environmental programs and delegates to states and tribes responsibility for issuing permits and monitoring and enforcing compliance.

Prior to August 1992, the principal agency at the federal level regulating the generation, transport, and disposal of hazardous waste was USEPA under the authority of the Resource Conservation and Recovery Act (RCRA). As of August 1, 1992, however, the California Department of Toxic Substance Control (DTSC) was authorized to implement the state's hazardous waste management program for USEPA.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites and established a trust fund to provide for cleanup when no responsible party could be identified.

The law authorizes two kinds of response actions: short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response, and long-term remedial response actions that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life-threatening. These actions can be conducted only at sites listed on the USEPA's National Priorities List.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Sections 6901 et seq. (1976), gave USEPA the authority to control hazardous waste from "cradle to grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. In addition, the RCRA set forth a framework for the management of non-hazardous wastes. The 1986 amendments to RCRA enabled USEPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. RCRA focuses only on active and future facilities and does not address abandoned or historical sites (see CERCLA). The Federal Hazardous and Solid Waste Amendments are the 1984 amendments to RCRA that required phasing out land disposal of hazardous waste. Some of the other mandates of this law include increased USEPA enforcement authority, more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

Federal Toxic Substances Control Act

Congress enacted the Toxic Substances Control Act (TSCA) in 1976 (15 U.S.C. Sections 2601 et seq.), to become effective January 1, 1977. The act authorizes the USEPA to secure information on all new and existing chemical substances and to control any of these substances determined to cause an unreasonable risk to public health or the environment. The act also includes requirements for the storage, use, and disposal of polychlorinated biphenyl (PCB)-containing materials.

Federal Insecticide, Fungicide, and Rodenticide Act

The primary focus of the 1976 Federal Insecticide, Fungicide, and Rodenticide Act, U.S.C. Sections 136 et seq., was to provide federal control of pesticide distribution, sale, and use. USEPA was given authority under the act not only to study the consequences of pesticide usage but also to require users (farmers, utility companies, and others) to register when purchasing pesticides. Through later amendments to the law, users also must take exams for certification as applicators of pesticides. All pesticides used in the United States must be registered (licensed) by USEPA. Registration assures that pesticides will be properly labeled and that if in accordance with specifications, will not cause unreasonable harm to the environment.

Safe Drinking Water Act

The Safe Drinking Water Act, 42 U.S.C. Sections 300f et seq., was established in 1974 to protect the quality of drinking water in the United States. This law focuses on all waters actually or potentially designed for drinking use, whether from aboveground or underground sources. The act authorized USEPA to establish safe standards of purity and required all owners or operators of public water systems to comply with primary (health-related) standards. State governments, which assume this power from USEPA, also encourage attainment of secondary standards (nuisance-related).

STATE

The California Environmental Protection Agency (Cal-EPA) and the State Water Resources Control Board (SWRCB) establish rules governing the use of hazardous materials and the management of hazardous waste. Within Cal-EPA, the California Department of Toxic Substance Control (DTSC) has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the state agency for the management of hazardous materials and the generation, transport, and disposal of hazardous waste.

California Health and Safety Code

San Luis Obispo County is currently responsible for implementing Chapter 6.95 of Division 20 of the California Health and Safety Code (Section 25500 et seq.) relating to hazardous materials release response plans and inventory.

California Water Code

California Water Code Section 231 requires the California Department of Water Resources (DWR) to develop well standards to protect California's groundwater quality. DWR Bulletin 74-81 Water Well Standards: State of California and Bulletin 74-90 (supplement to Bulletin 74-81), California Well Standards, Water Wells, Monitoring Wells, Cathodic Protection Wells, contains the minimum requirements for constructing, altering, maintaining, and destroying these types of wells. The standards apply to all water well drillers in California and the local agencies that enforce them.

Hazardous Waste Control Laws

The California Hazardous Waste Control Laws (HWCL) are the state's equivalent to RCRA and closely parallel RCRA by regulating the generation, storage, transportation, treatment, and disposal of hazardous waste in the state. The primary authority for enforcement of HWCL and RCRA itself lies with the DTSC. The State of California has been granted authorization by the USEPA to administer all regulations under both RCRA and the state's HWCL.

Cal/OSHA

The California Occupational Safety and Health Administration (Cal/OSHA) is responsible for implementing workplace regulations. Cal/OSHA considers an asbestos-containing material (ACM) as one containing at least 1 percent asbestos. A contractor certified by the California Contractor's State License Board to conduct asbestos-related work must perform the removal or disturbance of 100 square feet or more of ACM. Requirements specifically addressing asbestos are contained in Title 8 of the California Code of Regulations (CCR) and in the California Health and Safety Code.

Porter-Cologne Act

At the state level, water quality compliance and liability often revolve around compliance with the California Porter-Cologne Act of 1970, California Water Code Sections 13000 et seq. The Porter-Cologne Act designates the SWRCB and Regional Water Quality Control Boards (RWQCBs) as the state agencies with primary responsibility to protect water quality in California and is the primary vehicle for implementation of California's responsibilities under the federal Clean Water Act. Under the act, SWRCB and RWQCBs must address all discharges of waste that could affect the quality of the waters of the State, including potential nonpoint sources of pollution.

To carry out this mandate, the Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. The act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Underground Storage of Hazardous Substances Act

In 1983 the California Legislature enacted the Underground Storage of Hazardous Substances Act, Health and Safety Code Chapter 6.7. The intent was "to establish orderly procedures that will ensure that newly constructed underground storage tanks meet appropriate standards and that existing tanks be properly maintained, inspected, tested and upgraded so that the health, property and resources of the people of the state will be protected" (Section 25280 (b)). The primary focus of the act is on protection of groundwater from contamination.

Aboveground Petroleum Storage Act

Shortly after the passage of the Underground Storage of Hazardous Substances Act, the California Legislature recognized that there was no similar statewide program for determining the amount and type of hazardous substances being stored in aboveground tanks. The Aboveground Petroleum Storage Act was passed in 1989 and became effective January 1, 1990. In general, the act requires owners or operators of aboveground petroleum storage tanks to file a storage statement, pay a fee by July 1, 1990, and implement measures to prevent spills.

LOCAL

City of Paso Robles Hazard Mitigation Plan

The City of Paso Robles recognizes the consequences of disasters and the need to reduce the impacts of natural and human-caused hazards. This Hazard Mitigation Plan is the result of approximately one year of work to develop a plan that would guide the City toward greater disaster resistance in full accord with the character and needs of the community and the Disaster Mitigation Act of 2000. The purpose of hazard mitigation is to implement actions that eliminate the risk from hazards, or reduce the severity of the effects of hazards on people and property.

Safety Element of the General Plan

The Safety Element of the General Plan establishes goals, policies, and action items to protect the community from risks associated with geologic hazards and other phenomena that put lives and property at risk. The overall goal of the Safety Element is to minimize exposure to natural and manmade disasters, with policies on hazard education, disaster response, hazardous exposure minimization, structural safety, hazardous materials, and electromagnetic field (EMF) exposure.

HYDROLOGY AND WATER QUALITY

FEDERAL

Clean Water Act

The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that all pollutant discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool.

Total Maximum Daily Loads

Under CWA Section 303(d) and California's Porter-Cologne Water Quality Control Act of 1969 (discussed below), the State of California is required to establish beneficial uses of state waters and to adopt water quality standards to protect those beneficial uses. Section 303(d) establishes the Total Maximum Daily Load (TMDL) process to assist in guiding the application of state water quality standards. It requires states to identify waters whose water quality is "impaired" (affected by the presence of pollutants or contaminants) and to establish a TMDL or the maximum quantity of a particular contaminant that a water body can assimilate without experiencing adverse effects on the beneficial use identified. TMDLs are generally stakeholder-driven processes that involve investigation of sources and their loading (pollution input), make load allocations, and identify an implementation plan and schedule.

TMDLs in the city are established in the San Luis Obispo County Integrated Regional Water Management Plan (SLO County 2007a). Water bodies such as the Salinas River and Atascadero and Santa Maria creeks have certain high TMDL priorities related to agricultural runoff, land development, road construction, and others. **Table D-3**, below, reflects TMDLs developed or in development in the City of Paso Robles.

TABLE D-3
TMDLS DEVELOPED OR IN DEVELOPMENT FOR PASO ROBLES

TMDL	Status
Santa Maria and Oso Flaco Fecal Coliform TMDL	In progress
Santa Maria and Oso Flaco Nitrate TMDL	In progress
Salinas River Fecal Coliform TMDL (includes Atascadero Creek)	In progress
Regional Sediment Assessment	Under investigation

Source: SLO County 2007a

National Pollutant Discharge Elimination System

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. There are two general permits for stormwater dischargers. One permit applies to industrial dischargers and the other permit relates to construction activities.

NPDES was established by the CWA to regulate municipal and industrial discharges to surface waters of the United States. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that the USEPA must consider in setting effluent limits for priority pollutants.

The purpose of the NPDES program is to establish a comprehensive stormwater quality program to manage urban stormwater and minimize pollution of the environment to the maximum extent practicable. The NPDES program consists of (1) characterizing receiving water quality, (2) identifying harmful constituents, (3) targeting potential sources of pollutants, and (4) implementing a Comprehensive Stormwater Management Program.

Individual NPDES Permits

All point source discharges to waters of the United States not covered by a general permit are required to apply for an individual NPDES permit with the Regional Water Quality Control Board (RWQCB). The RWQCB then issues waste discharge requirements and monitoring provisions to ensure compliance with CWA standards. The RWQCB will deny or limit a mixing zone and dilution credit as necessary to protect the beneficial use of state waters.

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation is a water management agency established in 1902 to manage water in the western United States. The Bureau of Reclamation is primarily known for the role it has played in dam building and hydroelectric power generation. The Bureau of Reclamation is the largest water wholesaler in the country, serving 31 million people. San Luis Obispo County is located in the Bureau of Reclamation's Mid-Pacific Region.

Federal Flood Insurance Program

Congress, alarmed by increasing costs of disaster relief, passed the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The intent of these acts is to reduce the

need for large publicly funded flood control structures and disaster relief by restricting development on floodplains. The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development on floodplains. FEMA issues Flood Insurance Rate Maps (FIRMs) for communities participating in the NFIP. FIRMs delineate flood hazard zones in the community.

Executive Order 11988

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. It generally requires federal agencies constructing, permitting, or funding a project in a floodplain to do the following:

- Avoid incompatible floodplain development.
- Be consistent with the standards and criteria of the NFIP.
- Restore and preserve natural and beneficial floodplain values.

STATE

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, passed in 1969, articulates the federal CWA (see Clean Water Act above) for California. It established the State Water Resources Control Board (SWRCB) and divided the state into nine regions, each overseen by an RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs, which are responsible for implementing CWA Sections 401, 402, and 303(d). In general, the SWRCB manages statewide regulation of water quality, while the RWQCBs focus exclusively on water quality in their regions. San Luis Obispo County is in Region 3, which is administered by the Central Coast Regional Water Quality Control Board.

Basin Plans and Water Quality Objectives

The Porter-Cologne Act provides for the development and periodic review of water quality control plans (basin plans) that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. Basin plans are primarily implemented by using the NPDES permitting system and the issuance of waste discharge requirements to regulate waste discharges so that water quality objectives are met (see discussion of the NPDES system in the Clean Water Act subsection above). Basin plans are updated every three years. They provide the technical basis for determining waste discharge requirements and taking regulatory enforcement actions if deemed necessary.

Site-Specific Water Quality Objectives

Due to site-specific variations in water chemistry, the toxicity of a contaminant to aquatic life may deviate from adopted water quality objectives in a particular water body. As a result, various water bodies may require more or less protection to achieve optimal water quality. For this reason, the SWRCB and USEPA allow site-specific water quality objectives. At this time in California, the only way to obtain a site-specific water quality objective is through an amendment to the relevant basin plan, which tends to be a time-consuming proposition. The

SWRCB is currently considering whether to extend this authority to individual NPDES permits. In either case, a process exists whereby a site-specific water quality objective may be sought to allow for a higher discharge limit than would otherwise be possible.

Waste Discharge Requirements

It is the responsibility of the water boards to preserve and enhance the quality of the State's waters through the development of water quality control plans and the issuance of waste discharge requirements (WDRs). The Porter-Cologne Act provides for the issuance of WDRs. This requirement is very similar to the National Pollution Discharge Elimination System (NPDES) program under the federal Clean Water Act, and in most cases, the two processes are combined by the RWQCBs. However, the Porter-Cologne Act definition of discharge is somewhat broader than the CWA; in addition, waters of the State include certain water bodies that are not waters of the United States. As a result, certain discharges are solely regulated under the Porter-Cologne Act. The SWRCB has adopted general WDRs for land application of biosolids, discharges to isolated wetlands, and land discharge of groundwater or surface water from cleanup of petroleum pollution.

For example, on September 2, 2009, the SWRCB, Division of Water Quality adopted Order 2009-0009-DWQ, the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities. All discharges of stormwater and non-stormwater from construction sites are prohibited except those specifically authorized by the General Permit or another NPDES permit. The new General Permit becomes effective on July 1, 2010. Existing discharges covered under a previous permit must continue to comply with the previous permit until July 1, 2010, but must electronically file through the State Water Board's Stormwater Multi-Application and Report Tracking System (SMARTS) website for coverage under the new General Permit.

The stormwater pollution prevention plan (SWPPP) must be developed to meet site-specific objectives. These objectives include, but are not limited to, descriptions of the project and site, construction schedule, the efficacy of site-specific best management practices (BMPs), support for selecting BMPs, and Rain Event Action Plans. Dischargers must appoint a Qualified SWPPP Developer (QSD) and a Qualified SWPPP Practitioner (QSP) to oversee implementation of BMPs. Evidence of the training qualification and certification of the QSD and QSP must be included. In addition, SWPPPs must address the objective of developing stabilization BMPs for after project-completion. SWPPPs must be available for inspection at the construction site during working hours while construction is occurring, and be made available upon request by a state or municipal inspector.

Municipal Stormwater Permitting Program

The Municipal Stormwater Permitting Program regulates stormwater discharges from municipal separate storm sewer systems (MS4s). MS4 permits were issued in two phases. Under Phase I, which started in 1990, the Regional Water Quality Control Boards have adopted NPDES stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving more than 250,000 people) municipalities. Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. These permits are reissued as the permits expire.

The MS4 permits require the discharger to develop and implement a Stormwater Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. The management programs specify what best management practices (BMPs) will be used to address certain program areas. The program areas include public education and

outreach, illicit discharge detection and elimination, construction and post-construction, and good housekeeping for municipal operations. In general, medium and large municipalities are required to conduct chemical monitoring, while small municipalities are not.

Other General Permits

The SWRCB has adopted several other general permits under the NPDES program, including permits for the discharges of aquatic pesticides for vector and aquatic weed control.

Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California

The State Implementation Program (SIP) established new standards for a variety of toxic pollutants. This state policy for water quality control applies to discharges of toxic pollutants into California's inland surface waters, enclosed bays, and estuaries, subject to regulation under the Porter-Cologne Water Quality Control Act and the federal CWA. Such regulation may occur through the issuance of NPDES permits, the issuance or waiver of WDRs, or other regulatory approaches.

The goal of the SIP is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency. The SIP is a tool to be used in conjunction with watershed management approaches and, where appropriate, the development of TMDLs to ensure that water quality standards are met and the beneficial uses are protected.

California Fish and Game Code Sections 1601–1607

Under Sections 1601–1607 of the California Fish and Game Code, the California Department of Fish and Game (CDFG) regulates projects that affect the flow, channel, or banks of rivers, streams, and lakes. Sections 1601 and 1603 require public agencies and private individuals, respectively, to notify and enter into a streambed or lakebed alteration agreement with CDFG before beginning construction of a project that will have either of the following results:

- Divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake.
- Use materials from a streambed. Section 1601 contains addition prohibitions against the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

Sections 1601–1607 may apply to any work undertaken within the 100-year floodplain of any body of water or its tributaries, including intermittent stream channels. In general, however, it is construed as applying to work in the active floodplain and/or associated riparian habitat of a wash, stream, or lake that provides benefit to fish and wildlife. Sections 1601–1607 typically do not apply to drainages that lack a defined bed and banks, such as swales, or to very small bodies of water and wetlands such as vernal pools.

Dam Safety and Operation

Dam safety in California is administered by the Department of Water Resources, Division of Safety of Dams (DSOD). DSOD reviews plans and specifications for the construction of new dams or for the enlargement, alteration, repair, or removal of existing dams, as well as performs inspections during dam construction and operation. A water rights permit from the SWRCB is required prior to filing an application to the DSOD to construct a dam.

LOCAL

San Luis Obispo Integrated Regional Water Management Plan

The San Luis Obispo County Flood Control and Water Conservation District, in cooperation with the Water Resources Advisory Committee, has developed an Integrated Regional Water Management Plan (IRWMP) for the region defined as the county boundary. The IRWMP was adopted in 2005 and updated in July 2007. The IRWMP integrates all of the programs, plans, and projects that relate to the region's water supply, water quality, ecosystem preservation and restoration, groundwater monitoring and management, and flood management. One of the IRWMP's water quality objectives is to implement NPDES Phase II Storm Water Management Programs. In March of 2003, Phase II of the NPDES Final Rule went into effect, requiring permits for all construction projects in the county that disturb 1 acre or more, or if the project is part of a common plan, such as subdivision.

San Luis Obispo Flood Control and Water Conservation District

The San Luis Obispo County Flood Control and Water Conservation District was established in 1945. The district's boundaries are coterminous with the county's. The district is governed by the Board of Supervisors. The district functions similar to a regional water management agency, engaged in water planning and implementation of specific projects and programs. The district holds the County's contract with the California Department of Water Resources for State Water Project service and owns major waterworks facilities such as the Lopez Water Project and the newly constructed Nacimiento Water Pipeline. District water planning is funded by general property tax allocations (sometimes augmented by grant funding); projects and programs are funded by specific fees/assessments, charges, and/or special taxes when benefiting entities are in specific areas or participate via contracts.

City of Paso Robles General Plan

The City's General Plan includes water resource policies in the Land Use Element, Conservation Element, and Agriculture and Open Space Element relating to water quality and water resource management. Examples include the Conservation Element's Policy C-1C and its action items, which deal with storm drainage and flooding, and Action Item 15, which calls for the preparation of an emergency flood evacuation plan. The General Plan also has a land use category, referred to as Flood Hazard (FH), under which development is subject to special requirements due to flood hazards mapped by FEMA.

City of Paso Robles Floodplain Management Ordinance (Chapter 21.14 of the Municipal Code)

It is the purpose of this ordinance to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the community to all publicly and privately owned land in flood-prone, mudslide- (i.e., mudflow) or flood-related erosion areas. This code includes standards for construction and uses, variances, and required permits, among other regulations and information, for managing development and construction in floodplains.

City of Paso Robles Landscape and Irrigation Ordinance (Chapter 21.22B of the Municipal Code)

Consistent with California state law, it is the purpose of this ordinance to (a) promote the values and benefits of landscapes while recognizing the need to use water resources as efficiently as possible; and (b) establish a structure for planning, designing, installing, maintaining, and

managing water efficient landscapes in new construction and rehabilitated projects. This code includes measures for limiting new turf associated with development and with landscape and irrigation system design and information requirements.

City of Paso Robles Urban Water Management Plan

The City's Urban Water Management Plan (UWMP) was prepared for the City of Paso Robles to meet Water Code Sections 10610 et seq. and to guide the City's water conservation efforts to the year 2010. The UWMP documents the City's sources of water supply, defines water demands, presents a water shortage contingency plan, and describes implementation of water demand management measures.

LAND USE AND PLANNING

LOCAL

City of Paso Robles General Plan

The General Plan is the fundamental land use policy document of the City of Paso Robles. This plan was developed to address several areas in the City's planning area (which includes areas within the city limits, the Sphere of Influence, and the Planning Impact Area) that have distinct planning issues, constraints, and opportunities. It defines the framework by which the city's physical and economic resources are to be managed and used in the future. This General Plan's planning horizon is the year 2025. City decision-makers will use the plan as a blueprint for:

- Choices about the use of land;
- Conservation and development of new housing;
- Provision of supporting infrastructure and public and human services;
- Protection of environmental resources;
- Protection of people and property from natural and man-made hazards;
- Allocation of fiscal resources;
- Population growth; and
- Expansion of City boundaries.

The General Plan clarifies and articulates the City's intentions with respect to the rights and expectations of the community, including residents, property owners, and businesses. Through the General Plan, the City informs these groups of its goals, policies, and standards, thereby communicating expectations of the public and private sectors for meeting community objectives.

City of Paso Robles Specific Plans

A specific plan is a zoning tool allowed by state law, which enables a community to define a clear and specific vision for the future evolution of a specified planning area. A specific plan comprises unique and customized standards that enable a city to shape or reshape its streets and public spaces, and property owners to develop or redevelop their properties according to the vision of the specific plan. Paso Robles has several areas regulated by Specific Plans, including:

- Borkey Area Specific Plan
- Chandler Ranch Specific Plan
- Olsen/Beechwood Specific Plan
- Uptown/Downtown Specific Plan
- Union/46 Specific Plan

Implementation of any circulation improvements would be subject to any applicable Specific Plans.

City of Paso Robles Zoning Ordinance

The City of Paso Robles Zoning Ordinance is Title 21 of the Municipal Code. Implementation of any circulation improvements would be subject to any regulations of the Zoning Ordinance.

City of Paso Robles Design Guidelines

In order to assist the Development Review Committee and the Planning Commission in their evaluation of projects in Paso Robles, a series of design guidelines has been developed. The guidelines are intended for both new construction and restoration or remodeling of existing buildings to ensure that they complement the historic character of downtown Paso Robles. These guidelines also address compatibility, as well as specifically discourage the use of contemporary architectural styles, stylistic elements, or materials and encourage the use of the predominant architectural style in a particular area.

PUBLIC SERVICES AND UTILITIES

FEDERAL

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 to address the huge volumes of municipal and industrial solid waste generated nationwide. After several amendments, the act as it stands today governs the management of solid and hazardous waste and underground storage tanks. The RCRA is an amendment to the Solid Waste Disposal Act of 1965. RCRA has been amended several times, with the most substantial changes made by the Hazardous and Solid Waste Amendments of 1984. RCRA is a combination of the first solid waste statutes and all subsequent amendments. RCRA authorizes USEPA to regulate waste management activities. RCRA authorizes states to develop and enforce their own waste management programs, in lieu of the federal program, if a state's waste management program is equivalent to, consistent with, and no less stringent than the federal program.

STATE

California Integrated Waste Management Act

To minimize the amount of solid waste that must be disposed of by transformation and land disposal, the State Legislature passed the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. According to AB 939, all cities and counties are required to

divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000. The act further requires every city and county to prepare two documents to demonstrate how the mandated rates of diversion will be achieved. The first document is the Source Reduction and Recycling Element (SRRE) describing the chief source of the jurisdiction's waste, the existing diversion programs, and the current rates of waste diversion and new or expanded diversion programs intended to implement the act's mandate. The second document is the Household Hazardous Waste Element, which describes what each jurisdiction must do to ensure that household hazardous wastes are not mixed with regular non-hazardous solid waste and deposited at a landfill.

School Facilities Act of 1998

The School Facilities Act of 1998, also known as SB 50, provides state funding for new school construction projects that can satisfy criteria for such funding, including eligibility due to growth, Division of State Architect plan approval and California Department of Education site approval. However, the Act also dramatically limits the maximum amount of impact fees that can be charged by school districts as mitigation for new residential, commercial, and industrial construction. The act also prohibits local agencies from denying a development application based on a person's refusal to provide school facilities mitigation that exceeds the fee amount and refusing to approve any legislative or adjudicative act on the basis that school facilities are inadequate.

California Occupational Safety and Health Administration

In accordance with California Code of Regulations Title 8 Sections 1270, Fire Prevention, and 6773, Fire Protection and Fire Equipment, the California Occupational Safety and Health Administration (Cal/OSHA) has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

Emergency Response/Evacuation Plans

The State of California passed legislation authorizing the Office of Emergency Services to prepare a Standard Emergency Management System (SEMS) program, which sets forth measures by which a jurisdiction should handle emergency disasters. Noncompliance with SEMS could result in the State withholding disaster relief from the noncomplying jurisdiction in the event of an emergency disaster. The preservation of life, property, and the environment is an inherent responsibility of local, state, and federal government.

California Department of Forestry

The California Department of Forestry (CalFire) emphasizes the management and protection of California's natural resources. CalFire oversees enforcement of forest practice regulations and manages the areas of the state that provide for commercial timber production, public recreation, and research and demonstration of good forest management practices.

California Building Energy Efficiency Standards

Title 24, Part 6 of the California Code of Regulations, known as the Building Energy Efficiency Standards, were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and

possible incorporation of new energy efficiency technologies and methods. After adoption of the California Energy Security and Reliability Act of 2000 (AB 970), the California Energy Commission produced changes to the Building Energy Efficiency Standards. In November 2003, the California Energy Commission adopted these updated standards. The California Building Standards Commission adopted the 2005 changes in July 2003 and the updated standards took effect on October 1, 2005.

LOCAL

City of Paso Robles General Plan

Public services such as fire protection, police protection, schools, parks, and/or other public facilities are addressed in other elements of the General Plan (e.g., Parks and Recreation, Safety).

City of Paso Robles Ordinances

The City has several ordinances that deal with public services and utilities, including Title 14, Water and Sewers, Title 15, Utilities, and Title 16, Fire.

City of Paso Robles Public Works Administration

The Public Works Administration keeps City facilities working to serve the public. From the streets to the airport, parks to the water tanks, buildings to buses, sewers to capital projects, Public Works fixes, upgrades, replaces, refinishes, cleans, and otherwise maintains all City-owned public property.

NOISE

FEDERAL

Noise Control Act of 1972

The Noise Control Act of 1972 directed the United States Environmental Protection Agency (USEPA) to promote an environment for all Americans free from noise that jeopardizes their health and welfare. The NCA directed that all federal agencies comply with applicable federal, state, interstate, and local noise control regulations. It also required that USEPA establish criterion for noise levels adequate to protect health and welfare with an adequate margin of safety but without regard to cost or feasibility. In addition, USEPA was given the responsibility for coordinating federal research and activities related to noise control and for establishing federal noise emission standards for selected products distributed in interstate commerce. The act was subsequently amended by the Quiet Communities Act of 1978, which encouraged the development of noise control programs at the state and community level (Caltrans 2002a).

U.S. Environmental Protection Agency

A report published in 1974 by USEPA, Office of Noise Abatement and Control, continues to be a source of useful background information. Entitled Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, this report is better known as the levels document. The document is intended to "provide state and local governments as well as the federal government and the private sector with an informational point of departure for the purposes of decision-making." The document states that undue interference with activity and annoyance will not occur if outdoor noise levels in residential areas are below a

day-night average (L_{dn}) noise level of 55 dBA and indoor levels are below 45 dBA L_{dn}. Allowing for an average 15 dBA reduction in sound level between outdoors and indoors (with windows partially open), the interior noise level of 45 dBA L_{dn} would equate to an exterior noise level of 60 dBA L_{dn}. For outdoor voice communication, an exterior noise level of 60 dBA L_{dn} would allow normal conversation at distances up to 2 meters with 95 percent sentence intelligibility. In addition, various correction factors can be applied to account for the intrusiveness of the noise source, as well as site-specific and meteorological conditions (USEPA 1974a).

U.S. Department of Housing and Urban Development Guidelines

The United States Department of Housing and Urban Development (HUD) guidelines for the acceptability of residential land use are set forth in the Code of Federal Regulations Title 24, Part51, Environmental Criteria and Standards. These guidelines parallel those suggested in the Federal Interagency Committee on Urban Noise report and state that noise exposure of 65 dBA L_{dn}, or less, is acceptable, between 65 and 75 dBA is normally acceptable provided that appropriate sound attenuation is provided; and above 75 dBA L_{dn} is normally considered unacceptable. HUD establishes an interior noise goal of 45 dBA L_{dn}. These guidelines apply only to new construction supported by HUD grants and are not binding upon local communities (Caltrans 2002a).

Federal Aviation Administration

Title 14 of the CFR, Part 150, Airport Noise Compatibility Planning, prescribes the procedures, standards, and methodology to be applied airport noise compatibility planning activities. Noise levels below 65 DBA L_{dn} are normally considered to be acceptable for noise-sensitive land uses (Caltrans 2002a).

Federal Highway Administration

Federal Highway Administration (FHWA) regulations (23 CFR 772) specify procedures for evaluating noise impacts associated with federally funded highway projects and for determining whether these impacts are sufficient to justify funding noise abatement actions. The FHWA noise abatement criteria are based on worst hourly L_{eq} sound levels, not L_{dn} or CNEL values. The worst-hour 1-hour L_{eq} criteria for residential, educational, and health-care facilities are 67 dBA outdoors and 52 dBA indoors. The worst-hour 1-hour L_{eq} criterion for commercial and industrial areas is 72 dB (outdoors).

The FHWA document, Highway Traffic Noise Analysis and Abatement: Policy and Guidance (1995), calls for each state highway agency to prepare and adopt written guidelines specific to that state which must demonstrate compliance with 23 CFR 772. State highway agencies are allowed flexibility to establish their own definitions and quantifications of different criteria and decision items that are used in the guidelines to make noise abatement determinations.

Federal Transit Administration

The Federal Transit Administration (FTA) procedures for the evaluation of noise from transit projects are specified in the document titled Transit Noise and Vibration Impact Assessment (2006). The FTA noise impact criteria categorize noise-sensitive land uses as follows (FTA 2006a):

- Category 1: Buildings or parks where quiet is an essential element of their purpose.
- Category 2: Residences and buildings where people normally sleep, including residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.

- Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, churches, and active parks.

L_{dn} is used to characterize noise exposure for residential areas (Category 2). For other noise-sensitive land uses, such as outdoor amphitheaters and school buildings (Categories 1 and 3), the maximum 1-hour L_{eq} during the facility's operating period is used. Noise impacts are identified based on absolute predicted noise levels and increases in noise associated with the project.

STATE

State of California Public Utilities Code

Section 21669, Article 3, Chapter 4, Part 1, Division 9 of the California Public Utilities Code (Aeronautics Law) provides the legislative authority to adopt noise standards governing the operation of aircraft and aircraft engines for airports. The California Department of Transportation (Caltrans), Division of Aeronautics, is the agency responsible for compliance with this code section. Section 21662.4(a), Article 3, Chapter 4, Part 1, Division 9 of the Public Utilities Code exempts emergency service helicopters from local ordinances (Caltrans 2002a).

State Aeronautics Act

Chapter 4, Article 3, Section 21669 of the State Aeronautics Act (Division 9, Part 1 of the California Public Utilities Code) requires the California Department of Transportation to adopt, to an extent not prohibited by federal law, noise standards applicable to all airports operating under a state permit (Caltrans 2002a).

California Airport Noise Regulations

The airport noise standards promulgated in accordance with the State Aeronautics Act are set forth in Section 5000 et seq. of the California Code of Regulations (Title 21, Division 2.5, Chapter 6). The current version of the regulations became effective in March 1990.

In Section 5006, the regulations state: "The level of noise acceptable to a reasonable person residing in the vicinity of an airport is established as a community noise equivalent level (CNEL) value of 65 dBA for purposes of these regulations. This criterion level has been chosen for reasonable persons residing in urban residential areas where houses are of typical California construction and may have windows partially open. It has been selected with reference to speech, sleep and community reaction." In accordance with procedures listed in Section 5020, the county board of supervisors can declare an airport to have a "noise problem." As specified in Section 5012, no such airport shall operate with a noise impact area based on the standard of 65 dBA CNEL unless the operator has applied for or received a variance as prescribed in the regulations. For designated noise problem airports, the noise impact area is the area within the airport's 65 dB CNEL contour that is composed of incompatible land uses. Four types of land uses are defined as incompatible (Caltrans 2002a):

- Residences of all types;
- Public and private schools;
- Hospitals and convalescent homes; and
- Churches, synagogues, temples, and other places of worship.

However, these uses are not deemed incompatible if any of several mitigative actions have been taken as spelled out in Section 5014. Among these measures are airport acquisitions of an aviation easement for aircraft noise and, except for some residential uses, acoustical insulation adequate to ensure that the interior CNEL due to aircraft noise is 45 dBA or less in all habitable rooms (Caltrans 2002a).

Caltrans Division of Aeronautics

The California Department of Transportation (Caltrans), Division of Aeronautics, has adopted the Community Noise Equivalent Level (CNEL) as the noise descriptor to be used in describing the noise impact boundary of California airports. The Division of Aeronautics has identified a noise impact criterion of 65 dBA CNEL for noise-sensitive land uses, such as single-family dwellings. The CNEL descriptor is typically about 1 dB more than the L_{dn} because it applies an additional penalty for noise sources between the hours of 7:00 p.m. and 10:00 p.m. The L_{dn} descriptor only applies a penalty to noise levels between the hours of 10:00 p.m. and 7:00 a.m. (Caltrans 2002a).

State of California General Plan Guidelines

Section 65302(f) of the California Government Code (Title 7, Division 1, Chapter 3, Article 5) requires that a noise element be included as part of local general plans. Transportation noise sources are among the noise sources to be analyzed and addressed in general plans. To the extent practical, both current and future noise contours (expressed in terms of either CNEL) are to be included. The noise contours are to be "used as a guide for establishing a pattern of land uses that minimizes the exposure of community residents to excessive noise" (OPR 2003a).

Guidance on the preparation and content of general plan noise elements is provided by the Office of Planning and Research in its General Plan Guidelines (2003). This guidance represents an updated version of guidelines originally published by the State Department of Health Services in 1976. Included in the document are recommended noise compatibility criteria for a variety of land use designations. These standards may be adjusted to reflect noise-source characteristics and to reflect the community's noise control goals and sensitivities to noise pollution (OPR 2003a).

LOCAL

City of Paso Robles General Plan

The City's General Plan Noise Element includes numerous policies and action items that are intended to protect city residents from unacceptable exposure to noise. For new development exposed to transportation noise sources, the Noise Element establishes a maximum allowable noise exposure level of 65 dBA L_{dn} for outdoor activity areas. For interior spaces of residential, hotel and motel, hospital and nursing home, theater, auditorium, meeting hall, office building, school, and library uses, the maximum allowable interior noise exposure level is 45 dBA L_{dn} (Paso Robles 2003d).

City of Paso Robles Municipal Code

The Municipal Code prohibits activities that would result in loud, unnecessary, or unusual noises that would be a detriment to public health, comfort, convenience, safety, and welfare to community residents. Title 9, Chapter 9.07, includes various provisions and limitations pertaining to stationary and area sources of noise. With the exception of construction activities that would pose a risk to public health and safety, noise-generating construction activities are typically limited to between the hours of 7:00 a.m. and 7:00 p.m. (Paso Robles 2010g).

Groundborne Vibration

There are no federal, state, or local regulatory standards for groundborne vibration. However, various criteria have been established to assist in the evaluation of vibration impacts. Both the Federal Transit Administration and Caltrans have developed vibration criteria based on potential structural damage risks and human annoyance. These criteria differentiate between transient and continuous/frequent vibration sources. Transient sources of groundborne vibration include intermittent events, such as blasting, whereas, continuous and frequent events would include the operations of equipment, including construction equipment, and vehicle traffic on roadways (Caltrans 2002b, 2004a).

The groundborne vibration criteria often used for evaluation of potential structural damage are based on building classifications, which take into account the age and condition of the building. For instance, for residential structures and newer buildings, Caltrans considers a minimum peak-particle velocity (ppv) threshold of 0.25 inches per second (in/sec) for transient sources and 0.04 in/sec for continuous/frequent sources to be sufficient to protect against building damage. Continuous groundborne vibration levels below approximately 0.02 in/sec ppv are unlikely to cause damage to any structure. In terms of human annoyance, continuous vibrations in excess of 0.04 in/sec ppv and transient sources in excess of 0.25 in/sec ppv are identified by Caltrans as the minimum perceptible level for ground vibration. Short periods of ground vibration in excess of 2.0 in/sec ppv can be expected to result in severe annoyance to people. Short periods of ground vibration in excess of 0.1 in/sec ppv (0.2 in/sec ppv in buildings) can be expected to result in increased levels of annoyance (Caltrans 2002b, 2004a).

RECREATION

LOCAL

City of Paso Robles General Plan

The Parks and Recreation element of the General Plan contains several goals, policies and action items for recreational facilities.

> *POLICY PR-1B: Master Plan. Develop a Master Park, Recreational Facility, & Trails Plan addressing Citywide needs and financing for development, maintenance, and operation through the year 2025.*

City of Paso Robles Bicycle Master Plan

Adopted in December 2009, the Bicycle Master Plan (BMP) is a comprehensive plan to address the needs of both recreational and commuter cyclists. The plan provides direction for City bike planning and improvements over the next 10 years. The plan includes goals that establish what

the City would like to achieve, policies to provide the guidance on how to achieve the goals, and actions to direct the City's efforts. The BMP includes a prioritized Bicycle Improvement Program is provided to direct future upgrades to the City bicycle facilities, and funding strategies to achieve these goals.

City of Paso Robles Public Works Administration

The Public Works Administration keeps City facilities working to serve the public. From the streets to the airport, parks to the water tanks, buildings to buses, sewers to capital projects, Public Works fixes, upgrades, replaces, refinishes, cleans, and otherwise maintains all City-owned public property.

City of Paso Robles Bicycle Master Plan

TRAFFIC AND CIRCULATION

A jurisdiction is a level of government (city, county, state, or federal) or regulatory authority (local, regional, state, or federal) responsible for some or all aspects of the planning, implementation, operations, and maintenance of transportation facilities and services in a defined area. The City has jurisdiction over all city streets and traffic signals within the city limits. San Luis Obispo County and the California Department of Transportation (Caltrans) have jurisdiction over local and regional roadways outside the city limits. The County of San Luis Obispo has jurisdiction over streets in unincorporated areas, as well as over the countywide expressways. Caltrans has jurisdiction over state facilities, including U.S. Highway 101 (US 101) and State Route (SR) 46. Caltrans also has jurisdiction over on- and off-ramp intersections with local streets. Transit agencies operating within the city limits include the Paso Robles City Area Transit System, the San Luis Obispo Regional Transit Authority, and Amtrak's Coast Starlight. Several local, regional, state, and federal agencies have jurisdiction over transportation planning and implementation of circulation improvements in the city. Each agency or relevant planning document is described below.

FEDERAL

Americans with Disabilities Act of 1990

Titles I, II, III, and V of the Americans with Disabilities (ADA) Act have been codified in Title 42 of the United States Code, beginning at Section 12101. Title III prohibits discrimination on the basis of disability in places of public accommodation (businesses and nonprofit agencies that serve the public) and commercial facilities (other businesses). The regulation includes Appendix A to Part 36 (Standards for Accessible Design) establishing minimum standards for ensuring accessibility when designing and constructing a new facility or altering an existing facility.

Examples of key guidelines include detectable warnings for pedestrians entering traffic where there is no curb, a clear zone of 48 inches for the pedestrian travelway, and a vibration-free zone for pedestrians.

Federal Highway Administration

The Federal Highway Administration (FHWA) is a major agency of the U.S. Department of Transportation. In partnership with state and local agencies, FHWA administers and oversees federal highway programs to ensure that federal funds are efficiently used to meet the nation's transportation needs.

STATE

California Department of Transportation

Caltrans has authority over the state highway system, including freeways, interchanges, and arterial state routes. Caltrans approves the planning, design, and construction of improvements

for all state-controlled facilities including US 101, SR 46, and the associated interchanges for these facilities located in Paso Robles.

Caltrans typically uses a target level of service (LOS) to evaluate and plan for roadway improvements to their facilities. If the location under existing conditions operates worse than the appropriate target LOS, then the existing LOS should be maintained. However, LOS will not be evaluated for the proposed Circulation Element Update or used to identify specific environmental impacts. Instead, the daily utilization of roadway segments is used to illustrate the demand and capacity for each facility, and the focus of the analysis is the development of a multimodal approach to long-range transportation planning. In 2010, Caltrans' Smart Mobility Framework was adopted and serves as a planning framework that helps to guide and assess how well plans, programs, and projects meet a definition of "smart mobility." It is applicable to various levels of plans, programs, or projects (e.g., regional transportation and blueprint plans, general plans, corridor plans, specific development proposals) in all parts of the state (i.e., urban, suburban, and rural). When individual development and infrastructure projects are evaluated in the future, detailed operational studies including peak hour intersection LOS will be calculated for state-maintained facilities.

Statewide Transportation Improvement Program

The California Transportation Commission (CTC) administers transportation programming. Transportation programming is the public decision-making process that sets priorities and funds projects envisioned in long-range transportation plans. It commits expected revenues over a multiyear period to transportation projects. The State Transportation Improvement Program (STIP) is a multiyear capital improvement program of transportation projects on and off the State Highway System, funded with revenues from the State Highway Account and other funding sources. Caltrans manages the operation of state highways, including US 101 and SR 46 through Paso Robles.

AB 32 and SB 375

With the passage of Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, the State of California committed itself to reducing greenhouse gas (GHG) emissions to 1990 levels by 2020. The California Air Resources Board (CARB) is coordinating the response to comply with AB 32.

In 2007, CARB adopted a list of early action programs that could be put in place by January 1, 2010. In 2008, CARB defined its 1990 baseline level of emissions, and by 2011 it will complete its major rule making for reducing GHG emissions. Rules on emissions, as well as market-based mechanisms like the proposed cap and trade program, will take effect January 1, 2012.

On December 11, 2008, CARB adopted its Proposed Scoping Plan for AB 32. This scoping plan included the approval of Senate Bill (SB) 375 as the means for achieving regional transportation-related GHG targets. SB 375 provides guidance on how curbing emissions from cars and light trucks can help the state comply with AB 32.

There are five major components to SB 375. First, SB 375 will address regional GHG emissions targets. CARB's Regional Targets Advisory Committee will guide the adoption of targets to be met by 2020 and 2035 for each Metropolitan Planning Organization (MPO) in the state. These targets, which MPOs may propose themselves, will be updated every eight years in conjunction with the revision schedule of housing and transportation elements.

Second, MPOs will be required to create a Sustainable Communities Strategy (SCS) that provides a plan for meeting regional targets. The SCS and the Regional Transportation Plan (RTP) must be consistent with each other, including action items and financing decisions. If the SCS does not

meet the regional target, the MPO must produce an Alternative Planning Strategy that details an alternative plan to meet the target.

Third, SB 375 requires that regional housing elements and transportation plans be synchronized on eight-year schedules. In addition, Regional Housing Needs Assessment (RHNA) allocation numbers must conform to the SCS. If local jurisdictions are required to rezone land as a result of changes in the housing element, rezoning must take place within three years.

Finally, MPOs must use transportation and air emissions modeling techniques consistent with guidelines prepared by the CTC. Regional Transportation Planning Agencies, cities, and counties are encouraged, but not required, to use travel demand models consistent with the CTC guidelines.

REGIONAL

Transportation Demand Management Programs

Transportation Demand Management (TDM) programs are intended to reduce vehicle trips and parking demand by promoting the use of multimodal transportation options. By implementing TDM programs, municipalities can use available transportation resources more efficiently. These programs can include a wide variety of measures such as shuttle service, transit pass subsidies, improved access to transit, park-and-ride facilities, and improved bicycle and pedestrian amenities among others. TDM measures currently provided in the City of Paso Robles include the San Luis Obispo Rideshare program and the North County Shuttle park-and-ride lot.

San Luis Obispo Council of Governments

The majority of federal, state, and local financing available for transportation projects is allocated at the regional level by the San Luis Obispo Council of Governments (SLOCOG), the transportation planning, coordinating, and financing agency for San Luis Obispo County. The current regional transportation plan, known as Vision 2025: The Regional Transportation Plan (RTP) for San Luis Obispo County (SLOCOG 2005a), was adopted by SLOCOG on April 6, 2005. The RTP specifies a detailed set of investments and strategies throughout the region from 2005 through 2025 to maintain, manage, and improve the surface transportation system. The RTP specifies how anticipated federal, state, and local transportation funds will be spent in San Luis Obispo County during the next 15 years. Most of this "committed funding" will go toward maintaining the region's existing transportation infrastructure. The RTP is currently in the process of being updated with the proposed Circulation Element, and the environmental impact report for the RTP is anticipated to be released for public review during the fall of 2010. SLOCOG will develop a preliminary Sustainable Communities Strategy (PSCS) as part of the 2010 RTP update. The PSCS will be used as a foundation to the Sustainable Communities Strategy (SCS) in the next RTP update, after standards and targets are established at the state level.

San Luis Obispo County Air Pollution Control District

The San Luis Obispo County Air Pollution Control District (SLOAPCD) is the regional agency with the authority to develop and enforce regulations for the control of air pollution throughout San Luis Obispo County. The Clean Air Plan is the district's plan for reducing the emissions of air pollutants that lead to ozone. SLOAPCD has also published CEQA Guidelines for the purpose of evaluating the air quality impact of projects and plans. One of the criteria that the CEQA Guidelines describes is that plans, including general plans, must demonstrate reasonable efforts to implement transportation control measures (TCM) included in the Clean Air Plan that identify local governments as the implementing agencies. On-road motor vehicles are the largest

source of air pollution in San Luis Obispo County. To address the impact of vehicles, the California Clean Air Act requires air districts to adopt, implement, and enforce TCM.

San Luis Obispo County Regional Transit Authority

The San Luis Obispo Regional Transit Authority (SLORTA) is responsible for the development, operation, and maintenance of the intercity bus service in San Luis Obispo County. SLORTA operates four intercity bus lines, runabout service, and paratransit service to major regional destinations and transfer centers in adjoining counties.

San Luis Obispo County

The San Luis Obispo County Department of Public Works Bicycle Advisory Committee prepared the County of San Luis Obispo County Bikeways Plan, which was approved in 2005. A 2010 update is in circulation for public review. San Luis Obispo County prepared the plan to identify needed bikeway routes, accessory facilities such as bike parking, coordination with other modes of transportation, promotional and educational programs, and potential funding sources for these facilities and programs.

LOCAL

The City of Paso Robles has adopted several plans that provide guidance for managing the city's transportation system. Key plans are described below.

City of Paso Robles General Plan Circulation Element

The City regulates traffic and circulation through the adoption of policies and programs in the City's General Plan and specifically in the Circulation Element. The General Plan defines goals, policies, and actions to guide development and maintenance of the transportation system in Paso Robles. The Circulation Element also contains policy statements that serve as a framework for evaluating the effect of proposed projects on the transportation system. Development in Paso Robles would be reviewed for consistency with the City General Plan and Circulation Element. The current Circulation Element was adopted in 2003.

Paso Robles Bike Master Plan

The Paso Robles Bicycle Master Plan (PRBMP), adopted in 2009, provides a foundation for enhancing the bikeways network and increasing the mode share of bicycle travelers. The plan lays out specific goals to improve bicycle access and connectivity in Paso Robles.

Multi-Hazard Emergency Response Plan

In the event of a fire, geologic, or other hazardous occurrence, the City of Paso Robles' Multi-Hazard Emergency Response Plan (2004) provides comprehensive, detailed instructions and procedures regarding the responsibilities of City personnel and coordination with other agencies to ensure the safety of Paso Robles citizens.

The Multi-Hazard Emergency Response Plan includes evacuation procedures but does not delineate evacuation routes. Instead, procedures are outlined for different types of emergencies occurring in various locations in the city.

APPENDIX E

AIR QUALITY APPENDIX

LOCAL CLIMATE

The City of El Paso de Robles (Paso Robles) is located in San Luis Obispo County, which is part of the South Central Coast Air Basin (SCCAB). The climate of the county is characterized as Mediterranean, with warm, dry summers and cooler, relatively damp winters. Along the coast, mild temperatures prevail most of the year due to the moderating influence of the Pacific Ocean. The effects of the Pacific Ocean are diminished inland and by major intervening terrain features such as the coastal Santa Lucia Mountain Range.

With a Mediterranean-type climate, the area is characterized by warm, dry summers and cool winters with occasional rainy periods. Maximum summer temperatures in the region average about 70 degrees Fahrenheit near the coast, while inland valleys are often in the high 90s. Average minimum winter temperatures range from the low 30s along the coast to the low 20s inland. Airflow around the region plays an important role in the movement and dispersion of pollutants. The speed and direction of local winds are controlled by the location and strength of the Pacific high pressure system and other global patterns, topographical factors, and circulation patterns resulting from temperature differences between the land and the sea. The region is also subject to seasonal Santa Ana winds, which are typically hot, dry northerly winds which blow offshore at 15–20 miles per hour (mph), but can reach speeds over 60 mph.

Two types of temperature inversions (warmer air on top of cooler air) are created in the area: subsidence and radiation. The subsidence inversion is a regional effect created by the Pacific high in which air is heated as it is compressed when it flows from the high pressure area to the low pressure areas inland. This type of inversion generally forms at about 1,000 to 2,000 feet and can occur throughout the year, but it is most evident during the summer months. Radiation inversions are formed by the more rapid cooling of air near the ground surface during the night, especially during winter. Both types of inversions limit the dispersal of air pollutants in the regional airshed, with the more stable the air (low wind speeds, uniform temperatures), the lower the amount of pollutant dispersion.

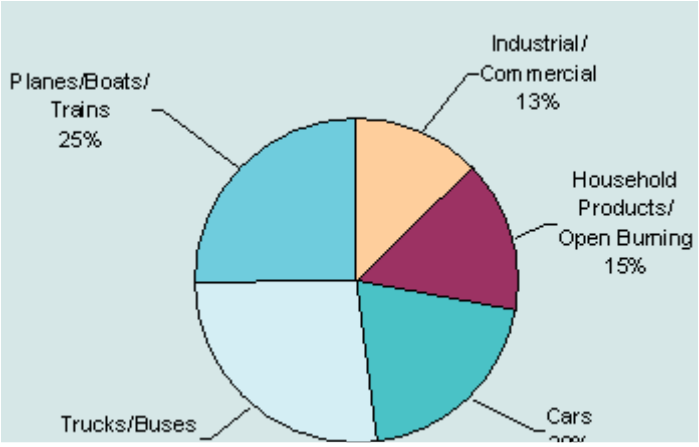
EXISTING AIR QUALITY CONDITIONS

Criteria Pollutants, Toxics, and Health Effects

In years past, air quality in the SCCAB has exceeded established standards for lead, carbon monoxide, sulfur dioxide, ozone, and particulate matter (PM). Violations of the state standard for respirable particulate matter (PM_{10}) still occur several times a year. In general, the PM_{10} and fine particulate matter ($PM_{2.5}$) levels measured in the SCCAB result from human and natural sources and processes within and closely adjoining the region. Reducing particulate matter air pollution is one of the San Luis Obispo County Air Pollution Control District's (SLOAPCD) highest public health priorities. Exposure to particulate pollution is linked to increased frequency and severity of asthma attacks, pneumonia and bronchitis, and even premature death in people with pre-existing cardiac or respiratory disease.

On a regional basis, ozone is the pollutant of greatest concern in the SCCAB. Ozone located in the upper atmosphere acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions; therefore, ozone is a regional pollutant that often affects large areas.

FIGURE E-1
AIR POLLUTION SOURCES IN SAN LUIS OBISPO COUNTY



Source: SLOAPCD 2010a

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and is the primary component of smog. The amount of ozone formed is dependent upon both the ambient concentration of chemical precursors and the intensity and duration of sunlight. Consequently, ambient ozone concentration tends to vary seasonally with the weather. Reactive organic gases (ROG) and nitrogen oxides (NOx) are the primary precursors to ozone formation. NOx emissions result primarily from the combustion of fossil fuels; ROG emissions are also generated by fossil fuel combustion and through the evaporation of petroleum products. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NOx are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels. A highly reactive molecule, ozone readily combines with many different components of the atmosphere. Consequently, high levels of ozone tend to exist only while high ROG and NOx levels are present to sustain the ozone formation process. Once these precursors have been depleted, ozone levels rapidly decline. Because these reactions occur on a regional scale, ozone is considered a regional pollutant.

Sensitive Receptors

Some groups of people are more affected by air pollution than others. The California Air Resources Board (CARB) has identified the following people who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, day-care facilities, elder-care facilities, elementary schools, and parks. All of these types of facilities are located in Paso Robles.

Attainment Status

An attainment designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A nonattainment designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. Unclassified designations indicate insufficient data is available to determine attainment status. The attainment status of the SCCAB is summarized in **Table E-1** below.

TABLE E-1
SCCAB ATTAINMENT STATUS DESIGNATION

Pollutant	State Designation	National Designation
Ozone, 1-hour	Nonattainment	Unclassified/Attainment
Ozone, 8-hour	Nonattainment	Unclassified/Attainment
PM_{10}	Nonattainment	Unclassified/Attainment
$PM_{2.5}$	Attainment	Unclassified/Attainment
Carbon Monoxide	Attainment	Unclassified
Nitrogen Dioxide	Attainment	Unclassified
Sulfur Dioxide	Attainment	Unclassified
Sulfates	Attainment	No Attainment Information
Lead	Attainment	No National Standards
Hydrogen Sulfide	Attainment	No National Standards
Vinyl Chloride	No Attainment Information	No National Standards
Visibility Reducing Particles	Attainment	No National Standards

Notes: For more information on standards, visit: http//ww.arb.ca.gov.research/aaqs/aaqs2.pdf
Source: SLOAPCD 2010b

As shown in **Table E-1**, the SCCAB is designated as nonattainment for state standards of respirable particulate matter (PM_{10}) and ozone (O_3) and unclassified/attainment for federal standards of O_3, PM_{10}, and fine particulate matter ($PM_{2.5}$) (SLOAPCD 2010a). According to SLOAPCD, the largest contributors of air pollution are motor vehicles. Emission sources of ROG and NO_x, the main precursors for ozone formation, are approximately 20 percent from automobiles, 27 percent from trucks/buses, and 25 percent from airplanes, boats, and trains. Particulate matter has many natural sources; however, vehicle exhaust, road dust, grading, and demolition are major contributors to exceedance of PM standards in the SCCAB.

SLOAPCD is required to monitor air pollutant levels to assure that the air quality standards are met, and if the standards are not met, to also develop strategies to meet the standards. Depending on whether or not the standards are met or exceeded, the air basin is classified as being in attainment or nonattainment. **Table E-2** summarizes the annual air quality data for the local airshed. CARB maintains over 60 air quality monitoring stations throughout California.

SLOAPCD operates nine air quality monitoring stations in the South Central Coast Air Basin, of which one is located in Paso Robles on Santa Fe Avenue.

TABLE E-2
AMBIENT AIR QUALITY DATA – SANTA FE AVENUE

Pollutant	2006	2007	2008	2009
Ozone (O_3)				
Maximum 1-Hour Concentration (ppm)	0.090	0.092	*	*
Days Exceeding State 1-Hour Standard	0	0	0	0
Days Exceeding Federal 8-Hour Standard	0	0	0	0
Particulate Matter ≥ 10 microns in diameter (PM_{10})				
Days Exceeding State 24-hour Standard	11.5	0	6.1	*
Days Exceeding Federal 24-Hour Standard	0	0	0	*

*Note: * Insufficient data available*

Source: CARB 2010a

As shown in **Table E-1**, the air quality monitoring station on Santa Fe Avenue has not registered an exceedance of the state or federal ozone standards for over four years. However, the state PM_{10} standard was exceeded over 11 times in 2006 and over 6 times in 2008 and.

San Luis Obispo Clean Air Plan

State standards for ozone and PM_{10} are currently exceeded in the SCCAB, as shown above in **Table E-1**. As such, SLOAPCD is required to develop a plan to achieve and maintain the state ozone standard by the earliest practicable date. SLOAPCD's plan is called the Clean Air Plan (CAP). The most current CAP was last updated in 2001 and is the third update to the 1991 CAP adopted by the SLOAPCD Board in January 1992. The 1991 CAP contained a comprehensive set of control measures designed to reduce ozone precursor emissions from a wide variety of stationary and mobile sources. Transportation control measures and land use planning strategies play an important role in the implementation of the CAP.

Odors

Although offensive odors rarely cause physical harm, they can be very unpleasant, leading to considerable stress among the public and often generating citizen complaints to local governments and agencies. Facilities commonly known to produce odors include wastewater treatment facilities, chemical manufacturing, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations. Because offensive odors rarely cause physical harm and no requirements for their control are included in state or federal air quality regulations, SLOAPCD has no rules or standards related to odor emissions, other than its nuisance rule. Any actions related to odors are based on citizen complaints to local governments and SLOAPCD.

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Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\Projects\Paso Robles\2010 Circulation Element EIR\ADEIR\Air Quality\Urbemis\Existing 2010 Conditions - Mobile Sources.urb924

Project Name: Paso Robles - Existing 2010 Conditions - Mobile Sources

Project Location: San Luis Obispo County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1,162.84	1,389.69	11,858.00	7.41	1,462.73	282.88	783,763.47

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1,162.84	1,389.69	11,858.00	7.41	1,462.73	282.88	783,763.47

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Trips	1,162.84	1,389.69	11,858.00	7.41	1,462.73	282.88	783,763.47
TOTALS (lbs/day, unmitigated)	1,162.84	1,389.69	11,858.00	7.41	1,462.73	282.88	783,763.47

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Temperature (F): 75 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Trips		100.00	unknown	2,924.67	292,466.99	848,154.31
					292,466.99	848,154.31

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	41.6	1.0	98.5	0.5
Light Truck < 3750 lbs	18.8	2.1	91.5	6.4
Light Truck 3751-5750 lbs	19.9	0.5	99.0	0.5
Med Truck 5751-8500 lbs	8.0	1.2	98.8	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	71.4	28.6
Lite-Heavy Truck 10,001-14,000 lbs	1.2	0.0	50.0	50.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	5.2	57.7	42.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.7	0.0	88.2	11.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	2.9	2.9	2.9	2.9	2.9	2.9
Rural Trip Length (miles)	13.0	5.0	5.0	13.0	5.0	5.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Trips				2.0	1.0	97.0

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Combined Winter Emissions Reports (Pounds/Day)

File Name: U:\Projects\Paso Robles\2010 Circulation Element EIR\ADEIR\Air Quality\Urbemis\Existing 2010 Conditions - Mobile Sources.urb924

Project Name: Paso Robles - Existing 2010 Conditions - Mobile Sources

Project Location: San Luis Obispo County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1,414.92	1,776.29	14,637.42	7.46	1,462.73	282.88	743,860.57

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1,414.92	1,776.29	14,637.42	7.46	1,462.73	282.88	743,860.57

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Trips	1,414.92	1,776.29	14,637.42	7.46	1,462.73	282.88	743,860.57
TOTALS (lbs/day, unmitigated)	1,414.92	1,776.29	14,637.42	7.46	1,462.73	282.88	743,860.57

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Temperature (F): 50 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Trips		100.00	unknown	2,924.67	292,466.99	848,154.31
					292,466.99	848,154.31

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	41.6	1.0	98.5	0.5
Light Truck < 3750 lbs	18.8	2.1	91.5	6.4
Light Truck 3751-5750 lbs	19.9	0.5	99.0	0.5
Med Truck 5751-8500 lbs	8.0	1.2	98.8	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	71.4	28.6
Lite-Heavy Truck 10,001-14,000 lbs	1.2	0.0	50.0	50.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	5.2	57.7	42.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.7	0.0	88.2	11.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	2.9	2.9	2.9	2.9	2.9	2.9
Rural Trip Length (miles)	13.0	5.0	5.0	13.0	5.0	5.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Trips				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\Projects\Paso Robles\2010 Circulation Element EIR\ADEIR\Air Quality\Urbemis\Existing 2003 Circulation Element - Year 2025 Conditions - Mobile Sources.urb924

Project Name: Existing 2003 Circulation Element - Year 2025 Conditions - Mobile Sources

Project Location: San Luis Obispo County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	845.45	760.74	7,436.51	11.72	2,326.17	442.50	1,250,879.75

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	845.45	760.74	7,436.51	11.72	2,326.17	442.50	1,250,879.75

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Trips	845.45	760.74	7,436.51	11.72	2,326.17	442.50	1,250,879.75
TOTALS (lbs/day, unmitigated)	845.45	760.74	7,436.51	11.72	2,326.17	442.50	1,250,879.75

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2025 Temperature (F): 75 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Trips		100.00	unknown	4,672.45	467,245.02	1,355,010.60
					467,245.02	1,355,010.60

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	41.8	0.0	100.0	0.0
Light Truck < 3750 lbs	18.5	0.0	98.4	1.6
Light Truck 3751-5750 lbs	20.0	0.0	100.0	0.0
Med Truck 5751-8500 lbs	8.0	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	1.2	0.0	58.3	41.7

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	5.2	34.6	65.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.7	0.0	88.2	11.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	2.9	2.9	2.9	2.9	2.9	2.9
Rural Trip Length (miles)	13.0	5.0	5.0	13.0	5.0	5.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Trips				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: U:\Projects\Paso Robles\2010 Circulation Element EIR\ADEIR\Air Quality\Urbemis\Existing 2003 Circulation Element - Year 2025 Conditions - Mobile Sources.urb924

Project Name: Existing 2003 Circulation Element - Year 2025 Conditions - Mobile Sources

Project Location: San Luis Obispo County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	977.12	970.84	8,908.70	11.75	2,326.17	442.50	1,183,410.93

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	977.12	970.84	8,908.70	11.75	2,326.17	442.50	1,183,410.93

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Trips	977.12	970.84	8,908.70	11.75	2,326.17	442.50	1,183,410.93
TOTALS (lbs/day, unmitigated)	977.12	970.84	8,908.70	11.75	2,326.17	442.50	1,183,410.93

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2025 Temperature (F): 50 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Trips		100.00	unknown	4,672.45	467,245.02	1,355,010.60
					467,245.02	1,355,010.60

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	41.8	0.0	100.0	0.0
Light Truck < 3750 lbs	18.5	0.0	98.4	1.6
Light Truck 3751-5750 lbs	20.0	0.0	100.0	0.0
Med Truck 5751-8500 lbs	8.0	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	1.2	0.0	58.3	41.7

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	5.2	34.6	65.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.7	0.0	88.2	11.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	2.9	2.9	2.9	2.9	2.9	2.9
Rural Trip Length (miles)	13.0	5.0	5.0	13.0	5.0	5.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Trips				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\Projects\Paso Robles\2010 Circulation Element EIR\ADEIR\Air Quality\Urbemis\Proposed 2010 Circulation Element - Year 2025 Conditions - Mobile Sources.urb924

Project Name: Proposed 2010 Circulation Element - Projected Year 2025 Conditions - Mobile Sources

Project Location: San Luis Obispo County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	830.63	747.41	7,306.20	11.52	2,285.41	434.75	1,228,961.98

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	830.63	747.41	7,306.20	11.52	2,285.41	434.75	1,228,961.98

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Trips	830.63	747.41	7,306.20	11.52	2,285.41	434.75	1,228,961.98
TOTALS (lbs/day, unmitigated)	830.63	747.41	7,306.20	11.52	2,285.41	434.75	1,228,961.98

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2025 Temperature (F): 75 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Trips		100.00	unknown	4,590.58	459,058.01	1,331,268.27
					459,058.01	1,331,268.27

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	41.8	0.0	100.0	0.0
Light Truck < 3750 lbs	18.5	0.0	98.4	1.6
Light Truck 3751-5750 lbs	20.0	0.0	100.0	0.0
Med Truck 5751-8500 lbs	8.0	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	1.2	0.0	58.3	41.7

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	5.2	34.6	65.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.7	0.0	88.2	11.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	2.9	2.9	2.9	2.9	2.9	2.9
Rural Trip Length (miles)	13.0	5.0	5.0	13.0	5.0	5.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Trips				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: U:\Projects\Paso Robles\2010 Circulation Element EIR\ADEIR\Air Quality\Urbemis\Proposed 2010 Circulation Element - Year 2025 Conditions - Mobile Sources.urb924

Project Name: Proposed 2010 Circulation Element - Projected Year 2025 Conditions - Mobile Sources

Project Location: San Luis Obispo County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	960.00	953.83	8,752.60	11.54	2,285.41	434.75	1,162,675.35

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	960.00	953.83	8,752.60	11.54	2,285.41	434.75	1,162,675.35

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Trips	960.00	953.83	8,752.60	11.54	2,285.41	434.75	1,162,675.35
TOTALS (lbs/day, unmitigated)	960.00	953.83	8,752.60	11.54	2,285.41	434.75	1,162,675.35

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2025 Temperature (F): 50 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Trips		100.00	unknown	4,590.58	459,058.01	1,331,268.27
					459,058.01	1,331,268.27

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	41.8	0.0	100.0	0.0
Light Truck < 3750 lbs	18.5	0.0	98.4	1.6
Light Truck 3751-5750 lbs	20.0	0.0	100.0	0.0
Med Truck 5751-8500 lbs	8.0	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	1.2	0.0	58.3	41.7

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	5.2	34.6	65.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.7	0.0	88.2	11.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	2.9	2.9	2.9	2.9	2.9	2.9
Rural Trip Length (miles)	13.0	5.0	5.0	13.0	5.0	5.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Trips				2.0	1.0	97.0

APPENDIX F

BIOLOGICAL RESOURCES APPENDIX

Scientific Name	Common Name	Federal Listing	State Listing	CNPS Listing
One Mile				
Aquila chrysaetos	golden eagle	None	None	
Branchinecta lynchi	vernal pool fairy shrimp	Threatened	None	
Castilleja densiflora ssp. *obispoensis*	San Luis Obispo owl's clover	None	None	1B.2
Caulanthus lemmonii	Lemmon's jewel-flower	None	None	1B.2
Emys marmorata	western pond turtle	None	None	
Navarretia nigelliformis ssp. *radians*	shining navarretia	None	None	1B.2
Polyphylla nubila	Atascadero June beetle	None	None	
Spea hammondii	western spadefoot	None	None	
Trimerotropis occulens	Lompoc grasshopper	None	None	
Vulpes macrotis mutica	San Joaquin kit fox	Endangered	Threatened	
Five Miles				
Anniella pulchra pulchra	silvery legless lizard	None	None	
Antirrhinum ovatum	oval-leaved snapdragon	None	None	4.2
Aquila chrysaetos	golden eagle	None	None	
Branchinecta lynchi	vernal pool fairy shrimp	Threatened	None	
California macrophylla	round-leaved filaree	None	None	1B.1
Calycadenia villosa	dwarf calycadenia	None	None	1B.1
Calyptridium parryi var. *hesseae*	Santa Cruz Mountains pussypaws	None	None	1B.1
Castilleja densiflora ssp. *obispoensis*	San Luis Obispo owl's clover	None	None	1B.2
Caulanthus lemmonii	Lemmon's jewel-flower	None	None	1B.2
Delphinium umbraculorum	umbrella larkspur	None	None	1B.3
Emys marmorata	western pond turtle	None	None	
Horkelia cuneata ssp. *puberula*	mesa horkelia	None	None	1B.1
Horkelia cuneata ssp. *sericea*	Kellogg's horkelia	None	None	1B.1
Juncus luciensis	Santa Lucia dwarf rush	None	None	1B.2
Lepidium jaredii ssp. *jaredii*	Jared's pepper-grass	None	None	1B.2
Monolopia gracilens	woodland woollythreads	None	None	1B.2
Navarretia nigelliformis ssp. *radians*	shining navarretia	None	None	1B.2
Perognathus inornatus inornatus	San Joaquin pocket mouse	None	None	
Polyphylla nubila	Atascadero June beetle	None	None	
Rana draytonii	California red-legged frog	Threatened	None	
Spea hammondii	western spadefoot	None	None	
Taxidea taxus	American badger	None	None	
Trimerotropis occulens	Lompoc grasshopper	None	None	
Triteleia ixioides ssp. *cookii*	Cook's triteleia	None	None	1B.3
Vulpes macrotis mutica	San Joaquin kit fox	Endangered	Threatened	

APPENDIX G

GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE APPENDIX

To fully understand global climate change, it is important to recognize the naturally occurring "greenhouse effect" and to define the greenhouse gases (GHGs) that contribute to this phenomenon. The temperature on earth is regulated by this greenhouse effect, which is so named because the earth's atmosphere acts like a greenhouse, warming the planet in much the same way that an ordinary greenhouse warms the air inside its glass walls. Like glass, the gases in the atmosphere let in light yet prevent heat from escaping.

Greenhouse gases are naturally occurring gases such as water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) that absorb heat radiated from the earth's surface. Greenhouse gases—CO_2, CH_4, N_2O, and others—are transparent to certain wavelengths of the sun's radiant energy, allowing them to penetrate deep into the atmosphere or all the way to the earth's surface. Clouds, ice caps, and particles in the air reflect about 30 percent of this radiation, but oceans and land masses absorb the rest (70 percent of the radiation received from the sun) before releasing it back toward space as infrared radiation. GHGs and clouds effectively prevent some of the infrared radiation from escaping; they trap the heat near the earth's surface where it warms the lower atmosphere. If this natural barrier of atmospheric gases were not present, the heat would escape into space and earth's average global temperatures could be as much as 61 degrees Fahrenheit (°F) cooler (NASA 2009a).

In addition to natural sources, human activities are exerting a major and growing influence on climate by changing the composition of the atmosphere and by modifying the land surface. Particularly, the increased consumption of fossil fuels (natural gas, coal, gasoline, etc.) has substantially increased atmospheric levels of greenhouse gases. Measured global GHG emissions resulting from human activities, especially the consumption of fossil fuels, have grown since pre-industrial times, with an increase of 70 percent between 1970 and 2004 (IPCC 2007a). This increase in atmospheric levels of GHG unnaturally enhances the greenhouse effect by trapping more infrared radiation as it rebounds from the earth's surface and thus traps more heat near the earth's surface. Prominent GHGs contributing to the greenhouse effect and climate change include carbon dioxide, methane, ozone (O_3), nitrous oxide, and chlorofluorocarbons (CFCs). Emissions of these gases are attributable to human activities associated with the industrial/manufacturing, utilities, transportation, residential, and agricultural sectors (CEC 2006a).

According to the U.S. Environmental Protection Agency (USEPA), the earth's average surface temperature has increased by about 1.2°F to 1.4°F since 1900. The warmest global average temperatures on record have all occurred within the past 13 years, with the warmest two years being 1998 and 2005 and 2010 on track to be the warmest year on record (NOAA 2009a). Eleven of the years between 1995 and 2006 ranked among the hottest years on record since 1850, when reliable worldwide temperature measurements began (IPCC 2007a; NOAA 2009a). Most of the warming in recent decades is likely the result of human activities. Other aspects of the climate are also changing, such as rainfall patterns, snow and ice cover, and sea level.

GLOBAL IMPLICATIONS

Recognizing the problem of global climate change, the World Meteorological Organization (WMO) and the United Nations Environment Programme established the Intergovernmental Panel on Climate Change (IPCC) in 1988. It is open to all members of the United Nations and WMO. The role of the IPCC is to assess on a comprehensive, objective, open, and transparent basis the scientific, technical, and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation. IPCC projects that the earth's average surface temperature could rise 1.8°F to 6.3ºF before the year 2100 (IPCC 2007a).

The IPCC Fourth Assessment Report's Working Group I Summary for Policymakers synthesizes current scientific understanding of global climate change and projects future climate change using the most comprehensive set of well-established global climate models. The report incorporates findings of the current effects of global climate change. These findings include:

- The intensity of tropical cyclones (hurricanes) in the North Atlantic has increased over the past 30 years, which correlates with increases in tropical sea surface temperatures.
- Droughts have become longer and more intense and have affected larger areas since the 1970s, especially in the tropics and subtropics.
- Since 1900 the Northern Hemisphere has lost 7 percent of the maximum area covered by seasonally frozen ground.
- Mountain glaciers and snow cover have declined worldwide.
- Satellite data since 1978 show that the extent of Arctic sea ice during the summer has shrunk by more than 20 percent.
- Since 1961, the world's oceans have been absorbing more than 80 percent of the heat added to the climate, causing ocean water to expand and contributing to rising sea levels. Between 1993 and 2003, ocean expansion was the largest contributor to sea level rise.
- Melting glaciers and losses from the Greenland and Antarctic ice sheets have also contributed to recent sea level rise.

At a more local level, the California Climate Action Team found that California-specific models estimate an average warming increase of 2.7 to 10.5ºF throughout California before the year 2100 (CAT 2009a). This may not seem like a significant increase, yet even at the lowest projected global increase of 1.8 ºF, the earth would be warmer than it has been for 10,000 years (Miller 2000a).

An enhanced greenhouse effect will generate new patterns of microclimate and may have significant impacts on the economy, environment, and transportation infrastructure and operations due to increased temperatures, intensity of storms, sea level rise, and changes in precipitation. Impacts may include flooding of tunnels, coastal highways, runways, and railways, buckling of highways and railroad tracks, submersion of dock facilities, and a shift in agriculture to areas that are now cooler. Such prospects will have strategic, security, and transportation implications.

Climate change affects public health and the environment. Increased smog and emissions, respiratory disease, reduction in the state's water supply, extensive coastal damage, and changes in vegetation and crop patterns have been identified as effects of climate change. The impacts of climate change are broad-ranging and interact with other market failures and economic dynamics, giving rise to many complex policy problems. The findings are the latest in a string of reports warning that the rate of carbon dioxide accumulating in the atmosphere is increasing at an alarming pace.

CALIFORNIA IMPLICATIONS

Climate change and global warming could negatively affect agriculture, forestry, water resources, coastal areas, energy production, air quality, public health, public infrastructure, natural protections, sensitive species and habitats, public safety, and the economy (CAT 2009a; CNRA 2009a). The estimated economic value of shoreline development that could be impacted

by a 55-inch rise in sea level is $62 billion. As the existing climate throughout California changes over time, mass migration of species, or worse, failure of species to migrate in time to adapt to the disturbances in climate, could also result.

Agriculture

Potential impacts, such as reduced water supply, more severe droughts, more winter floods, and drier growing seasons, will affect California's agriculture. Many farms, especially in the fruit and nut business, require long-term investments, making fast adaptation difficult, and could thus experience serious losses if decisions continue to be made with no regard to expected climate changes.

Fishing

Studies found that as a result of changes in ocean conditions, the distribution and abundance of major fish stocks will change substantially. Impacts to fisheries related to El Niño/Southern Oscillation illustrate how climate directly impacts marine fisheries on short-term scales. Higher sea surface temperatures in 1997–1998 during the El Niño had a great impact on market squid, California's largest fishery by volume. The California Regional Assessment reports that landings fell to less than 1,000 metric tons in that season, down from 110,000 tons in the 1996–1997 season. Other unusual events also occurred such as poor salmon returns, a series of plankton blooms, and seabird die-offs.

Coastline

With climate changes, recreational facilities and developed coastlines will also be more vulnerable to hurricanes, storm surges, and flooding. Increasing population growth in coastal areas is a reason for further concern, since these areas could be more vulnerable to impacts associated with climate change. Impacts of expected sea level rise and increased storm surges are numerous. Beachfront homes and harbors as well as wetlands may flood. Sewage systems may be overwhelmed by storm runoff and high tides.

Sea Level Rise

The California Adaptation Strategy (CAS) issued a report on sea level rise in December 2009, which states that sea level along the west coast rises approximately 7.9 inches per century, or approximately 0.08 inches per year (CNRA 2009a). However, sea level rise will vary by location. Some coastal areas will see minimal shifts in sea levels compared to other areas. The report also states that the rate of sea level rise is increasing. During the period of 1993–2003, the rate was approximately 0.12 inches per year, which could demonstrate the result of human-induced warming on sea level.

In 2009, the National Center for Conservation Science and Policy (NCCSP) conducted a geographic information system exercise that identified some areas of potential high risk from sea level rise along the entire California coast. Based on this analysis, which has not been ground-truthed, San Luis Obispo County supports 6.1 miles of existing coastal wetlands. As sea level rises, these wetlands are expected to migrate inland, potentially covering 1.1 miles of terrain. The area where wetlands are expected to migrate have been mapped, and it was determined that 69 percent is viable for migrating wetlands and should be protected to allow for such shifts (NCCSP 2010a). An additional 7 percent of the area where wetlands might migrate is viable but will experience loss of other functions, such as pasture, parks, or open space.

Forests

The California Regional Assessment notes an increase in the number and extent of areas burned by wildfires in recent years, and modeling results under changing climate conditions suggest that fires may be hotter, move faster, and be more difficult to contain under future climate conditions. The factors that contribute to the risk of catastrophic fires (fuel loads, high temperatures, dry conditions, and wind) are typically present already in summer and fall seasons in California, but can exist at other times of the year, especially in drought conditions. Public safety is an issue as home and tourism developments on coastal hills and mountains, and the foothills and higher elevations in the Sierra Nevada are highly susceptible to catastrophic wildfires. San Luis Obispo County is also susceptible to an increase in the number of wildfires and acres burned. A 2–3 percent increase in the number of annual acres burned in San Luis Obispo County is expected by the year 2035 (NCCSP 2010a).

Ecosystems

The current distribution, abundance, and vitality of species and habitats are strongly dependent on climatic (and microclimatic) conditions. Climate change is expected to result in warmer temperatures year-round, accompanied by substantially wetter winters. Rising sea level will significantly affect coastal wetlands because they are mostly within a few feet of sea level. As the sea rises, these wetlands will move inland. The overall acreage of wetlands will be reduced due to constraints by existing urban development and steeper slopes immediately inland of existing wetlands. Tidal rivers, estuaries, and relatively flat shoreline habitats will be more subject to damage by flooding and erosion. More severe storm surges from the ocean, due to higher sea levels, combined with higher river runoff could significantly increase flood levels by more than the rise in sea level alone. Erosion of beaches would decrease habitat for beach-dependent species, such as seals, shorebirds, and endangered species (for example, snowy plover and least tern).

The timing and amounts of water released from reservoirs and diverted from streams are constrained by their effects on various native fish, especially those that are listed under the federal and state endangered species acts as threatened or endangered. Several potential hydrological changes associated with global climate change could influence the ecology of aquatic life in California and have several negative effects on cold-water fish (DWR 2006a). For example, if climate change raises air temperature by just a few degrees Celsius, this change could be enough to raise the water temperatures above the tolerance of salmon and trout in many streams, favoring instead non-native fishes such as sunfish and carp (DWR 2006a). Unsuitable summer temperatures would be particularly problematic for many of the threatened and endangered fish that spend summers in cold-water streams, either as adults or juveniles or both (DWR 2006a). In short, climate change could significantly affect threatened and endangered fish in California. It could also cause non-threatened and non-endangered fish to reach the point where they become designated as such (DWR 2006a).

Changes in temperature and precipitation patterns would also shift California's current climate zones, and thus habitats associated with these zones, northward by approximately 100 to 400 miles, as well as upwards in elevation by 500 to 1,500 feet. Global climate change would alter the composition, structure, and arrangement of the vegetation cover of the state (forest and wildland). Species distribution would move geographically as the climate changes, with forest stands, woodlands, and grassland species predicted to move northward and higher in elevation. The entire vegetative community may be affected if non-native invasive species occupy sites and replace native plants. Outbreaks of insects and diseases could compromise forest health and the capability of the forest stands to reproduce and to store carbon on a

landscape basis. Forest fires are likely to become more frequent and severe if soils become drier. Changes in pest populations could further increase the stress on forests.

Wildfire Risk

With climate change, the potential for wildfires may increase due to changes in fuel conditions, such as forests transitioning to chaparral and grasslands; precipitation, including longer dry seasons and higher extreme temperatures; wind, which affects the spread of wildfire; and other variables. Wildfire intensity and frequency have increased in recent years across the western United States, with the total area burned increasing nearly seven times for the period between 1987 and 2003 as compared to the period between 1970 and 1986 (CEC 2009a). The wildfire season in the western United States has increased by 78 days since 1979 (CEC 2009a). Land management is often blamed for the increase in wildfire frequency. A century of fire suppression has led to increased forest densities and accumulation of fuel wood that can result in more severe fires when this excess buildup of fuel is ignited. Yet climate also plays an important role. Warmer temperatures and longer dry seasons are the main reasons for the increasing trend in forest wildfire risk (CEC 2009a). Reduced winter precipitation and early spring snowmelt deplete the moisture in soils and vegetation, leading to longer growing seasons and drought. These increasingly dry conditions provide more favorable conditions for ignition. In addition, higher temperatures increase evaporative water loss from vegetation, increasing the risk of rapidly spreading and large fires.

Climate change research predicts increased numbers and acres of wildfire. Wildfire occurrence statewide could increase from 57 percent to 169 percent by 2085 and by more than 100 percent in most northern California forests (CNRA 2009a). Fire severity is also predicted to increase as a result of more frequent severe fire weather. The wildfire season already appears to be starting sooner, lasting longer, and increasing in intensity (CNRA 2009a). Burned wildland acreage has increased in the last several decades. Over 48 million acres, or nearly half of the state, is at a high to extreme level of fire threat (CNRA 2009a).

Increases in the frequency and intensity of wildfires will make forests more susceptible to vegetation conversions from trees to brush or grasslands (CNRA 2009a). In order for trees to reestablish after wildfires, patches of living trees must be left to provide seeds for the recruitment of new seedlings. As wildfires increase in size, they can result in “stand-replacing” burns that are too big for natural regeneration. More frequent fires may also result in vegetation conversion by repeatedly killing regeneration. Vegetation conversions of chaparral and forest vegetation will impact biodiversity, habitats, watershed conditions, timber resources, and other goods and services.

On rangelands, climate-change-induced wildfire increases are predicted to increase grassland acreage, while decreasing brush and oak woodlands (CNRA 2009a). Wildfires may increase invasion by annual and brush non-native species, which are generally less palatable to livestock and wildlife than native grass and brush species. Annual grasses also increase fire risk and hazard by producing “flashy fuels” that ignite easily and carry fire quickly across the landscape.

Larger and more frequent wildfires will impact California’s economy by increasing fire suppression and emergency response costs, damages to homes and structures, interagency post-fire recovery costs, and damage to timber, water supplies, recreation use, and tourism. The California Department of Forestry and Fire Protection (Cal Fire) spent over $500 million on fire suppression during fiscal year 2007/2008. As climate change continues, these costs are expected to increase (CNRA 2009a).

In San Luis Obispo County, a loss of needleleaf forests at the higher elevations and temperate shrubland in the eastern portions of the county is likely to result from an increase in the number of wildfires and annual acres burned. The National Center for Conservation Science and Policy predicts a 2–3 percent increase in the number of annual acres burned in the county by 2035 (NCCSP 2010a).

Air Quality

Projected climate changes will impact the quality of California's air, public health, and environment. Higher temperatures increase the formation of ozone and fine particulate matter, making it more difficult to meet the health-based air quality standards for these pollutants. Air pollution is also made worse by increases in natural hydrocarbon emissions and evaporative emissions of fuels and solvents, which lead to higher levels of ozone and fine particulates during hot weather. Warmer temperatures that cause increased use of air conditioners can cause increased air pollutants from power plants and from vehicle operation. In addition, warming, drying, and increased winds could mean hotter, harder-to-control wildfires. These wildfires could result in increased levels of fine particulate matter that could also exceed state and federal standards and harm public health.

Water Supply

While most climate model simulations project relatively moderate changes in precipitation over this century, rising global temperatures are expected to result in reductions in snowpack for the Sierra Nevada (i.e., precipitation changing in the form of rain from snow). By the 2035 to 2064 period, the Sierra Nevada snowpack could decrease from 12 percent to 40 percent as compared to historic levels (depending on the climate scenario) (CalEPA 2007a). The Sierra Nevada snowpack currently acts as natural water storage by holding winter precipitation and releasing it during the spring and early summer months as the snow melts. According to the CNRA, nearly 75 percent of California's available water supply originates in the northern third of the state (north of Sacramento), mainly from water stored in the Sierra Nevada snowpack. Reduction of this natural water storage during the winter could mean water shortages in the future and would require the alteration of the management of existing reservoirs (while not losing flood control capacity or hydropower generation capacity) and/or the construction of additional human-made reservoirs to compensate for this storage loss.

The state's water supply system already faces challenges to provide water for California's growing population. Climate change is expected to exacerbate these challenges through increased temperatures and possible changes in precipitation patterns. The trends of the last century, especially increases in hydrologic variability, will likely intensify in this century (CNRA 2009a). Californians can expect to experience more frequent and larger floods and deeper droughts. Increasing average temperatures may have several impacts on water supply and demand, affecting California's farms, municipalities, and ecosystems.

Increasing winter and early spring temperatures will cause earlier melting of the Sierra Nevada snowpack, the most important seasonal surface reservoir of water in California. Historically this snowpack has released about 15 million acre-feet of water slowly over the warming spring and summer months (one acre-foot provides the annual water needs of one to two families) (CNRA 2009a). California's water storage and conveyance infrastructure gathers this melting snow in the spring and delivers it for use during the drier summer and fall months. This same infrastructure is also used for flood control in the winter and early spring by keeping lower reservoir levels. With earlier snowmelt and heavy winter/spring rains possibly coinciding, difficult tradeoffs may need to be made between water storage and flood protection.

San Luis Obispo County obtains nearly 80 percent of its water supply from groundwater. Only 2 percent of the county's supply comes from imported water and the remaining 17 percent of water supply comes from surface waters (SLO County 2010a). In the late 1980s, a drought brought increased awareness of groundwater issues in the county. Due to a lack of surface water supplies at the time, the county was forced to rely more heavily on groundwater supplies, drawing attention to the risks associated with this choice of water supply, particularly in coastal areas. Many of the county's coastal communities are facing existing or potential seawater intrusion in their groundwater sources. This issue is particularly acute in the Los Osos Valley, Cambria, and the Nipomo area.

Concerns over the availability, quality, and distribution of water are not new to California, but these concerns are growing and solutions are becoming more complex as water managers navigate competing interests and regulations to reliably provide quality water to farms, businesses, and homes, while also protecting the environment and complying with legal and regulatory requirements. Water adaptation strategies are primarily driven by the possibility of reduced future water supplies and increased flood threat brought about by climate change.

Increased Flooding

Currently, no information is available to accurately assess the impact of climate change for flood frequency or severity, because of the absence of detailed regional precipitation information from climate models and because water management choices can substantially influence overall flood risk. However, increased amounts of winter runoff could be accompanied by increases in flood event severity and warrant additional dedication of wet season storage space for flood control as opposed to water supply storage. This need to manage water storage facilities to handle increased runoff could in turn lead to water shortages during high water demand. It is recognized that these impacts would result in increased challenges for reservoir management and balancing the competing concerns of flood protection and water supply.

Sudden Climate Change

Most global climate models project that anthropogenic climate change will be a continuous and fairly gradual process through the end of this century (DWR 2006a). California is expected to be able to adapt to the water supply challenges posed by climate change, even in some of the warmer and drier projections for change. Sudden and unexpected changes in climate, however, could leave water managers unprepared and, in extreme situations, could have significant implications for California and its water supplies. For example, there is speculation that some of the recent droughts that occurred in California and the western United States could have been due, at least in part, to oscillating oceanic conditions resulting from climatic changes. The exact causes of these events are, however, unknown, and evidence suggests such events have occurred during at least the past 2,000 years (DWR 2006a).

```
          1 Paso Robles Circulation Element Update_Existing Conditions.log
Begin log file 2010/09/08 12:38:17
Logging for scenario file: C:\Documents and Settings\skaiser\Desktop\EMFAC\Paso
Robles Circulation Element Update_Existing Conditions.inp
Input file from program version: 2.30.3.501
Running program version:         2.30.3.501 build 2007.5.1.1
Contains 1 scenario(s)
Run timestamp used in report files: 2010/09/08 12:38:17
Opened output file type RTL

Read data for scenario 1.
Title: "Paso Robles Circulation Element Update"
Calendar year 2010
Area "San Luis Obispo County" calculated by area average
Hydrocarbon output CH4
PM output PM10
Program mode "Emfac"
    Speed             Temperature       RH
    25.00000          76.00000          30.00000
    45.00000

Beginning calculations for scenario 1.

Beginning calendar year 2010 for Annual
45 model years.
Min model year tech     1966.
Max model year tech     2010.
Ending    calendar year 2010.

End of scenario 1.

Finishing scenario file 2010/09/08 12:38:26
```

the range 1966 to 2010 selected

A-DSL	LDA-TOT	LDT1-NCAT	LDT1-CAT	LDT1-DSL	LDT1-TOT	LDT2-NCAT	LDT2-CAT	LDT2-DSL	LDT2-TOT	MDV-NCAT	MDV-CAT	MDV-DSL	MDV-TOT	LHDT1-NC	LHDT1-C
517	107140	1262	42748	3277	47287	517	47347	224	48088	182	18998	129	19309	22	34
13	3590	28	1428	103	1560	12	1682	7	1700	4	697	4	705	0	1
2838	667326	5102	263889	20197	289188	2091	298150	1325	301565	769	120494	799	122061	728	1124
0	0.12	0.01	0.07	0	0.08	0	0.06	0	0.07	0	0.03	0	0.03	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.03	0	0.01	0	0.02	0	0.01	0	0.01	0	0.01	0	0.01	0	
0	0.15	0.01	0.08	0	0.09	0.01	0.08	0	0.08	0	0.04	0	0.04	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.15	0.01	0.08	0	0.09	0.01	0.08	0	0.08	0	0.04	0	0.04	0	0.
0.01	12.71	2.31	7.85	0.06	10.22	0.95	6.24	0	7.19	0.54	2.31	0	2.85	0.07	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
0	5.46	0.18	3.3	0	3.48	0.07	2.87	0	2.94	0.05	1.19	0	1.24	0.03	0.
0.01	18.17	2.49	11.15	0.06	13.69	1.02	9.11	0	10.13	0.59	3.5	0	4.09	0.11	0.
0.02	1.32	0.15	0.9	0.16	1.22	0.06	1.03	0.01	1.1	0.03	0.43	0.01	0.47	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.36	0.01	0.18	0	0.18	0	0.27	0	0.28	0	0.12	0	0.12	0	0.
0.02	1.67	0.16	1.08	0.16	1.4	0.06	1.3	0.01	1.38	0.03	0.55	0.01	0.59	0	0.
0.01	1.35	0.01	0.66	0.04	0.71	0.01	0.78	0	0.79	0	0.44	0	0.45	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.05	0	0.03	0	0.03	0	0.03	0	0.03	0	0.02	0	0.02	0	0.
0.01	1.4	0.02	0.69	0.04	0.74	0.01	0.81	0	0.82	0	0.46	0	0.46	0	0.

0	0.05	0	0.02	0	0.03	0	0.04	0	0.04	0	0.02	0	0.02	0		
0	0.03	0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0		
0	0.05	0	0.02	0	0.02	0	0.02	0	0.02	0	0.01	0	0.01	0		
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.13	0	0.05	0.01	0.06	0	0.08	0	0.08	0	0.03	0	0.03	0	0.0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0	0	0	0	0		
0	146.2	2.05	72.21	0	74.27	0.84	84.6	0	85.44	0.36	47.63	0	47.99	0.09	17.3	
0.45	0.45	0	0	3.55	3.55	0	0	0.23	0.23	0	0	0.14	0.14	0		

HDT-NCA	MHDT-CAT	MHDT-DSL	MHDT-TOT	HHDT-NCA	HHDT-CAT	HHDT-DSL	HHDT-TOT	OBUS-NCA	OBUS-CAT	OBUS-DSL	OBUS-TOT	SBUS-NCAT	SBUS-CAT	SBUS-DSL	SBUS-TO
101	490	1767	2358	4	113	743	860	6	108	99	214	5	50	195	2
1	17	91	109	0	8	118	126	0	5	5	10	0	2	8	
4617	22377	49543	76537	162	5167	3761	9090	284	4950	2786	8020	18	199	779	9
0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0	0.01	0	0	0.01	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0	0.01	0	0	0.01	0.01	0	0	0	0	0	0	0	
0.12	0.22	0.2	0.54	0.02	0.34	0.51	0.88	0.01	0.05	0.01	0.07	0.03	0.03	0.03	0.
0	0.01	0.01	0.01	0	0	0.07	0.07	0	0	0	0	0	0	0	0.
0.31	0.75	0	1.06	0.04	0.36	0	0.41	0.02	0.14	0	0.15	0	0.01	0	0.
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0.43	0.98	0.21	1.61	0.06	0.71	0.58	1.36	0.03	0.19	0.01	0.22	0.04	0.05	0.03	0.
0	0.05	0.88	0.93	0	0.11	1.88	1.98	0	0.02	0.05	0.06	0	0.01	0.1	0.
0	0	0.01	0.01	0	0	0.15	0.15	0	0	0	0	0	0	0.01	0.
0	0.07	0	0.08	0	0.05	0	0.05	0	0.02	0	0.02	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.13	0.89	1.03	0	0.15	2.03	2.18	0	0.03	0.05	0.08	0	0.01	0.11	0.
0	0.01	0.15	0.16	0	0	0.24	0.24	0	0	0.01	0.01	0	0	0.01	0.
0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.01	0.15	0.17	0	0.01	0.25	0.25	0	0	0.01	0.01	0	0	0.01	0.

0	0	0.03	0.03	0	0	0.07	0.07	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0.03	0.03	0	0	0.08	0.08	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.25	1.62	0	1.88	0.02	0.65	0	0.67	0.02	0.42	0	0.43	0.02	0.19	0	0.
0	0	13.64	13.64	0	0	22.29	22.29	0	0	0.8	0.8	0	0	1.17	1.

H-DSL	MH-TOT	MCY-NCAT	MCY-CAT	MCY-DSL	MCY-TOT	ALL-TOT
453	4122	8342	4151	0	12493	250105
5	47	59	38	0	98	8292
45	412	16683	8302	0	24984	1698960
0	0	0.02	0.01	0	0.02	0.35
0	0	0	0	0	0	0
0	0	0	0	0	0	0.08
---	---	---	---	---	---	---
0	0	0.02	0.01	0	0.03	0.43
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
---	---	---	---	---	---	---
0	0	0.02	0.01	0	0.03	0.43
0.01	0.82	3.51	0.57	0	4.08	40.42
0	0	0	0	0	0	0.14
0	0.01	0.15	0.13	0	0.28	16.2
---	---	---	---	---	---	---
0.01	0.83	3.66	0.71	0	4.37	56.77
0.05	0.13	0.09	0.05	0	0.14	8.32
0	0	0	0	0	0	0.18
0	0	0.01	0	0	0.01	1.38
---	---	---	---	---	---	---
0.05	0.14	0.1	0.05	0	0.15	9.88
0.01	0.04	0.01	0.01	0	0.01	4.1
0	0	0	0	0	0	0.01
0	0	0	0	0	0	0.14
---	---	---	---	---	---	---
0.01	0.04	0.01	0.01	0	0.02	4.25

0	0	0	0	0	0	0.26
0	0	0	0	0	0	0.08
0	0	0	0	0	0	0.12
---	---	---	---	---	---	---
0	0	0	0	0	0.01	0.45
0	0	0	0	0	0	0
0	0	0	0	0	0	0.04
0	3.35	1.52	0.92	0	2.44	386.84
0.79	0.79	0	0	0	0	51.09

```
        3 Paso Robles Circulation Element Update_Existing Conditions_bdn.log
Begin log file 2010/09/08 13:02:21
Logging for scenario file: C:\Documents and Settings\skaiser\Desktop\EMFAC\Paso
Robles Circulation Element Update_Existing Conditions_bdn.inp
Input file from program version: 2.30.3.501
Running program version:         2.30.3.501 build 2007.5.1.1
Contains 1 scenario(s)
Run timestamp used in report files: 2010/09/08 13:02:22
Opened output file type CSV
Opened output file type BDN

Read data for scenario 1.
Title: "Paso Robles Circulation Element Update"
Calendar year 2010
Area "San Luis Obispo County" calculated by area average
Hydrocarbon output CH4
PM output PM10
Program mode "Burden"
    Daily output

Beginning calculations for scenario 1.

Beginning calendar year 2010 for Annual
45 model years.
Min model year tech     1966.
Max model year tech     2010.
Ending    calendar year 2010.

End of scenario 1.

Finishing scenario file 2010/09/08 13:03:12
```

```
Begin log file 2010/09/15 16:51:20
Logging for scenario file: C:\Documents and Settings\skaiser\Desktop\EMFAC\Paso
Robles Circulation Element Update_Baseline.inp
Input file from program version: 2.30.3.501
Running program version:         2.30.3.501 build 2007.5.1.1
Contains 1 scenario(s)
Run timestamp used in report files: 2010/09/15 16:51:20
Opened output file type RTL

Read data for scenario 1.
Title: "Paso Robles Circulation Element Update"
Calendar year 2008
Area "San Luis Obispo County" calculated by area average
Hydrocarbon output CH4
PM output PM10
Program mode "Emfac"
    Speed             Temperature       RH
    25.00000          76.00000          30.00000
    45.00000

Beginning calculations for scenario 1.

Beginning calendar year 2008 for Annual
44 model years.
Min model year tech     1965.
Max model year tech     2008.
Ending    calendar year 2008.

End of scenario 1.

Finishing scenario file 2010/09/15 16:51:28
```

the range 1965 to 2008 selected

A-DSL	LDA-TOT	LDT1-NCAT	LDT1-CAT	LDT1-DSL	LDT1-TOT	LDT2-NCAT	LDT2-CAT	LDT2-DSL	LDT2-TOT	MDV-NCAT	MDV-CAT	MDV-DSL	MDV-TOT	LHDT1-NC	LHDT1-C
620	101733	1711	39817	3374	44901	662	44743	256	45661	225	17972	137	18334	36	30
16	3387	39	1342	111	1491	15	1609	8	1631	5	682	5	692	1	1
3477	632793	7026	247385	21045	275456	2756	282932	1535	287224	982	114582	861	116425	1174	1015
0	0.14	0.01	0.07	0	0.08	0.01	0.07	0	0.07	0	0.03	0	0.03	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.03	0	0.01	0	0.02	0	0.01	0	0.02	0	0.01	0	0.01	0	
0	0.18	0.02	0.09	0	0.1	0.01	0.08	0	0.09	0	0.04	0	0.04	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.18	0.02	0.09	0	0.1	0.01	0.08	0	0.09	0	0.04	0	0.04	0	0.
0.01	15.59	3.19	8.31	0.06	11.55	1.22	6.81	0	8.04	0.67	2.43	0	3.11	0.12	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
0	6.2	0.25	3.45	0	3.7	0.09	3.08	0	3.17	0.06	1.23	0	1.29	0.05	0.
0.01	21.78	3.43	11.76	0.06	15.25	1.32	9.89	0	11.21	0.73	3.66	0	4.39	0.18	1.
0.02	1.6	0.2	0.97	0.18	1.35	0.08	1.15	0.01	1.24	0.04	0.47	0.01	0.52	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.39	0.01	0.18	0	0.19	0	0.29	0	0.29	0	0.12	0	0.12	0	0.
0.02	1.99	0.21	1.15	0.18	1.54	0.08	1.44	0.01	1.53	0.04	0.59	0.01	0.64	0	0.
0.01	1.28	0.02	0.62	0.04	0.68	0.01	0.75	0	0.76	0	0.43	0	0.44	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.05	0	0.02	0	0.03	0	0.03	0	0.03	0	0.02	0	0.02	0	
0.01	1.33	0.02	0.64	0.04	0.71	0.01	0.77	0	0.79	0	0.45	0	0.45	0	0.

0	0.04	0	0.02	0.01	0.03	0	0.04	0	0.04	0	0.02	0	0.02	0	
0	0.03	0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0	
0	0.05	0	0.02	0	0.02	0	0.02	0	0.02	0	0.01	0	0.01	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.12	0	0.05	0.01	0.06	0	0.08	0	0.08	0	0.03	0	0.03	0	0.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0	0	0	0	0	
0	139.87	2.82	68.02	0	70.84	1.09	81.01	0	82.11	0.45	46.66	0	47.11	0.14	16.0
0.56	0.56	0	0	3.8	3.8	0	0	0.27	0.27	0	0	0.16	0.16	0	

HDT-NCA	MHDT-CAT	MHDT-DSL	MHDT-TOT	HHDT-NCA	HHDT-CAT	HHDT-DSL	HHDT-TOT	OBUS-NCA	OBUS-CAT	OBUS-DSL	OBUS-TOT	SBUS-NCAT	SBUS-CAT	SBUS-DSL	SBUS-TO
129	471	1639	2239	7	128	740	876	8	107	88	203	5	49	183	2
1	16	86	103	0	10	116	125	0	5	5	10	0	2	7	
5876	21519	45960	73356	336	5843	3747	9926	369	4886	2471	7725	19	198	730	9
0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0	0	0.01	0	0	0.01	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0	0	0.01	0	0	0.01	0.01	0	0	0	0	0	0	0	
0.16	0.26	0.2	0.62	0.05	0.43	0.59	1.07	0.01	0.05	0.01	0.07	0.04	0.03	0.02	0.
0	0.01	0	0.01	0	0	0.08	0.08	0	0	0	0	0	0	0	0.
0.4	0.8	0	1.2	0.09	0.41	0	0.51	0.03	0.13	0	0.16	0	0.01	0	0.
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0.57	1.07	0.2	1.84	0.14	0.84	0.67	1.65	0.04	0.18	0.01	0.23	0.04	0.05	0.03	0.
0	0.06	0.97	1.03	0	0.14	2.21	2.35	0	0.02	0.05	0.07	0	0.01	0.1	0.
0	0	0.01	0.01	0	0	0.14	0.14	0	0	0	0	0	0	0.01	0.
0.01	0.08	0	0.08	0	0.05	0	0.06	0	0.02	0	0.02	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.14	0.98	1.13	0	0.19	2.36	2.55	0	0.03	0.05	0.09	0	0.01	0.11	0.
0	0.01	0.14	0.16	0	0.01	0.23	0.24	0	0	0.01	0.01	0	0	0.01	0.
0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.01	0.14	0.16	0	0.01	0.24	0.25	0	0	0.01	0.01	0	0	0.01	0.

0	0	0.03	0.03	0	0	0.09	0.09	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0.03	0.03	0	0	0.1	0.1	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.33	1.56	0	1.89	0.04	0.81	0	0.85	0.02	0.44	0	0.46	0.02	0.19	0	0.
0	0	12.9	12.9	0	0	21.8	21.8	0	0	0.71	0.71	0	0	1.09	1.

H-DSL	MH-TOT	MCY-NCAT	MCY-CAT	MCY-DSL	MCY-TOT	ALL-TOT
419	3914	9198	2665	0	11863	237544
5	44	68	24	0	92	7913
42	392	18394	5330	0	23724	1613460
0	0	0.02	0	0	0.02	0.39
0	0	0	0	0	0	0
0	0	0	0	0	0	0.1
---	---	---	---	---	---	---
0	0	0.02	0.01	0	0.03	0.48
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
---	---	---	---	---	---	---
0	0	0.02	0.01	0	0.03	0.48
0.01	1.01	4.02	0.51	0	4.53	46.93
0	0	0	0	0	0	0.14
0	0.01	0.17	0.1	0	0.26	17.84
---	---	---	---	---	---	---
0.01	1.03	4.19	0.61	0	4.8	64.9
0.05	0.15	0.11	0.03	0	0.14	9.53
0	0	0	0	0	0	0.18
0	0	0.01	0	0	0.01	1.43
---	---	---	---	---	---	---
0.05	0.15	0.11	0.03	0	0.15	11.13
0.01	0.04	0.01	0	0	0.01	3.92
0	0	0	0	0	0	0.01
0	0	0	0	0	0	0.13
---	---	---	---	---	---	---
0.01	0.04	0.01	0	0	0.01	4.07

0	0	0	0	0	0	0.27
0	0	0	0	0	0	0.08
0	0	0	0	0	0	0.11
---	---	---	---	---	---	---
0	0	0.01	0	0	0.01	0.45
0	0	0	0	0	0	0
0	0	0	0	0	0	0.04
0	3.19	1.72	0.55	0	2.27	371.06
0.75	0.75	0	0	0	0	50.36

```
Begin log file 2010/09/15 17:49:33
Logging for scenario file: C:\Documents and Settings\skaiser\Desktop\EMFAC\Paso
Robles Circulation Element Update_Baseline_bdn.inp
Input file from program version: 2.30.3.501
Running program version:         2.30.3.501 build 2007.5.1.1
Contains 1 scenario(s)
Run timestamp used in report files: 2010/09/15 17:49:33
Opened output file type CSV
Opened output file type BDN

Read data for scenario 1.
Title: "Paso Robles Circulation Element Update"
Calendar year 2008
Area "San Luis Obispo County" calculated by area average
Hydrocarbon output CH4
PM output PM10
Program mode "Burden"
    Daily output

Beginning calculations for scenario 1.

Beginning calendar year 2008 for Annual
44 model years.
Min model year tech     1965.
Max model year tech     2008.
Ending    calendar year 2008.

End of scenario 1.

Finishing scenario file 2010/09/15 17:50:21
```

```
Begin log file 2010/09/09 12:31:29
Logging for scenario file: C:\Documents and Settings\skaiser\Desktop\EMFAC\Paso
Robles Circulation Element Update_2020.inp
Input file from program version: 2.30.3.501
Running program version:         2.30.3.501 build 2007.5.1.1
Contains 1 scenario(s)
Run timestamp used in report files: 2010/09/09 12:31:29
Opened output file type RTL

Read data for scenario 1.
Title: "Paso Robles Circulation Element Update"
Calendar year 2020
Area "San Luis Obispo County" calculated by area average
Hydrocarbon output CH4
PM output PM10
Program mode "Emfac"
    Speed             Temperature       RH
    25.00000          76.00000          30.00000
    45.00000

Beginning calculations for scenario 1.

Beginning calendar year 2020 for Annual
45 model years.
Min model year tech     1976.
Max model year tech     2020.
Ending    calendar year 2020.

End of scenario 1.

Finishing scenario file 2010/09/09 12:31:38
```

the range 1976 to 2020 selected

DA-DSL	LDA-TOT	LDT1-NCAT	LDT1-CAT	LDT1-DSL	LDT1-TOT	LDT2-NCAT	LDT2-CAT	LDT2-DSL	LDT2-TOT	MDV-NCAT	MDV-CAT	MDV-DSL	MDV-TOT	LHDT1-NC	LHDT1-C
155	138798	34	59364	1862	61260	12	62203	83	62297	28	24913	73	25014	1	48
3	4777	1	2059	50	2110	0	2178	2	2180	1	876	2	879	0	1
805	866764	130	361816	10532	372478	47	386044	454	386545	106	154843	423	155372	28	1614
0	0.06	0	0.04	0	0.04	0	0.04	0	0.04	0	0.02	0	0.02	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0	0	0	0	0	
0	0.07	0	0.05	0	0.05	0	0.05	0	0.05	0	0.02	0	0.02	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.07	0	0.05	0	0.05	0	0.05	0	0.05	0	0.02	0	0.02	0	0.
0	5.03	0.06	4.69	0.03	4.77	0.02	3.93	0	3.96	0.11	1.67	0	1.78	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
0	2.37	0	1.89	0	1.9	0	1.73	0	1.73	0.01	0.83	0	0.84	0	0.
0	7.4	0.06	6.58	0.03	6.67	0.02	5.66	0	5.69	0.12	2.5	0	2.62	0	0.
0.01	0.52	0	0.53	0.08	0.61	0	0.55	0	0.56	0.01	0.24	0	0.25	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.15	0	0.11	0	0.11	0	0.16	0	0.16	0	0.08	0	0.08	0	0.
0.01	0.66	0	0.63	0.08	0.72	0	0.71	0	0.72	0.01	0.32	0	0.33	0	0.
0	1.75	0	0.94	0.02	0.96	0	1.01	0	1.01	0	0.56	0	0.56	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.07	0	0.04	0	0.04	0	0.04	0	0.04	0	0.02	0	0.02	0	0.
0	1.81	0	0.98	0.02	1	0	1.05	0	1.05	0	0.58	0	0.58	0	0.

	0	0.05	0	0.03	0	0.03	0	0.06	0	0.06	0	0.03	0	0.03	0		
	0	0.04	0	0.02	0	0.02	0	0.02	0	0.02	0	0.01	0	0.01	0		
	0	0.07	0	0.03	0	0.03	0	0.03	0	0.03	0	0.01	0	0.01	0		
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	0	0.16	0	0.07	0	0.08	0	0.11	0	0.11	0	0.04	0	0.05	0	0.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	0	0.02	0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0		
	0	186.78	0.05	101.52	0	101.58	0.02	108.71	0	108.73	0.06	59.5	0	59.56	0	21.	
	0.12	0.12	0	0	1.73	1.73	0	0	0.08	0.08	0	0	0.07	0.07	0		

HDT-NCA	MHDT-CAT	MHDT-DSL	MHDT-TOT	HHDT-NCA	HHDT-CAT	HHDT-DSL	HHDT-TOT	OBUS-NCA	OBUS-CAT	OBUS-DSL	OBUS-TOT	SBUS-NCAT	SBUS-CAT	SBUS-DSL	SBUS-TO
2	633	2420	3055	0	66	945	1011	0	96	181	277	0	53	270	3
0	27	127	153	0	3	172	176	0	3	10	14	0	2	10	
82	28927	67843	96852	18	2995	4784	7797	0	4388	5079	9467	0	212	1080	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	
0	0.07	0.18	0.25	0	0.12	0.3	0.42	0	0.02	0.01	0.03	0	0.03	0.03	0.
0	0.01	0.01	0.01	0	0	0.08	0.08	0	0	0	0	0	0	0	0.
0.01	0.46	0	0.46	0	0.2	0	0.2	0	0.1	0	0.1	0	0.01	0	0.
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.53	0.19	0.73	0.01	0.32	0.38	0.71	0	0.12	0.01	0.13	0	0.04	0.03	0.
0	0.02	0.36	0.38	0	0.03	0.75	0.78	0	0.01	0.02	0.03	0	0.01	0.08	0.
0	0	0.02	0.02	0	0	0.21	0.21	0	0	0	0	0	0	0.01	0.
0	0.05	0	0.05	0	0.02	0	0.02	0	0.01	0	0.01	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.07	0.38	0.45	0	0.05	0.96	1.02	0	0.02	0.02	0.04	0	0.01	0.1	0
0	0.02	0.21	0.23	0	0	0.35	0.35	0	0	0.02	0.02	0	0	0.02	0.
0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.02	0.21	0.23	0	0	0.36	0.36	0	0	0.02	0.02	0	0	0.02	0.

0	0	0.02	0.02	0	0	0.03	0.03	0	0	0	0	0	0	0	
0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0.02	0.02	0	0	0.04	0.04	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	2.3	0	2.3	0	0.27	0	0.28	0	0.31	0	0.31	0	0.2	0	0
0	0	19.02	19.02	0	0	32.37	32.37	0	0	1.55	1.55	0	0	1.62	1.6

H-DSL	MH-TOT	MCY-NCAT	MCY-CAT	MCY-DSL	MCY-TOT	ALL-TOT
576	5340	6310	9875	0	16185	323906
7	64	45	81	0	126	10892
58	534	12619	19748	0	32367	2199410
0	0	0.01	0.02	0	0.03	0.2
0	0	0	0	0	0	0
0	0	0	0	0	0	0.04
---	---	---	---	---	---	---
0	0	0.02	0.02	0	0.03	0.24
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
---	---	---	---	---	---	---
0	0	0.02	0.02	0	0.03	0.24
0.01	0.15	2.6	0.81	0	3.41	20.29
0	0	0	0	0	0	0.17
0	0	0.11	0.28	0	0.39	8.86
---	---	---	---	---	---	---
0.01	0.16	2.71	1.1	0	3.81	29.31
0.03	0.07	0.07	0.09	0	0.16	3.95
0	0	0	0	0	0	0.25
0	0	0.01	0.01	0	0.01	0.94
---	---	---	---	---	---	---
0.03	0.07	0.08	0.1	0	0.18	5.14
0.01	0.05	0.01	0.02	0	0.02	5.36
0	0	0	0	0	0	0.02
0	0	0	0	0	0	0.18
---	---	---	---	---	---	---
0.01	0.05	0.01	0.02	0	0.02	5.55

0	0	0	0	0	0	0.24
0	0	0	0	0	0	0.1
0	0	0	0	0	0	0.15
---	---	---	---	---	---	---
0	0	0	0	0	0	0.5
0	0	0	0	0	0	0
0	0	0	0	0	0	0.05
0	4.44	1.16	2.05	0	3.21	498.43
0.99	0.99	0	0	0	0	65.73

```
Begin log file 2010/09/09 13:06:15
Logging for scenario file: C:\Documents and Settings\skaiser\Desktop\EMFAC\Paso
Robles Circulation Element Update_2020_bdn.inp
Input file from program version: 2.30.3.501
Running program version:         2.30.3.501 build 2007.5.1.1
Contains 1 scenario(s)
Run timestamp used in report files: 2010/09/09 13:06:15
Opened output file type CSV
Opened output file type BDN

Read data for scenario 1.
Title: "Paso Robles Circulation Element Update"
Calendar year 2020
Area "San Luis Obispo County" calculated by area average
Hydrocarbon output CH4
PM output PM10
Program mode "Burden"
    Daily output

Beginning calculations for scenario 1.

Beginning calendar year 2020 for Annual
45 model years.
Min model year tech     1976.
Max model year tech     2020.
Ending    calendar year 2020.

End of scenario 1.

Finishing scenario file 2010/09/09 13:07:08
```

```
Begin log file 2010/09/09 13:37:41
Logging for scenario file: C:\Documents and Settings\skaiser\Desktop\EMFAC\Paso
Robles Circulation Element Update_2025.inp
Input file from program version: 2.30.3.501
Running program version:         2.30.3.501 build 2007.5.1.1
Contains 1 scenario(s)
Run timestamp used in report files: 2010/09/09 13:37:42
Opened output file type RTL

Read data for scenario 1.
Title: "Paso Robles Circulation Element Update"
Calendar year 2025
Area "San Luis Obispo County" calculated by area average
Hydrocarbon output CH4
PM output PM10
Program mode "Emfac"
    Speed             Temperature       RH
    25.00000          76.00000          30.00000
    45.00000

Beginning calculations for scenario 1.

Beginning calendar year 2025 for Annual
45 model years.
Min model year tech     1981.
Max model year tech     2025.
Ending    calendar year 2025.

End of scenario 1.

Finishing scenario file 2010/09/09 13:37:49
```

the range 1981 to 2025 selected

A-DSL	LDA-TOT	LDT1-NCAT	LDT1-CAT	LDT1-DSL	LDT1-TOT	LDT2-NCAT	LDT2-CAT	LDT2-DSL	LDT2-TOT	MDV-NCAT	MDV-CAT	MDV-DSL	MDV-TOT	LHDT1-NC	LHDT1-C
76	157980	0	68599	1127	69726	0	70862	45	70907	1	28421	50	28471	0	57
2	5418	0	2406	29	2435	0	2475	1	2476	0	997	1	998	0	2
392	985787	0	419735	5932	425667	0	437785	228	438012	3	175734	273	176009	0	1893
0	0.04	0	0.03	0	0.03	0	0.04	0	0.04	0	0.02	0	0.02	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.01	0	0	0	0	0	0.01	0	0.01	0	0	0	0	0	
0	0.05	0	0.04	0	0.04	0	0.04	0	0.04	0	0.02	0	0.02	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.05	0	0.04	0	0.04	0	0.04	0	0.04	0	0.02	0	0.02	0	0.
0	3.9	0	3.15	0.01	3.16	0	3.28	0	3.28	0	1.5	0	1.5	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
0	1.67	0	1.24	0	1.24	0	1.37	0	1.37	0	0.71	0	0.71	0	0.
0	5.57	0	4.39	0.01	4.4	0	4.65	0	4.65	0	2.2	0	2.2	0	0.
0	0.38	0	0.35	0.05	0.39	0	0.42	0	0.43	0	0.18	0	0.19	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.1	0	0.07	0	0.07	0	0.11	0	0.11	0	0.06	0	0.06	0	0.
0	0.48	0	0.42	0.05	0.46	0	0.54	0	0.54	0	0.25	0	0.25	0	0
0	1.97	0	1.1	0.01	1.11	0	1.15	0	1.15	0	0.63	0	0.63	0	0.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.08	0	0.04	0	0.04	0	0.04	0	0.04	0	0.02	0	0.02	0	0.
0	2.04	0	1.14	0.01	1.15	0	1.2	0	1.2	0	0.66	0	0.66	0	0.

0	0.06	0	0.03	0	0.03	0	0.07	0	0.07	0	0.03	0	0.03	0			
0	0.05	0	0.02	0	0.02	0	0.02	0	0.02	0	0.01	0	0.01	0			
0	0.07	0	0.03	0	0.03	0	0.03	0	0.03	0	0.01	0	0.01	0			
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.18	0	0.09	0	0.09	0	0.13	0	0.13	0	0.05	0	0.05	0	0.0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0.02	0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0			
0	210.12	0	117.54	0	117.54	0	123.27	0	123.27	0	67.55	0	67.55	0	25.3		
0.06	0.06	0	0	0.99	0.99	0	0	0.04	0.04	0	0	0.04	0.04	0			

HDT-NCA	MHDT-CAT	MHDT-DSL	MHDT-TOT	HHDT-NCA	HHDT-CAT	HHDT-DSL	HHDT-TOT	OBUS-NCA	OBUS-CAT	OBUS-DSL	OBUS-TOT	SBUS-NCAT	SBUS-CAT	SBUS-DSL	SBUS-TO
0	717	2760	3477	0	49	1058	1107	0	90	226	316	0	55	313	3
0	31	146	177	0	3	190	192	0	3	13	16	0	2	12	
0	32723	77400	110122	0	2246	5352	7599	0	4097	6331	10429	0	219	1252	14
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0.03	0.19	0.22	0	0.08	0.26	0.35	0	0.01	0.02	0.03	0	0.02	0.03	0.
0	0.01	0.01	0.02	0	0	0.09	0.09	0	0	0	0	0	0	0	0.
0	0.33	0	0.33	0	0.13	0	0.13	0	0.07	0	0.07	0	0.01	0	0.
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.37	0.2	0.57	0	0.22	0.35	0.57	0	0.08	0.02	0.09	0	0.04	0.04	0.
0	0.01	0.26	0.27	0	0.02	0.58	0.59	0	0	0.02	0.02	0	0.01	0.08	0.
0	0	0.02	0.02	0	0	0.24	0.24	0	0	0	0	0	0	0.01	0.
0	0.04	0	0.04	0	0.02	0	0.02	0	0.01	0	0.01	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.05	0.28	0.33	0	0.03	0.81	0.85	0	0.01	0.02	0.03	0	0.01	0.09	0
0	0.02	0.24	0.27	0	0	0.38	0.38	0	0	0.02	0.02	0	0	0.02	0.
0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.03	0.24	0.27	0	0	0.4	0.4	0	0	0.02	0.02	0	0	0.02	0.

0	0	0.02	0.02	0	0	0.02	0.02	0	0	0	0	0	0	0	
0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	
0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0.02	0.02	0	0	0.04	0.04	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	2.65	0	2.65	0	0.21	0	0.21	0	0.29	0	0.29	0	0.2	0	0
0	0	21.87	21.87	0	0	35.6	35.6	0	0	1.9	1.9	0	0	1.87	1.8

H-DSL	MH-TOT	MCY-NCAT	MCY-CAT	MCY-DSL	MCY-TOT	ALL-TOT
620	6078	6435	11987	0	18422	368625
7	73	48	95	0	144	12397
62	608	12868	23972	0	36840	2504990
0	0	0.01	0.02	0	0.03	0.18
0	0	0	0	0	0	0
0	0	0	0	0	0.01	0.03
---	---	---	---	---	---	---
0	0	0.02	0.02	0	0.04	0.21
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
---	---	---	---	---	---	---
0	0	0.02	0.02	0	0.04	0.21
0.01	0.06	2.76	0.93	0	3.7	16.59
0	0	0	0	0	0	0.18
0	0	0.11	0.34	0	0.45	6.79
---	---	---	---	---	---	---
0.01	0.06	2.87	1.28	0	4.15	23.56
0.03	0.05	0.08	0.11	0	0.18	2.97
0	0	0	0	0	0	0.29
0	0	0.01	0.01	0	0.01	0.79
---	---	---	---	---	---	---
0.03	0.05	0.08	0.12	0	0.2	4.05
0.01	0.06	0.01	0.02	0	0.03	6.08
0	0	0	0	0	0	0.02
0	0	0	0	0	0	0.2
---	---	---	---	---	---	---
0.01	0.06	0.01	0.02	0	0.03	6.3

0	0	0	0	0	0	0.25
0	0	0	0	0	0	0.12
0	0	0	0	0	0	0.17
---	---	---	---	---	---	---
0	0	0	0	0	0.01	0.55
0	0	0	0	0	0	0
0	0	0	0	0	0	0.06
0	5.07	1.23	2.42	0	3.65	566.76
1.06	1.06	0	0	0	0	72.16

```
Begin log file 2010/09/09 14:11:01
Logging for scenario file: C:\Documents and Settings\skaiser\Desktop\EMFAC\Paso
Robles Circulation Element Update_2025_bdn.inp
Input file from program version: 2.30.3.501
Running program version:         2.30.3.501 build 2007.5.1.1
Contains 1 scenario(s)
Run timestamp used in report files: 2010/09/09 14:11:01
Opened output file type CSV
Opened output file type BDN

Read data for scenario 1.
Title: "Paso Robles Circulation Element Update"
Calendar year 2025
Area "San Luis Obispo County" calculated by area average
Hydrocarbon output CH4
PM output PM10
Program mode "Burden"
    Daily output

Beginning calculations for scenario 1.

Beginning calendar year 2025 for Annual
45 model years.
Min model year tech     1981.
Max model year tech     2025.
Ending    calendar year 2025.

End of scenario 1.

Finishing scenario file 2010/09/09 14:11:55
```

APPENDIX H

NOISE APPENDIX

TECHNICAL BACKGROUND

ACOUSTIC FUNDAMENTALS

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound is mechanical energy transmitted in the form of a wave because of a disturbance or vibration. Sound levels are described in terms of both amplitude and frequency. Amplitude is defined as the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

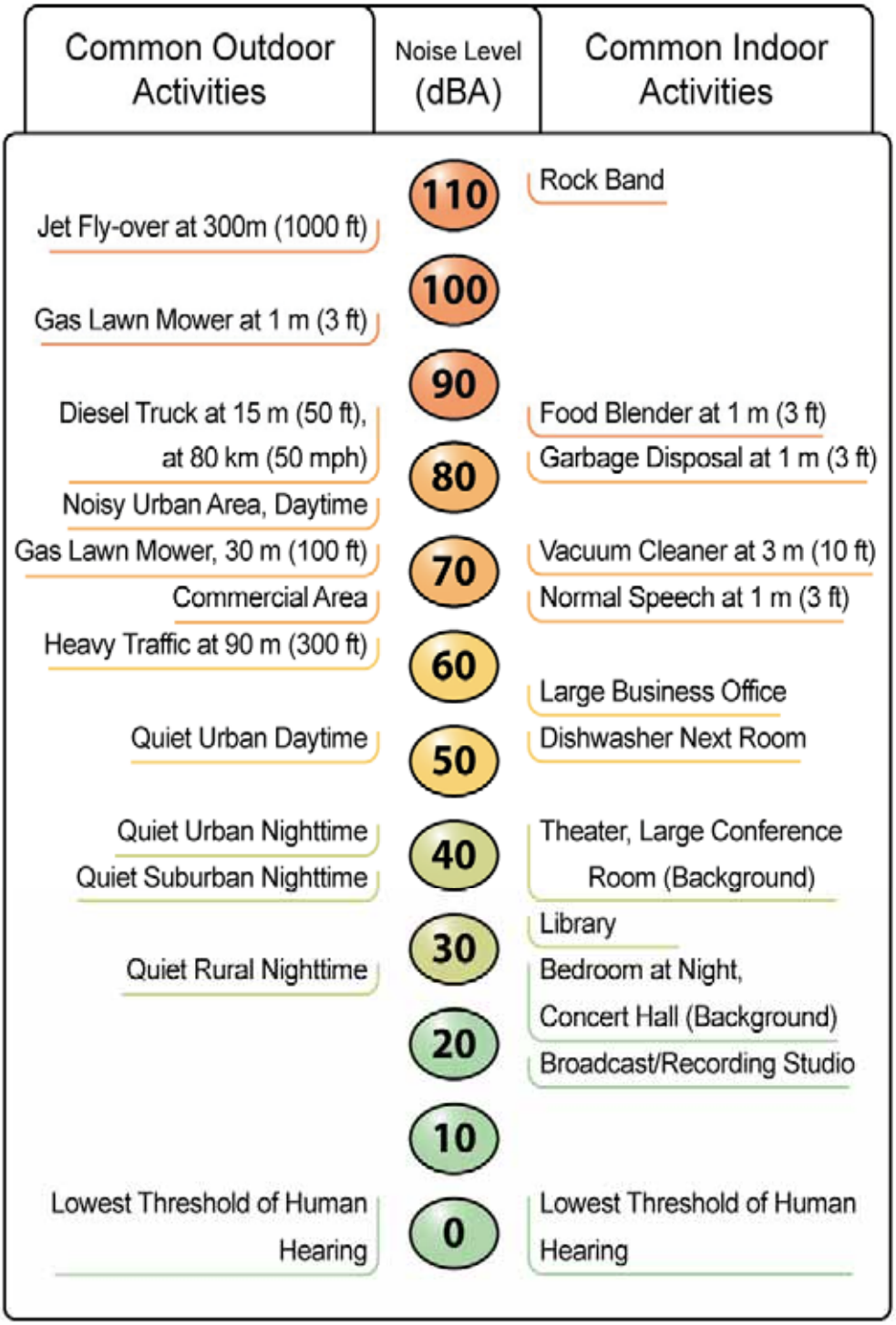
The frequency of a sound is defined as the number of fluctuations of the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to sound of different frequencies. For instance, the human ear is more sensitive to sound in the higher portion of this range than in the lower, and sound waves below 16 Hz or above 20,000 Hz cannot be heard at all. To approximate the sensitivity of the human ear to changes in frequency, environmental sound is usually measured in what is referred to as "A-weighted decibels" (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA. Common community noise sources and associated noise levels, in dBA, are depicted in **Figure H-1.**

Noise can be generated by a number of sources, including mobile sources, such as automobiles, trucks and airplanes, and stationary sources, such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates at a rate between 3.0 to 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Mobile transportation sources, such as highways, hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3.0 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance from the source. Noise generated by stationary sources typically attenuates at a rate of approximately 6.0 to 7.5 dBA per doubling of distance from the source.

Noise Descriptors

The intensity of environmental noise fluctuates over time, and several descriptors of time-averaged noise levels are used. The three most commonly used descriptors are L_{eq}, L_{dn}, and CNEL. The energy-equivalent noise level, L_{eq}, is a measure of the average energy content (intensity) of noise over any given period. Many communities use 24-hour descriptors of noise levels to regulate noise. The day-night average noise level, L_{dn}, is the 24-hour average of the noise intensity, with a 10-dBA "penalty" added for nighttime noise (10:00 p.m. to 7:00 a.m.) to account for the greater sensitivity to noise during this period. The Community Noise Equivalent Level, CNEL, is similar to L_{dn} but adds an additional 5-dBA penalty for evening noise (7:00 p.m. to 10:00 p.m.). Another descriptor that is commonly discussed is the single-event noise exposure level (SENEL), also referred to as the sound exposure level (SEL). The single-event noise exposure

FIGURE H-1
TYPICAL COMMUNITY NOISE LEVELS



Source: Caltrans 2010b

level describes a receiver's cumulative noise exposure from a single noise event, which is defined as an acoustical event of short duration (0.5 second), such as a backup beeper, the sound of an airplane traveling overhead, or a train whistle, and involves a change in sound pressure above a defined reference value (usually approximately 40 dBA). Noise analyses may also depend on measurements of L_{max}, the maximum instantaneous noise level during a specific period of time, and L_{min}, the minimum instantaneous noise level during a specific period. Common noise level descriptors are summarized in **Table H-1**.

TABLE H-1
COMMON ACOUSTICAL DESCRIPTORS

Descriptor	Definition
Energy Equivalent Noise Level (L_{eq})	The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.
Minimum Noise Level (L_{min})	The minimum instantaneous noise level during a specific period of time.
Maximum Noise Level (L_{max})	The maximum instantaneous noise level during a specific period of time.
Day-Night Average Level (DNL or L_{dn})	The 24-hour L_{eq} with a 10 dBA "penalty" for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours to account for increased sensitivity to noise during these hours.
Community Noise Equivalent Noise Level (CNEL)	The CNEL is similar to the L_{dn} described above, but with an additional 5 dBA penalty added to noise events that occur between the hours of 7:00 p.m. to 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated L_{dn}.
Single Event Noise Level (SEL)	The level of sound accumulated over a given time interval or event. Technically, the sound exposure level is the level of the time-integrated mean square A-weighted sound for a stated time interval or event, with a reference time of one second.
Percent Exceeded Noise Level (L_n)	The level exceeded for *n* percent of the time. For instance, L_{10} is the level exceeded for 10 percent of the time. The commonly used values of n for the n-percent exceeded level, L_n, are 2, 10, 50, and 90.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has

adapted: the so-called "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged. Regarding increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans;
- Outside of the laboratory, a 3 dB change is considered a just-perceivable difference;
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial;
- A 10 dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Noise Reduction

Various methods can be employed to reduce noise levels, including enclosures, barriers, and sound-dampening materials. The methods employed are dependent on various factors, including source and receptor characteristics as well as environmental conditions. With regard to typical community noise sources, noise-reduction techniques typically focus on the isolation or shielding of the noise source from nearby noise-sensitive receptors. The more common methods include the use of buffers, enclosures, and barriers. In general, these techniques contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver. Buildings, concrete walls, and berms can all act as effective noise barriers. Wooden fences or broad areas of dense foliage can also reduce noise but are less effective than solid barriers. Changes in design specifications and use of equipment noise control devices (e.g., mufflers and silencers) are also commonly employed to reduce stationary-source noise levels. Additional noise control techniques commonly used for transportation noise sources include traffic control, such as prohibiting heavy-duty trucks and reducing speed limits along primarily affected corridors. However, an approximate 20 mile per hour reduction in speed would typically be required to achieve a noticeable decrease in noise levels. In some instances, the use of noise-reducing pavements, such as rubberized asphalt, has also been used to reduce traffic noise.

Railroad Noise Levels and Contours

TABLE H-2
RAILROAD NOISE LEVELS AND DISTANCES TO NOISE CONTOURS

	L_{dn} at 100 Feet	Distance to L_{dn} Contour (feet)		
		70	65	60
Union Pacific (Freight)	61.6	--	--	--
Amtrak (Passenger)	59.9	--	--	--
Combined L_{dn}	61.6	28	59	128

**Based on a total of four freight trains and two passenger trains daily. Based on estimated SEL for freight trains 98–101 dB at 100 feet and 93–104 SEL at 100 feet for passenger trains. Includes the sounding of horns. Distances to noise contours are approximate.*
Source: City of El Paso de Robles 2003d

TABLE H-3
FUTURE (2025) RAILROAD NOISE LEVELS AND DISTANCES TO NOISE CONTOURS

Train Source	L_{dn} at 100 Feet	Distance to L_{dn} Contour (feet)		
		70	65	60
Union Pacific (Freight)	67.1	--	--	--
Amtrak (Passenger)	56.6	--	--	--
Combined L_{dn}	67.1	64	138	297

**Based on a total of eight freight trains and four passenger trains daily. Freight trains were distributed equally between daytime (7 a.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) hours. Assumes three passenger trains during the daytime hours and one passenger train during the nighttime hours. Includes the sounding of horns. Distances to noise contours are approximate. Source: City of El Paso de Robles 2003d*

Traffic Noise Levels & Contours

TABLE H-4
TRAFFIC DISTRIBUTION PERCENTAGES

	Day	Evening	Night
US 101			
Autos	73.24	12.19	9.06
M-Trucks	1.04	0.06	0.13
H-Trucks	3.70	0.12	0.46
SR 46 East			
Autos	71.74	11.94	8.87
M-Trucks	0.54	0.03	0.07
H-Trucks	5.89	0.18	0.74
SR 46 West			
Autos	76.68	12.77	9.49
M-Trucks	0.64	0.04	0.08
H-Trucks	0.27	0.01	0.02
Local Roadways			
Autos	77.40	12.89	9.58
M-Trucks	0.06	0.02	0.01
H-Trucks	0.02	0.01	0.01

Existing

HWY 46 E, US101 TO UNION RD
ADT: 26000 SPEED: 45 ACTIVE HALF WIDTH (FT): 41
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 72.30
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
122.6	252.2	537.6	1155.4

HWY 46 E, UNION RD TO AIRPORT RD
ADT: 24000 SPEED: 50 ACTIVE HALF WIDTH (FT): 41
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 72.80
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
131.4	272.0	580.6	1248.2

HWY 46 E, AIRPORT RD TO JARDINE RD
ADT: 19700 SPEED: 55 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 75.21
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
124.0	266.9	574.8	1238.2

24TH ST, SPRING ST TO RIVERSIDE AVE
ADT: 15700 SPEED: 25 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 60.34
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	59.0	126.5

24TH ST, RIVERSIDE AVE TO US 101
ADT: 15700 SPEED: 25 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 60.04
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	59.3	126.6

CHAROLAIS RD, S RIVER RD TO RAMBOUILLET RD
ADT: 7100 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.20
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	82.2	176.3

CHAROLAIS RD, RAMBOUILLET RD TO CRESTON RD
ADT: 4700 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 60.41
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	62.7	134.0

13TH ST, SPRING ST TO RIVERSIDE AVE
ADT: 8600 SPEED: 25 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 57.42
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	85.0

13TH ST, RIVERSIDE AVE TO S RIVER RD
ADT: 25400 SPEED: 25 ACTIVE HALF WIDTH (FT): 27
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 60.73
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	85.1	175.8

CRESTON RD, S RIVER TO CAPITOL HILL DR
ADT: 15800 SPEED: 35 ACTIVE HALF WIDTH (FT): 21
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.08
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	54.7	110.8	235.3

CRESTON RD, CAPITOL HILL DR TO WALNUT DR
ADT: 15800 SPEED: 35 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.38
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	50.9	109.1	234.8

CRESTON RD, WALNUT DR TO GOLDEN HILL
ADT: 15800 SPEED: 35 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.07
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	51.4	109.3	234.8

CRESTON RD, GOLDEN HILL TO NIBLICK RD
ADT: 17700 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.37
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	59.5	119.7	253.8

CRESTON RD, NIBLICK RD TO SCOTT ST
ADT: 5500 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 58.29
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	58.9	118.4

CRESTON RD, SCOTT ST TO STONEY CREEK
ADT: 5500 SPEED: 35 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 59.49
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	54.7	116.5

CRESTON RD, STONEY CREEK TO ALAMO CREEK TERRACE
ADT: 5500 SPEED: 35 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 59.79
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	54.3	116.3

CRESTON RD, ALAMO CREEK TERRACE TO CHAROLAIS
ADT: 5500 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 58.29
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	58.9	118.4

CRESTON RD, CHAROLAIS TO E CITY LIMIT
ADT: 4200 SPEED: 55 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.98
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	105.2	223.9

GOLDEN HILL RD, DALLONS DR TO SR 46 E
ADT: 2200 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 55.91
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	84.0

GOLDEN HILL RD, CRESTON RD TO ROLLING HILL
ADT: 9300 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.60
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	99.4	211.3

GOLDEN HILL RD, ROLLING HILL TO UNION
ADT: 11200 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.41
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	54.4	112.1	238.9

GOLDEN HILL RD, UNION TO SR 46
ADT: 7100 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.20
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	82.2	176.3

NIBLICK RD, SPRING ST TO S RIVER RD
ADT: 30100 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 67.27
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	102.1	215.0	460.9

NIBLICK RD, S RIVER RD TO MELODY
ADT: 19400 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.37
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	77.8	161.2	344.3

NIBLICK RD, MELODY TO CRESTON
ADT: 14100 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.98
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	64.5	131.1	278.7

SHERWOOD RD, CRESTON TO FONTANA
ADT: 10000 SPEED: 45 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.10
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	59.9	127.9	274.9

S RIVER RD, S CITY LIMIT TO CHAROLAIS RD
ADT: 2300 SPEED: 40 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 57.61
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	83.3

S RIVER RD, SERENADE RD TO NIBLICK RD
ADT: 12800 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.76
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	56.9	121.4	260.8

S RIVER RD, NIBLICK RD TO NAVAJO AVE
ADT: 13400 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.76
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	62.6	126.9	269.4

SPRING ST, 10TH ST TO 11TH ST
ADT: 13900 SPEED: 30 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 60.90
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	77.4	163.2

SPRING ST, 16TH TO 17TH
ADT: 13800 SPEED: 30 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 60.87
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	77.1	162.5

SPRING ST, 28TH TO 30TH
ADT: 4900 SPEED: 30 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 56.38
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	83.0

UNION RD,N RIVER RD TO RIVERGLENN DR
ADT: 5500 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.09
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	69.5	148.7

UNION RD, RIVERGLENN DR TO WALNUT DR
ADT: 5500 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.09
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	69.5	148.7

UNION RD, WALNUT DR TO GOLDEN HILL RD
ADT: 5300 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 60.93
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	67.8	145.1

UNION RD, GOLDEN HILL RD TO SR 46 E
ADT: 7800 SPEED: 45 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.33
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	50.6	108.3	233.0

UNION RD, SR 46 E TO E CITY LIMIT
ADT: 3300 SPEED: 55 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.71
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	88.8	190.4

S RIVER RD, NAVAJO RD TO CRESTON RD
ADT: 11200 SPEED: 30 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.04
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	65.6	140.8

SPRING ST, 3RD TO 4TH
ADT: 19300 SPEED: 30 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.33
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	95.5	202.7

SPRING ST, 6TH TO 7TH
ADT: 15600 SPEED: 30 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.41
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	83.3	176.1

HWY 46 W, GAHAN PLACE TO DEL SOL PLACE
ADT: 7200 SPEED: 55 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.84
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	74.1	159.1	342.6

US 101, WELLSONA RD TO SPRING ST
ADT: 22700 SPEED: 65 ACTIVE HALF WIDTH (FT): 41
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 73.83
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
151.9	317.7	679.9	1462.3

US 101, SPRING ST TO SR 46 E
ADT: 20000 SPEED: 65 ACTIVE HALF WIDTH (FT): 41
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 73.28
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
140.5	292.4	625.0	1344.1

US 101, SR 46 E TO 13TH ST
ADT: 35500 SPEED: 65 ACTIVE HALF WIDTH (FT): 41
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 75.77
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
201.3	426.5	915.2	1969.9

US 101, SPRING ST TO SR 46 W
ADT: 64000 SPEED: 65 ACTIVE HALF WIDTH (FT): 51
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 77.87
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
296.1	630.3	1354.2	2915.4

US 101, SR 46 W TO MAIN ST
ADT: 53000 SPEED: 65 ACTIVE HALF WIDTH (FT): 43
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 77.42
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
260.9	556.0	1194.9	2572.5

AIRPORT RD, SR46 TO DRY CREEK RD
ADT: 5400 SPEED: 50 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.00
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	103.0	221.6

NACIMIENTO LAKE DR, WEST CITY LIMIT
ADT: 7300 SPEED: 45 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.04
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	103.7	223.0

FUTURE CUMULATIVE WITH PROPOSED 2010 CIRCULATION ELEMENT

HWY 46 E, US 101 TO UNION RD
ADT: 48900 SPEED: 45 ACTIVE HALF WIDTH (FT): 41
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 75.04
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
180.7	381.4	817.8	1759.7

HWY 46 E, UNION RD TO AIRPORT RD
ADT: 38000 SPEED: 50 ACTIVE HALF WIDTH (FT): 41
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 74.80
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
174.5	367.6	787.8	1695.2

HWY 46 E, AIRPORT RD TO JARDINE RD
ADT: 34400 SPEED: 55 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 77.63
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
179.7	387.0	833.5	1795.4

24TH ST, SPRING ST TO RIVERSIDE AVE
ADT: 14100 SPEED: 25 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 59.87
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	54.9	117.8

24TH ST, RIVERSIDE AVE TO US 101
ADT: 14100 SPEED: 25 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 59.57
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	55.3	117.9

CHAROLAIS RD, S RIVER RD TO RAMBOUILLET RD
ADT: 11500 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.29
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	53.1	113.0	242.9

CHAROLAIS RD, RAMBOUILLET RD TO CRESTON RD
ADT: 9000 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.23
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	96.1	206.4

13TH ST, SPRING ST TO RIVERSIDE AVE
ADT: 11200 SPEED: 25 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 58.57
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	101.3

13TH ST, RIVERSIDE AVE TO S RIVER RD
ADT: 32200 SPEED: 25 ACTIVE HALF WIDTH (FT): 27
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.76
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	98.3	205.3

CRESTON RD, S RIVER TO CAPITOL HILL DR
ADT: 19800 SPEED: 35 ACTIVE HALF WIDTH (FT): 21
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.06
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	62.3	128.2	273.2

CRESTON RD, CAPITOL HILL DR TO WALNUT DR
ADT: 19800 SPEED: 35 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.36
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	59.1	126.8	272.9

CRESTON RD, WALNUT DR TO GOLDEN HILL
ADT: 19800 SPEED: 35 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.05
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	59.5	126.9	272.9

CRESTON RD, GOLDEN HILL TO NIBLICK RD
ADT: 25200 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.90
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	73.0	150.4	320.7

CRESTON RD, NIBLICK RD TO SCOTT ST
ADT: 8000 SPEED: 35 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.12
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	69.8	149.4

CRESTON RD, SCOTT ST TO STONEY CREEK
ADT: 8000 SPEED: 35 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.12
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	69.8	149.4

CRESTON RD, STONEY CREEK TO ALAMO CREEK TERRACE
ADT: 8000 SPEED: 35 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.42
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	69.5	149.3

CRESTON RD, ALAMO CREEK TERRACE TO CHAROLAIS
ADT: 8000 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 59.92
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	73.2	150.8

CRESTON RD, CHAROLAIS TO E CITY LIMIT
ADT: 7400 SPEED: 55 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.44
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	72.4	152.2	326.0

GOLDEN HILL RD, DALLONS DR TO SR 46 E
ADT: 12800 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.56
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	61.0	123.2	261.4

GOLDEN HILL RD, CRESTON RD TO ROLLING HILL
ADT: 13800 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.32
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	61.7	128.4	274.4

GOLDEN HILL RD, ROLLING HILL TO UNION
ADT: 17100 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.25
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	70.4	147.8	316.4

GOLDEN HILL RD, UNION TO SR 46
ADT: 11100 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.14
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	51.9	110.4	237.2

NIBLICK RD, SPRING ST TO S RIVER RD
ADT: 38100 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 68.30
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *
70 CNEL 65 CNEL 60 CNEL 55 CNEL
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59.0 118.5 251.1 539.0

NIBLICK RD, S RIVER RD TO MELODY
ADT: 25400 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.54
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *
70 CNEL 65 CNEL 60 CNEL 55 CNEL
--- --- --- ---
0.0 91.8 192.3 411.7

NIBLICK RD, MELODY TO CRESTON
ADT: 19700 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.43
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *
70 CNEL 65 CNEL 60 CNEL 55 CNEL
--- --- --- ---
0.0 78.5 162.9 347.8

SHERWOOD RD, CRESTON TO FONTANA
ADT: 16200 SPEED: 45 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.00
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *
70 CNEL 65 CNEL 60 CNEL 55 CNEL
--- --- --- ---
0.0 85.0 177.3 379.2

S RIVER RD, S CITY LIMIT TO CHAROLAIS RD
ADT: 2600 SPEED: 40 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 58.14
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *
70 CNEL 65 CNEL 60 CNEL 55 CNEL
--- --- --- ---
0.0 0.0 0.0 90.3

S RIVER RD, SERENADE RD TO NIBLICK RD
ADT: 17400 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.09
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *
70 CNEL 65 CNEL 60 CNEL 55 CNEL
--- --- --- ---
0.0 69.5 148.8 320.0

S RIVER RD, NIBLICK RD TO NAVAJO AVE
ADT: 15100 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.28
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *
70 CNEL 65 CNEL 60 CNEL 55 CNEL
--- --- --- ---
0.0 67.1 137.0 291.6

SPRING ST, 10TH ST TO 11TH ST
ADT: 15000 SPEED: 30 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.24
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	81.3	171.7

SPRING ST, 16TH TO 17TH
ADT: 17900 SPEED: 30 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.00
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	91.0	192.9

SPRING ST, 28TH TO 30TH
ADT: 6900 SPEED: 30 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 57.86
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	103.3

UNION RD,N RIVER RD TO RIVERGLENN DR
ADT: 9000 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.23
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	96.1	206.4

UNION RD, RIVERGLENN DR TO WALNUT DR
ADT: 9000 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.23
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	96.1	206.4

UNION RD, WALNUT DR TO GOLDEN HILL RD
ADT: 9100 SPEED: 40 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.28
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	96.8	207.9

UNION RD, GOLDEN HILL RD TO SR 46 E
ADT: 14100 SPEED: 45 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.90
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	74.7	160.6	345.7

UNION RD, SR 46 E TO E CITY LIMIT
ADT: 4600 SPEED: 55 ACTIVE HALF WIDTH (FT): 9
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.15
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	51.9	110.5	237.5

S RIVER RD, NAVAJO RD TO CRESTON RD
ADT: 13700 SPEED: 30 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.92
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	74.9	161.0

SPRING ST, 3RD TO 4TH
ADT: 22700 SPEED: 30 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.03
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	106.0	225.7

SPRING ST, 6TH TO 7TH
ADT: 16700 SPEED: 30 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.70
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	87.0	184.3

HWY 46 W, GAHAN PLACE TO DEL SOL PLACE
ADT: 19400 SPEED: 55 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 71.14
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
66.6	143.0	307.9	663.1

US 101, WELLSONA RD TO SPRING ST
ADT: 50400 SPEED: 65 ACTIVE HALF WIDTH (FT): 41
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 77.30
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
252.3	537.8	1155.7	2488.1

US 101, SPRING ST TO SR 46 E
ADT: 47800 SPEED: 65 ACTIVE HALF WIDTH (FT): 41
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 77.07
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
243.8	519.2	1115.6	2401.8

US 101, SR 46 E TO 13TH ST
ADT: 67000 SPEED: 65 ACTIVE HALF WIDTH (FT): 41
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 78.53
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
303.7	649.5	1396.9	3008.0

US 101, SPRING ST TO SR 46 W
ADT: 93300 SPEED: 65 ACTIVE HALF WIDTH (FT): 51
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 79.51
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
378.4	809.4	1740.6	3748.1

US 101, SR 46 W TO MAIN ST
ADT: 79000 SPEED: 65 ACTIVE HALF WIDTH (FT): 43
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 79.15
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
338.6	724.7	1558.8	3356.6

AIRPORT RD, SR46 TO DRY CREEK RD
ADT: 9800 SPEED: 50 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.59
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	71.3	153.1	329.6

NACIMIENTO LAKE DR, WEST CITY LIMIT
ADT: 9700 SPEED: 45 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.27
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	58.4	125.2	269.4

FUTURE CUMULATIVE WITH 2003 CIRCULATION ELEMENT

(PRIMARY SEGMENTS WITH PREDICTED CHANGES IN NOISE LEVELS/CONTOUR DISTANCES IN COMPARISON TO PROPOSED 2010 CE)

HWY 46 E, US101 TO UNION RD
ADT: 48900 SPEED: 45 ACTIVE HALF WIDTH (FT): 53
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 74.49
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
183.7	382.5	817.7	1758.4

HWY 46 E, UNION RD TO AIRPORT RD
ADT: 38000 SPEED: 50 ACTIVE HALF WIDTH (FT): 53
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 74.25
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
177.5	368.8	787.8	1694.0

24TH ST, SPRING ST TO RIVERSIDE AVE
ADT: 14100 SPEED: 25 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 58.80
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	57.4	118.8

24TH ST, RIVERSIDE AVE TO US 101
ADT: 14100 SPEED: 25 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 58.37
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	59.5	119.8

CRESTON RD, S RIVER TO CAPITOL HILL DR
ADT: 19800 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.85
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	63.4	128.7	273.4

CRESTON RD, CAPITOL HILL DR TO WALNUT DR
ADT: 19800 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.85
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	63.4	128.7	273.4

CRESTON RD, WALNUT DR TO GOLDEN HILL
ADT: 19800 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.85
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	63.4	128.7	273.4

CRESTON RD, NIBLICK RD TO SCOTT ST
ADT: 8000 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 59.92
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	73.2	150.8

```
CRESTON RD, SCOTT ST TO STONEY CREEK
ADT:  8000      SPEED:  35      ACTIVE HALF WIDTH (FT):  24
SITE CHARACTERISTICS: SOFT     GRADE (PERCENT):  .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE =  59.92
* *  DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *
70 CNEL  65 CNEL   60 CNEL   55 CNEL
-------  -------   -------   -------
   0.0       0.0       73.2      150.8

CRESTON RD, STONEY CREEK TO ALAMO CREEK TERRACE
ADT:  8000      SPEED:  35      ACTIVE HALF WIDTH (FT):  24
SITE CHARACTERISTICS: SOFT     GRADE (PERCENT):  .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE =  59.92
* *  DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *
70 CNEL  65 CNEL   60 CNEL   55 CNEL
-------  -------   -------   -------
   0.0       0.0       73.2      150.8
```

TABLE H-5
CHANGES IN PROJECTED TRAFFIC NOISE CONTOURS

Roadway Segment	Distances (feet) to Projected Future (Year 2025) 60 dBA L_{dn}/CNEL Contours	
	Existing 2003 Circulation Element	Proposed 2010 Circulation Element
SR 46 East, US 101 to Union Road	818	818
SR 46 East, Union Road to Airport Road	789	788
24th Street, Spring Street to Riverside Avenue	57	55
24th Street, Riverside Avenue to US 101	60	55
Creston Road, S. River Road to Golden Hills Road	129	128
Creston Road, Niblick Road to Alamo Creek Terrace	73	70

**Reflects changes in traffic noise contour distances for modeled roadway segments that were recommended for widening under the existing 2003 Circulation Element. Road widening improvements corresponding to the above segments are not recommended as part of the proposed Circulation Element Update.*

APPENDIX I

TRAFFIC AND CIRCULATION APPENDIX

Daily Two-Way Roadway Segment Level of Service Definitions					
Roadway Type	Maximum Daily Volume (both directions except freeways)				
	LOS A	LOS B	LOS C	LOS D	LOS E
2-Lane Freeway[1]	11,100	20,100	28,800	35,700	40,100
3-Lane Freeway[1]	17,000	30,800	44,000	54,100	60,600
4-Lane Freeway[1]	28,200	43,200	61,600	74,400	80,000
2-Lane Highway	10,700	17,600	25,300	32,800	36,500
4-Lane Multilane Highway	21,400	35,200	50,600	65,600	73,000
4-Lane Expressway	26,400	30,000	34,800	42,480	44,880
2-Lane Undivided Arterial[4]			9,100	16,700	17,700
~~3~~2-Lane Divided Arterial[4]			13,100	20,600	21,700
4-Lane Arterial[4]			29,000	35,400	37,400
1-Lane Ramp	5,000	7,500	10,500	13,000	15,000
2-Lane Ramp	7,500	11,250	15,750	19,500	22,500
2-Lane Collector	8,000	9,500	10,500	12,000	13,500
3-Lane Collector	11,000	12,500	14,500	16,000	18,000
2-Lane Local Street	1,900	3,900	5,800	8,200	9,600

Notes:

1. *LOS capacity thresholds based on one direction.*
2. *The LOS capacity thresholds are based on HCM 2000 methodology and are generally appropriate for suburban and rural areas.*
3. *Non-directional peak hour traffic volumes are assumed to be 10% of the daily traffic volume. Directional split is typically assumed 70/30. All volumes are approximate and assume ideal roadway characteristics.*
4. *LOS A and B are not achievable for arterial roadways using the HCM 2000 methods.*

Source: Highway Capacity Manual (HCM), Transportation Research Board 2000a

Vehicle Miles Traveled (VMT) by Speed Bin ~~_ USE This information (A)~~							
EMFAC[1]	VMT	Average Daily		Average Daily		Average Daily	
Speed Bin	Speed Bins	Existing		Current CE[1] (No Project)		Proposed CE[1] (Project)	
Name	Actual	VMT	%	VMT	%	VMT	%
7.5	0-7.49	201	0.02%	3,815	0.28%	4,573	0.34%
12.5	7.5-12.49	93	0.01%	3,263	0.24%	4,389	0.33%
17.5	12.5-17.49	1,805	0.21%	15,585	1.15%	16,028	1.20%
22.5	17.5-22.49	5,385	0.63%	12,941	0.96%	15,474	1.16%
27.5	22.5-27.49	84,779	10.00%	136,584	10.08%	168,475	12.66%
32.5	27.5-32.49	52,400	6.18%	84,715	6.25%	81,856	6.15%
37.5	32.5-37.49	86,451	10.19%	181,218	13.37%	183,189	13.76%
42.5	37.5-42.49	63,261	7.46%	160,553	11.85%	165,975	12.47%
47.5	42.5-47.49	66,965	7.90%	210,451	15.53%	176,734	13.28%
52.5	47.5-52.49	32,324	3.81%	141,128	10.42%	117,822	8.85%
57.5	52.5-57.49	110,835	13.07%	119,808	8.84%	115,339	8.66%
62.5	57.5-62.49	343,657	40.52%	284,951	21.03%	281,417	21.14%
67.5	62.5-67.49	0	0.00%	0	0.00%	0	0.00%
72.5	67.5-72.49	0	0.00%	0	0.00%	0	0.00%
77.5	72.5-77.49	0	0.00%	0	0.00%	0	0.00%
82.5	77.5-82.49	0	0.00%	0	0.00%	0	0.00%
87.5	82.5-87.49	0	0.00%	0	0.00%	0	0.00%
92.5	87.5-92.49	0	0.00%	0	0.00%	0	0.00%
	Total	848,156	100.0%	1,355,012	100.0%	1,331,271	100.0%
Service Population		42,511		63,827		63,827	
VMT per Service Pop.		19.95		21.23		20.86	

Notes:

1. EMFAC = Emissions Factors Model (State of California), CE = Circulation Element

~~Old (B)~~							
~~EMFAC[1]~~	~~VMT~~	~~Average Daily~~		~~Average Daily~~		~~Average Daily~~	
~~Speed Bin~~	~~Speed Bins~~	~~Existing~~		~~Current CE[1] (No Project)~~		~~Proposed CE[1] (Project)~~	
~~Name~~	~~Actual~~	~~VMT~~	~~%~~	~~VMT~~	~~%~~	~~VMT~~	~~%~~
~~7.5~~	~~0-7.49~~	~~201~~	~~0.02%~~	~~3,815~~	~~0.28%~~	~~21,007~~	~~1.57%~~
~~12.5~~	~~7.5-12.49~~	~~100~~	~~0.01%~~	~~3,263~~	~~0.24%~~	~~34,789~~	~~2.60%~~
~~17.5~~	~~12.5-17.49~~	~~1,929~~	~~0.23%~~	~~15,585~~	~~1.15%~~	~~24,691~~	~~1.85%~~
~~22.5~~	~~17.5-22.49~~	~~7,060~~	~~0.83%~~	~~12,941~~	~~0.96%~~	~~29,888~~	~~2.23%~~
~~27.5~~	~~22.5-27.49~~	~~89,101~~	~~10.43%~~	~~136,584~~	~~10.08%~~	~~188,270~~	~~14.08%~~
~~32.5~~	~~27.5-32.49~~	~~48,778~~	~~5.71%~~	~~84,715~~	~~6.25%~~	~~88,113~~	~~6.59%~~
~~37.5~~	~~32.5-37.49~~	~~86,793~~	~~10.16%~~	~~181,218~~	~~13.37%~~	~~195,918~~	~~14.65%~~
~~42.5~~	~~37.5-42.49~~	~~62,989~~	~~7.37%~~	~~160,553~~	~~11.85%~~	~~144,735~~	~~10.82%~~
~~47.5~~	~~42.5-47.49~~	~~67,929~~	~~7.95%~~	~~210,451~~	~~15.53%~~	~~149,672~~	~~11.19%~~
~~52.5~~	~~47.5-52.49~~	~~33,023~~	~~3.87%~~	~~141,128~~	~~10.42%~~	~~80,379~~	~~6.01%~~
~~57.5~~	~~52.5-57.49~~	~~106,224~~	~~12.43%~~	~~119,808~~	~~8.84%~~	~~116,808~~	~~8.73%~~
~~62.5~~	~~57.5-62.49~~	~~350,170~~	~~40.99%~~	~~284,951~~	~~21.03%~~	~~263,202~~	~~19.68%~~
~~67.5~~	~~62.5-67.49~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~
~~72.5~~	~~67.5-72.49~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~
~~77.5~~	~~72.5-77.49~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~
~~82.5~~	~~77.5-82.49~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~
~~87.5~~	~~82.5-87.49~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~
~~92.5~~	~~87.5-92.49~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~	~~0~~	~~0.00%~~
	~~Total~~	~~854,298~~	~~100.0%~~	~~1,355,012~~	~~100.0%~~	~~1,337,472~~	~~100.0%~~
~~Service Population~~		~~42,511~~		~~63,827~~		~~63,827~~	
~~VMT per Service Pop.~~		~~20.10~~		~~21.23~~		~~20.95~~	

~~*Notes:*~~

~~*1. EMFAC = Emissions Factors Model (State of California), CE = Circulation Element*~~

B-A							
EMFAC[1]	VMT	Average Daily		Average Daily		Average Daily	
Speed Bin	Speed Bins	Existing		Current CE[1] (No Project)		Proposed CE[1] (Project)	
Name	Actual	VMT	%	VMT	%	VMT	%
7.5	0-7.49	0		0	0	16,434	
12.5	7.5-12.49	7		0	0	30,400	
17.5	12.5-17.49	124		0	0	8,663	
22.5	17.5-22.49	1,676		0	0	14,414	
27.5	22.5-27.49	4,322		0	0	19,795	
32.5	27.5-32.49	-3,622		0	0	6,258	
37.5	32.5-37.49	342		0	0	12,728	
42.5	37.5-42.49	-272		0	0	-21,240	
47.5	42.5-47.49	964		0	0	-27,061	
52.5	47.5-52.49	699		0	0	-37,444	
57.5	52.5-57.49	-4,611		0	0	1,470	
62.5	57.5-62.49	6,513		0	0	-18,215	
67.5	62.5-67.49	0		0	0	0	
72.5	67.5-72.49	0		0	0	0	
77.5	72.5-77.49	0		0	0	0	
82.5	77.5-82.49	0		0	0	0	
87.5	82.5-87.49	0		0	0	0	
92.5	87.5-92.49	0		0	0	0	
-	Total	6,142		0	0	6,201	
Service Population		-		-		-	
VMT per Service Pop.		-		-		-	

Notes:

1. EMFAC = Emissions Factors Model (State of California), CE = Circulation Element

APPENDIX J

REVISED CIRCULATION ELEMENT

~~Revised~~ Final ~~Draft~~

City of El Paso de Robles
General Plan 2010

Circulation Element

Prepared for:

City of El Paso de Robles
Community Development Department

Prepared by:

Fehr & Peers

Prepared: January~~,~~ 2011 ~~Revised: August 10, 2010~~

SJ07-1015

TABLE OF CONTENTS

Circulation Element **1**
Goals, Policies, and Action Items 1
Circulation Issues ..... 7~~75~~
Circulation Standards And Development Policies ..... 171~~171~~~~11~~

APPENDICES

Appendix A: Roadway Capacity Utilization Analysis

Appendix B: City of El Paso de Robles Travel Demand Forecasting Final Model Development Report

LIST OF FIGURES

Figure CE-1 Circulation Element Master Plan 7

LIST OF TABLES

Table CE-1 Existing and 2025 Roadway Segment Utilization 8

CIRCULATION ELEMENT

This document has been developed to emphasize that the first priority of the circulation system is to provide mobility to people. This emphasis, along with the high costs and quality of life impacts of roadway widening, supports the development of an efficient system allowing travel by multiple modes. Efficiency in this context is defined as using facilities to their maximum extent possible, e.g. the efficiency as viewed from an economic perspective.

GOALS, POLICIES, AND ACTION ITEMS

GOAL CE-1: Establish a safe, balanced, ~~and~~ efficient, and multimodal circulation system, focusing on the mobility of people, and preserving the City's small town character and quality of life.

POLICY CE-1A: Circulation Master Plan. Revise/update the City's Circulation Master Plan to address the mobility needs of ~~people and goods including~~all users of the streets, roads and highways including bicyclists, children, persons with disabilities, motorists, movers of commercial goods, pedestrians, users of public transportation, and seniors as follows:

a. Improve the circulation network on a prioritized basis;~~mobility through and access to Downtown Paso Robles by implementing City Council adopted Town Center and Uptown Plans;~~
b. Provide~~ing~~ adequate access for emergency vehicles and evacuation;
c. ~~Improving~~ Improve mobility through and access to Downtown Paso Robles by implementing City Council adopted Town Center and Uptown Plans;~~the circulation network on a prioritized basis;~~
d. Establish~~ing~~ safe pedestrian and bicycle paths, for children and their parents to schools and other major destinations such as downtown and retail;~~:~~ ~~to major destinations (such as downtown, retail centers, and schools);~~
e. Maintain mobility for all modes by encouraging flexible and off-set working hours; transit improvements; pedestrian and bikeway improvements; and public outreach as to the availability and benefit of alternative modes of travel~~education~~;
f. Require~~ing~~ new development to mitigate its impact on the transportation network.

Action Item 1. Develop a multimodal ~~Transportation~~ transportation ~~Mitigation~~ mitigation ~~Fee~~ fee p~~P~~rogram so that new development contributes to improvements that offset cumulative impacts to mobility. The impact fee program will list needed improvements to automobile, pedestrian, bicycle, and transit ~~shall identify improvements to pedestrian, bicycle, transit, automobile and truck transportation~~ facilities. To encourage the reduction of City-wide ~~The Mitigation Fee Program will emphasize improvements that reduce citywide~~ VMT (Vehicle Miles Traveled), the mitigation fee program will recognize and support ~~especially including bicycle and pedestrian network improvements,~~ Transportation Demand Management (TDM) strategies~~,~~ associated with new development. ~~and improved traffic signal operations.~~ Fees shall be assessed in ~~consideration of~~relation to ~~-~~cumulative impacts and shall be proportional to the number of auto trips generated by the development.

Action Item 2.~~-~~ Set conditions of approval of development applications to provide access for all modes of travel and to ~~all parcels and to~~ make appropriate improvements to the transportation system serving subject sites including frontage improvements and all improvements needed to mitigate transportation impacts.

Action Item 3. Preserve right-of-way in accordance with the Circulation Master Plan and all adopted Plan Lines. ~~and require development impact fees and/or region-wide supplemental funding to construct transportation improvements.~~

Action Item 4. Request the County to mitigate transportation impacts to City facilities by requiring participation by County development projects in the City's transportation impact fee program~~, and improve streets, bikeways, trails and walkways to City Standards to provide other transportation improvements (e.g. bus stops, park and ride lots)~~ as appropriate.

Action Item 5. Update the Zoning, Subdivision, Streets and Sidewalk chapters of the Municipal Code, as well as the Standard Conditions of Approval and ~~Standard Specifications~~Standard Specifications and Details. These updates shall reflect a ~~C~~"complete ~~S~~street~~s~~"" approach where all modes of travel are routinely accommodated.

Action Item 6. Implement the City's Traffic Calming Program as funding is available. ~~when requested, where applicable, and as funding is available considering of n.~~ Neighborhood preservation ~~in the~~and context shall be a factor in the consideration of community mobility objectives.

Action Item 7. Continue to actively seek federal, state, and regional grants and~~/or~~ funding.

Action Item 8. Construct ~~Adopt design standards and policies for~~ roundabouts in lieu of traffic signals where appropriate conditions exist to maximize the efficiency of streets,~~to~~ maintain continuous but moderate traffic flow, ~~flow through intersections, moderate speeds,~~ reduce accident severity, and enhance pedestrian and cyclist ~~safety~~activity.

Action Item 9. Install all transportation improvements in accordance with current accessibility standards. ~~accessible pedestrian ramps on all street corners.~~

Action Item 10. Establish limitations on truck traffic in residential areas and adopt designated~~, including signed~~ truck routes. ~~and prohibitions on potentially impacted facilities.~~

Action Item 11. Develop and adopt transportation impact study guidelines that specify the process by which ~~impacts due to~~ new development~~s~~ impacts are identified. These guidelines shall include specific performance measures and thresholds for the identification of impacts and mitigation measures in accordance with the goals herein, including person mobility, the reduction in VMT and the development of a balanced transportation network for all modes. Street widths and consideration of additional traffic lanes ~~Roadway widenings~~ shall be evaluated in the context of potential impacts to community character, convenience for non-auto modes, safety and cost/benefit.

Action Item 12. The City will ~~work~~ coordinate with Caltrans ~~to ensure regional coordination and~~on planning and implementation of congestion management strategies on SR 46 and US 101. ~~while maintaining safe and effective~~These strategies will include improved connectivity for all modes of transportation across these corridors and in areas on either side of these facilities. ~~between areas of the City north and south of SR 46.~~ The City and Caltrans will work in concert with the most recent Regional Transportation Plan.

Action Item 13. The City shall monitor the performance of the transportation ~~mobility~~ network on a regular basis. ~~and optimize traffic signals to maximize the efficiency of the existing network by encouraging moderate, stable vehicle speeds.~~ The City will optimize traffic signals to maximize the

efficiency of the existing network. The City shall ~~actively~~ explore the feasibility of coordinating all traffic signals with a centralized traffic signal control system ~~to link the signals~~.

Action Item 14. ~~Provide emergency access to all areas of the City.~~ Maintain and/or improve emergency vehicle~~s~~ access on all existing streets. New development and redevelopment projects shall provide emergency vehicle access as required by all applicable codes and the Emergency Services Department.

Action Item 15. Integrate the City's traffic model with City land use planning and the regional traffic model produced by the San Luis Obispo Council of Governments.

Action Item 16. View all transportation improvements, new or retrofit, as opportunities to improve safety, access, and mobility for all travelers and recognize bicycle, pedestrian, and transit modes as integral elements of the transportation system.

Action Item 17. Transportation polices should link transportation planning and land use planning.

Action Item 18. Transportation systems and facilities should be planned, designed and constructed so as not to serve as barriers to community resources.

Action Item 19. Transportation improvements shall improve accessibility and promote physical activity.

POLICY CE-1B: Reduce Vehicle Miles Traveled (VMT). The City shall strive to reduce ~~the total vehicle miles of travel (~~VMT~~)~~ generated per household per weekday by making efficient use of existing transportation facilities and by providing direct routes for pedestrians and bicyclists through the implementation of sustainable planning principles.

Action Item 1. New developments or redeveloped areas shall conform to the following guidelines to the maximum extent possible:

- New streets and intersections shall be designed for continuous flow at moderate speeds. Low volume residential streets should be designed for speeds of 25 miles per hour or less. Higher order roadways shall be designed for ~~30~~ 35 mph or less with stable flows. Roundabouts shall be considered in lieu of traffic signals for intersection control as needed. ~~Low-speed vehicles (LSVs) and neighborhood electric vehicles (NEVs) can operate on all roads posted with a speed limit of 35 mph or less (Section 21260 of the California Vehicle Code). Lower speeds are associated with lower collision severity, and continuous flows aid in minimizing air pollutant and GHG emissions.~~
- To the extent practical, ~~N~~new residential streets shall provide a grid roadway system with block lengths of ~~typically~~ 300 feet or more and ~~never~~ not longer than 600 feet. Cul-de-sac streets shall be ~~strongly~~ discouraged. Street widths shall be no greater than as needed to accommodate emergency service vehicles. ~~conform to the City's d~~Design standards compatible with traditional neighborhood shall be developed. ~~for new roadways.~~
- Lane configurations for new intersections shall be limited to provide for moderate speeds and pedestrian and cyclist safety. Congestion during certain time periods shall be accepted in exchange for shorter pedestrian and cyclist crossing distances, less overall paved area, reduced costs and preservation of small town character.
- Circulation systems ~~New developments~~ shall provide for all modes of travel, and shall typically include ~~supported by~~ sidewalks, bicycle lanes, and transit stop amenities., ~~turnouts, etc.~~ .

- ~~New development shall ensure that a~~C~~ c~~ontinuous paths of travel shall be established and connected ~~is available~~ for walking and bicycling from and throughout ~~the~~the development area ~~site~~ to downtown and other key destinations. ~~(as determined by the City).~~ All development shall conform to the most current Bike Master Plan adopted by the City Council and the most current trail system plan. Impact fees shall be assessed to mitigate impacts and to contribute to the development of the bike and pedestrian ~~The appropriate bicycle and pedestrian routes shall be based on the street classification system and proposed bicycle and pedestrian network as specified in the bicycle and pedestrian~~ master plans.
- New specific plans shall include a mix of uses that are well connected for all modes and built at higher densities to help minimize the number of single occupant vehicle trips and reduce vehicle miles traveled.

Action Item 2. ~~Incorporate bicycle lanes and routes into street systems, new subdivisions, and large developments.~~Develop well connected routes for bicycles throughout the City in accordance with the most current council adopted Bike Master Plan.

Action Item 3. The City shall make the travel demand model available to consultants of~~to~~ land development applications to verify traffic generation assumptions in accordance with the ~~general~~ General ~~plan~~Plan. The model will be used to estimate the change in VMT resulting from proposed development.

Action Item 4. To the extent feasible, plan for a reasonable, ongoing balance between housing and jobs.

POLICY CE-1C: Airport. Improve/expand transportation to and ~~/~~from the Paso Robles Municipal Airport ~~airport~~ as set forth
in the Airport Master Plan.

Action Item 1. Establish policy and actions items as part of the Airport Master Plan and Airport Land Use Plan Updates.

Action Item 2. Pursue federal and state grants for airport improvement projects.

Action Item 3. Enhance bicycle, pedestrian and transit access to allow employees and passengers to use non-automobile modes of travel to and from the Airport.

POLICY CE-1 D: Transit. Improve and expand transit services.

Action Item 1. Continue operation of local bus service including~~-~~ ~~-~~inter-connectivity with regional transit.

Action Item 2. Coordinate with the San Luis Obispo Regional Transit Authority to ~~make~~ improve information available on transit options and support advertising/outreach programs for transit.

Action Item 3. Develop Park and Ride Lots at convenient locations.

Action Item ~~3~~4. Establish a Master Plan of transit routes within the City coordinated with regional routes. Require new development and redevelopment projects to include design elements that promote transit use in accordance with the Master Plan ~~,~~ such ~~as:~~
~~Locating~~as locating sheltered bus stops near neighborhood focal points~~, such as~~ shopping and service destinations.

Action Item ~~4~~5. Locate~~ing~~ transit routes on streets serving medium and ~~-~~high density development ~~whenever~~ where feasible.

Action Item ~~5~~6. Link~~ing~~ neighborhoods to transit ~~bus~~ stops and park-and-ride lots by providing direct ~~through continuous bikeways and sidewalks~~ bicycle and pedestrian access.

~~• Providing direct bicycle and pedestrian access to transit stops, park-and-ride lots, bicycle racks, and train access.~~

~~**Action Item 4.** Support the development of a local-serving transit/trolley loop serving the Downtown area to encourage a park-once strategy in the Downtown area.~~

~~**Action Item 5.** Support multi-modal stations at appropriate locations to integrate transit with other transportation modes.~~

Action Item ~~6~~7. Support the development of a transit/trolley loop serving the Downtown area to encourage a park-once strategy. ~~–convenient transit service to employment centers and government centers as funding allows. Work with San Luis Obispo Regional Transit Authority (SLORTA) to provide fixed route and/or commuter bus service as appropriate.~~

Action Item ~~7~~8. ~~Develop a plan to monitor transit system performance and evaluate expansions to transit service.~~ Support and improve the existing multi-modal facility on Pine Street. ~~-~~Consider establishment of a similar facility on the east side of the City.

Action Item ~~8~~9. Support convenient transit service to employment, education, ~~centers~~ and government centers as funding allows. ~~-~~Work with San Luis Obispo Regional Transit Authority (SLORTA) to provide fixed route and/or commuter bus service as appropriate.

Action Item ~~9~~10. Develop a plan to monitor transit system performance and evaluate expansions to transit service.

POLICY CE-1E: Rail. Promote regional, interstate and intra-state rail service. ~~rail transportation for inter- and intra-state rail service travel, along with rail service for travel within the City.~~

Action Item 1. Maintain adequate freight rail service (to the extent freight service does not conflict with the Town Centre Plan).

Action Item 2. In conjunction with the San Luis Obispo Council of Governments, support expanding Amtrak rail service. ~~Support expanding Amtrak rail service to the City when promoted by the San Luis Obispo Council of Governments.~~

Action Item 3. Promote the Amtrak bus feeder link, which provides connections to trains in the Central Valley. ~~north and south of the City.~~

POLICY CE-1F: Pedestrian and Bicycle Access. ~~and General Coordination.~~ Provide safe and convenient pedestrian and bicycle access to all areas of the city. ~~and cooperate with other agencies regarding transportation planning.~~

Action Item 1. Develop a ~~pedestrian~~ Pedestrian ~~m~~Master ~~plan~~ Plan (PMP) identifying and prioritizing improvements to the pedestrian network to support walking as a viable primary mode of travel within Paso Robles. At a minimum, the PMP should include the following components:

- A crosswalk policy to address warrants for installation~~, removal,~~ and enhancements to crosswalks.
- A sidewalk and trail master plan with an inventory of existing and missing sidewalks and a list of projects to ensure pedestrian connections to downtown, employment centers, shopping and services. ~~a sidewalk or path is provided on every street segment.~~
- An on-going program to identify and eliminate hazardous conditions to pedestrians and to provide a sidewalk or formal path on every City-controlled street.

Action Item 2. Maintain and update as needed the Bicycle Master Plan (BMP) ~~a bicycle master plan (BMP)~~ identifying and prioritizing improvements to the bicycle network to support biking as a viable primary mode of travel within Paso Robles. The BMP shall provide bike facilities on or parallel to all major arterials (including bridges) and a network of off-street paths to facilitate commute and recreational bicycle travel. The BMP should identify bicycle priority streets, bicycle boulevards, and bicycle routes that create a fully connected network throughout the City.

Action Item 3. Provide safe and convenient pedestrian, bicycle and vehicle access to the Cuesta College North County Campus, through the following means:

- Incorporate access to and from the campus in City circulation, pedestrian, bicycle, and transit planning.
- Implement appropriate signage and vehicle speed controls to ensure ~~the~~ safety to pedestrians ~~in the vicinity of~~near the campus.
- Encourage distribution of trip reduction information, including transit and ridesharing information, to Cuesta College students, faculty, and staff.
- ~~Maintain access to Highway 46East at Buena Vista Drive.~~
- Work with Caltrans and SLOCOG to construct ~~a bicycle-pedestrian undercrossing~~a bicycle-pedestrian under-crossings of State Route 46E per the adopted BMP and the Caltrans Corridor Study.

Action Item 4. Establish a formal Safe Routes to School Program and pursue grant funding to encourage children to safely walk and bike to school. ~~Work with San Luis Obispo County and San Luis Obispo Council of Governments to create and integrate local traffic models as tools to evaluate impacts and formulate appropriate mitigation measures.~~

Action Item 5. Collect pedestrian and bicycle volumes with intersection counts to ensure adequate data is available for prioritizing improvements to the transportation network. ~~Establish a formal Safe Routes to School Program and work to obtain grant funding to encourage children to safely walk and bike to school.~~

Action Item 6. Improve streetscapes and install curb extensions at intersections where appropriate to reduce driving speeds and shorten pedestrian crossing distances. ~~Collect pedestrian and bicycle volumes with intersection counts to ensure adequate data is available for prioritizing improvements to the transportation network.~~

Action Item 7. Support lighted LED cross-walks where pedestrian traffic volumes are high or safety considerations warrant implementation.

Action Item 8. Update and expand the American Disabilities Act (ADA) City Transition Plan to include public street right-of-way Install curb extensions at intersections where appropriate to shorten pedestrian crossing distances, reduce driving speeds, and improve the streetscape. Improvements.

Action Item 8. Support lighted LED cross-walks where pedestrian traffic volumes are high or safety considerations warrant implementation.

CIRCULATION ISSUES

Circulation Master Plan (CMP)

To provide safe and efficient mobility, both within the City and between the City and surrounding areas, a master system of transportation facilities is needed to serve residential, commercial, industrial, and tourist needs.

The system of key arterial routes is mapped on the 2010 Circulation Master Plan Map (Figure CE-1). Figure CE-1 is designed to respond to the Land Use Element of the General Plan. If land is not developed, or uses change, the entire network of planned facilities may not be needed or it may change to suit future land use modifications.

This system is mapped on the 2010 Circulation Master Plan Map (Figure CE-1). Assignment of status of collector, local,main streets, boulevards, parkways industrial, rural, and hillside streets, as well as bicycle and pedestrian paths, is determined at the time of approval of Specific Plans, subdivision maps (including parcel maps) and development plans.

The Circulation Element anticipates that as the City develops, selected transportation facilities will need to be improved. Continued growth and development of the community will be supported by the holistic improvements that will increase of the bicycle, pedestrian, and transit systems and by increasing the efficiency of the vehicle network, not necessarily by roadway wideningas well as bicycle, pedestrian, and transit systems.

Recommended Circulation Master Plan

The purpose of the circulation system is to maintain and ~~/~~enhance safe and efficient person mobility in the City (per Goal CE-1). To support this goal, the 2010 Circulation Element Update changes how the performance of the transportation network is measured de-emphasizing ~~away from~~ an auto-centric measure (level of service or LOS) in favor of~~towards~~ measures that represent a more efficient use of resources, support the mobility of people, quality of life and small town feel desired by residents. In addition, measures supporting person mobility will offer more travel choices, support public health goals by encouraging more walking and biking, and reduce greenhouse gas emissions.

The 2003 Circulation Element included a c~~C~~itywide target of LOS D for all roadways during the peak hours of travel. Level of service measures driver comfort and convenience, and LOS D reflects a utilization substantially below the roadway's capacity during the majority of the day. This is an inefficient usage of infrastructure, one which results in costly roadway widening~~s~~ to accommodate only brief periods of higher traffic levels (i.e., the worst minutes or hours of the day). These widening projects~~s~~ have secondary impacts of encouraging higher rates of vehicular speed, degrading mobility for pedestrians and cyclists and affecting the overall quality of life in surrounding areas. With this in mind, future traffic projections are presented in terms of capacity utilization, or the extent to which the roadway's capacity is being used on a daily basis.

The 2010 Circulation Element Update Map is generally consistent with the 2003 Circulation Element Map, but it removes a number of infrastructure recommendations due to revised traffic projections and changes to the City's Circulation Element Goals, Policies, and Action Items. Figure CE~~-~~-1 illustrates both the existing and future City street system. Compared to the 2003 Circulation Element, this ~~update of the~~ Circulation Element update identifies 34.5 fewer lane miles ~~are needed~~ by Year 2025. This is the equivalent to removing a two-lane roadway ~~more than halfway to downtown San Luis Obispo~~ from downtown Paso Robles to more than halfway to downtown San Luis Obispo. The pattern and location of future facilities are not precise and will warrant periodic study updates to confirm their appropriateness and feasibility. The map presents the network needed to serve key circulation demands to the Year 2025 planning horizon, while accommodating the City's multi-modal and community goals for the transportation network.

Fehr & Peers developed a Citywide Traffic Model to assist in the Circulation Element update process. The traffic model is an important transportation planning tool that is used to forecast travel in the City based on expected land use and/or roadway network changes. The traffic model can be used to test the effects of alternative land use scenarios and potential roadway network improvements, and to estimate the resultant traffic levels.

Figure CE-1 Circulation Element Master Plan

Circulation Element Update Analysis

This 2010 Circulation Element Update applied the land use projections in the currently adopted Land Use Element of the General Plan to determine future mobility needs. The model development process, as well as the initial data collection and assumptions that are a part of this Circulation Element update process, are fully documented in a separate Technical Appendix report. This appendix includes the following:

- Initial data collection, including traffic counts and land use data files,
- Baseline assumptions, including trip generation, distribution, land use, growth,
- Model development process, including calibration and validation process
- 2025 travel forecasts

Future Corridor Operations

Using the 2025 travel forecasts, the capacity utilization for major arterials and collectors within Paso Robles is summarized in Table CE-~~-~~1, which includes the proposed improvements presented in Figure CE-1. The capacity utilization represents the projected volume divided by the roadway's calculated capacity. These are "planning level" capacities and forecasts, intended to predict the need for ~~additional lanes on a roadway~~improvements.

TABLE CE-1
EXISTING AND 2025 ROADWAY SEGMENT UTILIZATION

Roadway Segment		Existing Conditions		Year 2025 Conditions[1]	
		ADT	Capacity Utilization	ADT	Capacity Utilization
City Segments					
24th Street	Spring Street to US 101	15,700	89%	14,100	80%
Airport Road	SR 46 to Dry Creek Road	5,400	30%	4,000	23%
Charolais Road	S. River Road to Rambouillet Road	7,100	33%	11,500	53%
	Rambouillet Road to Creston Road	4,700	22%	9,000	41%
13th Street	Spring Street to Riverside Avenue	8,600	49%	11,200	63%
	Riverside Avenue to S. River Road	25,400	68%	32,200	86%
Creston Road	S. River Road to Golden Hill Road	15,800	73%	19,800	91%
	Golden Hill Road to Niblick Road	17,700	47%	25,200	67%
	Niblick Road to Charolais Road	5,500	15%	8,000	37%
	Charolais Road to East City Limit	4,200	19%	7,400	34%
Dallons Drive	Buena Vista Road to Golden Hill Road	1,300	8%	2,600	15%
Golden Hill Road	Dallons Drive to SR 46 East	2,200	13%	12,800	34%
	Creston Road to Rolling Hills Road	9,300	43%	13,800	64%

TABLE CE-1
EXISTING AND 2025 ROADWAY SEGMENT UTILIZATION

		Existing Conditions		Year 2025 Conditions[1]	
	Roadway Segment	**ADT**	**Capacity Utilization**	**ADT**	**Capacity Utilization**
	Rolling Hills Road to Union Road	11,200	51%	17,100	46%
	Union Road to SR 46 East	7,100	40%	11,100	30%
Linne Road	Fontana Road to East City Limit	4,100	23%	10,700	60%
Nacimiento Lake Drive	West City Limit	7,300	41%	9,700	55%
Niblick Road	Spring Street to S. River Road	30,100	80%	38,100	**102%**
	S. River Road to Melody Drive	19,400	52%	25,400	68%
	Melody Drive to Creston Road	14,100	38%	19,700	53%
N. River Road	Union Road to SR 46 East	2,700	20%	4,200	31%
	SR 46 East to North City Limit	1,200	9%	1,300	10%
Rolling Hills Road	Creston Road to Golden Hill Road	2,800	16%	3,600	20%
Paso Robles Street	Freeway Off-Ramp to Creston Road	5,800	61%	5,600	58%
River Oaks Drive	N. River Road to Buena Vista Road	1,900	11%	2,600	15%
Riverside Avenue	13th Street to 24th Street	11,800	67%	13,700	63%
Sherwood Road	Creston Road to Fontana Road	10,000	56%	16,200	75%
S. River Road	South City Limit to Charolais Road	2,300	17%	2,600	19%
	Serenade Road to Niblick Road	12,800	34%	17,400	47%
	Niblick Road to Navajo Road	13,400	36%	15,100	40%
Spring Street	10th Street to 11th Street	13,900	64%	15,000	69%
	16th Street to 17th Street	13,800	64%	17,900	82%
	28th Street to 30th Street	4,900	23%	6,900	32%
Union Road	N. River Road to Walnut Drive	5,500	26%	9,000	41%
	Walnut Drive to Golden Hill Road	5,300	30%	9,100	51%
	Golden Hill Road to SR 46 East	7,800	44%	14,100	65%
	SR 46 East to East City Limit	3,300	18%	4,600	21%
Buena Vista Drive	SR 46 East to Experimental Station Road	4,400	20%	6,800	31%
	North of Cuesta College	2,600	12%	3,500	16%
Dry Creek Road	Airport Road to SR 46 East	1,300	7%	3,800	21%
Nickerson Drive	Niblick Road to Creston Road	2,000	15%	2,400	18%
Pine Street	6th Street to 13th Street	3,400	35%	3,000	31%
Ramada Drive	SR 46 West to Calle Propane	1,700	18%	4,700	49%
	SR 46 West to South City Limit	3,100	33%	6,100	64%

TABLE CE-1
EXISTING AND 2025 ROADWAY SEGMENT UTILIZATION

Roadway Segment		Existing Conditions		Year 2025 Conditions[1]	
		ADT	Capacity Utilization	ADT	Capacity Utilization
Rambouillet Road	Charolais Road to Niblick Road	1,600	12%	1,500	11%
S. River Road	Navajo Road to Creston Road	11,200	63%	13,700	77%
Theatre Drive	SR 46 West to South City Limit	9,600	44%	12,300	57%
S. Vine Street	SR 46 West to 1st Street	4,800	27%	12,700	72%
Vine Street	3rd Street to 4th Street	4,000	30%	5,500	41%
	30th Street to 32nd Street	300	3%	1,200	9%
Spring Street	3rd Street to 4th Street	19,300	89%	**22,700**	**105%**
	6th Street to 7th Street	15,600	72%	16,700	77%
Adjacent Jurisdictions					
US 101	Wellsona Road to Spring Street	22,700	28%	50,400	63%
	Spring Street to SR 46 East	20,000	25%	47,800	60%
	SR 46 East to 13th Street	35,500	44%	67,000	84%
	Spring Street to SR 46 West	64,000	80%	**93,300**	**117%**
	SR 46 West to Main Street	53,000	66%	79,000	99%
SR 46 East	US 101 to Union Road	26,000	59%	**48,900**	**109%**
	Union Road to Airport Road	24,000	34%	38,000	52%
	Airport Road to Jardine Road	19,700	54%	34,400	47%
Dry Creek Road	Aerotech Center Way to Prairie Road	1,300	7%	1,600	9%
Union Road	Airport Road Ext. (future) to Penmen Springs Road	3,300	19%	4,600	26%
Linne Road	Hanson Road to Penmen Springs Road	4,100	23%	7,000	40%
Creston Road	Airport Road Ext. (future) to Neal Springs Road	4,200	24%	8,500	48%
S. River Road	Santa Ysabel Avenue to Pin Oak Lane	2,300	17%	2,600	19%
Ramada Drive	Volpi Ysabel Road to Easy Street	3,100	32%	6,100	64%
Theater Drive	Nutwood Cir to Rancho Paso Road	9,600	54%	13,600	77%
SR 46 West	Gahan Pl to Del Sol Pl	7,200	20%	19,400	53%
Nacimiento Lake Drive	Mustang Springs Road to Adelaida Road	7,300	41%	9,700	55%

Notes:
[1] Year 2025 with proposed improvements shown on Figure CE-1.
Reductions in utilization can occur with a reduction in volume due to changes in travel patterns or with an increase in capacity.
ADT = Average Daily Traffic during a typical weekday.
High utilization locations are indicated in **bold**.
Source: Fehr & Peers, January 2011.

Table CE-1
Existing and 2025 Roadway Segment Utilization

Street	Segment	Existing ADT	Existing Capacity Utilization	2025 ADT	2025 Capacity Utilization
HWY 46	US 101 TO UNION RD	26,600	59%	45,500	101%
HWY 46	UNION RD TO AIRPORT	24,800	34%	37,900	52%
HWY 46	AIRPORT TO DRY CREEK RD	19,700	54%	31,100	43%
24TH ST	SPRING ST TO US 101	15,700	89%	15,700	89%
AIRPORT RD	SR 46 TO DRY CREEK RD	5,400	30%	9,800	55%
CHAROLAIS RD	S RIVER RD TO RAMBOULLET	7,100	40%	12,600	71%
CHAROLAIS RD	RAMBOUILLET RD TO CRESTON	4,700	27%	10,200	58%
13TH ST	SPRING ST TO RIVERSIDE AVE	8,600	64%	11,700	87%
13TH ST	RIVERSIDE AVE TO S RIVER	25,400	77%	31,500	95%
CRESTON RD	S RIVER RD TO GOLDEN HILL	15,800	73%	19,400	89%
CRESTON RD	GOLDEN HILL RD TO NIBLICK	17,700	47%	24,600	66%
CRESTON RD	NIBLICK RD TO CHAROLAIS	5,500	31%	8,000	45%
CRESTON RD	CHAROLAIS RD TO EAST CITY LIMIT	4,200	23%	8,600	49%
DALLONS DR	BUENA VISTA RD TO GOLDEN HILL	1,300	10%	2,400	18%
GOLDEN HILL RD	DALLONS DR TO SR 46	2,200	13%	13,900	79%
GOLDEN HILL RD	CRESTON RD TO ROLLING HILL	9,300	43%	13,600	63%
GOLDEN HILL RD	ROLLING HILLS RD TO UNION	11,200	51%	16,800	77%
GOLDEN HILL RD	UNION RD TO SR46	7,100	40%	11,300	64%
LINNE RD	FONTANA RD TO EAST CITY	4,100	23%	9,000	51%
NACIMIENTO LAKE DR	WEST CITY LIMIT	7,300	41%	9,700	55%
NIBLICK RD	SPRING ST TO S RIVER	30,100	80%	38,800	104%
NIBLICK RD	S RIVER RD TO MELODY DR	19,400	52%	24,100	64%
NIBLICK RD	MELODY DR TO CRESTON RD	14,100	38%	18,400	49%
N RIVER RD	UNION RD TO SR 46E	2,700	20%	4,200	31%
N RIVER RD	SR46E TO NORTH CITY LIMIT	1,200	9%	1,300	10%
ROLLING HILLS RD	CRESTON RD TO GOLDEN HILL	2,800	29%	3,400	36%
PASO ROBLES ST	FREEWAY OFFRAMP TO CRESTON	5,800	61%	6,100	64%
RIVER OAKS DR	N RIVER RD TO BUENA VISTA	1,900	14%	2,600	19%
RIVERSIDE AVE	13TH ST TO 24TH ST	11,800	87%	14,200	79%
SHERWOOD RD	CRESTON RD TO FONTANA	10,000	56%	13,800	78%
S RIVER RD	SOUTH CITY LIMITS TO CHAROLAIS	2,300	17%	2,500	19%
S RIVER RD	SERENADE RD TO NIBLICk	12,800	73%	18,500	49%
S RIVER RD	NIBLICK RD TO NAVAJ	13,400	36%	15,200	41%
SPRING ST	10TH ST TO 11TH ST	13,900	77%	15,000	83%
SPRING ST	16TH ST TO 17TH ST	13,800	77%	16,800	93%
SPRING ST	28TH ST TO 30TH ST	4,900	27%	6,700	37%
UNION RD	N RIVER RD TO WALNUT DR	5,500	31%	9,200	52%
UNION RD	WALNUT DR TO GOLDEN HILL	5,300	30%	9,300	52%
UNION RD	GOLDEN HILL RD TO SR46E	7,800	44%	14,000	79%
UNION RD	SR46E TO EAST CITY LIMIT	3,300	18%	4,500	25%
BUENA VISTA DR	SR 46E TO EXPERIMENTAL STATION	4,400	20%	6,900	32%
BUENA VISTA DR	NORTH OF CUESTA COLLEGE	2,600	15%	3,500	20%
DRY CREEK RD	AIRPORT RD TO SR 46E	1,300	7%	3,800	21%
NICKERSON DR	NIBLICK RD TO CRESTON	2,000	15%	2,500	18%
PINE ST	6TH ST TO 13TH ST	3,400	35%	3,400	35%
RAMADA DR	SR 46W TO CALLE PROPANE	1,700	18%	5,000	52%
RAMADA DR	SR 46 W TO SOUTH CITY	3,100	33%	6,400	67%
RAMBOUILLET RD	CHAROLAIS RD TO NIBLICK	1,600	12%	1,600	12%
S RIVER RD	NAVAJO RD TO CRESTON	11,200	63%	13,600	77%
THEATRE DR	SR 46W TO SOUTH CITY LIMIT	9,600	53%	12,000	67%
S VINE ST	SR 46W TO 1ST ST	4,800	36%	15,500	88%
VINE ST	3RD TO 4TH ST	4,000	30%	6,000	44%
VINE ST	30TH ST TO 32ND ST	300	3%	1,200	9%
SPRING ST	3RD ST TO 4TH ST	19,300	107%	23,000	128%
SPRING ST	6TH ST TO 7TH ST	15,600	87%	16,300	91%

ADT=Average Daily Traffic

- **Over 100 percent utilization** results in forced or breakdown conditions for motorists frequently throughout the day. This situation exists when the volume of traffic exceeds the capacity of the roadway and queues can form behind these bottleneck points with traffic traveling in a stop-and-go fashion. ~~-~~These conditions warrant more investment in roadway capacity improvements, or another strategy to reduce traffic and/or improve mobility through a particular road segment or intersection.
- **90 to 100 percent utilization** represents operating conditions at or near capacity for motorists. The transportation infrastructure is fully utilized. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver for motorists may be difficult. Unstable operation can occur at certain times of day and minor disturbances in traffic flow can cause breakdown conditions. ~~–~~However, justification for additional lanes and/or road widening is not met, particularly in light of other community goals and environmental impacts.
- **70 to 90 percent utilization** represents high-density, but stable flow for motorists. While some temporary congestion can occur at selected times of day, operations are reasonable for most drivers throughout the day. ~~–~~Motorists experience some restriction in speed and maneuverability, with reduced levels of convenience during peak travel hours. The transportation infrastructure is well-utilized. ~~–~~Additional investment in road widening is not warranted.
- **50 to 70 percent utilization** provides stable operating conditions for motorists and limited delays throughout most of the day. ~~-~~The roadway is only partially utilized. ~~-~~No consideration should be made for road widening. ~~–~~The maneuverability of individual motorists is affected by the interaction with other motorists in the traffic stream. These conditions are less attractive for bicycles, pedestrians, and transit users because of typically higher auto vehicle speeds.
- **30 to 50 percent utilization** provides stable operating conditions for motorists throughout the day. The investment in transportation infrastructure is realized on a very limited basis. ~~–~~Road widening improvements are not warranted. ~~–~~The presence of other motorists causes a noticeable, though slight, reduction in maneuverability. These conditions are always conducive to speeding and typically very discouraging to travel by bicyclists and pedestrians.
- **Less than 30 percent utilization** represents free-flow travel with a high level of maneuverability for motorists at all times of day. ~~–~~The investment in transportation infrastructure is not efficiently utilized. Here vehicle operations are almost always counterproductive for bicycles, pedestrians, and transit users.

The information in Table CE-1 conveys that: 1) most of the City's roadways operate well below their capacity on a daily basis, with a couple of exceptions, and 2) in year 2025 only a handful of streets are projected to have a demand that exceeds their capacity on either city or adjacent jurisdiction roadways. Specifically, the volume on four~~?~~ study segments is projected to exceed the capacity and two of these are on SR 46E ~~between~~ and US 101. ~~and Airport Road.~~ In addition, only ~~three~~ two other segments are projected to have a utilization of between 90 and 100 percent. This indicates that major new capacity enhancements across the City are not justified given the City's goals.

The operations in key corridors in the City are discussed below beginning with US 101 and ~~.~~ followed by ~~T~~the three primary east/west corridors. ~~are discussed first, as t~~These east/west corridors must traverse the Salinas River, the freeway and the railroad; natural and physical barriers that separate the east and west sides of the City. These barriers are significant ~~are key~~ constraints ~~in~~ on the transportation network. The Spring Street and Creston Road corridors are also discussed. The City should monitor and manage traffic operations along these corridors as development occurs to ensure that the system is optimized for steady, safe, and orderly traffic flow.

US 101 from Wellsona Road to Main Street – Degradation of US 101 mainline operations by Year 2025 and beyond is anticipated due to future growth within and outside San Luis Obispo County, as well as the addition of traffic from proposed land uses in Paso Robles' General Plan. Already planned increases in land use and changes to regional travel patterns will contribute to these unacceptable operations.

Traditionally, traffic-related impacts or substantial increases in automobile trips on roadway segments are mitigated by increasing roadway capacity through construction or payment toward additional lanes or other new facilities. US 101 would require widening to six lanes to improve traffic operations to acceptable levels of service. The widening of US 101 is not included in the Regional Transportation Plan (RTP) or 2010 constrained regional transportation list prepared by SLOCOG. However, the Route 101 North County Corridor Study identifies widening of US 101 as a beyond 2035 improvement. The study also describes the need for auxiliary lanes and other capacity enhancements prior to Year 2035. These enhancements would improve operations and reduce the capacity utilization but would not fully eliminate the projected deficient roadway operations.

The Circulation Element contains several policies that seek to reduce automobile travel. Implementation of these policies and associated actions would help reduce the magnitude of traffic impacts on US 101. Ultimately, SLOCOG and Caltrans are the responsible agencies for planning for and implementing improvements within the US 101 corridor. Payment of traffic impact fees or a fair share contribution would fulfill the City's obligations for mitigating regional traffic impacts; however, unless other funding sources (e.g., State Transportation Improvement Program funds for projects identified in the RTP, San Luis Obispo County fees, and/or a future regional impact fee) are made available, implementation of the necessary improvements is not feasible and implementation of the proposed Circulation Element Update would not improve US 101 operations. The City of Paso Robles would support and participate in development of a regional fee should it be proposed by regional agencies, such as SLOCOG.

SR 46 East from US Highway 101 to Airport Road – Future traffic volumes along the SR 46 East corridor are expected to exceed the capacity of this roadway during certain times of day, typically the morning and afternoon two-hour commute periods. The 2008 Caltrans Comprehensive C~~c~~orridor Study (CCS) establishes that widening SR 46E to accommodate this forecasted demand would be ineffective without substantial capacity and operational improvements to the US 101 mainline and the interchange with SR 46E. ~~-~~SR 46E presents a barrier to connections between areas of the City north and south of the highway. ~~–~~The CCS recognize~~d~~s that capacity improvements to SR 46E such as six-lane widening conflicts with the City's goals of small town character and mobility associated with non-auto modes. ~~–~~To mitigate impacts on the highway, the CCS endorses the development of a parallel route system of local roads north and south of SR 46E between Jardine Road and River Road that will serve to reduce the demand for travel on SR 46. ~~-~~These routes have been identified in the City's Parallel Routes Study. ~~–~~The alignment of parallel route(s) shall be studied by the City, and constructed with development of the land uses north and south of SR 46. ~~-~~Specific recommendations of the Parallel Routes Study include: ~~Widening of the SR 46 corridor to accommodate this focused demand would be ineffective until substantial capacity and operational improvements are made to the US 101 mainline and at the SR 46 interchange ramps. These capacity improvements would include the widening of US 101 to six lanes, and flyover ramps at the interchange, both of which are not considered a viable alternative by Caltrans in the foreseeable future. Furthermore, widening is infeasible and conflicts with the City's goals for a transportation network focused on person mobility, since a widened SR 46 to six lanes with at-grade intersections would constitute a significant barrier to north-south connectivity in the City for non-auto modes The development of a parallel route system of local roads north of SR 46 between Jardine Road and River Road will serve to reduce the demand for travel on SR 46, and has been studied in the City's *Parallel Routes Study*. The specific alignment of a parallel route(s) shall be studied by the City, and constructed with development of the land uses north of SR 46. Specifically, the recommended connections include:~~

A connection between Airport Road and Golden Hill Road via the Wisteria Road corridor, including a bridge over Huer Huero Creek.

- A connection between the northern terminus of Golden Hill Road and the western terminus of Dry Creek Road, including a bridge over ~~the~~ =Huer Huero Creek.
- Improvements to the intersection of SR 46E and Union Road. -The City shall monitor traffic levels and plan for a grade separated interchange and interim improvements as needed. -The improvement of this intersection will require that the north leg be extended to connect to Airport Road, so that access to uses in the Airport area would be provided via the new intersection at SR 46E-Union Road.
- Improvement to facilities serving non-auto modes of travel will also reduce the auto demand along this corridor.

~~Increased development north of SR 46 will require improvements to the intersections along this corridor. In accordance with the *SR 46 East Comprehensive Corridor Study* prepared by Caltrans, improvements will focus at the SR 46/Union Road intersection. Signalization of this intersection will accommodate the level of growth expected in the area through Year 2025, but the City shall monitor traffic levels and plan for a grade separated interchange at this location when needed. The improvement of this intersection will require that the north leg of Union Road be extended to connect to Airport Road, so that access to uses on Airport Road would be provided via the new signal at Union Road.~~

13th Street from Riverside Avenue to Union Road – As one of the three major crossings of the Salinas River and the US 101 freeway, ~~in the City,~~ the demand for travel across this segment is forecasted to ~~will~~ increase ~~in the future~~ to a daily capacity utilization of 95%. This corresponds to increased congestion during the typical commute periods and likely other times of day, but does not justify the widening of this segment by 2025. Improvements within this corridor should focus on operational efficiencies (i.e., signal coordination, modified timings) and enhancements to improve bicycle and pedestrian travel as needed. -The construction of the ~~e~~17th Street-Riverside Avenue on-ramp to southbound US 101, scheduled for construction in 2012, will ~~significantly~~ improve operations at the intersection of 13th Street and Riverside Avenue.

Niblick Road from Spring Street to South River Road – This segment serves as the third major crossing of the Salinas River in the City, and is projected to have a daily capacity utilization of 104% in Year 2025. This corresponds to increased congestion, particularly during commute periods, as well as potential route changes to parallel routes and/or changes to the times people travel to avoid congestion. The projected capacity utilization of slightly more than 100% does not justify the widening of this roadway by 2025 but should be re-evaluated during the next Circulation Element update. If the bridge were widened, congestion would continue to occur at the intersections on either side of the bridge during some portion of the commute periods. Furthermore, widening the bridge to a 6-lane arterial would result in a capacity utilization of ~~72~~71%, which would reduce vehicle delays, but would also support higher vehicle speeds and would conflict with the City's multi-modal goals and desire to maintain its small town character.

Spring Street from Niblick Road to 24th Street – Spring Street is the most heavily utilized corridor in the City to the west of Highway 101. This area is characterized by a well-developed grid network offering numerous routes of travel to most destinations. Grid systems are effective at distributing traffic and provide a more pedestrian- and bicycle-friendly environment. Given the grid system's ability to distribute traffic, and the desire to maintain mobility for all modes, no widenings in the Downtown area are proposed. Potential operational improvements, such as signal timing and coordination and improved ramp access to Highway 101, should be studied by the City, as should the need to signalize intersections in the area.

Creston Road – The City conducted a Plan Line study in 2007 a draft Plan Line was developed for Creston Road from Riverside Avenue to Niblick Road/Sherwood Road. The study proposed a threetwo-lane divided arterial section from River Road to Rolling Hills Road with use of roundabouts to improve pedestrian safety, bike safety and school access. –The City should strive to adopt a Plan Line and incorporate recommended improvement projects into the capital improvement and impact fee programs. identified a number of improvements to this corridor that would improve access to nearby residents and improve traffic flow. The City shall review these improvements as a part of a transportation impact fee update or the Capital Improvement Projects List update.

CIRCULATION STANDARDS AND DEVELOPMENT POLICIES

Standards and Specifications:
The City maintains standards and specifications for the dedication (right of way width) and improvement of City streets. These standards are adopted by the City Council. The City's set of adopted engineering standards contains various street types and helps to define the City roadway system-.

Plan Lines:
Plan lines should be established wherever necessary, to protect and implement the Circulation Element of the General Plan. -Plan Lines provide: planned right of ways are irregular and do not conform to adopted Standard Details. Plan Lines provide a basis for building setbacks and a source of information for residents and business owners.

- For safe, efficient and effective multi-modal transportation within the City.
- A source of information for residents, property owners and business owners.
- A basis of planning for building setbacks and development of adjacent properties.
- A basis for regulation and direction regarding the extension of existing and new arterial streets.

Private Streets:
Private streets are those which are not owned or maintained by the City. –The City should discourage private streets where future growth patterns could call for full City standard streets. -Appropriate applications for private streets include development in multifamily residential projects where traffic is limited to internal circulation needs. Private streets should provide equivalent structural integrity of public streets constructed from Standard Specifications.

Traffic Signals:
The City uses a warrant system to set priorities for installing traffic signals at intersections. -The purpose of the warrant analysis is to provide a rational basis for identifying and prioritizing intersections with the greatest need for signal installation. -At all intersections where warrants are met, an analysis shall be conducted to determine if a roundabout is a feasible or preferred alternative.

Bridges:
The Circulation Master Plan Map identifies all proposed bridge crossings of the Salinas River and Huer Huero Creek. The Parallel Routes Study focuses on Huer Huero crossings, and the City will determine the priority of bridges as development occurs. The City is not planning to widen any existing bridges prior to 2025. -The City will update development fees so that new development will pay for its share of the need for new bridges.

Sidewalks:
Sidewalks or paths are required to be constructed on all public streets. -LED lighted crosswalks are encouraged, particularly on routes to schools and/or public destinations where enhanced visibility is needed.

Railroad Crossings:
The City should coordinate with the San Luis Obispo Council of Governments and railroad operators to secure funding to improve all existing railroad crossings in the City for bicycle, pedestrian, and vehicular safety.

Bike Lanes and Related Facilities:
To further encourage bicycle travel as a means of reducing Vehicle Miles Traveled (VMT,) the City has established a system of bike lanes via adoption of a ~~Bikeways~~ Bike Master Plan in 2009. The Bikeways Plan should be updated periodically to: 1) review system performance, 2) ensure that that the City qualifies for all potential grant opportunities, and 3) update implementation priorities.

Transportation Demand Management (TDM):
The City should encourage firms located within the City limits to use flexible work hours (flex-time) and other traffic demand management strategies to reduce traffic congestion during typical commute periods. To the extent possible, companies should also be encouraged to share parking facilities with other adjacent uses through easement agreements. The City should also encourage residential developers to design and build project elements that support TDM such as car-share and bike-share facilities, neighborhood electric vehicle (NEV) operation, transit stop amenities, and neighborhood transportation centers. TDM elements can be required through the development agreement process and as optional mitigation to reduce anticipated traffic impacts.

Paso Robles Event Center:
The City should continue to coordinate with the Paso Robles Event Center, Highway Patrol, and private property owners to provide safe, efficient, and effective traffic flow and parking during the Midstate Fair in July and August and during other major special events. The City should encourage regional ~~bus~~ transit service (e.g., bus, shuttle, park and ride facilities, etc.) from southern communities in the County to the Paso Robles Event Center.

Emergency Evacuation Routes:
The City should continue to coordinate with the County, Highway Patrol, and other agencies to provide effective emergency evacuation routes for local, Countywide, and Statewide emergencies. The City should address emergency evacuation routes as part of the development of a community-wide Disaster Response Plan.

Development Policies:
As conditions of approval of Subdivision (Tract and Parcel Maps) and Development Plans (Planned Developments, Conditional Use Permits, and as applicable, Building Permits,) developers should be responsible for the following:

1. ~~Incorporate~~ Incorporating circulation design elements that keep traffic "calm", encourage walking and bicycling and enhance the overall livability of the community. Circulation design elements may include, differing pavement types, night lighting and traffic calming measures, ~~including~~such as, but not limited to, landscaped traffic circles, ~~and~~ medians, and narrow streets. ~~narrowing.~~
2. Dedication ~~to provide~~of a minimum of one half of the right of way of adjacent streets, as indicated by the Standard Details and Specifications ~~CMP unless a precise plan line showing offset dedications has been~~ adopted by the City Council. An adopted Plan Line will also provide direction for required dedications and building setbacks.

3. Improvement of any and all streets and alleys that border development sites, to the centerline plus 12-feet or beyond if necessary, to provide safe access in the judgment of the City Engineer. Medians should also be installed in accordance with the direction of the City Engineer.
4. Improvement of all interior and adjacent streets and alleys to City standards and specifications.
5. Provision of adequate access to all parcels, whether existing, proposed, or potential (from future subdivision~~;~~) this may entail planning street extensions beyond the boundaries of a project.
6. Provision of adequate access for emergency vehicles and for emergency evacuation for each development phase.
7. Design of local streets and access to parcels in such a manner as to minimize impacts to safe and efficient traffic flow.
8. Design of streets to minimize grading.
9. Provision of off-site improvements where necessary to mitigate traffic impacts that may be created by a development project.
10. Construction of required street improvements ~~shall occur~~ prior to occupancy of new ~~construction~~development.
11. Provision of shared driveways and parking lots where necessary to reduce the number of driveways into a street in order to reduce potential traffic conflicts.
12. Limited ~~or restrict~~ access on all arterials.
13. Payment of ~~*any*~~ traffic mitigation fees ~~that have been developed consistent with the requirements of AB 1600 and~~ adopted by the City Council, or ~~are~~ as required for mitigation identified through an environmental review process.

APPENDIX A:
ROADWAY CAPACITY UTILIZATION ANALYSIS

The following tables provide supporting details in the roadway capacity utilization analysis summarized in Table CE-1 for the base (2008) and future (2025) analysis years.

PASO ROBLES CIRCULATION ELEMENT DAILY ROADWAY LEVEL OF SERVICE SUMMARY
BASE YEAR 2008

STREET	SEGMENT	COUNT	FACILITY TYPE	LANES	ADT	LEVEL OF SERVICE CAPACITIES A	B	C	D	E	LOS	CAPACITY UTILIZATION
CITY SEGMENTS												
24TH ST	SPRING ST TO US 101	15,682	ARTERIAL	2	12,200	0	0	9,100	16,700	17,700	D	89%
AIRPORT RD	SR 46 TO DRY CREEK RD	5,351	ARTERIAL	2	3,570	0	0	9,100	16,700	17,700	C	30%
CHAROLAIS RD	S RIVER RD TO RAMBOULLET	7,073	ARTERIAL	2*	4,140	0	0	13,100	20,600	21,700	C	33%
CHAROLAIS RD	RAMBOUILLET RD TO CRESTON	4,747	ARTERIAL	2*	3,410	0	0	13,100	20,600	21,700	C	22%
13TH ST	SPRING ST TO RIVERSIDE AVE	8,628	ARTERIAL	2	6,200	0	0	9,100	16,700	17,700	C	49%
13TH ST	RIVERSIDE AVE TO S RIVER	25,354	ARTERIAL	4	29,280	22,000	25,000	29,000	35,400	37,400	C	68%
CRESTON RD	S RIVER RD TO GOLDEN HILL	15,765	ARTERIAL	2*	10,680	0	0	13,100	20,600	21,700	D	73%
CRESTON RD	GOLDEN HILL RD TO NIBLICK	17,689	ARTERIAL	4	14,990	22,000	25,000	29,000	35,400	37,400	A	47%
CRESTON RD	NIBLICK RD TO CHAROLAIS	5,482	ARTERIAL	4	1,880	22,000	25,000	29,000	35,400	37,400	A	15%
CRESTON RD	CHAROLAIS RD TO EAST CITY LIMIT	4,156	ARTERIAL	3	2,680	0	0	13,100	20,600	21,700	C	19%
DALLONS DR	BUENA VISTA RD TO GOLDEN HILL	1,330	ARTERIAL	2	1,410	0	0	9,100	16,700	17,700	C	8%
GOLDEN HILL RD	DALLONS DR TO SR 46	2,233	ARTERIAL	2	6,930	0	0	9,100	16,700	17,700	C	13%
GOLDEN HILL RD	CRESTON RD TO ROLLING HILL	9,250	ARTERIAL	3	7,950	0	0	13,100	20,600	21,700	C	43%
GOLDEN HILL RD	ROLLING HILLS RD TO UNION	11,159	ARTERIAL	3	10,540	0	0	13,100	20,600	21,700	C	51%
GOLDEN HILL RD	UNION RD TO SR46	7,063	ARTERIAL	2	7,500	0	0	9,100	16,700	17,700	C	40%
LINNE RD	FONTANA RD TO EAST CITY	4,145	ARTERIAL	2	2,570	0	0	9,100	16,700	17,700	C	23%
NACIMIENTO LAKE DR	WEST CITY LIMIT	7,260	ARTERIAL	2	4,870	0	0	9,100	16,700	17,700	C	41%
NIBLICK RD	SPRING ST TO S RIVER	30,055	ARTERIAL	4	31,430	22,000	25,000	29,000	35,400	37,400	D	80%
NIBLICK RD	S RIVER RD TO MELODY DR	19,400	ARTERIAL	4	16,960	22,000	25,000	29,000	35,400	37,400	A	52%
NIBLICK RD	MELODY DR TO CRESTON RD	14,077	ARTERIAL	4	13,970	22,000	25,000	29,000	35,400	37,400	A	38%
N RIVER RD	UNION RD TO SR 46E	2,749	COLLECTOR	2	1,920	8,000	9,500	10,500	12,000	13,500	A	20%
N RIVER RD	SR46E TO NORTH CITY LIMIT	1,176	COLLECTOR	2	30	8,000	9,500	10,500	12,000	13,500	A	9%
ROLLING HILLS RD	CRESTON RD TO GOLDEN HILL	2,797	ARTERIAL	2	1,730	0	0	9,100	16,700	17,700	C	16%
PASO ROBLES ST	FREEWAY OFFRAMP TO CRESTON	5,820	LOCAL	2	7,230	1,900	3,900	5,800	8,200	9,600	D	61%
RIVER OAKS DR	N RIVER RD TO BUENA VISTA	1,917	ARTERIAL	2	1,800	0	0	9,100	16,700	17,700	C	11%
RIVERSIDE AVE	13TH ST TO 24TH ST	11,776	ARTERIAL	2	10,890	0	0	9,100	16,700	17,700	D	67%
SHERWOOD RD	CRESTON RD TO FONTANA	9,985	ARTERIAL	2	10,350	0	0	9,100	16,700	17,700	D	56%
S RIVER RD	SOUTH CITY LIMITS TO CHAROLAIS	2,309	COLLECTOR	2	1,690	8,000	9,500	10,500	12,000	13,500	A	17%
S RIVER RD	SERENADE RD TO NIBLICk	12,849	ARTERIAL	4	9,670	22,000	25,000	29,000	35,400	37,400	A	34%
S RIVER RD	NIBLICK RD TO NAVAJO	13,359	ARTERIAL	4	12,900	22,000	25,000	29,000	35,400	37,400	A	36%
SPRING ST	10TH ST TO 11TH ST	13,913	ARTERIAL	2*	14,070	0	0	13,100	20,600	21,700	D	64%
SPRING ST	16TH ST TO 17TH ST	13,790	ARTERIAL	2*	10,190	0	0	13,100	20,600	21,700	D	64%
SPRING ST	28TH ST TO 30TH ST	4,890	ARTERIAL	2*	4,930	0	0	13,100	20,600	21,700	C	23%
UNION RD	N RIVER RD TO KLECK RD	5,536	ARTERIAL	2*	5,650	0	0	13,100	20,600	21,700	C	26%
UNION RD	KLECK RD TO GOLDEN HILL	5,277	ARTERIAL	2	4,670	0	0	9,100	16,700	17,700	C	30%
UNION RD	GOLDEN HILL RD TO SR46E	7,847	ARTERIAL	2*	5,020	0	0	13,100	20,600	21,700	C	36%
UNION RD	SR46E TO EAST CITY LIMIT	3,256	ARTERIAL	2*	1,530	0	0	13,100	20,600	21,700	C	15%
BUENA VISTA DR	SR 46E TO EXPERIMENTAL STATION	4,427	ARTERIAL	2*	4,820	0	0	13,100	20,600	21,700	C	20%
BUENA VISTA DR	NORTH OF CUESTA COLLEGE	2,592	ARTERIAL	2*	2,730	0	0	13,100	20,600	21,700	C	12%
DRY CREEK RD	AIRPORT RD TO SR 46E	1,260	ARTERIAL	2	1,240	0	0	9,100	16,700	17,700	C	7%
NICKERSON DR	NIBLICK RD TO CRESTON	2,014	COLLECTOR	2	820	8,000	9,500	10,500	12,000	13,500	A	15%
PINE ST	6TH ST TO 13TH ST	3,402	LOCAL	2	2,750	1,900	3,900	5,800	8,200	9,600	B	35%
RAMADA DR	SR 46W TO CALLE PROPANE	1,734	LOCAL	2	370	1,900	3,900	5,800	8,200	9,600	A	18%
RAMADA DR	SR 46 W TO SOUTH CITY	3,137	LOCAL	2	370	1,900	3,900	5,800	8,200	9,600	B	33%

PASO ROBLES CIRCULATION ELEMENT DAILY ROADWAY LEVEL OF SERVICE SUMMARY
BASE YEAR 2008

STREET	SEGMENT	COUNT	FACILITY TYPE	LANES	ADT	LEVEL OF SERVICE CAPACITIES					LOS	CAPACITY UTILIZATION
						A	B	C	D	E		
RAMBOUILLET RD	CHAROLAIS RD TO NIBLICK	1,582	COLLECTOR	2	1,100	8,000	9,500	10,500	12,000	13,500	A	12%
S RIVER RD	NAVAJO RD TO CRESTON	11,226	ARTERIAL	2	9,260	0	0	9,100	16,700	17,700	D	63%
THEATRE DR	SR 46W TO SOUTH CITY LIMIT	9,606	ARTERIAL	2*	13,390	0	0	13,100	20,600	21,700	C	44%
S VINE ST	SR 46W TO 1ST ST	4,842	ARTERIAL	2	3,350	0	0	9,100	16,700	17,700	C	27%
VINE ST	3RD TO 4TH ST	4,037	COLLECTOR	2	1,730	8,000	9,500	10,500	12,000	13,500	A	30%
VINE ST	30TH ST TO 32ND ST	341	COLLECTOR	2	180	8,000	9,500	10,500	12,000	13,500	A	3%
SPRING ST	3RD ST TO 4TH ST	19,332	ARTERIAL	2*	18,400	0	0	13,100	20,600	21,700	D	89%
SPRING ST	6TH ST TO 7TH ST	15,635	ARTERIAL	2*	15,690	0	0	13,100	20,600	21,700	D	72%
ADJACENT JURISDICTIONS												
US 101	AT MONTEREY RD	22,700	FREEWAY	4	23,960	28,000	43,200	61,600	74,400	80,000	A	28%
US 101	SPRING TO SR 46E	20,000	FREEWAY	4	23,290	28,000	43,200	61,600	74,400	80,000	A	25%
US 101	SR 46E TO 13TH	35,500	FREEWAY	4	48,990	28,000	43,200	61,600	74,400	80,000	B	44%
US 101	NIBLICK TO SR 46W	64,000	FREEWAY	4	78,150	28,000	43,200	61,600	74,400	80,000	D	80%
US 101	S/O SR 46 W RAMPS	53,000	FREEWAY	4	66,660	28,000	43,200	61,600	74,400	80,000	C	66%
SR 46 E	US 101 TO UNION	26,600	EXPRESSWAY	4	30,320	26,400	30,000	34,800	42,480	44,880	B	59%
SR 46 E	UNION TO AIRPORT	24,800	HIGHWAY	4	23,990	21,400	35,200	50,600	65,600	73,000	B	34%
SR 46 E	AIRPORT TO DRY CREEK	19,700	HIGHWAY	2	20,480	10,700	17,600	25,300	32,800	36,500	C	54%
DRY CREEK	W/O JARDINE	1,300	ARTERIAL	2	550	0	0	9,100	16,700	17,700	C	7%
UNION	W/O PENMAN SPRINGS	3,300	ARTERIAL	2	1,530	0	0	9,100	16,700	17,700	C	19%
LINNE	W/O PENMAN SPRINGS	4,100	ARTERIAL	2	2,560	0	0	9,100	16,700	17,700	C	23%
CRESTON	N/O NEAL SPRINGS	4,200	ARTERIAL	2	2,680	0	0	9,100	16,700	17,700	C	24%
S RIVER	N/O SANTA YSABEL	2,300	COLLECTOR	2	1,690	8,000	9,500	10,500	12,000	13,500	A	17%
RAMADA	S/O VOLPI YSABEL	3,100	LOCAL	2	370	1,900	3,900	5,800	8,200	9,600	B	32%
THEATRE	N/O NUTWOOD	9,600	ARTERIAL	2	11,550	0	0	9,100	16,700	17,700	D	54%
SR 46 W	W/O GAHAN	7,200	HIGHWAY	2	2,760	10,700	17,600	25,300	32,800	36,500	A	20%
NACIMIENTO LAKE	W/O MUSTANG SPRINGS	7,300	ARTERIAL	2	4,870	0	0	9,100	16,700	17,700	C	41%

* Note that an asterisk (*) indicates the prescence of a raised median or two-way left-turn lane on a two-lane arterial.

PASO ROBLES CIRCULATION ELEMENT DAILY ROADWAY LEVEL OF SERVICE SUMMARY
PROPOSED CIRCULATION ELEMENT 2025

STREET	SEGMENT	FACILITY TYPE	LANES	ADT	LEVEL OF SERVICE CAPACITIES A	B	C	D	E	LOS	CAPACITY UTILIZATION
CITY SEGMENTS											
24TH ST	SPRING ST TO US 101	ARTERIAL	2	14,100	0	0	9,100	16,700	17,700	D	80%
AIRPORT RD	SR 46 TO DRY CREEK RD	ARTERIAL	2	4,000	0	0	9,100	16,700	17,700	C	23%
CHAROLAIS RD	S RIVER RD TO RAMBOULLET	ARTERIAL	2*	11,500	0	0	13,100	20,600	21,700	C	53%
CHAROLAIS RD	RAMBOUILLET RD TO CRESTON	ARTERIAL	2*	9,000	0	0	13,100	20,600	21,700	C	41%
13TH ST	SPRING ST TO RIVERSIDE AVE	ARTERIAL	2	11,200	0	0	9,100	16,700	17,700	D	63%
13TH ST	RIVERSIDE AVE TO S RIVER	ARTERIAL	4	32,200	22,000	25,000	29,000	35,400	37,400	D	86%
CRESTON RD	S RIVER RD TO GOLDEN HILL	ARTERIAL	2*	19,800	0	0	13,100	20,600	21,700	D	91%
CRESTON RD	GOLDEN HILL RD TO NIBLICK	ARTERIAL	4	25,200	22,000	25,000	29,000	35,400	37,400	C	67%
CRESTON RD	NIBLICK RD TO CHAROLAIS	ARTERIAL	4	8,000	0	0	13,100	20,600	21,700	C	37%
CRESTON RD	CHAROLAIS RD TO EAST CITY LIMIT	ARTERIAL	3	7,400	0	0	13,100	20,600	21,700	C	34%
DALLONS DR	BUENA VISTA RD TO GOLDEN HILL	ARTERIAL	2	2,600	0	0	9,100	16,700	17,700	C	15%
GOLDEN HILL RD	DALLONS DR TO SR 46	ARTERIAL	2	12,800	22,000	25,000	29,000	35,400	37,400	A	34%
GOLDEN HILL RD	CRESTON RD TO ROLLING HILL	ARTERIAL	3	13,800	0	0	13,100	20,600	21,700	D	64%
GOLDEN HILL RD	ROLLING HILLS RD TO UNION	ARTERIAL	3	17,100	22,000	25,000	29,000	35,400	37,400	A	46%
GOLDEN HILL RD	UNION RD TO SR46	ARTERIAL	2	11,100	22,000	25,000	29,000	35,400	37,400	A	30%
LINNE RD	FONTANA RD TO EAST CITY	ARTERIAL	2	10,700	0	0	9,100	16,700	17,700	D	60%
NACIMIENTO LAKE DR	WEST CITY LIMIT	ARTERIAL	2	9,700	0	0	9,100	16,700	17,700	D	55%
NIBLICK RD	SPRING ST TO S RIVER	ARTERIAL	4	38,100	22,000	25,000	29,000	35,400	37,400	F	102%
NIBLICK RD	S RIVER RD TO MELODY DR	ARTERIAL	4	25,400	22,000	25,000	29,000	35,400	37,400	C	68%
NIBLICK RD	MELODY DR TO CRESTON RD	ARTERIAL	4	19,700	22,000	25,000	29,000	35,400	37,400	A	53%
N RIVER RD	UNION RD TO SR 46E	COLLECTOR	2	4,200	8,000	9,500	10,500	12,000	13,500	A	31%
N RIVER RD	SR46E TO NORTH CITY LIMIT	COLLECTOR	2	1,300	8,000	9,500	10,500	12,000	13,500	A	10%
ROLLING HILLS RD	CRESTON RD TO GOLDEN HILL	ARTERIAL	2	3,600	0	0	9,100	16,700	17,700	C	20%
PASO ROBLES ST	FREEWAY OFFRAMP TO CRESTON	LOCAL	2	5,600	1,900	3,900	5,800	8,200	9,600	C	58%
RIVER OAKS DR	N RIVER RD TO BUENA VISTA	ARTERIAL	2	2,600	0	0	9,100	16,700	17,700	C	15%
RIVERSIDE AVE	13TH ST TO 24TH ST	ARTERIAL	2	13,700	0	0	13,100	20,600	21,700	D	63%
SHERWOOD RD	CRESTON RD TO FONTANA	ARTERIAL	2	16,200	0	0	13,100	20,600	21,700	D	75%
S RIVER RD	SOUTH CITY LIMITS TO CHAROLAIS	COLLECTOR	2	2,600	8,000	9,500	10,500	12,000	13,500	A	19%
S RIVER RD	SERENADE RD TO NIBLICk	ARTERIAL	4	17,400	22,000	25,000	29,000	35,400	37,400	A	47%
S RIVER RD	NIBLICK RD TO NAVAJO	ARTERIAL	4	15,100	22,000	25,000	29,000	35,400	37,400	A	40%
SPRING ST	10TH ST TO 11TH ST	ARTERIAL	2*	15,000	0	0	13,100	20,600	21,700	D	69%
SPRING ST	16TH ST TO 17TH ST	ARTERIAL	2*	17,900	0	0	13,100	20,600	21,700	D	82%
SPRING ST	28TH ST TO 30TH ST	ARTERIAL	2*	6,900	0	0	13,100	20,600	21,700	C	32%
UNION RD	N RIVER RD TO KLECK RD	ARTERIAL	2*	9,000	0	0	13,100	20,600	21,700	C	41%
UNION RD	KLECK RD TO GOLDEN HILL	ARTERIAL	2	9,100	0	0	9,100	16,700	17,700	C	51%
UNION RD	GOLDEN HILL RD TO SR46E	ARTERIAL	2*	14,100	0	0	13,100	20,600	21,700	D	65%
UNION RD	SR46E TO EAST CITY LIMIT	ARTERIAL	2*	4,600	0	0	13,100	20,600	21,700	C	21%
BUENA VISTA DR	SR 46E TO EXPERIMENTAL STATION	ARTERIAL	2*	6,800	0	0	13,100	20,600	21,700	C	31%
BUENA VISTA DR	NORTH OF CUESTA COLLEGE	ARTERIAL	2*	3,500	0	0	13,100	20,600	21,700	C	16%
DRY CREEK RD	AIRPORT RD TO SR 46E	ARTERIAL	2	3,800	0	0	9,100	16,700	17,700	C	21%
NICKERSON DR	NIBLICK RD TO CRESTON	COLLECTOR	2	2,400	8,000	9,500	10,500	12,000	13,500	A	18%
PINE ST	6TH ST TO 13TH ST	LOCAL	2	3,000	1,900	3,900	5,800	8,200	9,600	B	31%
RAMADA DR	SR 46W TO CALLE PROPANE	LOCAL	2	4,700	1,900	3,900	5,800	8,200	9,600	C	49%
RAMADA DR	SR 46 W TO SOUTH CITY	LOCAL	2	6,100	1,900	3,900	5,800	8,200	9,600	D	64%

PASO ROBLES CIRCULATION ELEMENT DAILY ROADWAY LEVEL OF SERVICE SUMMARY
PROPOSED CIRCULATION ELEMENT 2025

STREET	SEGMENT	FACILITY TYPE	LANES	ADT	LEVEL OF SERVICE CAPACITIES A	B	C	D	E	LOS	CAPACITY UTILIZATION
RAMBOUILLET RD	CHAROLAIS RD TO NIBLICK	COLLECTOR	2	1,500	8,000	9,500	10,500	12,000	13,500	A	11%
S RIVER RD	NAVAJO RD TO CRESTON	ARTERIAL	2	13,700	0	0	9,100	16,700	17,700	D	77%
THEATRE DR	SR 46W TO SOUTH CITY LIMIT	ARTERIAL	2*	12,300	0	0	13,100	20,600	21,700	C	57%
S VINE ST	SR 46W TO 1ST ST	ARTERIAL	2	12,700	0	0	9,100	16,700	17,700	D	72%
VINE ST	3RD TO 4TH ST	COLLECTOR	2	5,500	8,000	9,500	10,500	12,000	13,500	A	41%
VINE ST	30TH ST TO 32ND ST	COLLECTOR	2	1,200	8,000	9,500	10,500	12,000	13,500	A	9%
SPRING ST	3RD ST TO 4TH ST	ARTERIAL	2*	22,700	0	0	13,100	20,600	21,700	F	105%
SPRING ST	6TH ST TO 7TH ST	ARTERIAL	2*	16,700	0	0	13,100	20,600	21,700	D	77%
ADJACENT JURISDICTIONS											
US 101	AT MONTEREY RD	FREEWAY	4	50,400	28,000	43,200	61,600	74,400	80,000	C	63%
US 101	SPRING TO SR 46E	FREEWAY	4	47,800	28,000	43,200	61,600	74,400	80,000	C	60%
US 101	SR 46E TO 13TH	FREEWAY	4	67,000	28,000	43,200	61,600	74,400	80,000	D	84%
US 101	NIBLICK TO SR 46W	FREEWAY	4	93,300	28,000	43,200	61,600	74,400	80,000	F	117%
US 101	S/O SR 46 W RAMPS	FREEWAY	4	79,000	28,000	43,200	61,600	74,400	80,000	E	99%
SR 46 E	US 101 TO UNION	EXPRESSWAY	4	48,900	26,400	30,000	34,800	42,480	44,880	F	109%
SR 46 E	UNION TO AIRPORT	HIGHWAY	4	38,000	21,400	35,200	50,600	65,600	73,000	C	52%
SR 46 E	AIRPORT TO DRY CREEK	HIGHWAY	2	34,400	21,400	35,200	50,600	65,600	73,000	B	47%
DRY CREEK	W/O JARDINE	ARTERIAL	2	1,600	0	0	9,100	16,700	17,700	C	9%
UNION	W/O PENMAN SPRINGS	ARTERIAL	2	4,600	0	0	9,100	16,700	17,700	C	26%
LINNE	W/O PENMAN SPRINGS	ARTERIAL	2	7,000	0	0	9,100	16,700	17,700	C	40%
CRESTON	N/O NEAL SPRINGS	ARTERIAL	2	8,500	0	0	9,100	16,700	17,700	C	48%
S RIVER	N/O SANTA YSABEL	COLLECTOR	2	2,600	8,000	9,500	10,500	12,000	13,500	A	19%
RAMADA	S/O VOLPI YSABEL	LOCAL	2	6,100	1,900	3,900	5,800	8,200	9,600	D	64%
THEATRE	N/O NUTWOOD	ARTERIAL	2	13,600	0	0	9,100	16,700	17,700	D	77%
SR 46 W	W/O GAHAN	HIGHWAY	2	19,400	10,700	17,600	25,300	32,800	36,500	C	53%
NACIMIENTO LAKE	W/O MUSTANG SPRINGS	ARTERIAL	2	9,700	0	0	9,100	16,700	17,700	D	55%

* Note that an asterisk (*) indicates the prescence of a raised median or two-way left-turn lane on a two-lane arterial.

APPENDIX B:
CITY OF EL PASO DE ROBLES
TRAVEL DEMAND FORECASTING
FINAL MODEL DEVELOPMENT REPORT

The City of El Paso de Robles chose to update its travel demand forecasting (TDF) model to support long-range planning efforts and to provide a mechanism for evaluating the potential effects of future land development and transportation improvement projects. The TDF model was used as a tool to support the development of the City's Circulation Element Update.

The attached Final Model Development Report describes the model development process, including the sources of data used to develop key model inputs and check them for reasonableness, and presents model validation results, which measure the model's accuracy.

City of El Paso de Robles

Travel Demand Forecasting Model: Final

Prepared for:

Prepared by:

FEHR & PEERS
TRANSPORTATION CONSULTANTS

160 W. Santa Clara Street
Suite 675
San José, CA 95113

August 5, 2009

Final

Paso Robles
Travel Demand Forecasting Model

Prepared for:

City of El Paso de Robles

Prepared by:

Fehr & Peers

August 5, 2009

SJ07-1014

LIST OF FIGURES

Figure 1 Model Area 4

Figure 2 – Model User Interface 5

Figure 3 – File and Folder Structure 6

Figure 4 – Components of the City of Paso Robles Travel Demand Model 8

Figure 6 Base Year (2008) Roadway Functional Classification 24

Figure 7 Base Year (2008) Roadway Total Through Lanes 25

Figure 8 Base Year (2008) Roadway Free-Flow Speed 26

Figure 9 Daily Validation Locations 30

Figure 10 Daily and Peak Hour Screenline Locations 31

Figure 11 Daily Model Validation by Location 33

Figure 12 Daily Model Validation Scatter Plots 34

Figure 13 AM Peak Hour Validation Locations 45

Figure 14 AM Peak Hour Model Validation by Location 46

Figure 15 AM Peak Hour Model Validation Scatter Plots 47

Figure 16 PM Peak Hour Model Validation by Location 48

Figure 17 PM Peak Hour Model Validation Scatter Plots 49

Figure A-1 Traffic Analysis Zones (TAZ) – Key Map 2

Figure A-2 Traffic Analysis Zones (TAZ) – Inset 1 3

Figure B-1A Residential (DU) Change (2025-2008) 2

Figure B-1B Commercial (KSF) Change (2025-2008) 3

Figure B-2A Industrial (KSF) Change (2025-2008) 4

LIST OF TABLES

TABLE 1 EXTERNAL STATIONS 12

TABLE 2 LAND USE CATEGORIES 13

TABLE 3 LAND USE TYPE RELATIONSHIP TO ASSESSORS' PARCEL LAND USE CODES 14

TABLE 4 LINK ATTRIBUTES 17

TABLE 5 TYPICAL ROADWAY SPEEDS AND CAPACITIES 18

TABLE 6 NODE ATTRIBUTES 19

TABLE 7 PERCENT OF VEHICLE TRIPS BY TRIP PURPOSE 21

TABLE 8 TRIP GENERATION PRODUCTION AND ATTRACTION SUMMARY FOR PASO ROBLES/ATASCADERO 22

TABLE 9 BASE YEAR LAND USE COMPARISON 27

TABLE 10 TRIP PRODUCTION TO ATTRACTION RATIOS BY PURPOSE 28

TABLE 11 RESULTS OF DAILY MODEL VALIDATION 35

TABLE 12 RESULTS OF DAILY MODEL VALIDATION BY FUNCTIONAL CLASS 35

TABLE 13 RESULTS OF DAILY MODEL VALIDATION BY VOLUME RANGE 36

TABLE 14 RESULTS OF DYNAMIC VALIDATION LAND USE TESTS 38

TABLE 15 RESULTS OF DYNAMIC VALIDATION NETWORK TESTS 39

TABLE 16 PEAK HOUR FACTOR COMPARISON 41

TABLE 17 RESULTS OF PEAK HOUR MODEL VALIDATION 42

TABLE 18 RESULTS OF DAILY MODEL VALIDATION BY FUNCTIONAL CLASS 43

TABLE 19 RESULTS OF PEAK HOUR MODEL VALIDATION BY VOLUME RANGE 43

1. INTRODUCTION

BACKGROUND

The City of Paso Robles chose to update its travel demand forecasting (TDF) model to support long-range transportation planning efforts and to provide a mechanism for evaluating the potential effects of future land development and transportation improvement projects. The Paso Robles model was created as a sub-area model within the San Luis Obispo Council of Governments (SLOCOG) regional travel demand model. The SLOCOG model was originally created to aid jurisdictions within San Luis Obispo County in creating their own local travel demand models. The Paso Robles model was last updated to 2004 base year conditions. This model update refines the Paso Robles area within the SLOCOG model to reflect 2008 base year land uses and make it a viable planning tool for the local land use and roadway network.

The purpose of this study was to develop a citywide TDF model, update the key model inputs such as land use, road network and trip generation parameters, and validate the model to current (2008) conditions. The Paso Robles TDF model will be used to update the City's Circulation Element and to generate traffic volume forecasts and other travel demand data for various planning and engineering studies.

Although variations in traffic in Paso Robles occur due to the school year traffic, as well as weekend traffic entering the area from the Central Valley, the model was calibrated and validated to average, mid-week traffic conditions. The land use data, roadway network, and counts reflect April 2008 conditions.

This document describes the model development process, including the sources of data used to develop key model inputs and check them for reasonableness, and presents model validation results, which measure the model's accuracy.

STUDY AREA

Figure 1 shows the study area for the City of Paso Robles travel demand forecasting model. The full, SLOCOG model area encompasses San Luis Obispo County; however, changes to the model were focused in the City of Paso Robles. Areas outside the City were included to allow the City to evaluate the interactions that occur with other areas of San Luis Obispo County. Figure 1 also includes the roadway network, which is described in detail in Chapter 3.

GENERAL DISCUSSION OF THE TDF MODEL

This section summarizes the answers to commonly asked questions related to TDF models and City of Paso Robles's need for a TDF model.

What is a TDF Model?

A TDF model is a computer program that simulates traffic levels and patterns for a specific geographic area. The program consists of input files that summarize the area's land uses, street network, travel characteristics, and other key factors. Using this data, the model performs a series of calculations to determine the amount of trips generated, where each trip begins and ends, and the route taken by the trip. The model's output includes projections of traffic volumes on major roads.

Why Do We Need a TDF Model?

The Paso Robles TDF model is a valuable tool for the preparation of long-range transportation planning studies. The traffic model can be used to estimate the average daily and peak hour traffic volumes on the major roads in response to future growth assumptions. Using these traffic projections, transportation improvements to accommodate traffic growth can be identified.

How Do We Know if the TDF Model is Accurate?

To be deemed accurate for projecting future traffic volumes, a model must first be calibrated to a year for which accurate and well-documented land use data and traffic volumes for the model area are available. A model is considered to be accurately calibrated when it replicates the actual traffic counts on the major roads within certain ranges of error established in the "Travel Forecasting Guidelines," Caltrans, 1992 and it produces reasonable and stable responses to changes in various inputs. The City of Paso Robles TDF model has been calibrated to 2008 (base year) conditions using actual traffic counts and land use data compiled by City staff. Although 2008 data was used to calibrate the model, the base year within the database is labeled "2004" because the refined model is located within the SLOCOG model, which was calibrated to base year 2004.

The ability of a traffic model to replicate traffic counts is known as model validation. For the daily model validation, 55 roadway segments within the City, two (2) segments of the US 101 mainline, 19 ramps onto US 101 and 6 screen lines were included in the validation process. Traffic counts at these locations were compared with the base year daily, AM peak hour, and PM peak hour model projections to determine the model's accuracy.

Is the City of Paso Robles TDF Model Consistent with Standard Practices?

The City of Paso Robles TDF model is consistent in form and function with the standard traffic forecasting models used in the transportation planning profession. The model includes a land use/trip generation module, a gravity-based trip distribution model, mixed-flow OD factor matrix for vehicle occupancy, and a capacity-restrained equilibrium traffic assignment process. The traffic model utilizes Version 4.8 (Build 470) of the TransCAD Transportation GIS software, which is consistent with many of the models used by local jurisdictions in California and throughout the nation.

How Can the TDF Model be Used?

The TDF model can be used for many purposes related to planning and design of the City's transportation system. The following is a partial listing of some of the potential uses of the model.

- To update the General Plan
- To update the Street Master Plan
- To update the city-wide traffic impact fee program
- To evaluate the traffic impacts of area-wide land use plan alternatives
- To evaluate the shift in traffic resulting from a roadway improvement
- To evaluate the traffic impacts of land development proposals
- To determine trip distribution patterns of land development proposals

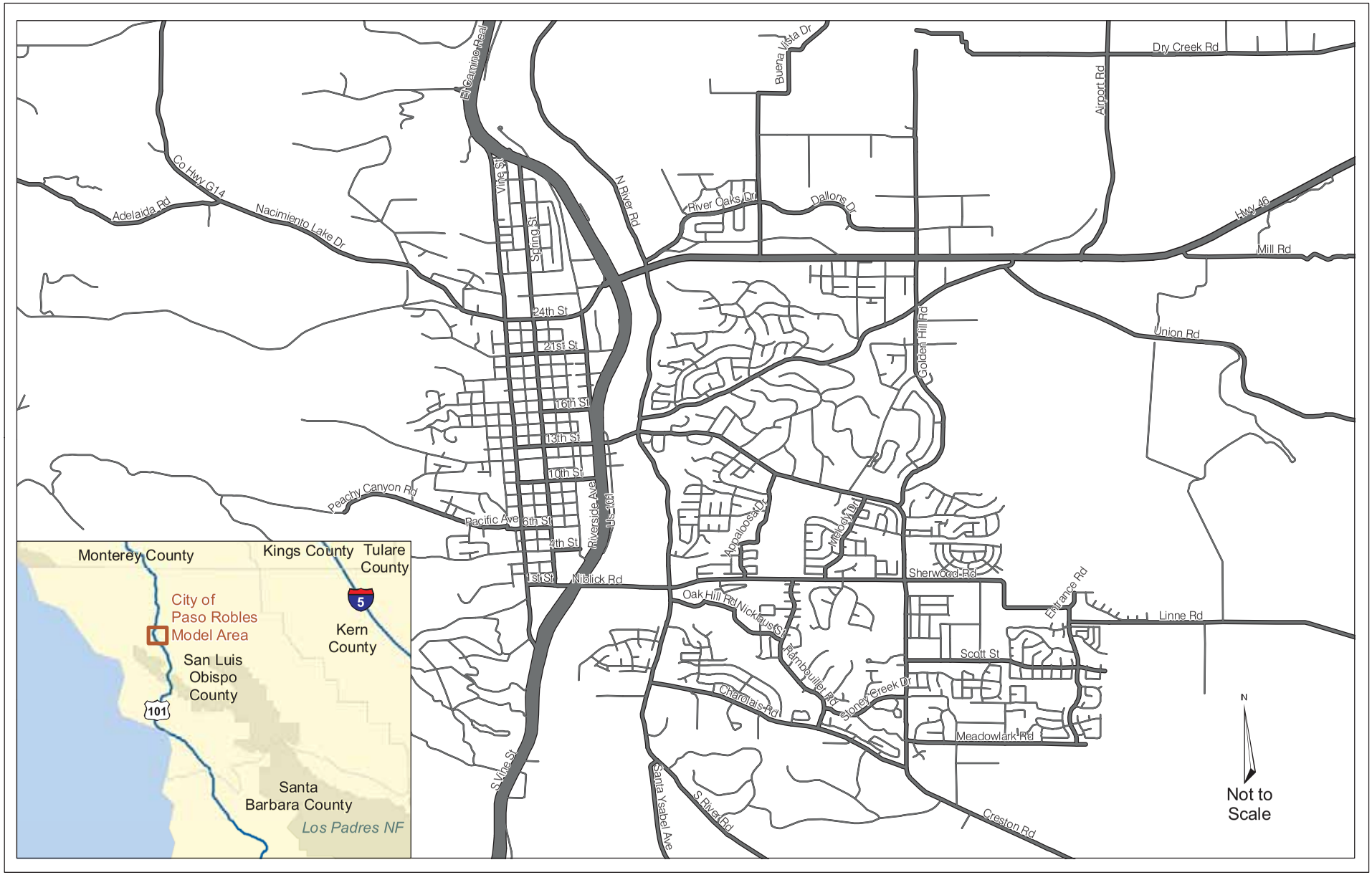
- To support the development of transportation sections of environmental documents prepared for CEQA compliance
- To support the preparation of project development reports for Caltrans

ORGANIZATION OF THIS REPORT

This report is organized into the following eight sections:

- Chapter 1 – Introduction
- Chapter 2 – Components of the Model
- Chapter 3 – Summary of the Input Data
- Chapter 4 – Description of the Model Calibration Process
- Chapter 5 – Model Results and Daily Validation
- Chapter 6 – Peak Hour Model Specifications
- Chapter 7 – Peak Hour Model Validation Results
- Chapter 8 – Future Year Models

A technical appendix is also attached, which contains model development information and operation analysis that is referenced in this report.



FEHR & PEERS
TRANSPORTATION CONSULTANTS

July 2009
SJ08-1014

CITY OF PASO ROBLES MODEL AREA

FIGURE 1

2. COMPONENTS OF THE MODEL

The Paso Robles travel demand forecasting model utilizes the TransCAD 4.8 Build 470 modeling software. Following is a description of the file and folder structure, followed by a detailed description of the model components. The model structure is the same as the SLOCOG TDF model.

FILE AND FOLDER STRUCTURE

Figure 2 shows the model user interface (UI). The buttons on the user interface activate the various steps in the model. By default, all model steps can be run in a single operation by pressing the "Trip Generation" button. These steps can be completed one at a time by checking the "Stop after stage" box and then pushing the various buttons in sequence.

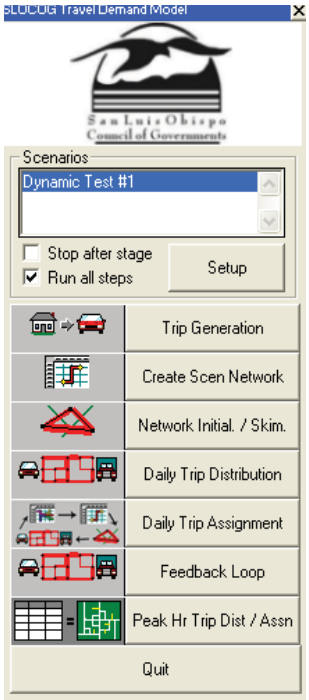


Figure 2 – Model User Interface

The model requires that some UI setup files (shown in the upper portion of **Figure 3**) be stored in the TransCAD software folder along with the TransCAD program. The model input files and output files can be stored either on the user's hard drive or in a local area network (shown in the lower portion of **Figure 3**). The model setup files are described in detail below for the Year 2008 model – similar set-up is need for the Year 2025 model.

**Please note that although the file structure naming convention assumes that the base year is 2004, all files have been updated with 2008 information.

1. **Add-ins.TXT:** This setup file stores the information about the script file name and the name of model scenario. The contents should look something like this:

   M, gisdk\\toolbox\\gisdk, GISDK Start Toolbox, GIS Developer's Kit
   D, slocog_2004_ui, SLOCOG Model, SLOCOG Model - 2004

2. **SLOCOG_2004.INI**: This setup file stores the paths for some setup files and the model folder. The contents should look something like this:

   [Model Table]
   C:\SLOCOG\Working\SLOCOG_Mod.bin
   [UI File]
   C:\Program Files\TransCAD\slocog_2004_ui.dbd
   [Scenario File]
   C:\SLOCOG\Working\SLOCOG_scen.arr
   [Data Directory]
   C:\SLOCOG\Working\

3. **Model Batch Script**: The model script, which is also know as the "resource" file (SLOCOG_2004.rsc), controls the overall model flow and also produces a user interface similar to the one shown on **Figure 2**. The script is written in a scripting language called GISDK, which is used to set up and run TransCAD models. TransCAD script is a compiled language, so the model script has been compiled and saved as slocog_2004_ui.

4. **MOD_2004.BIN:** This setup file stores the names of the model input and output files, the model parameters, and other setup information.

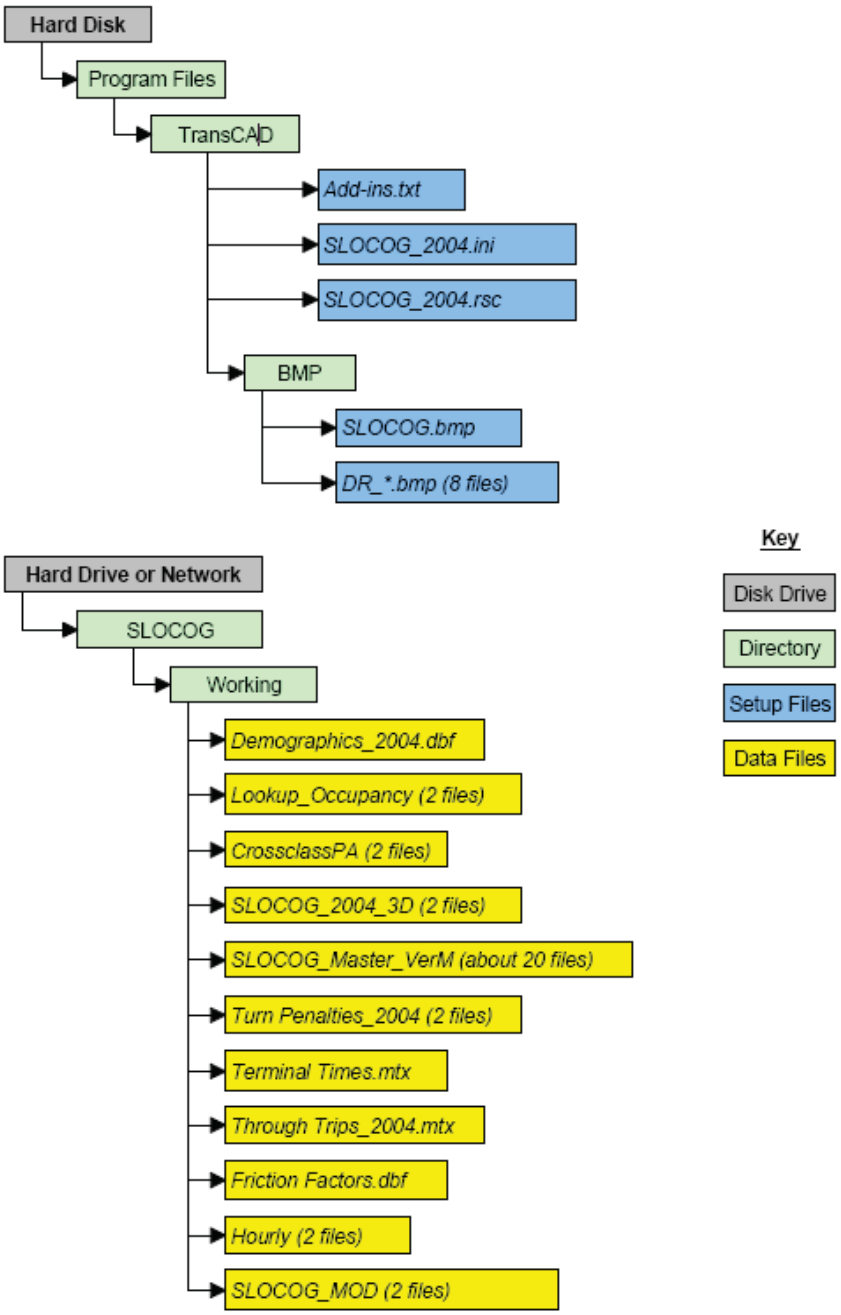


Figure 3 – File and Folder Structure

OVERVIEW OF MODEL COMPONENTS

The model consists of three kinds of components:

- Input data – The input data are files that represent different aspects of the City's road system, land use, and travel characteristics.
- Model steps – The model steps are the mathematical calculations that the model completes in determining traffic flows. These steps are performed by model batch script. Some of these steps are applicable to most traffic models, while others are unique to the SLOCOG model.
- Model outputs – The model outputs are data files produced by the model, and some are inputs to other steps in the model.

Figure 4 shows the relationship between input and output files. The individual components are described below for each step of the TDF model (trip generation, trip distribution, vehicle occupancy, and trip assignment).

Trip Generation

1. **Land Use Table *(DEMOGRAPHICS_2004.DBF)*:** This input file stores the land use characteristics of the traffic analysis zones (TAZs) and the external station weights.

   The land use data includes such items as the number of single- and multi-family dwelling units (DUs), and the square footage of commercial, office, industrial, and other non-residential land uses.

   External station weights (or factors) show the relative amount of traffic to and from each external station. These factors are used to distribute the internal-to-external and external-to-internal trip productions and attractions to the areas external to the traffic model.
2. **Occupancy Rates (*Lookup_Occupancy.DBF*):** This contains the place-level occupancy rates for single- and multi-family housing based on the 2000 U.S. Census.
3. **Revised Land Use Table (*Demographics_2004_temp.DBF*):** The dwelling units from the land use table are adjusted downwards based on their occupancy rates and stored in this file. The advantage of this approach is that it allows for differences in occupancy rates to be transparent and easily accessible for revision rather than embedded in differences in trip generation rates.
4. **Trip Generation Rates (*CROSSCLASSPA.BIN*):** This input file stores the trip generation rates by trip purpose. For example, home-based work and home-based other trips generated per single-family DU have separate trip generation rates.
5. **Trip Generation Step:** This step multiplies the land use table by the trip generation rates to produce an initial estimate of trip ends. The model then balances the trip production and attraction estimates based on the script file. The model will hold to either productions or attractions, and then factor the other estimate up or down until it equals the selected control. For most trip purposes, the model's default is to adjust attractions to balance to productions.
6. **Unbalanced Trip Ends *(PA_Unbalanced.BIN)*:** This output file stores the vehicle trip productions and attractions by trip purpose before the trip-end balancing procedure.
7. **3D Data Storage File (*SLOCOG_2004_3D.BIN*):** This data stores information about the elasticities of trip generation to the Density, Diversity and Design characteristics of each TAZ. It also stores a base case for comparative purposes.

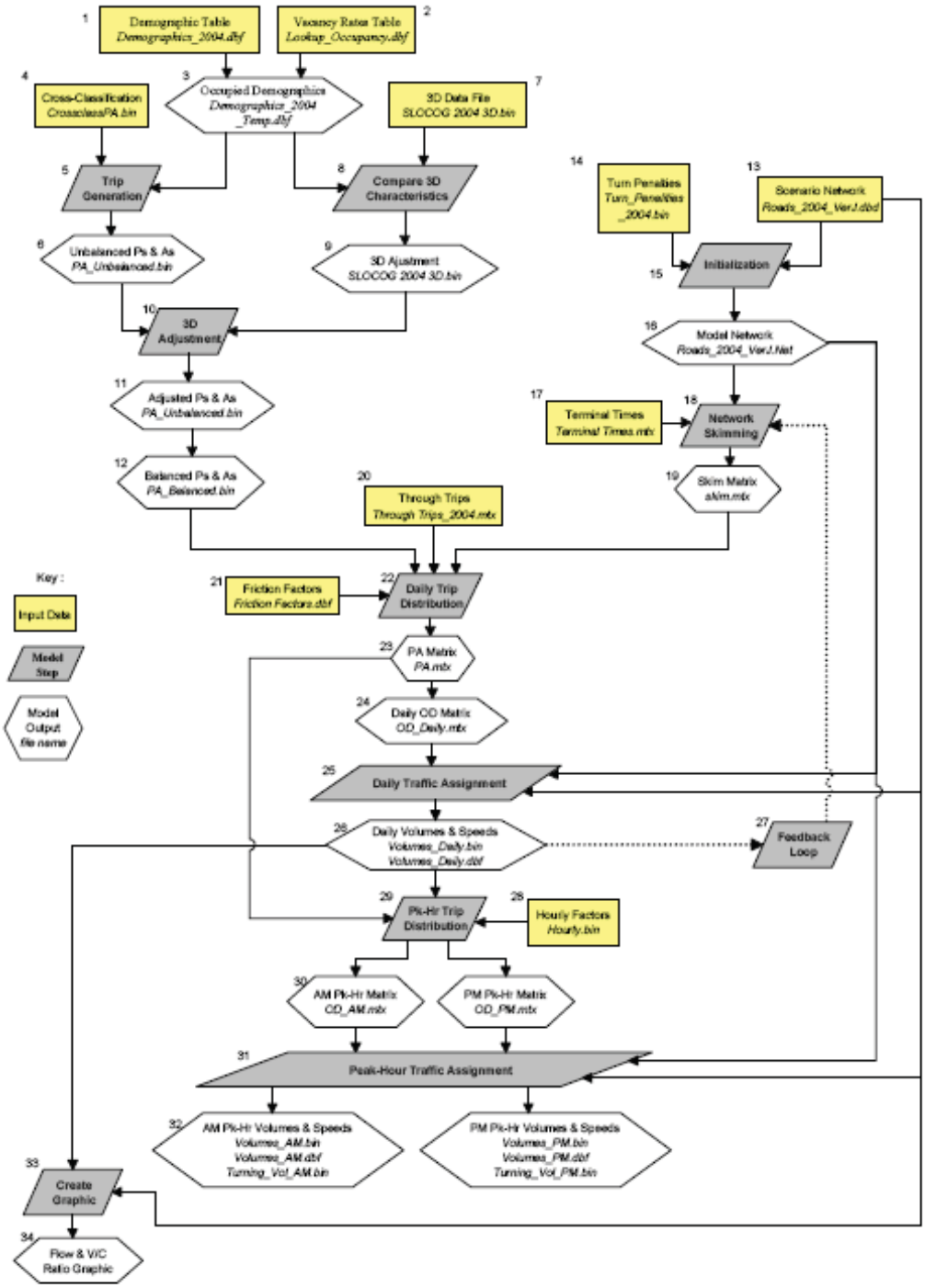


Figure 4 – Components of the City of Paso Robles Travel Demand Model

8. **Compare 3D Characteristics Step:** This step is a part of trip generation that compares the 3D characteristics of the land use for the scenario in the land use table to those of the base case in the 3D storage file and calculates the appropriate 3D adjustment factors
9. **3D Data Storage File (*SLOCOG_2004_3D.BIN*):** The adjustments produced in the last filed shown in the 3D Data Storage File (7).
10. **3D Adjustment Step:** This step is a part of trip generation that applies the 3D adjustment factors to the unbalanced trip ends.
11. **Adjusted Trip Ends *(PA_Unbalanced.BIN)*:** This file stores the adjusted trip ends by the 3D factors before the trip-end balancing procedure.
12. **Balanced Trip Ends *(PA_Balanced.BIN)*:** This output file stores the model estimate of vehicle trips for each trip purpose that begin or end in each TAZ.

Create Scenario Network

13. **Master Network *(Roads_Master_VerA.DBD)*:** This input file is a master highway network that contains highway networks for all scenarios (existing roadways and future roadway improvements). This is a family of files showing the length, location, free-flow speed, capacity, and other characteristics of the roadways in the study area.
14. **Create Scenario Network Step:** This step creates a scenario-specific highway network file from the master highway network file.
15. **Scenario Network *(Roads_2004.DBD)*:** This output file is a scenario-specific network generated in the Master Network step. This is a family of files showing the length, location, free-flow speed, capacity, and other characteristics for the specific model year.

Network Initialization

16. **Turn Penalty Table *(Turn_Penalties_2007.BIN)*:** This input file stores the turning prohibition or delay (in minutes) for specific turning movements in the model network.
17. **Network Initialization Step:** In this step, the model takes the highway network data and stores it into a format used by TransCAD.
18. **Virtual Network *(Roads_2004.NET)*:** This output file is a special TransCAD data structure that stores the important highway network data and the turn penalty information. The contents in this file cannot be viewed visually.

Network Skimming

19. **Terminal Times Matrix *(Terminal_Times.MTX)*:** This file stores the average travel times associates with the start and end of each trip, such as time spent looking for a parking place and parking. The file is in the form of TAZ-to-TAZ matrix, so each cell contains the sum of the terminal times at the origin TAZ and destination TAZ. External trip ends do not have terminal times.
20. **Network Skimming Step:** This step measures travel times for all possible routes between each pair of TAZs, based on the information contained in the highway network, and determines the shortest route. Then it adds the terminal times.
21. **Skim Matrix *(Skim.MTX)*:** This output file stores the shortest travel time between each pair of TAZs, including the terminal times. The data is stored in the form of a TAZ-to-TAZ matrix, with each cell showing the shortest travel time in minutes between each pair of zones.

Daily Trip Distribution

22. **Through Trips *(Through_Trips_2007.MTX)*:** This input file contains the number of through trips, in the form of an origin-destination (OD) matrix for external TAZs.
23. **Friction Factors *(Friction_Factors.DBF)*:** This input file contains factors determining the relative attractiveness (by trip purpose) of each destination zone based on the travel time between TAZs and the number of potential origins and destinations in each TAZ.
24. **Daily Trip Distribution Step:** This step uses four input files to determine how trips are distributed among productions and attractions. It then converts them into the origin-destination pairs for the 24-hour period.
25. **Production-Attraction Matrix *(PA.MTX)*:** This output file contains the trips from the trip generation plus the through trips. This is an intermediate product before determining the directionality of trips.
26. **Total Daily OD Matrix *(OD_Daily.MTX)*:** This output file stores the daily number of trips between each origin-destination pair for the 24-hour period.

Daily Traffic Assignment

27. **Daily Traffic Assignment Step:** The model uses an iterative assignment process whereby the quickest route is determined for each of the trips in the daily OD matrix, taking into account congestion caused by other trips.
28. **Daily Volumes *(Volumes_Daily.DBF)*:** This output file stores the daily model volumes and other outputs on each link. TransCAD typically produces these outputs as *.bin files, but the SLOCOG model also produces *.dbf files with the same information since these types of files are easier to use when linking the model outputs to other software packages.

Feedback Loop

29. **Feedback Loop Step:** In this step, the model feeds the congested travel time back into the network initialization step and repeats steps 20 through 28. One feedback loop iteration is done by default (i.e., the feedback loop is turned off).

Peak Hour Trip Distribution

30. **Hourly Factors *(Hourly.BIN)*:** This input file factors the daily OD matrix into the AM and PM Peak Hour OD matrices.
31. **Peak Hour Trip Distribution Step:** The model uses an iterative assignment process that determines the quickest route for each trip in the AM and PM peak hour OD matrices, taking into account congestion caused by other trips.
32. **AM and PM Peak-Hour OD Matrices *(OD_AM.MTX, OD_PM.MTX)*:** These output files store the number of trips between each OD pair for the AM and PM peak hours.

Peak Hour Traffic Assignment

33. **Peak Hour Traffic Assignment Step:** The model uses an iterative assignment process that determines the quickest route for each trip in the AM and PM peak hour OD matrices, taking into account congestion caused by other trips.
34. **AM and PM Peak Hour Volumes *(Volumes_AM.BIN, Volumes_PM.BIN, Turning_Vol_AM.BIN, Turning_Vol_PM.BIN)*:** Volumes_AM.BIN and Volumes_PM.BIN store the AM and PM peak hour model

volumes and other outputs on each link. The SLOCOG model produces these files in *.dbf format. The model also automatically outputs the turning volumes for study intersections. The user selects the intersection by assigning each of them a unique number in the 'study intersection' field of the node layer of the network file.

Create Graphic

35. **Create Graphic Step:** This step automatically produces a model network map showing the traffic volume as a bandwidth and congestion as a color code.
36. **Flow and V/C Ratio Graphic (*VC_Ratios.MAP*):** This graphic is useful to produce because it shows daily traffic volumes as a bandwidth and the volume/capacity ratio as a color code. This graphic can be saved as an image file such as JPEG or BMP for use with other software packages, such as embedding it in a report done in Microsoft Word.

3. SUMMARY OF THE INPUT DATA

TRAFFIC ANALYSIS ZONE (TAZ) SYSTEM

Travel demand models divide the study area into traffic analysis zones (TAZs), which the model uses to connect land uses to the roadway network. The TAZs represent physical areas containing land uses that produce or attract vehicle trip ends. A 2008 parcel-level map was obtained from the City of Paso Robles. TAZ boundaries were sketched based on political boundaries (i.e., city limit) and loading characteristics of the roadway network that include geographic boundaries such as railroad tracks and creeks.

After reviewing the existing TAZ layer used in the SLOCOG model, along with the roadway network and recent aerial photographs, Fehr & Peers refined and subdivided existing TAZ boundaries for Paso Robles area. Large TAZs in Paso Robles were split to add detail and to better replicate loading of vehicle trips to the roadway network, especially in areas where future land use changes are expected. The City of Paso Robles was divided into 232 TAZs (2,100 to 3,246). Detailed maps showing the TAZ numbers in the Paso Robles portions of the model area are included in **Appendix A.**

TAZs in other areas of the SLOCOG model were not changed. The resulting model's TAZ system includes 1,389 zones including areas outside of Area 5 (Paso Robles).

Also included in the TAZ structure are the external stations or gateways where major roadways provide access into the overall model area. These stations capture the traffic entering, exiting, or passing through the model area and were established during the development of the SLOCOG model. **Table 1** contains a list of the 9 external stations that were established for this model.

TABLE 1
EXTERNAL STATIONS

External Station ID	Description
9001	State Highway 1, Monterey County
9002	US 101, Monterey County
9003	State Highway 41, King County
9004	State Highway 46, Kern County
9005	State Highway 58, Kern County
9006	State Highway 166, Kern County (Maricopa)
9007	State Highway 33, Santa Barbara County/Ventura County
9008	US 101, Santa Barbara County (Santa Maria)
9009	State Highway 1, Santa Barbara County (Guadalupe)

Source: Fehr & Peers, September 2008.

LAND USE DATA

One of the primary inputs to the traffic model is land use data. This data is instrumental in estimating daily and peak-hour trip generation. For the purposes of this model, we used the City's parcel-level land use database as the primary information source for existing land use within the City of Paso Robles.

The land use data categories used in this model are shown in **Table 2** and are the same categories used in the SLOCOG model. The land use data contained within each TAZ was verified by several methods, including comparisons to aerial photographs and data were requested directly from certain institutions, such as schools and large apartment complexes.

Appendix B includes detailed base year (2008) land use data by TAZ in Paso Robles. Also for reference, **Table 3** show the general relationship between Paso Robles land uses and the County Assessors Parcel Use Codes. **Appendix C** includes the County Assessors Parcel Use Codes table. During review of the land use data, some parcels were assigned to land uses dissimilar to their Assessors' Parcel Code; these parcel-by-parcel changes were based on the description given for the parcel in the APN database and/or aerial photography and local knowledge.

For areas outside the City, the 2004 land use data from the current SLOCOG model was used.

Special Generators

Special generators are used for unique land uses that cannot be adequately represented by one of the standard land use categories. The trip ends for special generators are determined outside the model process for each specific use and added to the results of the standard trip generation procedure. There are two special generators currently used in the 2008 Paso Robles model – the California Youth Authority (TAZ 2306), County Fair (TAZ 2203). The California Youth Authority estimate of 242 daily trips and the County Fair estimate of 83 daily trips are based on per employee trip estimates developed in the base year SLOCOG model.

TABLE 2
LAND USE CATEGORIES

Land Use Type	Units	Model Field Name	Daily Trip Rate
Residential			
Single-Family	Dwelling Units (DU)	SFR	7.56
Multi-Family	Dwelling Units (DU)	MFR	5.21
Mobile Home	Dwelling Units (DU)	MH	3.94
Rural Residential	Dwelling Units (DU)	RURAL	5.21
Non-Residential			
Office	1,000 Square Feet (KSF)	OFF_GEN	6.94
Downtown Mixed-Use	1,000 Square Feet (KSF)	DWNTWN	15.75
Regional-Serving Retail	1,000 Square Feet (KSF)	RET_REG	37.80
Neighborhood-Serving Retail	1,000 Square Feet (KSF)	RET_NEI	29.33
Chuches and Meeting Halls	Rooms (RMS)	CHURCH	5.74
Gas Stations and Auto Care	1,000 Square Feet (KSF)	GAS	588.81
Elementary Schools	Students (STU)	ELEM	1.29
High Schools	Students (STU)	HIGHSCH	1.71
CalPoly Students	Students (STU)	CAL_S	2.17
CalPoly Employees	Employees (EMP)	CAL_E	8.22

TABLE 2
LAND USE CATEGORIES

Land Use Type	Units	Model Field Name	Daily Trip Rate
Cuesta College Students	Students (STU)	CUE_S	1.20
Cuesta College Employees	Employees (EMP)	CUE_E	15.55
Hospitals	1,000 Square Feet (KSF)	HOSPITL	11.07
Light Industrial	1,000 Square Feet (KSF)	IND_LIT	4.39
Heavy Industrial	1,000 Square Feet (KSF)	IND_HVY	0.95
Motels and Hotels	Rooms (RM)	MOTEL	4.72
Recreation	Acres (ACRE)	REC	0.41
Public-Quasi Public (high generator)	1,000 Square Feet (KSF)	PQP_HI	16.76
Public-Quasi Public (low generator)	1,000 Square Feet (KSF)	PQP_LO	6.70
Agricultural	Acres (ACRE)	AGR	0.00
Undeveloped	Acres (ACRE)	UNDEV	0.00
Special Generators	Trips (TRIP)	SPECIAL	1.00
Beach Resorts	Acres (ACRE)	BEACH	14.18

Source: Fehr & Peers, December 2008.

TABLE 3
LAND USE TYPE RELATIONSHIP TO ASSESSORS' PARCEL LAND USE CODES

Land Use Type	Model Field Name	Assessors Parcel Land Use Code
Residential		
Single-Family	SFR	1010 – 1014
Multi-Family	MFR	1020 – 1022
Mobile Home	MH	1030 – 1033
Rural Residential	RURAL	1010 – 1014
Non-Residential		
Office	OFF_GEN	2300 – 2330, 2510
Downtown Mixed-Use	DWNTWN	No Parcels Assigned
Regional-Serving Retail	RET_REG	2100 – 2160, 2210 – 2230
Neighborhood-Serving Retail	RET_NEI	2100 – 2160, 2210 – 2230
Churches and Meeting Halls	CHURCH	5210, 5310
Gas Stations and Auto Care	GAS	2170 – 2190, 2240 – 2250
Elementary Schools	ELEM	5120, 7410

TABLE 3
LAND USE TYPE RELATIONSHIP TO ASSESSORS' PARCEL LAND USE CODES

Land Use Type	Model Field Name	Assessors Parcel Land Use Code
High Schools	HIGHSCH	7410
CalPoly Students	CAL_S	N/A
CalPoly Employees	CAL_E	N/A
Cuesta College Students	CUE_S	Cuesta College-owned parcels only
Cuesta College Employees	CUE_E	Cuesta College-owned parcels only
Hospitals	HOSPITL	N/A
Light Industrial	IND_LIT	2520, 4100 – 4140, 4400 – 4450
Heavy Industrial	IND_HVY	4200 – 4310
Motels and Hotels	MOTEL	3110 – 3120
Recreation	REC	2410 – 2430, 7130, 7195
Public-Quasi Public (high generator)	PQP_HI	7100
Public-Quasi Public (low generator)	PQP_LO	7160
Agricultural	AGR	6000 – 6210
Undeveloped	UNDEV	8210 – 8220
Special Generators	SPECIAL	7310 – 7320
Beach Resorts	BEACH	N/A

Source: Fehr & Peers, December 2008.

ROADWAY NETWORK

The roadway network for the base year (2008) conditions was taken from the current version of the SLOCOG model. The base year model roadway network includes all US and state routes, arterials, collectors, and local roadways within San Luis Obispo County (see **Figure 1** for study area). Some detail was added to the local street network to account for development occurring between 2004 and 2008 and proposed network improvements between 2008 and 2025.

The roads (shown on **Figure 1**) are classified in 7 categories and form the primary road network that is represented in the model structure. As is typical for urban-area models, the model network focuses on facilities in the higher functional classes, and does not attempt to replicate travel patterns on local residential streets, but does include them to distribute traffic. The road categories are described below.

Freeways: Freeways are high-capacity facilities that primarily serve long-distance travel. Access is limited to interchanges that are typically spaced at least one mile apart. US 101 is the primary freeway through Paso Robles. Freeway ramps connect the local street network to the regional freeway network.

Highways: Roadways designated as highways are typically state highways that are not limited-access freeways. These facilities serve travel between Paso Robles and neighboring cities and counties, and often are located in rural or semi-rural areas. Highway 46 is the primary highway in Paso Robles.

Arterials: Roadway segments classified as arterials are major roads that provide connections between developed areas of the City or from developed areas to the freeway system. Arterials in Paso Robles typically have one to two lanes in each direction, with travel speeds of 35 to 45 miles per hour (mph).

Collectors: Collectors are facilities that connect local streets to the arterial and highway system, and may also provide direct access to some local land uses. Collectors typically have one lane in each direction and speeds of around 30 mph.

Local Streets: Local streets are facilities that typically serve residential areas and connect collector and arterial streets. Some local streets may also provide direct access to commercial and industrial areas. Local streets typically have one lane in each direction and speeds of 25 mph.

As part of the model development process, modifications were made to the SLOCOG network to reflect the existing roadway system and to improve the model's forecasting capabilities. These modifications include:

- roadway classifications were corrected to reflect the City's current Circulation Element;
- roadway speeds were adjusted based on field observations conducted in July 2008;
- roadway links coded as couplets were recoded as single links to make intersection turning movement forecasting easier for end users;
- roadway improvements constructed between 2004 and 2008 were added to the appropriate links;

Each roadway segment in the model has a set of data or link attributes attached to it. **Table 4** provides a complete list of the link attributes and their definitions. Field visits were conducted to verify lanes and speed limits.

Traffic count data was collected in April of 2008. Data was collected for 55 roadway segments throughout the study area. The roadway segments counts were collected over a seven-day period. The primary use of the count data is to validate the base year model and provide a baseline for travel demand forecast adjustments. The City of Paso Robles TDF model refined the SLOCOG "master roadway network" that includes all input roadway network data for each scenario within one input roadway model network.

Table 5 shows typical free-flow speed and capacities for each roadway functional classification included in the model. The speeds and capacities represent a typical facility, but may be adjusted to better represent field conditions or as part of the model validation process. The speeds and capacities may vary to account for factors such as the surrounding level of development and are typically reduced as roads pass through urban areas, due to the presence of stop signs, narrow travel lanes, pedestrians, parked vehicles, and other urban features.

Links in the model are connected by nodes, and the crossing of two links at a node represents an intersection. Centroids are another form of node and represent the physical location of each traffic analysis zone (TAZ). TAZs contain the land use information within the study area. **Table 6** shows the node attributes and their definitions.

TABLE 4
LINK ATTRIBUTES

Attribute	Units	Definition
ID	unitless	Link ID
Length	miles	Link length
Dir	unitless	Direction indicator used to define one-way or two-way segments depending on link topology
NAME	N/A	Street name
FUNC_CLASS	Unitless	Functional classification used in Paso Robles Travel Demand Model[1]
LANE_CAPACITY	Vphpl[1]	Lane capacity
AB_LANE_04	Lanes	Number of lanes in AB direction
BA_LANE_04		Number of lanes in BA direction
AB_LANE_15		Number of lanes in AB direction
BA_LANE_15		Number of lanes in BA direction
AB_LANE_30		Number of lanes in AB direction
BA_LANE_30		Number of lanes in BA direction
AB_SPEED	Mph[2]	Speed in AB direction
BA_SPEED		Speed in BA direction
AB_TIME	minutes	Free-flow travel time in AB direction
BA_TIME		Free-flow travel time in BA direction
AB_CONGTT		Congested travel time in AB direction
BA_CONGTT		Congested travel time in BA direction
ALPHA	Unitless	Bureau of Public Roads (BPR) speed-volume delay curve constant[1]
BETA		AM peak roadway model volume in BA direction
FROM_ID		From node ID based on link topology
TO_ID		To node ID based on link topology
DAILY_CNT		Only included for locations at which counts are available.
[Count Site]		Location of Count
[Permanent Count Site]		Indicates whether the count location is a permanent count site.
Area		Indicates location of link within the County
City		Indicates location of link within the County
Comments		Other information
In_2004		Identifies the scenario in which the link should be included.
In_2015		
In_2025		
RTP_Year		Identifies the year the roadway appears in the model
Hwy_Label		Displays the route number for state highways
CountID		Validation Count ID

Notes:
[1] vphpl = vehicles per hour per lane
[2] mph = miles per hour

TABLE 4
LINK ATTRIBUTES

Attribute	Units	Definition

Bold text indicates model input field. Other fields are model output fields (Load24_AB, etc.) or other descriptive fields.

Source: Fehr & Peers, December 2008.

TABLE 5
TYPICAL ROADWAY SPEEDS AND CAPACITIES

Roadway Classification[1]	Speed (mph)[2]	BPR Curve Parameters (α and β)[3]	Total Through Lanes	Example Facility	Lane Capacity (vphpl)[4]	Total Facility Capacity (vph)[5]
Freeway	65	0.25 and 9.00	6 to 8	US 101	1,800	7,200
Highway	55	0.70 and 4.00	2 to 4	SR 46	1,500	3,000 to 6,000
Arterial	35 - 45	0.40 and 4.00	2 to 4	Creston Road or Niblick Road	900	1,800 to 3,600
Ramp	30		1 to 2	-	800	800 to 1,600
Collector	25 - 35	0.25 and 4.00	2 to 4	Spring Street or Rambouillet Rd	550	1,100 to 2,200
Local	25		2	Angus Street or Pine Street	400	800
Centroid Connector[7]	25		2	-	10,000	20,000

Notes:

1 Classifications within the City of Paso Robles Traffic Demand Model. Taken from the SLOCOG model classifications.

2 Speed limits developed from field observations and posted speed limits within Paso Robles. Some facilities may have lower or higher values based on field conditions. mph = miles per hour

3 vphpl = vehicles per hour per lane

4 Bureau of Public Roads (BPR) speed-delay curve parameters

5 vph = vehicles per hour

6 Centroid connectors are abstract representations of the starting and ending point of each trip, and thus do not include capacity constraints.

Source: Fehr & Peers, September 2008.

TABLE 6
NODE ATTRIBUTES

Attribute	Units	Definition
ID	unitless	Node ID
Longitude	feet	California State Plane Zone III longitude coordinate
Latitude	feet	California State Plane Zone III latitude coordinate
TAZ	unitless	Traffic Analysis centroid ID
Area_Type		Location by Model Area (e.g. 5)
Study_Intersection		Study intersection ID

Note:
Bold text indicates model input field. Other fields are model descriptive fields (Longitude, etc.).
Source: Fehr & Peers, September 2008.

4. DESCRIPTION OF THE MODEL CALIBRATION PROCESS

Model calibration is the process by which parameters are set based on a comparison of travel estimates computed by the model with actual data from the area being modeled. This section provides a general description of the calibration steps and the adjustments made during the process to achieve accuracy levels that are within Caltrans' guidelines. For detailed information regarding the specified modeling steps, refer to the TransCAD model control file that is included in **Appendix E**.

TRIP GENERATION

The trip generation rates shown in Table 2 relate the number of vehicle trips going to and from a site. Each trip has two ends, a "production" and an "attraction" end. By convention, all trips with one end at a residence are defined as being "produced" by the residence and "attracted" to the other use (job, school, shop, etc.), and are called "home-based" trips. Trips that do not have one end at a residence are called "non-home-based" trips.

There are eight (8) trip purposes used in the Paso Robles TDF model:

1. Home-Based Work (HBW): trips between a residence and a workplace.
2. Home-Based Other (HBO): trips between a residence and any other destination.
3. Non-Home-Based (NHB): trips that do not begin or end at a residence, such as traveling from a workplace to a restaurant, or from a retail store to a bank.
4. Home-Based School (SCHOOL) Trips: trips between a residence and an elementary school, junior high school, high school, or university.
5. Cal Poly University (CALPOLY) Trips: Trips between a residence and Cal Poly San Luis Obispo.
6. Cuesta College (CUESTA) Trips: trips between a residence and Cuesta College.
7. Regional (REGIONAL) Trips: Certain types of land uses, such as hospitals, airports, and large discount stores, attract trips from a wide area. Trips to regional attractors fall into this trip purpose category, which uses a different set of friction factors than trips to local attractors (typically HBO trips). The Paso Robles TDF model regional attractors include California Polytechnic State University and Cuesta College.
8. Magnet (MAGNET) Trips: These are trips to attractions that draw a high percentage of users from outside the county. For example, the state beaches and Hearst Castle get a much higher percentage visitors from outside the model area than most other land uses in the county.

Trip generation rates are initially defined for total trips and later split by trip purpose, for both productions and attractions.

The most widely used source for vehicle trip generation rates in the transportation planning field is the *Trip Generation* manual published by the Institute of Transportation Engineers (ITE) in 2003, which includes national trip survey data. The Paso Robles model trip generation rates were initially based on those development for the SLOCOG model, which were based on *Trip Generation* and the San Diego Association of Government's *Trip Generators* (2004). The rates were calibrated to account for local conditions based on residential counts, production-to-attraction balancing, and to account for the difference between ITE and model land use definitions.

After the total vehicle trips are calculated for each land use type, they are split into the five trip purposes described above. The distribution of trips by purpose was based on recent data from the Caltrans' *2000-2001 California Statewide Household Travel Survey: Final Report* (2002). The results by land use category for the base year model are presented in **Table 7** for Paso Robles.

TABLE 7
PERCENT OF VEHICLE TRIPS BY TRIP PURPOSE

Model Field Name	HBW		HBO		NHB		SCHOOL		CUESTA		CALPOLY		REGIONAL		MAGNET	
	Prod.	Attr.	Prod.	Attr.	Prod.	Attr.	Prod.	Attr.	Prod.	Attr.	Prod.	Attr.	Prod.	Attr.	Prod.	Attr.
SFR	21%	0%	28%	0%	15%	15%	5%	0%	2%	0%	1%	0%	12%	0%	1%	0%
MFR	25%	0%	25%	0%	15%	15%	5%	0%	1%	0%	1%	0%	12%	0%	1%	0%
MH	25%	0%	28%	0%	15%	15%	3%	0%	1%	0%	0%	0%	12%	0%	1%	0%
RURAL	21%	0%	31%	0%	15%	14%	5%	0%	1%	0%	0%	0%	12%	0%	1%	0%
OFF_GEN	0%	45%	0%	5%	25%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DWNTWN	0%	6%	0%	31%	19%	19%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%
RET_REG	0%	6%	0%	11%	19%	19%	0%	0%	0%	0%	0%	0%	0%	45%	0%	0%
RET_NEI	0%	6%	0%	46%	19%	19%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
CHURCH	0%	10%	0%	50%	20%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
GAS	0%	10%	0%	10%	40%	40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
ELEM	0%	0%	0%	0%	20%	20%	0%	60%	0%	0%	0%	0%	0%	0%	0%	0%
HIGHSCH	0%	0%	0%	0%	20%	20%	0%	60%	0%	0%	0%	0%	0%	0%	0%	0%
CAL_S	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%
CAL_E	0%	20%	0%	0%	0%	0%	0%	0%	0%	80%	0%	0%	0%	0%	0%	0%
CUE_S	10%	0%	15%	0%	15%	0%	0%	0%	30%	0%	0%	30%	0%	0%	0%	0%
CUE_E	0%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	80%	0%	0%	0%	0%
HOSPITL	0%	6%	0%	2%	30%	30%	0%	0%	0%	0%	0%	0%	0%	32%	0%	0%
IND_LIT	0%	45%	0%	20%	18%	18%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
IND_HVY	0%	45%	0%	20%	18%	18%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
MOTEL	0%	20%	0%	20%	30%	30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
REC	0%	10%	0%	70%	10%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
PQP_HI	0%	10%	0%	50%	20%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
PQP_LO	0%	10%	0%	40%	25%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AGR	0%	60%	0%	0%	20%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
UNDEV	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SPECIAL	0%	55%	0%	5%	10%	10%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%
BEACH	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
IX / XI	3%	4%	3%	3%	3%	3%	1%	0%	0%	0%	0%	1%	4%	2%	0%	70%

Note: Area type 5 is shown in **Table 7**. Source: Fehr & Peers, July 2009.

For example, based on **Table 7** a neighborhood consisting of 10 single-family dwelling units would generate 76 daily vehicle trips. Splitting these trips into the various purposes based on **Table 8** would results in 16 trips would travel between home and work, 21 trips between home and anything other than work or school (i.e. shopping, bank, visiting friends), 4 trips between home and school, and the remaining 35 trips are between any non-home locations (e.g., going from work to shop).

Table 9 compares preliminary traffic model productions and attractions by trip purpose to the final productions and attractions after trip balancing. The HBW, NHB, and HBO purposes are balanced to productions while the NHB, HBSCH, CalPoly, and Cuesta purposes are balanced to attractions. **Appendix F** shows the trip generation production and attraction summary for each area type of the base year model. The AM and PM peak hour trip tables are created by factoring the daily production-attraction trip table as described in **Chapter 6**.

TABLE 8
TRIP GENERATION PRODUCTION AND ATTRACTION SUMMARY FOR PASO ROBLES/ATASCADERO

Purpose	Estimated Productions	Estimated Attractions	Final Productions	Final Attractions
Home-Based Work (HBW)	45,174	39,909	39,969	36,259
Home-Based Other (HBO)	58,511	57,558	52,139	46,791
Non-Home-Based (NHB)	133,311	132,478	129,072	129,072
School (SCHOOL)	10,323	12,779	10,485	12,779
CalPoly (CALPOLY)	1,843	0	1,059	0
Cuesta (CUESTA)	4,751	3,278	3,215	3,278
Regional (REGIONAL)	24,888	32,252	24,033	31,473
Magnet (MAGNET)	2,074	0	2,086	0
Internal – External (IX)	7,464	-	7,492	-
External – Internal (XI)	-	7,372	-	7,377
		Total	269,550	267,029

Note:
1. Trip productions and attractions are for Area 5 (Paso Robles/Atascadero) only. Although the trip productions and attractions balance for the entire model area, productions and attractions may not balancing in individual areas of the model if the area has more housing than jobs or vice versa.

Source: Fehr & Peers, July 2009.

TRIP DISTRIBUTION (GRAVITY MODEL)

Once the trip generation step has determined the number of trips that originate and terminate in each zone, the trip distribution process determines the specific destination of each originating trip. The destination may be within the zone itself, resulting in an intra-zonal trip. If the destination is outside of the zone of origin, it is an inter-zonal

trip. Internal-internal (II) trips originate and terminate within the model area. Trips that originate within but terminate outside of the model area are internal-external (IX), and trips that originate outside and terminate inside of the model area are external-internal (XI). Trips passing completely through the model area are external-external (XX).

The trip distribution model uses the gravity equation to distribute trips to all zones. This equation estimates an accessibility index for each zone based on the number of attractions in each zone and a friction factor, which is a function of travel time between zones. Each attraction zone is given its pro-rata share of productions based on its share of the accessibility index. This process applies to the II, IX, and XI trips. The XX trips are added to the trip table prior to final assignment.

Friction Factors

Friction factors, also known as travel time factors, determine the relative attractiveness of each destination zone based on the travel time between TAZs and the number of potential origins and destinations in each TAZ. These factors are used in the trip distribution stage of the model. Friction factors reported in national modeling reference documents such as National Cooperative Highway Research Program (NCHRP) 365, with adjustments for the unique conditions within San Luis Obispo County, were used in the model. See **Appendix G** for friction factor curves.

Trips between the Paso Robles Area and External Areas

One of the important inputs to a travel model is an estimate of the amount of travel between the study area and neighboring areas outside the model. These trips are typically called internal-external, or I-X/X-I, trips.

Information from the Year 2000 Census for work location by area of residence was used to estimate the percent of work trips between San Luis Obispo County and neighboring counties. This was originally developed for the SLOCOG model area. For non-work trip purposes, information from the Caltrans *2000-2001 California Statewide Household Travel Survey: Final Report* (2002) was used to estimate the percent of HBO and NHB trips that travel between San Luis Obispo County and other areas.

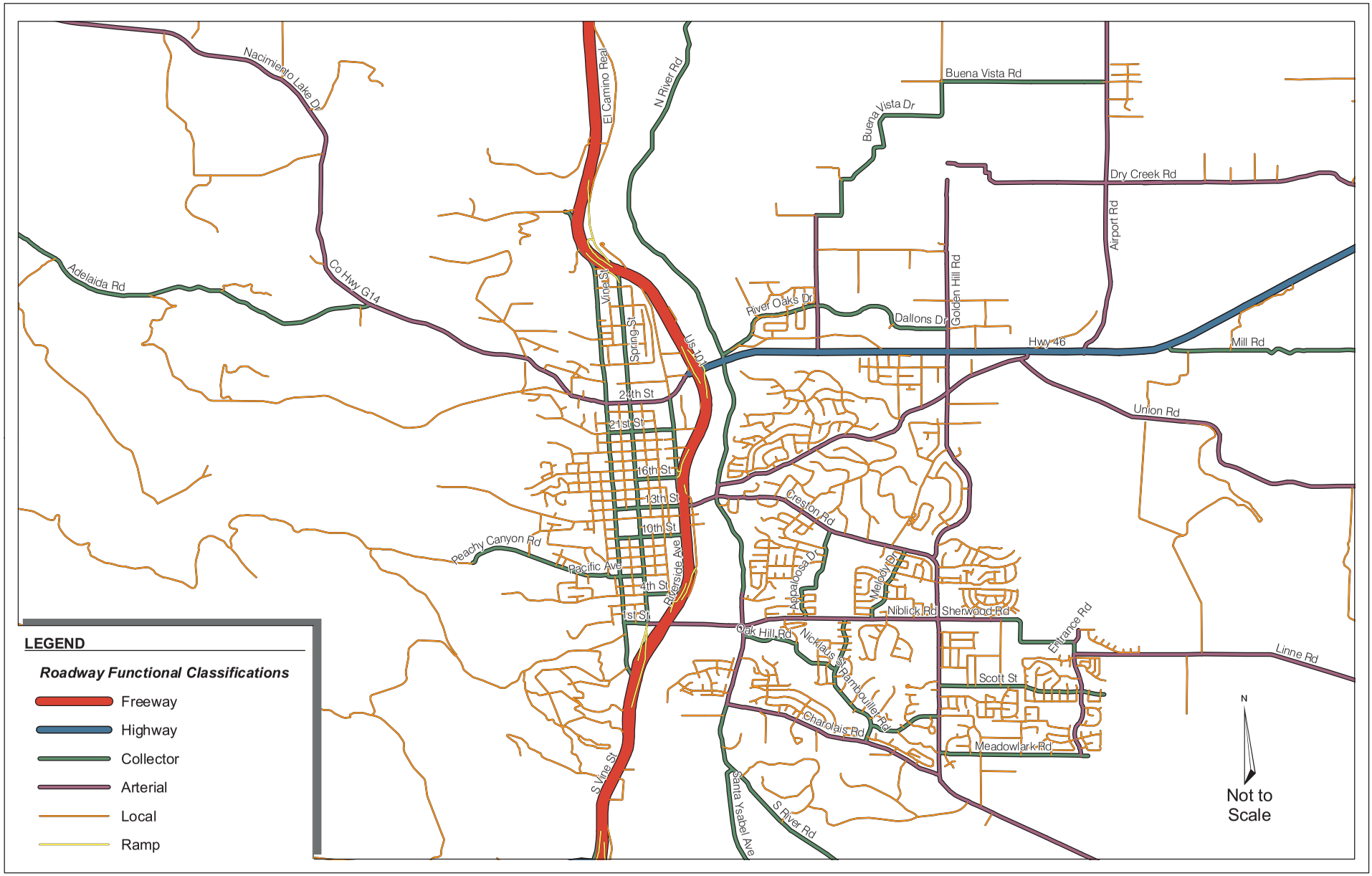
After the number of I-X/X-I trips is estimated, those trips are distributed to the stations around the perimeter of the model area using external station weights. These external station weights are based on City, County, and Caltrans traffic count data and information provided by SLOCOG staff.

Through Trips

Through trips (also called external-external, or XX trips) are those that pass through the study area without stopping inside the study area. The major flows of through traffic in the Paso Robles area use US 101, with lower volumes of through traffic using State Routes 46 (east and west). The size of these flows was estimated based on Caltrans traffic counts.

ROADWAY NETWORK CALIBRATION

Calibration of the roadway network included modification of the centroid connectors to more accurately represent the location at which traffic accessed the local roads, adjusting speeds within ± 5 mph of the posted speed limit to adjust the attractiveness of the route, and refining the turn penalties. **Figures 6** through **8** show the calibrated functional classification, two-way lane total, and free-flow speed, respectively, for roads included in the base year network. Turn penalties are used to prohibit or add delay to certain turning movements in addition to the link cost. For the Paso Robles travel demand model, only prohibitions of traffic getting off a freeway ramp and then back on or locations with prohibitions due to medians are specifically coded.



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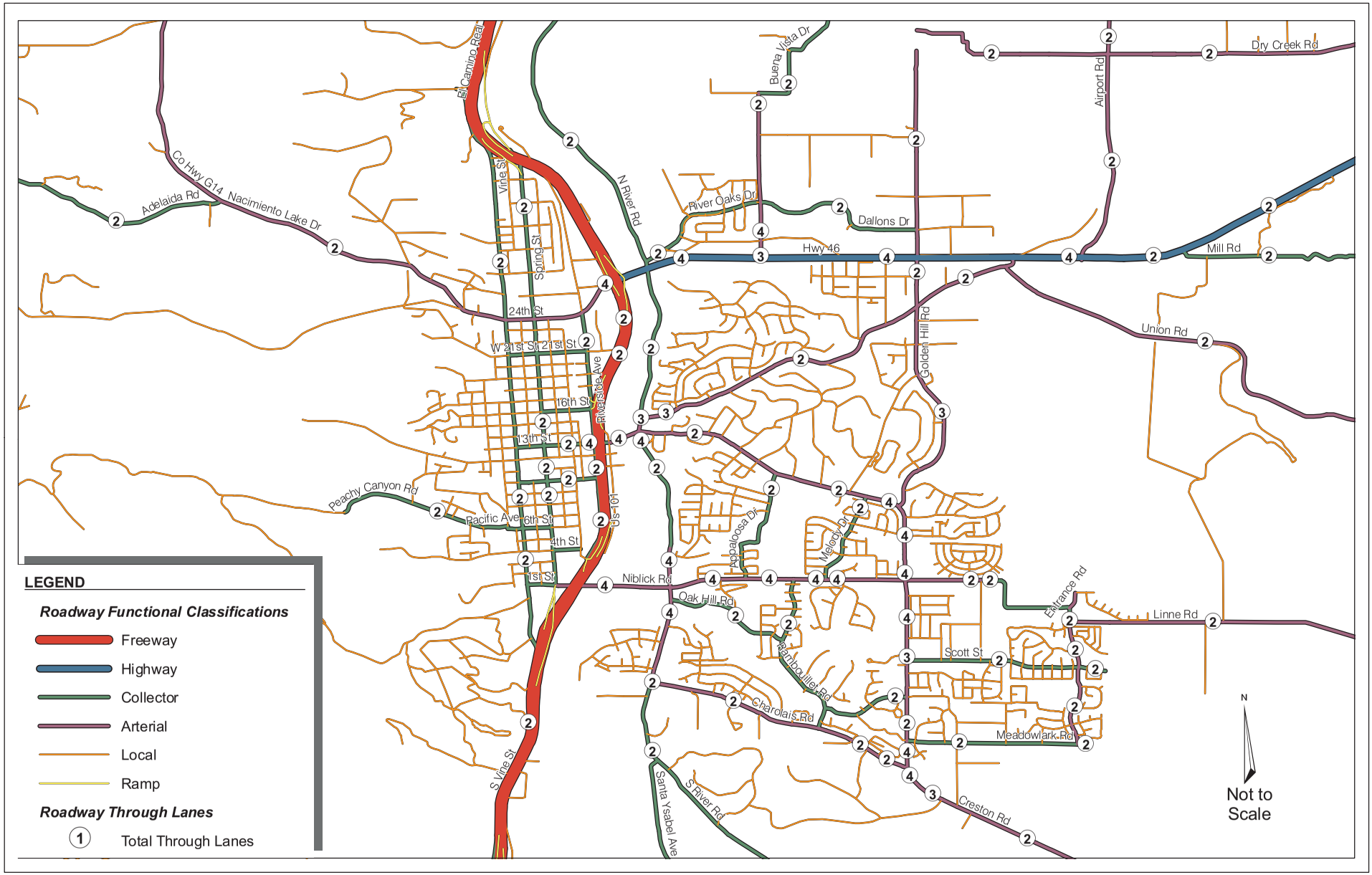
BASE YEAR (2008) ROADWAY FUNCTIONAL CLASSES

FIGURE 6



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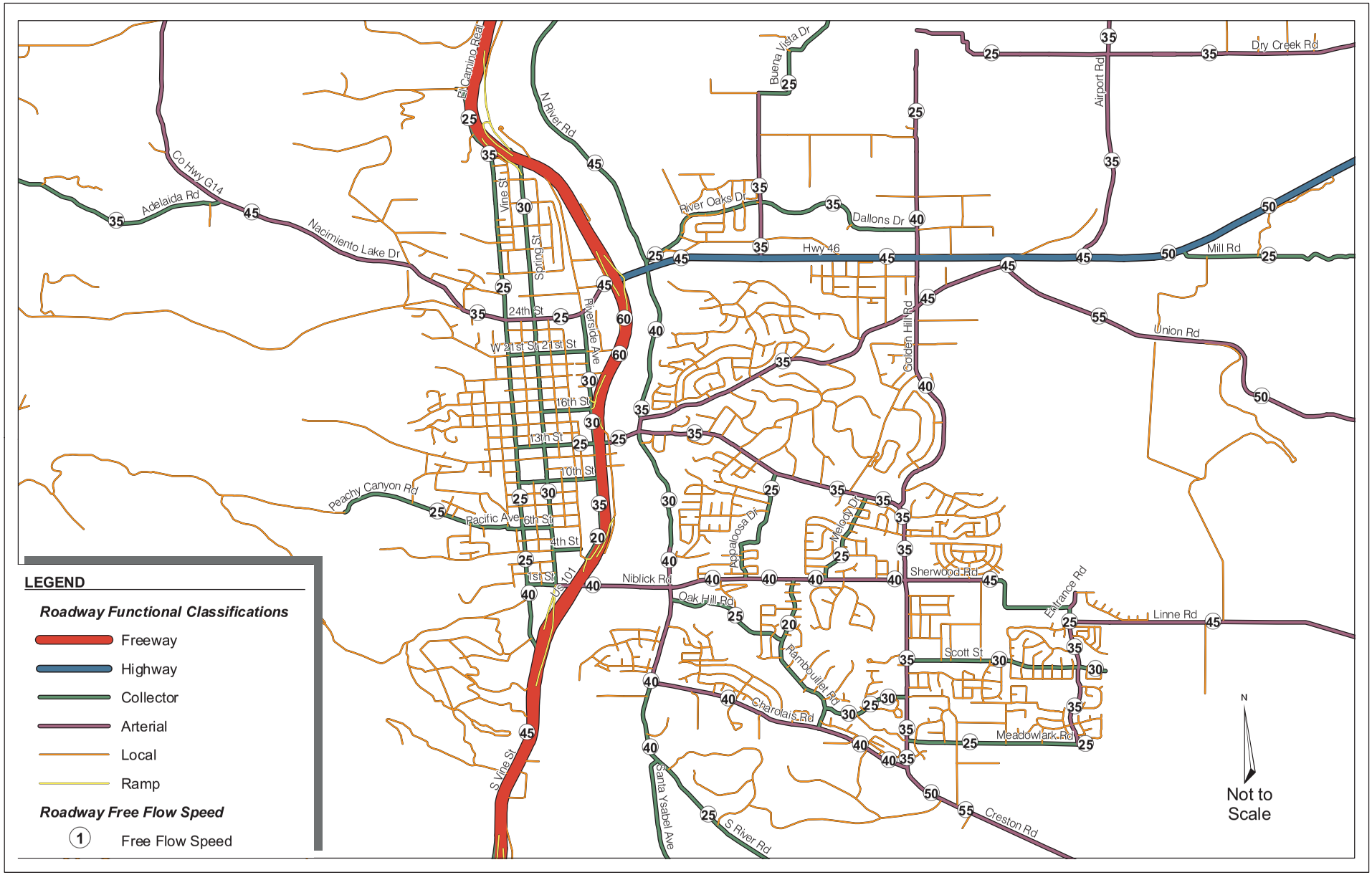
BASE YEAR (2008) TOTAL THROUGH LANES

FIGURE 7



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BASE YEAR (2008) FREE FLOW SPEED

FIGURE 8

5. MODEL RESULTS AND DAILY VALIDATION

This chapter describes reasonableness and validation checks that have been performed for the base year City of Paso Robles Travel Demand Forecast (TDF) model. Model validation is the term used to describe model performance in terms of how closely the model's output matches existing travel data in the base year. While most model validation guidelines focus on the performance of the trip assignment function in accurately assigning trips to the roadway network, good modeling practice calls for examining the outputs from each step of the modeling process for reasonableness, and comparing them against existing data.

LAND USE

As a check to ensure that the input land use data are valid, comparisons with residential and non-residential data sources were performed. **Table 9** compares the total residential units and employees by category between the 2008 model and original 2004 model. Although the number of dwelling units and non-residential square footage differs slightly, the overall totals are reasonable and reflect growth between 2004 and 2008 for residential dwelling units and an increase in retail, office and industrial square footage based on input provided by the City.

TABLE 9
BASE YEAR LAND USE COMPARISON

Land Use Type	Model Year		Difference
	2004[1]	2008[2]	
SFR	8,046	9,381	1,335
MFR	3,141	3,413	272
OFF_GEN	453,000	556,000	103,000
RET_REG	469,000	1,089,000	620,000
IND_LIT	3,377,000	3,551,000	174,000
IND_HVY	77,000	141,000	64,000

Notes:
[1] 2004 SLOCOG Model Demographics Data
[2] Aggregated from the 2008 Parcel-Level Land Use Data from Paso Robles APN database.
Source: Fehr & Peers, July 2009.

Regional retail land uses had the largest increase between the 2004 and 2008. While some of this increase is attributable to new development, some of this growth also occurred because of how parcels were assigned to land uses. Trips to and from regional retail uses travel further than others in the model area, and they often increase the number of trips on larger, regional facilities (i.e. freeways and highways) that exit the model study area.

TRIP GENERATION

One of the basic assumptions of any traffic model is that the total number of local trips (internal-to-internal, or I-I) produced is equal to the total number of local trips attracted. If the totals are not equal, the model will typically adjust (i.e., discard) the attractions to match the productions. While it is never possible to achieve a perfect match between productions and attractions prior to the automatic balancing procedure, the existence of a substantial

mismatch in one or more trip purposes indicates that either land use inputs or trip generation rates may be in error.

Table 10 summarizes the local trip productions and attractions from the Paso Robles travel model for each trip purpose, prior to the application of the automatic balancing procedure. Guidelines published by TMIP[1] and NCHRP[2] suggest that the number of productions (P's) and attractions (A's) prior to balancing should match within 10% (i.e., the production-to-attraction ratio should be within the range of 0.90 to 1.10). The results shown in the first column **Table 10** indicate that the 2008 model meets the published guidelines for P/A ratios prior to balancing for all trip purposes.

TABLE 10
TRIP PRODUCTION TO ATTRACTION RATIOS BY PURPOSE

Trip Purpose	Production / Attraction Ratio before balancing	Percent of Total Daily Vehicle Trips	
		Paso Robles 2008 Model	California[2]
Home-Based Work (HBW)	1.00	16%	21%
Home-Based Other (HBO)[1]	0.89	39%	48%
Non-Home-Based (NHB)	1.01	39%	31%
Home-Based School (HBSCH)	0.98	6%	N/A
Total	0.97	100%	100%

Note:
1 Includes CalPoly, Cuesta, Regional and Magnet trip types.
2 Caltrans. *2000-2001 California Statewide Household Travel Survey: Final Report*, June 2002.
N/A = Not available.
Source: Fehr & Peers, July 2009.

In addition to production and attraction balancing, the percent of total trips for each purpose were checked for reasonableness. Values reported in Caltrans' *2000-2001 California Statewide Household Travel Survey: Final Report* (June 2002) are provided below:

- HBW trips: 16% to 29% of all trips
- HBO and REGIONAL trips: 47% to 52% of all trips
- NHB trips: 17% to 29% of all trips
- HBSCH trips: 8% to 16% of all trips

[1] Travel Model Improvement Program (TMIP). *Model Validation and Reasonableness Checking Manual*. Washington, D.C.: TMIP, 2001.
[2] National Cooperative Highway Research Program (NCHRP). *Report 365: Travel Estimation Techniques for Urban Planning*. Washington, D.C.: National Academy Press, 1998.

TRIP ASSIGNMENT

The most critical static measurement of the accuracy of any traffic model is the degree to which it can approximate actual traffic counts in the base year. Caltrans has established certain trip assignment guidelines for models to be deemed acceptable for forecasting future year traffic. This section describes the model performance in comparison to the standards discussed in *Travel Forecasting Guidelines* (Caltrans, November 1992). The validity of the Paso Robles model was tested for both daily and peak hour conditions (see other memorandum for peak hour validation results). Model volumes were compared to existing daily traffic counts at 55 individual count sites shown on **Figure 9**, and at 6 screenlines shown on **Figure 10**. The remainder of this section contains a summary of the validation results, while **Appendix H** contains a detailed report of all validation comparisons.

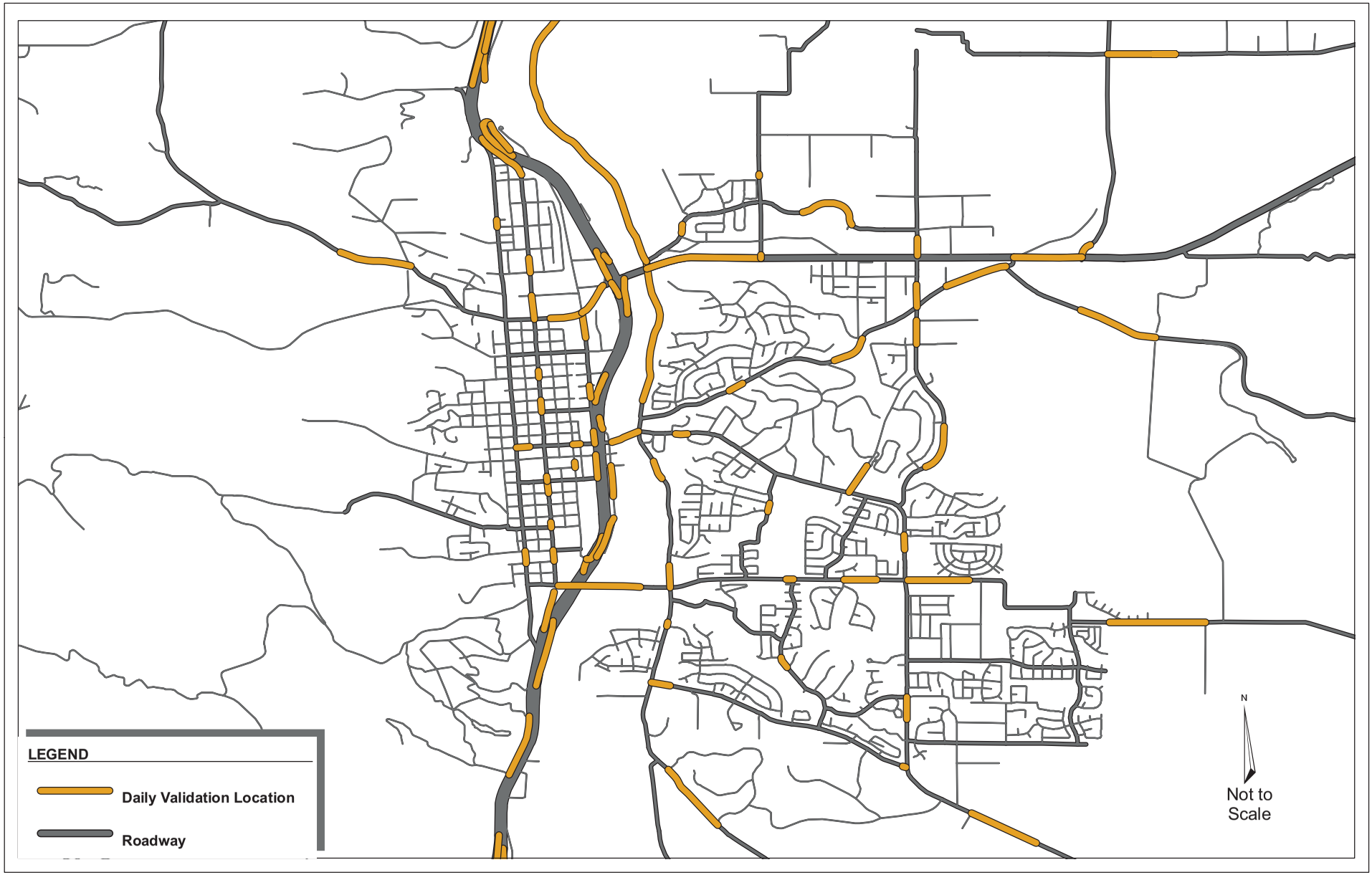
Link volume results from the model runs were examined and checked for reasonableness. Links were identified where model results varied substantially from the observed counts, and the characteristics of those links were reviewed with City staff to ensure that the link attributes accurately reflected local operating conditions. In some cases, link characteristics such as speeds were modified based on local input. **Appendix I** shows the daily link volumes resulting from the 2007 Paso Robles travel demand model.

Comparison Techniques

Traffic model accuracy is usually tested using four comparison techniques.

- The volume-to-count ratio is computed by dividing the volume assigned by the model and the actual traffic count for individual roadways (or intersections) area-wide.
- The maximum deviation is the difference between the model volume and the actual count divided by the actual count.
- The percent root mean square error (RMSE) is the square root of the model volume minus the actual count squared divided by the number of counts. It is a measure similar to standard deviation in that it assesses the accuracy of the entire model.
- The coefficient of determination (R^2) is the proportion of variability between the actual traffic counts and the estimated traffic volumes from the model.
- The correlation coefficient estimates the correlation between the actual traffic counts and the estimated traffic volumes from the model.

In addition to these tests, the model's stability was tested to verify that reasonable output responses occurred based on varying input variables.



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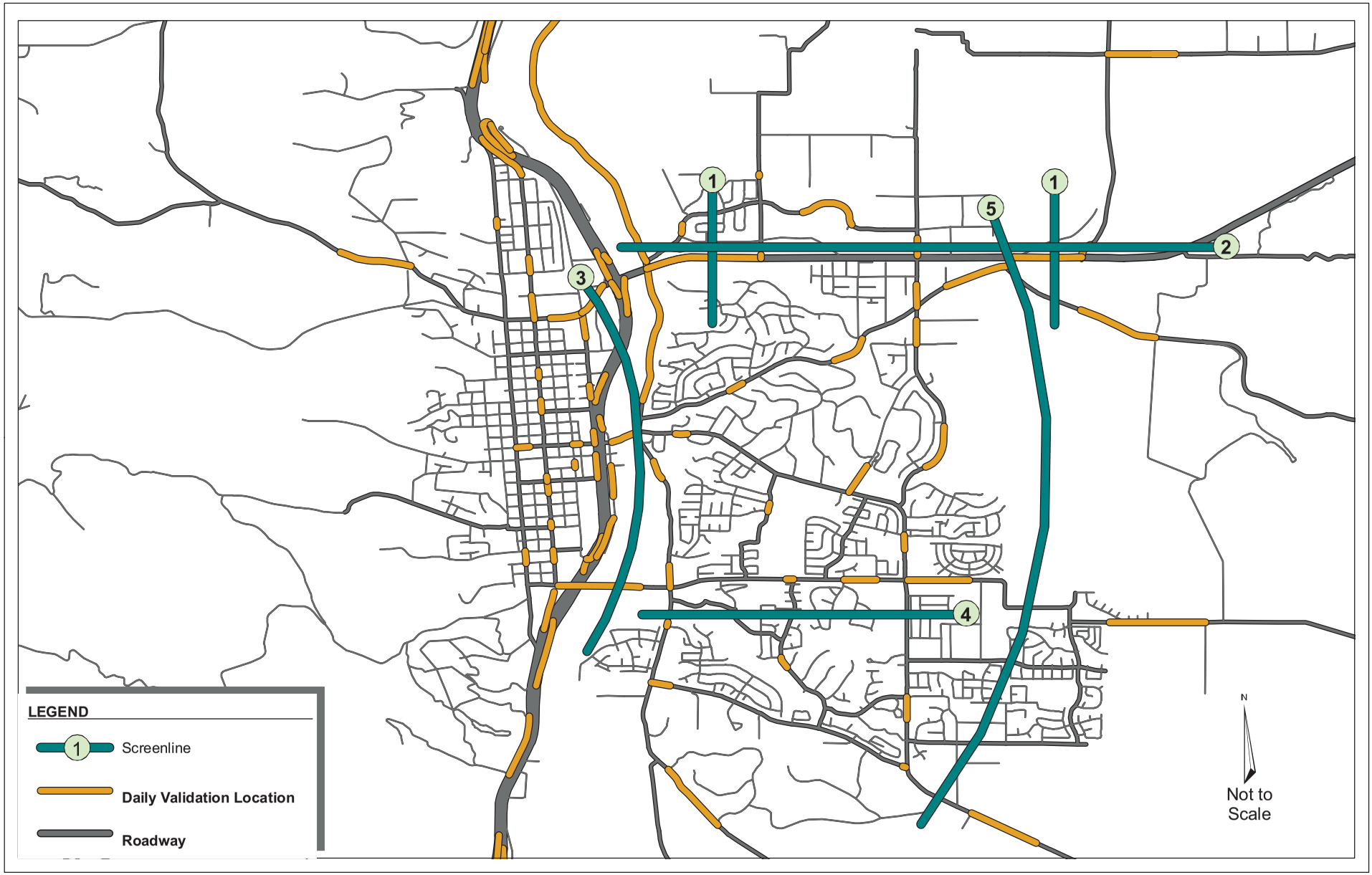
DAILY VALIDATION LOCATIONS

FIGURE 9



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DAILY SCREENLINE LOCATIONS

FIGURE 10

Validation Guidelines

For a model to be considered accurate and appropriate for use in traffic forecasting, it must replicate actual conditions to within a certain level of accuracy. Since it would be impossible for any model to precisely replicate all counts, validation guidelines have been established by Caltrans and other agencies. Key validation standards for daily travel models based on the Caltrans guidelines are summarized below.

- The two-way sum of the volumes on all roadway links for which counts are available should be within 10 percent of the counts.
- At least 75 percent of the roadway links for which counts are available should be within the maximum desirable deviation, which ranges from approximately 15 to 68 percent depending on total volume (the larger the volume, the less deviation is permitted).
- The correlation coefficient between the actual ground counts and the estimated traffic volumes should be greater than 88 percent.
- All of the roadway screenlines should be within the maximum desirable deviation, which ranges from approximately 17 to 64 percent depending on total volume.

Although not stated in the Caltrans standards, an additional Fehr & Peers validation guideline was applied to the 2007 Paso Robles traffic model:

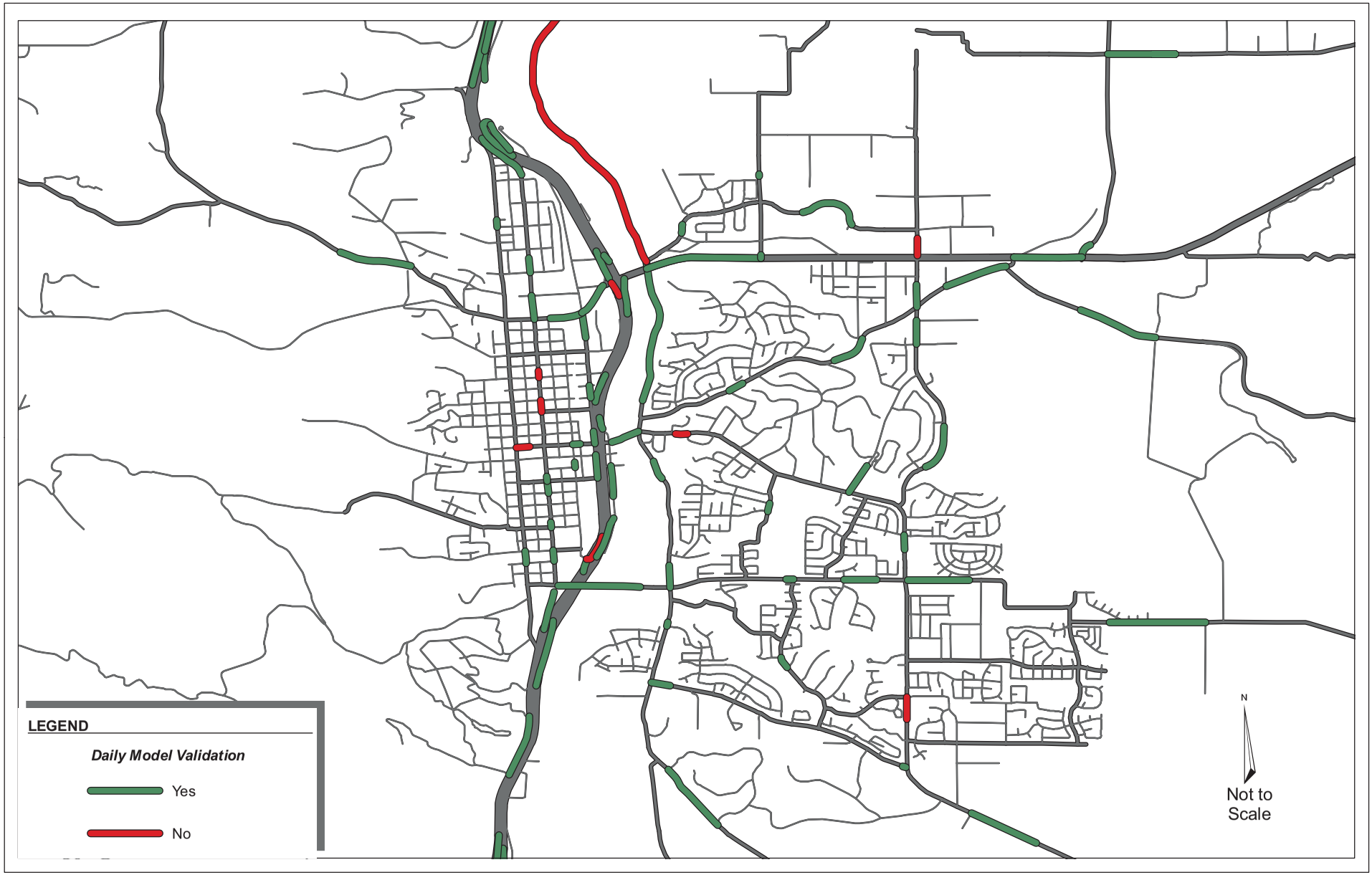
- The Root Mean Square Error (RMSE) should not exceed 30 percent. This measure of effectiveness (MOE) is most important for screenlines, but is also used to describe the certainty of functional classification and volume ranges too.

Static Validation Results

Scripts and spreadsheets were created to compute the validation results for roadway links in the Paso Robles TDF model. The results for daily conditions are summarized in **Table 11** below, while the detailed spreadsheets are presented in **Appendix H**. The model deviation by geographic location is shown on **Figure 11**. **Figure 12** shows a scatter plot of count and model volumes compared to Caltrans' allowable error. The model performs well, exceeding all guidelines for overall model accuracy.

In addition to model-wide statistics, the results are aggregated by functional class and count volume range, as shown below in **Table 12**.

As previously discussed, the RMSE is presented to provide understanding of the functional classification and volume ranges. Again, the model exceeds the guidelines except for the lower functional classes. Because the traffic volumes carried by facilities with the same functional class can vary substantially, it is standard practice at Fehr & Peers to calculate model validation statistics by traffic volume range. This ensures that the model performs well on mid- and high-volume facilities, which are the primary focus of most travel forecasting efforts. These results are shown in **Table 13**.



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DAILY MODEL VALIDATION

FIGURE 11

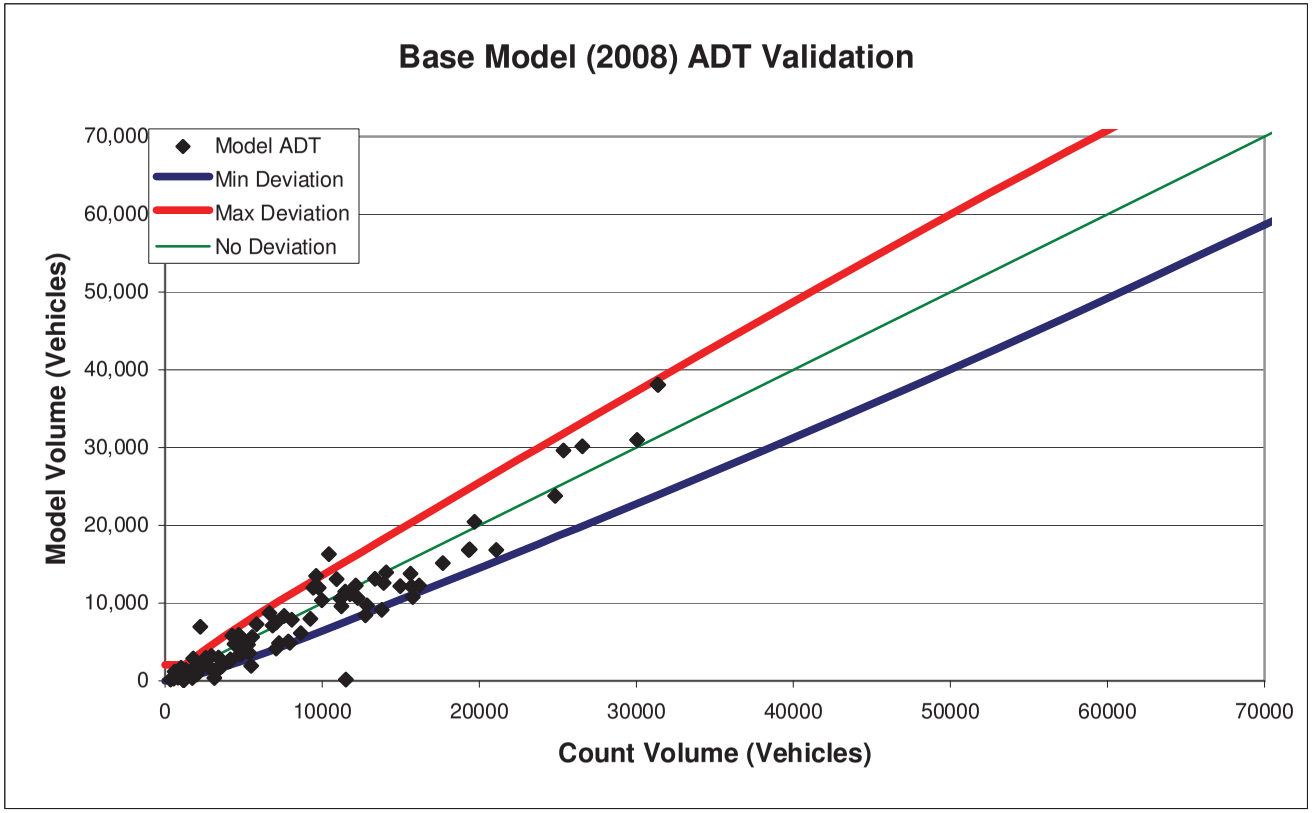


Figure 12 Daily Model Validation Scatter Plot

TABLE 11
RESULTS OF DAILY MODEL VALIDATION

Validation Item	Criterion for Acceptance	Model Results
Count Locations	N/A	88
% of Links within Caltrans Standard Deviations	At Least 75%	86%
% of Screenlines within Caltrans Standard Deviations	100%	100%
2-way Sum of All Links Counted	Within ± 10%	-6%
Correlation Coefficient	Greater than 88%	95%
RMSE	30% or less	28%

Source: Fehr & Peers, July 2009.

TABLE 12
RESULTS OF DAILY MODEL VALIDATION BY FUNCTIONAL CLASS

Functional Class	Count Locations	Volume-to-Count Criteria[1]	Model Volume-to-Count	RMSE[2]
Freeway	4	± 7%	**22%**	24%
Ramp	19	± 20%	8%	**39%**
Arterial	34	± 25%	-12%	24%
Collector	23	± 25%	-16%	28%
Highway	3	± 20%	5%	9%
Local	5	± 25%	**-39%**	**84%**
Overall	88		-6%	30%

Notes:

[1] Travel Model Improvement Program (TMIP). *Model Validation and Reasonableness Checking Manual*. Washington, D.C.: TMIP, 2001.

[2] Since no published guidelines exist, 30% was used for all functional classes. **Bold text** indicates result exceeds guideline.

Source: Fehr & Peers, July 2009.

TABLE 13
RESULTS OF DAILY MODEL VALIDATION BY VOLUME RANGE

Count Volume Range	Count Locations	Volume-to-Count		RMSE	
		Criteria[1]	Model	Criteria[2]	Model
Less than 1,000	5	± 200%	-22%	116%	61%
1,000 to 2,499	12	± 100%	3%	116%	95%
2,500 to 4,999	19	± 50%	-19%	116%	34%
5,000 to 9,999	17	± 25%	-5%	43%	28%
10,000 to 19,999	19	± 20%	-13%	28%	25%
20,000 to 24,999	1	± 20%	-12%	25%	13%
25,000 to 39,999	5	± 15%	15%	25%	17%

Notes:

1 Travel Model Improvement Program (TMIP). *Model Validation and Reasonableness Checking Manual*. Washington, D.C.: TMIP, 2001.

2 Harvey, G. et al., *A Manual of Regional Transportation Modeling Practice for Air Quality Analysis for the Natural Association of Regional Councils*. Washington, D.C., July 1993.

Source: Fehr & Peers, July 2009.

The model performs quite well based on daily validation criteria. This is a result of the validation and checking of the inputs at each step of the model development process, including a complete database of 2008 land use locally adjusted trip generation rates.

DYNAMIC VALIDATION

The traditional approach to the validation of travel demand models is to compare the link volumes for the model's base year to actual traffic counts taken in the same year. This approach provides information on a model's ability to reproduce a static condition. However, models are seldom used for static applications. By far the most common use of models is to forecast how a change in inputs would result in a change in traffic conditions. Therefore, another important test of a model's accuracy would focus on the model's ability to predict reasonable differences in outputs as inputs are changed; in other words, "dynamic" rather than static validation. Dynamic validation was performed for both land use and roadway network changes.

Land Use Changes

One form of dynamic validation is to vary the amounts of a particular land use type and compare the magnitude and direction of change from the original forecast. Of particular interest are the resulting changes in:

- Vehicle Trips (VT)
- Change in VT per land use unit change (VT/DU or KSF)
- Vehicle Miles Traveled (VMT)
- Change in VMT per land use unit change (VMT/DU or KSF)
- Vehicle Hours Traveled (VHT)

- Change in VHT per land use unit change (VHT/DU or KSF)
- Vehicle miles traveled per vehicle trip (VMT/VT)

This form of dynamic validation was performed on the Paso Robles model by adjusting the number of single-family dwelling units and the retail development of TAZ 2214 located in downtown Paso Robles and TAZ 8121 in northern Paso Robles. These zones were selected due to their geographic location and existing land use mix within the zone. To isolate each of these changes, tests were done sequentially, changing one item at a time.

TAZ 2214 is generally bounded by 7th Street, 10th Street, Spring Street and Pine Street, and consists of 60 dwelling units (14 single-family and 46 multi-family), and 85.4 ksf of non-residential land use (35 ksf of office, 19 ksf of regional retail, 6.7 ksf of neighborhood retail, 4.5 ksf of gas station/auto body uses, and 20 ksf of light industrial facilities). The values added to TAZ 2214 were selected based on the interaction with adjacent land use, and to determine if the model is sensitive to the location and magnitude of various land use changes. TAZ 8121 is north of the River Oaks residential development between River Road and Buena Vista Avenue and consists of 2 rural single-family dwelling units. The values added to TAZ 8121 were selected to show increased travel measures (e.g., trip length and travel time) as compared to TAZ 2214. The results are shown in **Table 14**.

- The change in VT per added DU ranges from 8.0 – 9.0. This is reasonable given the mix of land uses in the various zones and a trip generation rate of 7.56 for single-family. By removing a DU, the magnitude of change in VT is roughly the same as adding a DU, only the VT decreases instead of increases. Furthermore, the "noise" (i.e., change in VMT per DU) is less than 1/100th of a percent when adding or subtracting 1 DU. This shows appropriate response to change in either direction and is a good indicator that the model will behave reasonably with the addition of future land use.

- Adding a single DU to the model is a test of how much noise (random error) is in the model. Total VMT changed by between 1.6 and 12.0 vehicle-miles per day per dwelling unit added, which is a very reasonable result. This is reasonable given that locating 2,500 DU north of SR 46 generated the higher end of the range (an average trip length of 12.0 miles per trip for TAZ 8121) and the placement of dwelling units in downtown Paso Robles generated the lower range (an average trip length of 3.6 miles per trip for TAZ 2214).

- The VHT per DU change is fairly stable around 6.5 to 13.1, with the exception of adding 2,500 DUs to zone 8121. The retail land use has a greater variability between 83.3 and 135.3 for VHT per KSF.

- As shown in **Table 14**, the VMT per VT is very stable and typically is around 2.79. This measure is used to reduce the influence of vehicle trip generation differences between land use types by normalizing the trip distance by total trips.

TABLE 14
RESULTS OF DYNAMIC VALIDATION LAND USE TESTS

TAZ	Scenario	Vehicle Trips (VT)	Change in VT/DU or KSF Change	Vehicle Miles Traveled (VMT)	Change in VMT/DU or KSF Change	Vehicle Hours Traveled (VHT)	Change in VHT/DU or KSF Change	VMT/VT
Residential Land Use Results								
Base Case		293,581	N/A	827,683	N/A	1,219,982	N/A	2.82
TAZ 2214[1]	Added 1 DU	293,589	8.0	827,686	3.2	1,219,993	10.2	2.82
	Removed 1 DU	293,572	-9.0	827,680	-2.5	1,219,974	-8.9	2.82
	Added 10 DU	293,666	8.5	827,699	1.6	1,220,048	6.5	2.82
	Added 100 DU	294,440	8.6	828,261	5.8	1,221,289	13.1	2.81
	Added 2,500 DU	314,488	8.4	837,158	3.8	1,246,209	10.5	2.66
TAZ 8121[2]	Added 2,500 DU	314,381	8.3	857,748	12.0	1,277,584	23.0	2.73
Retail Land Use Results								
Base Case		293,581	N/A	827,683	N/A	1,219,982	N/A	2.82
TAZ 2214[1]	Added 10 KSF	293,877	29.6	828,071	38.8	1,220,816	83.3	2.82
	Added 100 KSF	296,464	28.8	830,748	30.6	1,230,404	104.2	2.80
	Added 300 KSF	302,052	28.2	837,921	34.1	1,246,985	90.0	2.77
TAZ 8121[2]	Added 300 KSF	302,114	28.4	851,506	79.4	1,260,563	135.3	2.82

Notes:
[1] Traffic Analysis Zone (TAZ) 2214 is generally bounded by Spring Street, Pine Street, 10th Street and 7th Street.
[2] Traffic Analysis Zone (TAZ) 8121 is located north of River Oaks Phase 1 and between River Road and Buena Vista Avenue.
Source: Fehr & Peers, July 2009.

Roadway Network Changes

A second set of dynamic validation tests were performed to examine how the model would respond to changes in the road network. For this exercise, we completed three tests:

1. Widened Niblick Road (between Spring Street and South River Road)
2. Removed connection between Union Road and SR 46 (between Golden Hill Road and Airport Road)

3. Added the 16th Street Southbound On-Ramp to US 101

To isolate each of these changes, only one of the tests was done at a time. The description and results of each test are discussed in **Table 15**.

TABLE 15
RESULTS OF DYNAMIC VALIDATION NETWORK TESTS

Dynamic Test	Expected Change	Actual Change
Widen Niblick Road	• Volume on modified links will increase and volume on parallel links will decrease.	• Niblick Road was widened from 4 to 6 lanes between Spring Street and River Road. Increasing capacity on Niblick Road decreased volume by reasonable levels on Creston Road.
Remove the Union Road intersection with SR 46	• Volume on other links connecting to SR 46 will increase and volume on Union Road will decrease.	• Deleted the connection between Union Road and SR 46 between Golden Hill Road and Airport Road. The model appropriately shifted trips to Golden Hill Road between Union Road and SR 46. Some traffic shifted from city streets and remained on US 101 to SR 46 – eastbound trips on SR 46, west of Golden Hill Road, increased with an anticipated decrease in traffic on Union Road.
Add 16th Street/17th Street Southbound On-Ramp to US 101	• Volume on connecting links will increase and volume on adjacent ramps will decrease.	• Added 16th Street Southbound On-ramp to US 101. The model appropriately shifted trips from the two adjacent southbound on-ramps at 24th Street and Spring Street to the new ramp. There were complementary increases in traffic on Creston Road and 13th Street.

Source: Fehr & Peers, July 2009.

6. PEAK HOUR MODEL SPECIFICATIONS

In addition to the daily model validation described in the earlier chapters of this report, we developed model components to forecast traffic during the morning (AM) and evening (PM) peak hours. For purposes of model development and testing, the typical peak hours were determined based on traffic count data. This review showed that the morning peak hour generally occurs from 7:30 to 8:30 AM, and the evening peak hour occurs between 4:30 and 5:30 PM. Estimates of peak hour trips were obtained by applying a factor to the daily productions and attractions for each trip purpose. The peak hour factors were calibrated to reflect trip-making relationships between the AM and PM peak hours to the daily model. In addition, recent national and regional data from reference documents *National Cooperative Highway Research Program (NCHRP) Report 365*[3] was consulted to ensure that the peak hour factors used in the Paso Robles travel demand model were within reasonable ranges.

Table 16 presents the AM and PM peak hour factors published by NCHRP[4], SLOCOG model[5] and the Paso Robles model. The differences in peak hour factors between the data references and the Paso Robles model are primarily due to local travel characteristics in the Paso Robles area compared to nationally (NCHRP Report 365 data).

[3] National Cooperative Highway Research Program (NCHRP). *Report 365: Travel Estimation Techniques for Urban Planning.* Washington, D.C.: National Academy Press, 1998.
[4] NCHRP, 1998.
[5] SLOCOG, 2004.

TABLE 16
PEAK HOUR FACTOR COMPARISON

Trip Purpose		AM Peak Hour Factors[1]			PM Peak Hour Factors[1]		
		SLOCOG[2]	NCHRP 365[3]	Paso Robles 2007 Model	SLOCOG[2]	NCHRP 365[3]	Paso Robles 2007 Model
Home-Based Work (HBW)	Departure	15.50	13.80	12.20	0.70	0.90	1.40
	Return	0.10	0.60	1.10	9.00	11.40	9.50
Home-Based Other (HBO)	Departure	7.00	5.00	3.50	4.00	4.20	4.00
	Return	1.60	0.40	2.70	2.60	3.20	4.80
Non-Home-Based (NHB)	Departure	3.00	1.50	2.50	5.20	9.10	5.20
	Return	2.00		2.50	5.20		5.20
Home-Based School (HBSCH)	Departure	8.00	N/A	8.00	2.00	N/A	2.40
	Return	3.60		3.60	5.00		6.00
Regional (REGIONAL)	Departure	4.40		5.00	4.40		3.80
	Return	2.20		2.00	2.20		1.90
Internal – External (IX)	Departure	3.00		3.00	5.00		5.00
	Return	3.00		3.00	5.00		5.00
External – Internal (XI)	Departure	5.20		5.20	6.00		6.00
	Return	0.50		0.50	4.00		4.00
External – External (XX)	Departure	1.80		1.80	4.00		4.00
	Return	1.80		1.80	3.30		3.30

Notes:

1 Factors represent the percent of daily traffic occurring in the peak hour for departure and returns.

2 Peak hour factors used in the 2004 SLOCOG model update.

3 National Cooperative Highway Research Program (NCHRP). *Report 365: Travel Estimation Techniques for Urban Planning.* Washington, D.C.: National Academy Press, 1998. Reported for 7-8 AM and 5-6 PM from Table 41.

N/A = Not available.

Source: Fehr & Peers, July 2009.

7. PEAK HOUR MODEL VALIDATION RESULTS

The peak hour model volumes were compared against individual peak hour traffic counts, Caltrans, and other sources. Spreadsheets were created to compute the validation results for roadway links in the Paso Robles traffic model. As shown on **Figure 10**, a subset of the daily screenlines are used because limited peak hour ramps counts exist on US 101 through Paso Robles. As a result, the AM and PM validation statististics are based on a set of 69 count locations. **Figures 13** and **14** show the validation locations. All counts are included on the roadway file and analysis of the reduced set of counts are included in **Appendix H**.

Although, peak hour model validation was conducted based on the two-way sum of the count, freeways were validated in each direction and the directionality for other major facilities was checked. The final results for peak hour conditions are summarized in **Table 17** below, while the detailed spreadsheets are presented in **Appendix H**.

TABLE 17
RESULTS OF PEAK HOUR MODEL VALIDATION

Validation Item	Criterion for Acceptance	AM Peak Hour Model Results	PM Peak Hour Model Results
Count Locations	N/A	69	69
% of Links within Caltrans Standard Deviations	At Least 75%	80%	87%
% of Screenlines within Caltrans Standard Deviations	100%	100%	100%
2-way Sum of All Links Counted	Within ± 10%	**-13%**	-1%
Correlation Coefficient	Greater than 88%	92%	94%
RMSE	30% or less	**36%**	**31%**

Source: Fehr & Peers, July 2009.

As shown in **Table 17**, the 2007 Paso Robles TDF AM and PM peak hour models meet or exceed the guidelines for model accuracy. In addition to model-wide statistics, the results are aggregated by functional class, as shown in **Table 18** and volume range in **Table 19**. The results in **Tables 18** and **19** are descriptive statistics used to complement the overall model-wide statistics in **Table 17** and link level statistics in **Appendix H**. Overall this shows that the greatest uncertainty occurs during the AM peak hour.

Again, the model generally meets the guidelines except for highways and the lower functional classes. Because the traffic volumes carried by facilities with the same functional class can vary substantially, it is standard practice at Fehr & Peers to calculate model validation statistics by traffic volume range. This ensures that the model performs well on mid- and high-volume facilities, which are the primary focus of most travel forecasting efforts. These results are shown in **Table 26**.

TABLE 18
RESULTS OF DAILY MODEL VALIDATION BY FUNCTIONAL CLASS

Functional Class	Volume-to-Count Criteria[1]	AM Peak Hour			PM Peak Hour		
		Count Locations	Model Volume-to-Count	RMSE[2]	Count Locations	Model Volume-to-Count	RMSE[2]
Freeway	± 7%	4	**38%**	**45%**	4	**36%**	37%
Ramp	± 20%	N/A	N/A	N/A	N/A	N/A	N/A
Arterial	± 25%	34	-18%	30%	34	5%	26%
Collector	± 25%	23	-19%	39%	23	7%	25%
Highway	± 25%	3	-5%	10%	3	-4%	11%
Local	± 25%	5	**-43%**	**90%**	5	**37%**	**80%**

Notes:
1 Travel Model Improvement Program (TMIP). *Model Validation and Reasonableness Checking Manual*. Washington, D.C.: TMIP, 2001.
2 Since no published guidelines exist, 40% was used for all functional classes.
Bold text indicates that results exceed guideline criteria.
Source: Fehr & Peers, July 2008.

TABLE 19
RESULTS OF PEAK HOUR MODEL VALIDATION BY VOLUME RANGE

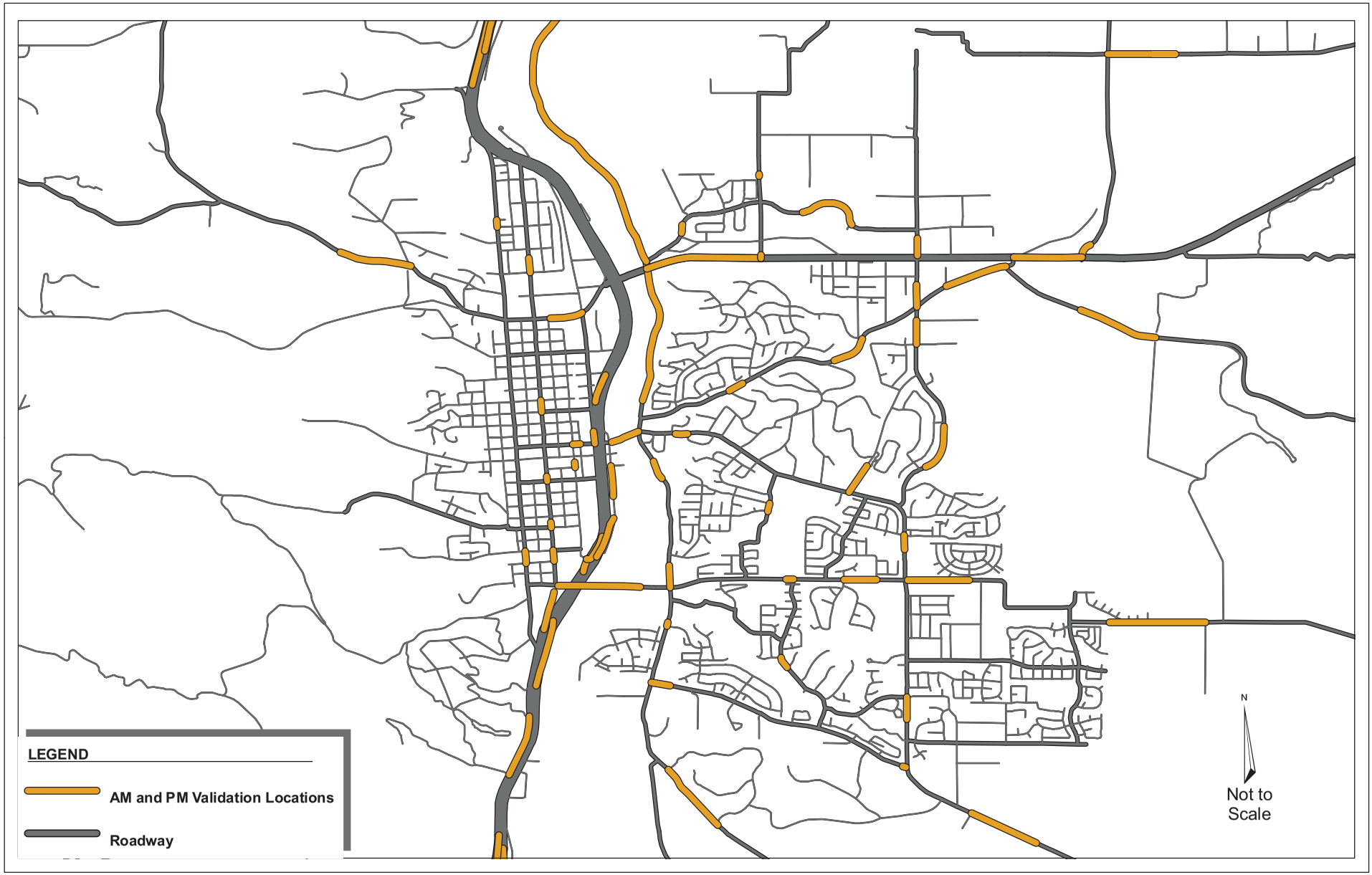
Count Volume Range	Volume-to-Count Criteria[1]	RMSE Criteria[2]	AM Peak Hour			PM Peak Hour		
			Counts	Volume-to-Count	RMSE[2]	Counts	Volume-to-Count	RMSE[2]
0 to 100	± 100%	116%	2	-88%	-88%	2	26%	53%
100 to 249	± 50%	116%	10	-10%	-10%	12	0%	98%
250 to 499	± 25%	43%	19	-13%	-13%	12	-12%	34%
500 to 999	± 20%	28%	19	-24%	-24%	17	7%	**32%**
1,000 to 1,999	± 20%	25%	17	-11%	-11%	21	-11%	24%
2,000 to 2,499	± 15%	25%	2	18%	-18%	1	**26%**	**26%**
2,500 to 3,999	± 15%	30%	0	N/A	N/A	4	14%	20%

Notes:
1 Travel Model Improvement Program (TMIP). *Model Validation and Reasonableness Checking Manual*. Washington, D.C.: TMIP, 2001.
2 Harvey, G. et al., *A Manual of Regional Transportation Modeling Practice for Air Quality Analysis for the Natural Association of Regional Councils*. Washington, D.C., July 1993.
Source: Fehr & Peers, July 2009.

The model performs quite well on these validation criteria except for the highest volume range in the PM where most of the error comes from one freeway location outside of the City being higher than the observed count. The model was developed to be used in local planning studies within the City of Paso Robles, and the validation on

major local roadways was within acceptable range. Therefore, the final model validation is expected to be appropriate for the purposes for which it was developed. The good results of the validation are due to the checking of the inputs at each step of the model development process, including a well-calibrated and validated daily model, and a complete set of count data.

The AM peak hour model deviation by geographic location is shown on **Figure 15**, while **Figure 16** shows a scatter plot of count and model volumes compared to Caltrans' allowable error. **Figures 17** and **18** show similar comparisons for the PM peak hour model. As these figures show, the error is distributed geographically and by count volume and demonstrates the model is performing well overall.



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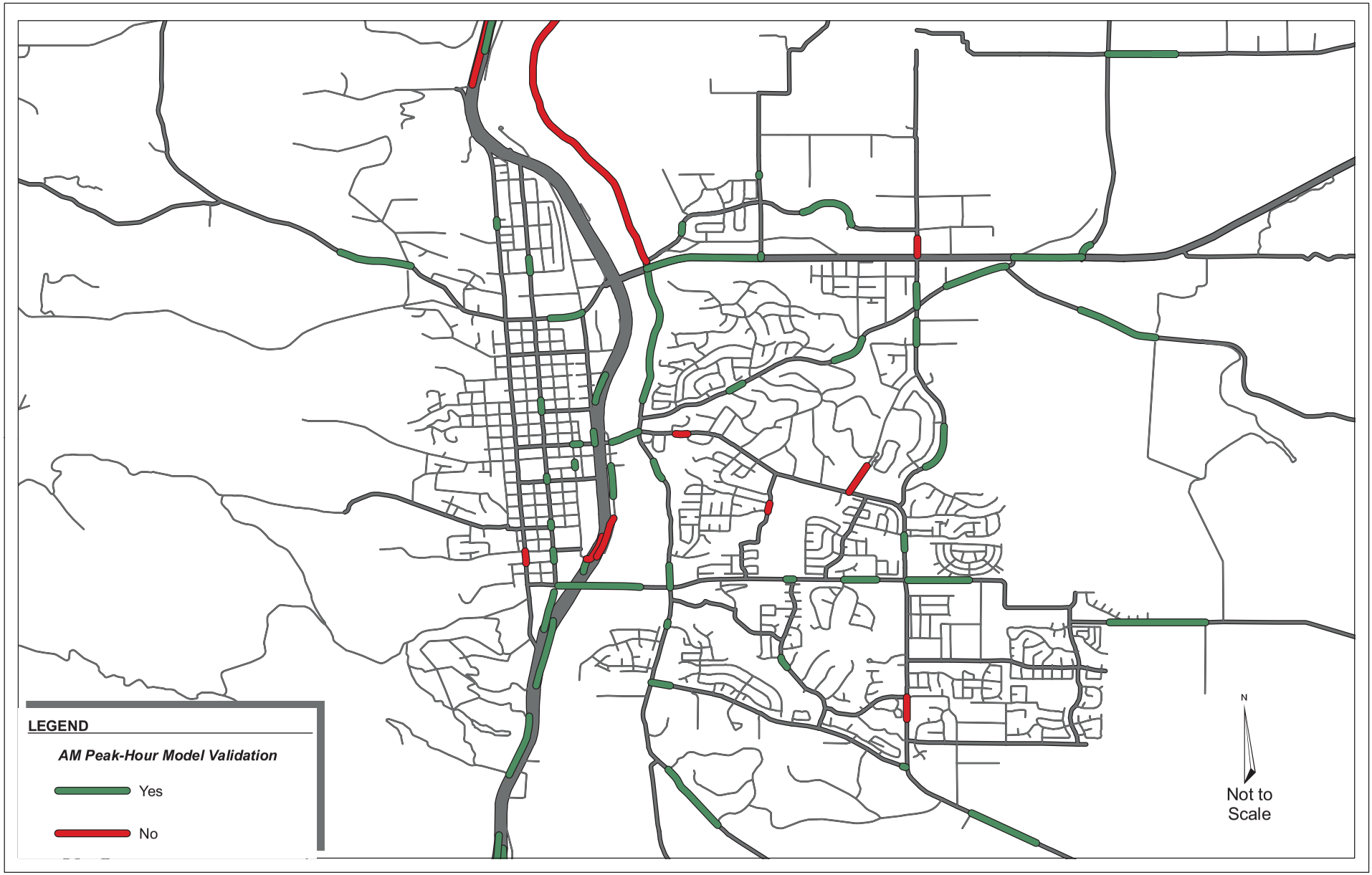
AM AND PM PEAK-HOUR VALIDATION LOCATIONS

FIGURE 13



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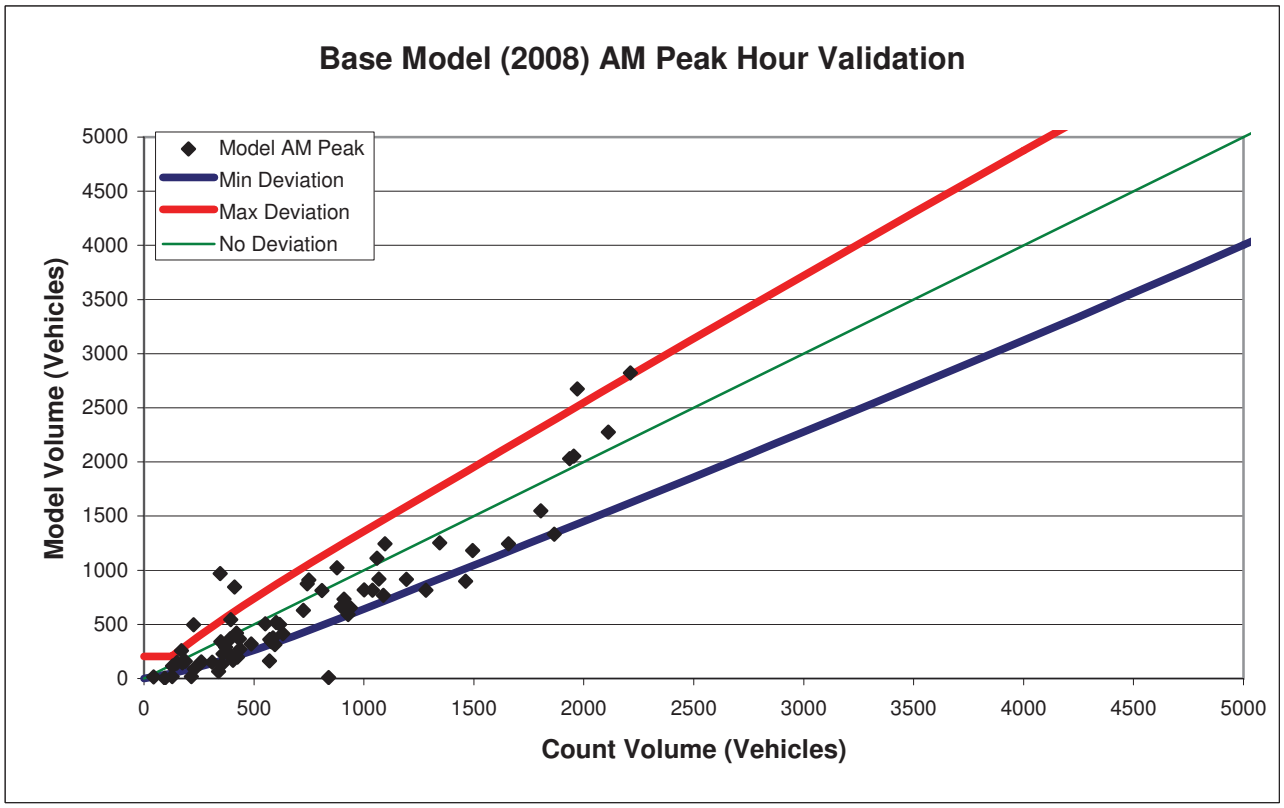
AM PEAK-HOUR MODEL VALIDATION

FIGURE 14



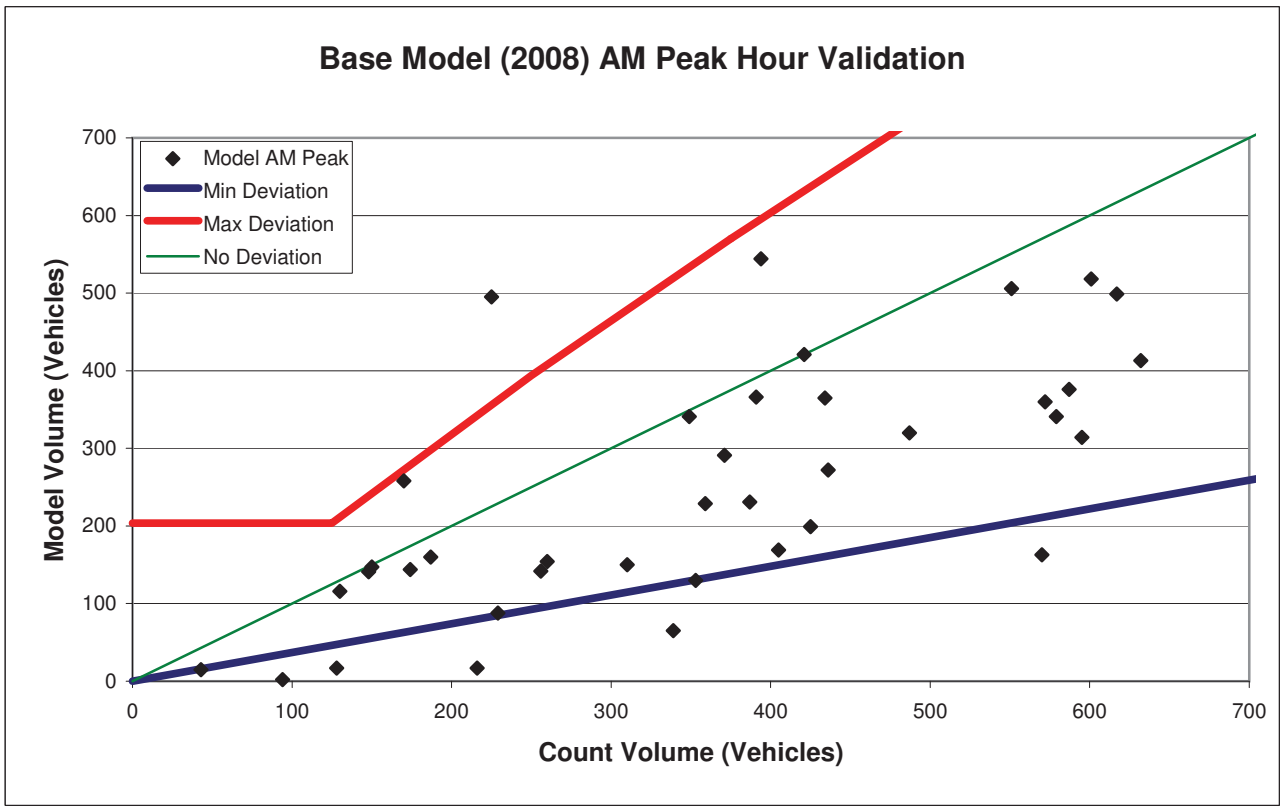
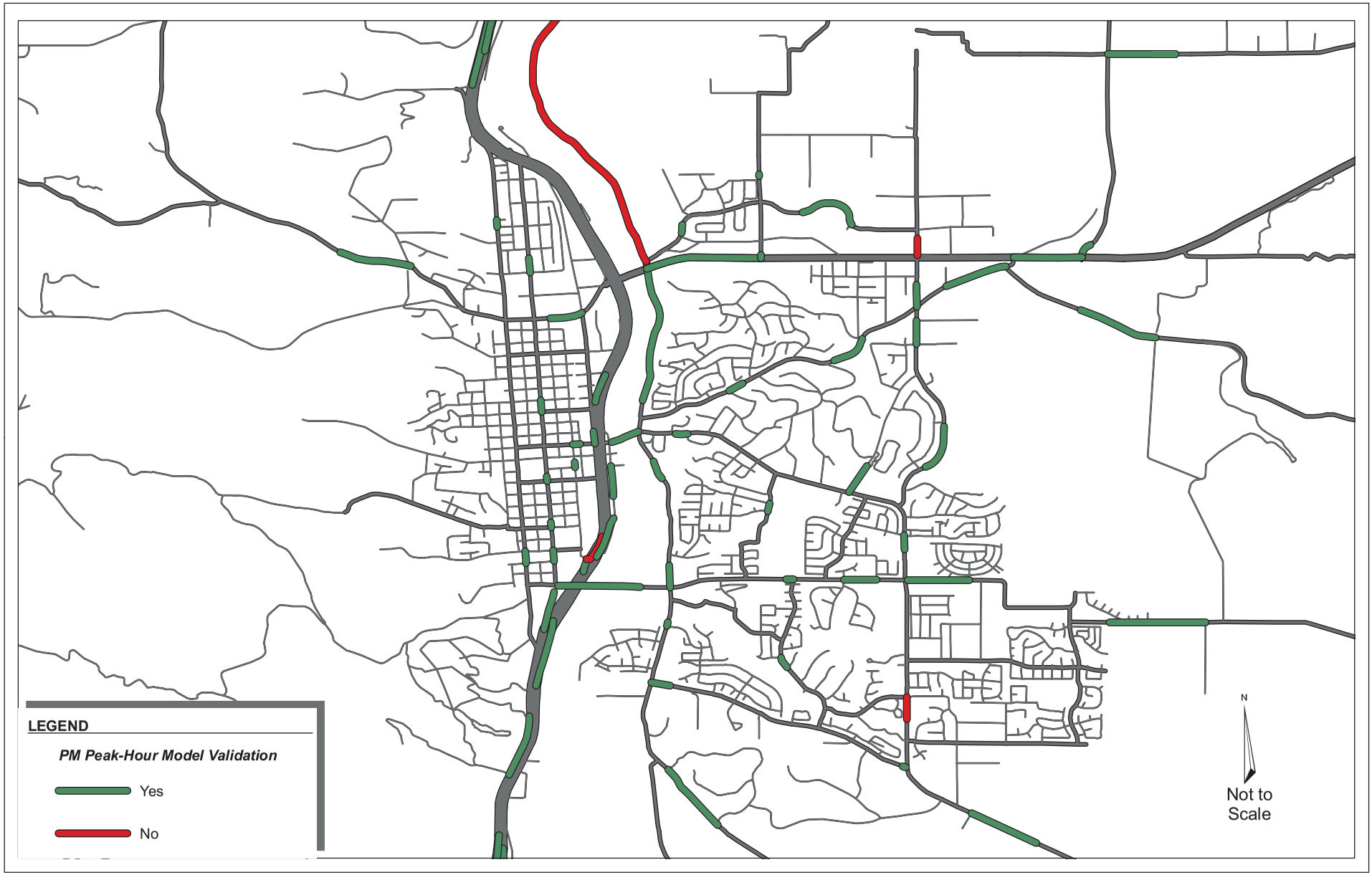


Figure 15 AM Peak Hour Model Validation Scatter Plots



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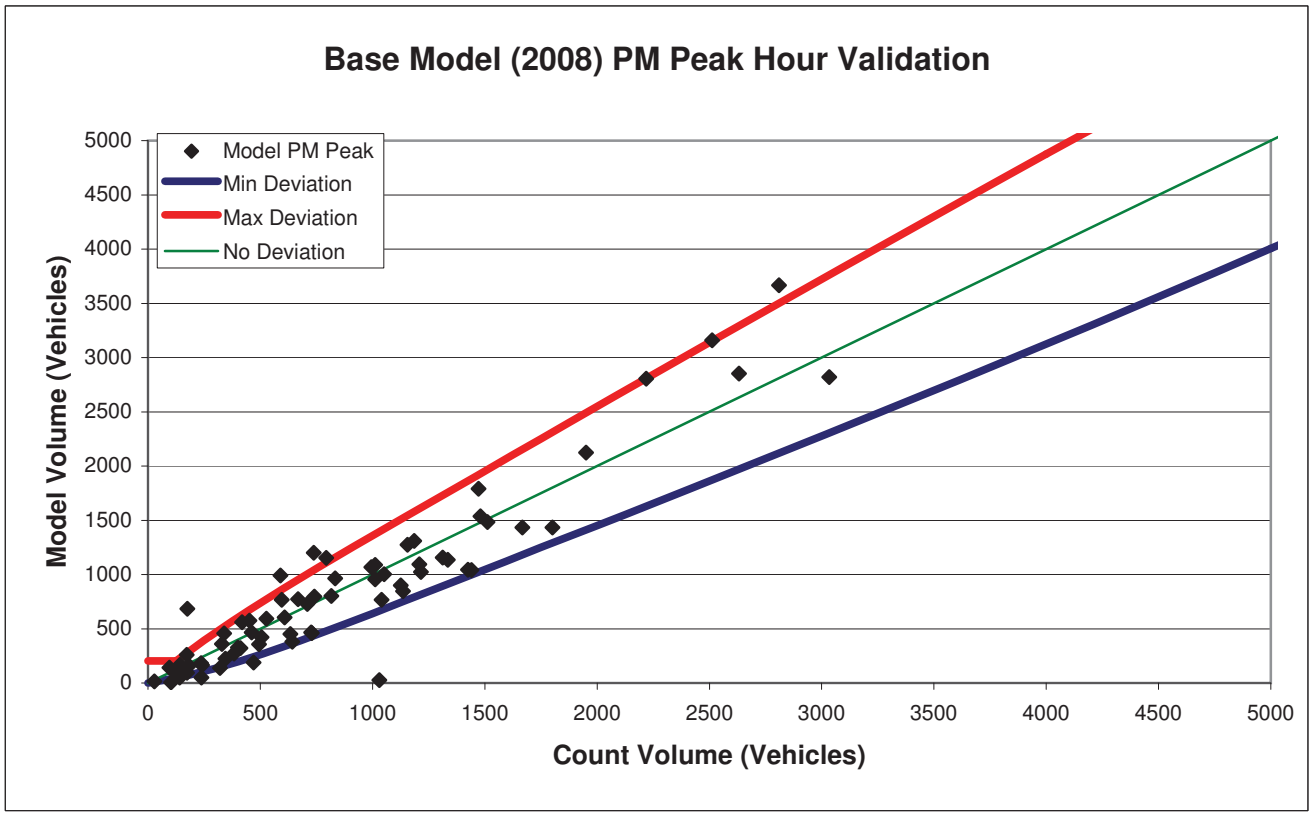
PM PEAK-HOUR MODEL VALIDATION

FIGURE 16



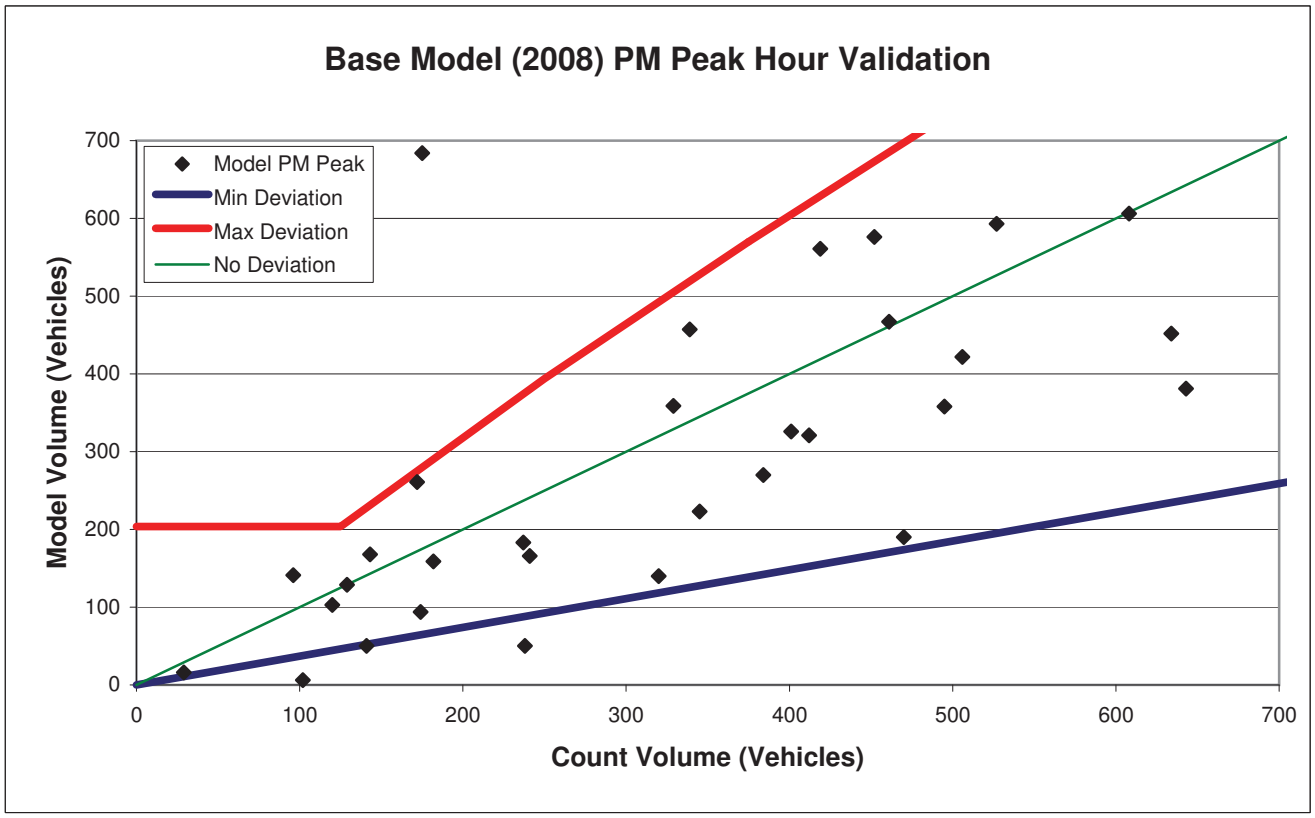
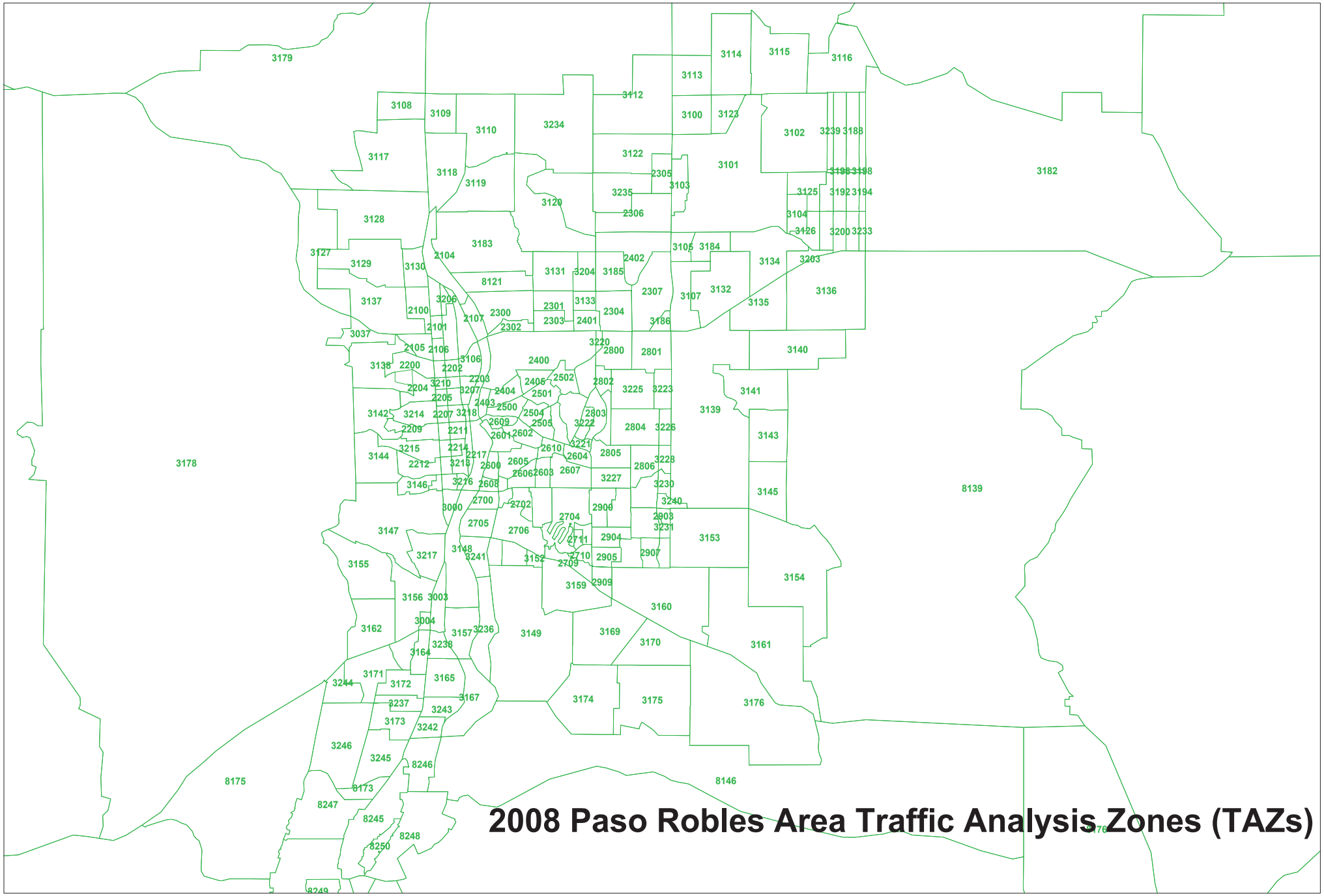


Figure 17 PM Peak Hour Model Validation Scatter Plots

APPENDIX A:
TRAFFIC ANALYSIS ZONE (TAZ) BOUNDARY MAPS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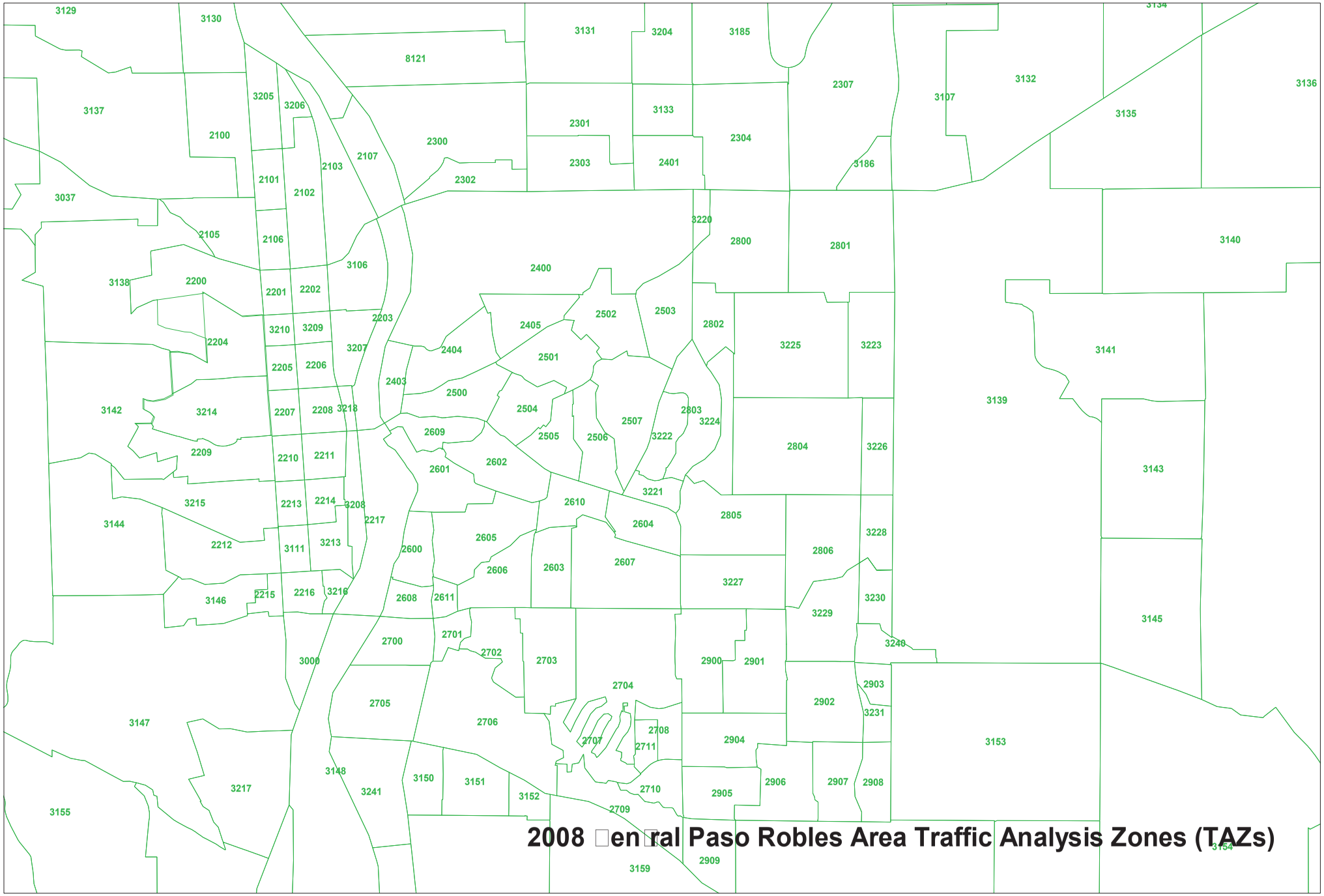
2008 Paso Robles Area Traffic Analysis Zones (TAZs)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2008 Central Paso Robles Area Traffic Analysis Zones (TAZs)
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2909

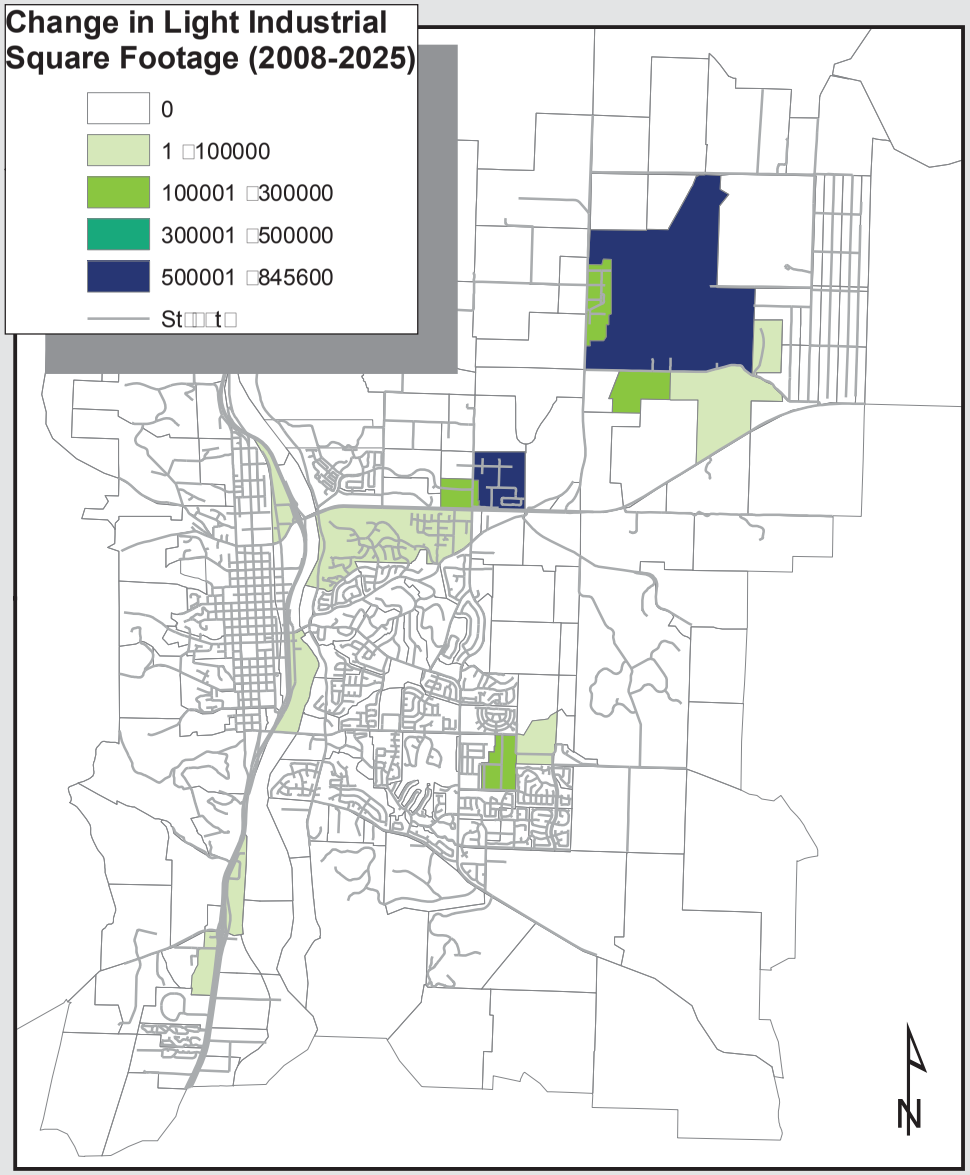
APPENDIX B:
LAND USE DATA
(YEAR 2008 AND YEAR 2025)

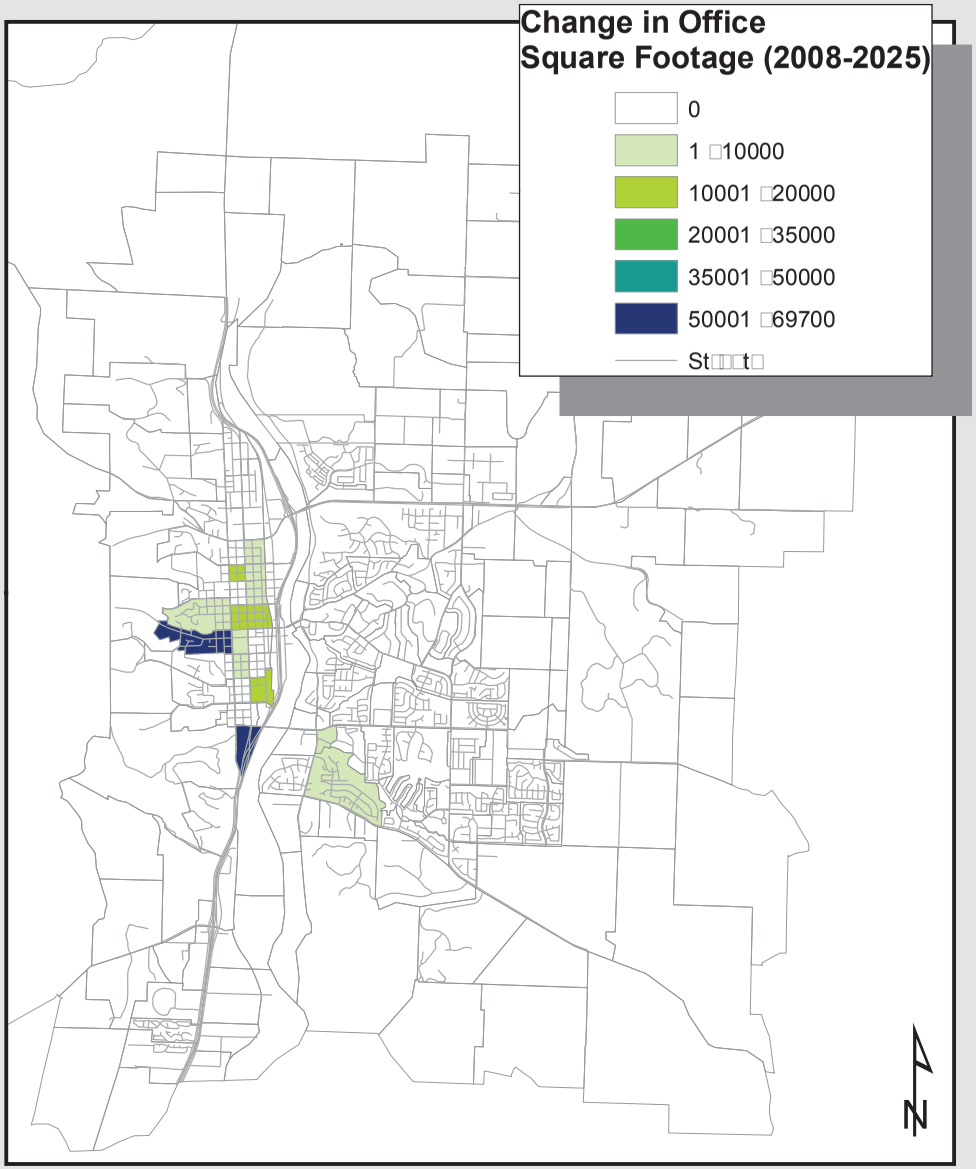
TAZ	ATYPE	ATYPE_STR	SFR	MFR	MH	RURAL	OFF_GEN	DWNTWN	RET_REG	RET_NEI	CHURCH	GAS	ELEM	HIGHSCH	CAL_S	CAL_E	CUE_S	CUE_E	HOSPITL	IND_LIT	IND_HVY	MOTEL	REC	PQP_HI	PQP_LO	AGR	UNDEV	SPECIAL	BEACH
102	1	SLO City	27	132	0	0	15701	0	0	7900	6660	0	0	0	0	0	0	0	0	0	0	0	22	0	0	0	71	0	0
104	1	SLO City	30	22	0	0	0	0	0	0	0	0	0	210	0	0	0	0	0	0	0	0	0	4500	0	0	52	0	0
106	1	SLO City	31	243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0
108	1	SLO City	49	79	0	0	40084	40254	0	52145	0	0	0	0	0	0	0	0	0	0	0	12	0	51455	9280	0	75	0	0
110	1	SLO City	11	32	0	0	89157	0	0	1500	0	0	0	0	0	0	0	0	0	0	0	0	0	85300	0	0	66	0	0
112	1	SLO City	91	244	0	0	50241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	58	0	0
114	1	SLO City	7	14	0	0	19960	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14050	0	14	0	0
116	1	SLO City	139	96	0	0	49089	0	0	3000	30000	800	0	0	0	0	0	0	0	0	0	89	0	0	0	0	17	0	0
118	1	SLO City	8	146	0	0	0	0	0	0	0	1900	0	0	0	0	0	0	0	0	0	298	0	0	0	0	3	0	0
120	1	SLO City	11	12	33	0	43376	339768	0	21550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	0	0
122	1	SLO City	0	17	0	0	2000	0	0	37516	0	0	0	0	0	0	0	0	0	0	0	0	9	2250	0	0	11	0	0
124	1	SLO City	2	0	0	0	0	80618	0	17680	24500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
126	1	SLO City	0	0	0	0	0	133940	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	1	SLO City	0	0	0	0	0	34026	0	30365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	1	SLO City	21	82	0	0	39895	0	0	29965	0	0	0	0	0	0	0	0	0	0	0	0	30	25636	0	0	39	0	0
132	1	SLO City	7	62	0	0	0	0	13200	0	0	652	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	1	SLO City	17	7	0	0	3276	0	0	15228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
136	1	SLO City	3	8	0	0	12695	11643	800	39772	0	5130	0	0	0	0	0	0	0	0	0	0	24	0	0	0	16	0	0
138	1	SLO City	0	0	0	0	2070	1800	5450	103184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	1	SLO City	2	3	0	0	5200	5100	0	90482	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	1	SLO City	0	13	0	0	0	15395	0	96091	0	0	0	0	0	0	0	0	0	0	0	50	0	0	0	0	10	0	0
144	1	SLO City	0	0	0	0	0	18767	0	26750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	1	SLO City	2	3	0	0	62157	0	11700	41734	0	24600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0
148	1	SLO City	14	5	0	0	8490	0	0	12600	0	2100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	1	SLO City	17	0	0	0	25951	0	0	13970	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	6	0	0
152	1	SLO City	16	2	0	0	50907	0	29000	1600	0	0	0	0	0	0	0	0	0	0	0	154	0	0	0	0	0	0	0
154	1	SLO City	0	0	0	0	1500	0	0	4500	3000	0	0	0	0	0	0	0	0	0	0	303	0	0	0	0	0	0	0
156	1	SLO City	17	2	0	0	0	0	2500	82352	3000	21224	0	0	0	0	0	0	0	0	0	0	28	0	0	0	9	0	0
158	1	SLO City	35	87	0	0	51002	13450	0	147625	4954	6075	0	0	0	0	0	0	0	750	0	84	0	0	0	0	57	0	0
160	1	SLO City	5	16	0	0	55815	0	0	10975	2304	9000	0	0	0	0	0	0	0	0	0	7	0	0	0	0	27	0	0
162	1	SLO City	2	30	0	0	169537	16500	0	30750	23120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0
164	1	SLO City	24	5	0	0	47710	0	0	12840	48194	3000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0
166	1	SLO City	1	2	0	0	33860	0	0	57700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
168	1	SLO City	29	22	0	0	22723	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
170	1	SLO City	1	0	0	0	0	0	0	105961	0	1000	0	0	0	0	0	0	0	3200	0	0	0	0	0	0	5	0	0
172	1	SLO City	231	195	0	0	2000	0	0	40239	2000	1250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0	0
174	1	SLO City	121	71	0	0	11873	0	0	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	1	SLO City	92	152	0	0	2000	0	0	4750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0
178	1	SLO City	45	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	0	0	0	0	0	0
180	1	SLO City	0	0	0	0	0	0	0	58787	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91800	0	134	0	0
182	1	SLO City	6	1	0	0	22418	0	0	108693	0	8800	0	0	0	0	0	0	22429	93778	0	28	0	0	0	0	72	0	0
184	1	SLO City	247	201	0	0	1200	0	0	13240	0	1000	287	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0
186	1	SLO City	19	31	0	0	0	0	0	42450	0	11050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0
188	1	SLO City	86	201	0	0	25167	0	0	9000	0	0	0	0	0	0	0	0	4250	0	0	0	0	0	0	0	3	0	0
190	1	SLO City	0	0	0	0	20632	0	0	31350	0	1750	0	0	0	0	0	0	0	0	0	0	0	23890	0	0	27	0	0
192	1	SLO City	235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	284	0	0
194	1	SLO City	144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	134	0	0
196	1	SLO City	256	68	0	0	3690	0	0	100	12150	2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0
198	1	SLO City	20	7	0	0	6420	0	14890	58856	0	20235	0	0	0	0	0	0	0	29068	17050	0	0	0	0	0	93	0	0
202	1	SLO City	139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2318	0	0
204	1	SLO City	0	0	0	0	0	0	0	0	0	0	0	1519	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
206	1	SLO City	7	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
208	1	SLO City	99	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	0	0
210	1	SLO City	169	116	0	0	7300	0	0	5000	14384	0	0	0	0	0	0	0	0	0	0	0	0	18850	0	0	915	0	0
212	1	SLO City	0	1	0	0	46152	0	0	0	0	0	0	0	0	0	0	0	105400	0	0	0	0	0	0	0	355	0	0
214	1	SLO City	6	0	0	0	34549	0	0	0	0	0	0	0	0	0	0	0	39813	0	0	0	0	0	0	0	742	0	0
216	1	SLO City	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	175	0	0
218	1	SLO City	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	1	SLO City	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0
222	1	SLO City	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0
224	1	SLO City	216	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225	1	SLO City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	115	0	0
226	1	SLO City	79	272	0	0	0	0	0	0	2488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	0	0
228	1	SLO City	95	2	0	0	2648	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	0	0
230	1	SLO City	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0	0
232	1	SLO City	72	0	0	0	0	0	0	512076	6860	25300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160	0	0
234	1	SLO City	2	0	0	0	0	0	0	90094	0	0	0	0	0	0	0	0	0	165598	0	0	39	0	0	0	103	0	0
236	1	SLO City	40	168	0	0	29935	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78	0	0	0	517	0	0
240	1	SLO City	236	156	0	0	2800	0	0	0	0	24712	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	0	0
242	1	SLO City	70	58	0	0	0	0	0	18760	47988	0	0	0	0	0	0	0	30000	0	0	0	0	0	0	0	77	0	0
246	1	SLO City	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0
248	1	SLO City	172	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
302	1	SLO City	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	297	0	0
304	1	SLO City	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3800	0	0	0	0	0	0	19104	0	0
306	1	SLO City	143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3690	0	0
308	1	SLO City	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	194	0	0
310	1	SLO City	127	0	0	0	0	0	0	0	6300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
311	1	SLO City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	108	0	0
312	1	SLO City	57	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
314	1	SLO City	103	0	0	0	0	0	0	0	0	0	424	0	0	0	0	0	0	0	0	0	0	0	0	0	137	0	0
316	1	SLO City	364	162	0	0	0	0	0	0	40362	0	480	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0
318	1	SLO City	54	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0	0
320	1	SLO City	0	214	0	0	6824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
322	1	SLO City	1	41	0	0	0	0	0	9681	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
324	1	SLO City	0	0	0	0	2830	0	0	82265	0	3000	0	0	0	0	0	0	0	0	0	0	0	0	2900	0	0	0	0
326	1	SLO City	153	0	0	0	0	0	0	0	4905	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
328	1	SLO City	53	3	0	0	0	0	0	1235	4000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0
330	1	SLO City	159	320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
332	1	SLO City	20	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0	0

TA	ATYPE	ATYPE_STR	SFR	MFR	MH	RURAL	OFF_GEN	DWNTWN	RET_REG	RET_NEI	CHURCH	GAS	ELEM	HIGHSCH	CAL_S	CAL_E	CUE_S	CUE_E	HOSPITL	IND_LIT	IND_HVY	MOTEL	REC	PQP_HI	PQP_LO	AGR	UNDEV	SPECIAL	BEACH
102	1	SLO City	30	134	0	0	19367	0	0	9086	8525	0	0	0	0	0	0	0	0	0	0	0	29	0	0	0	71	0	0
104	1	SLO City	32	23	0	0	0	0	0	0	0	0	0	185	0	0	0	0	0	0	0	0	0	6563	719	0	52	0	0
106	1	SLO City	39	248	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0
108	1	SLO City	53	81	1	0	54142	44980	0	58267	0	0	0	0	0	0	0	0	0	0	0	16	0	75042	20275	0	75	0	0
110	1	SLO City	12	33	0	0	109973	0	0	1725	0	0	0	0	0	0	0	0	0	0	0	0	0	124401	13635	0	66	0	0
112	1	SLO City	101	250	1	0	61971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	58	0	0
114	1	SLO City	8	14	0	0	24620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18245	0	14	0	0
116	1	SLO City	146	100	1	0	60550	0	0	3450	38400	800	0	0	0	0	0	0	0	0	0	118	0	0	0	0	17	0	0
118	1	SLO City	13	149	1	0	0	0	0	0	0	1900	0	0	0	0	0	0	0	0	0	396	0	0	0	0	3	0	0
120	1	SLO City	13	13	33	0	93168	366790	0	23264	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	0	0
122	1	SLO City	1	17	0	0	2467	0	0	43148	0	0	0	0	0	0	0	0	0	0	0	0	11	3281	360	0	11	0	0
124	1	SLO City	2	0	0	0	9411	87757	0	19246	31360	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
126	1	SLO City	0	0	0	0	15636	143993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	1	SLO City	0	0	0	0	3972	37784	0	33719	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	1	SLO City	24	84	0	0	49210	0	0	34463	0	0	0	0	0	0	0	0	0	0	0	0	38	37387	4098	0	39	0	0
132	1	SLO City	9	63	0	0	0	0	15181	0	0	652	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	1	SLO City	18	7	0	0	4041	0	0	17514	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
136	1	SLO City	3	8	0	0	17018	13196	907	45077	0	5130	0	0	0	0	0	0	0	0	0	0	31	0	0	0	16	0	0
138	1	SLO City	0	0	0	0	2763	2068	6261	118547	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	1	SLO City	2	3	0	0	7009	5845	0	103702	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	1	SLO City	102	80	14	0	1797	17546	0	109519	0	0	0	0	0	0	0	0	0	0	0	66	0	0	0	0	10	0	0
144	1	SLO City	0	0	0	0	2191	21003	0	29938	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	1	SLO City	2	3	0	0	76669	0	13456	47999	0	24600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0
148	1	SLO City	15	5	0	0	10472	0	0	14491	0	2100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	1	SLO City	18	0	0	0	32010	0	0	16067	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	6	0	0
152	1	SLO City	17	2	0	0	62793	0	33353	1840	0	0	0	0	0	0	0	0	0	0	0	205	0	0	0	0	0	0	0
154	1	SLO City	0	0	0	0	1850	0	0	5175	3840	0	0	0	0	0	0	0	0	0	0	403	0	0	0	0	0	0	0
156	1	SLO City	18	2	0	0	0	0	2875	94714	3840	21224	0	0	0	0	0	0	0	0	0	0	36	0	0	0	9	0	0
158	1	SLO City	39	89	0	0	64480	15385	0	168860	6341	6075	0	0	0	0	0	0	0	998	0	112	0	0	0	0	57	0	0
160	1	SLO City	6	16	0	0	68847	0	0	12622	2949	9000	0	0	0	0	0	0	0	0	0	9	0	0	0	0	27	0	0
162	1	SLO City	3	31	0	0	211047	18544	0	34560	29594	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0
164	1	SLO City	25	6	0	0	58849	0	0	14767	61688	3000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0
166	1	SLO City	1	2	0	0	41766	0	0	66361	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
168	1	SLO City	31	23	0	0	28028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
170	1	SLO City	1	0	0	0	0	0	0	121867	0	1000	0	0	0	0	0	0	0	4256	0	0	0	0	0	0	5	0	0
172	1	SLO City	244	203	2	0	2467	0	0	46279	2560	1250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0	0
174	1	SLO City	127	74	1	0	14645	0	0	863	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	1	SLO City	99	156	1	0	2467	0	0	5463	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0
178	1	SLO City	47	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	108	0	0	0	0	0	0
180	1	SLO City	0	0	0	0	0	0	0	67612	0	0	0	0	0	0	0	0	0	0	0	0	0	0	119207	0	134	0	0
182	1	SLO City	6	1	0	0	27652	0	0	125009	0	8800	0	0	0	0	0	0	49782	124739	0	37	0	0	0	0	72	0	0
184	1	SLO City	260	209	2	0	1480	0	0	15227	0	1000	253	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0
186	1	SLO City	20	32	0	0	0	0	0	48822	0	11050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0
188	1	SLO City	94	206	1	0	31043	0	0	10351	0	0	0	0	0	0	0	0	9433	0	0	0	0	0	0	0	3	0	0
190	1	SLO City	0	0	0	0	25449	0	0	36056	0	1750	0	0	0	0	0	0	0	0	0	0	0	34841	3819	0	27	0	0
192	1	SLO City	242	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	284	0	0
194	1	SLO City	148	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	134	0	0
196	1	SLO City	266	74	1	0	4552	0	0	115	15552	2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0
198	1	SLO City	2	7	0	0	7919	0	17125	67691	0	20235	0	0	0	0	0	0	0	38665	19618	0	0	0	0	0	93	0	0
202	1	SLO City	143	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2318	0	0
204	1	SLO City	0	0	0	0	0	0	0	0	0	0	0	1337	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
206	1	SLO City	9	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
208	1	SLO City	103	29	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	0	0
210	1	SLO City	177	121	1	0	9004	0	0	575	18412	0	0	0	0	0	0	0	0	0	0	0	0	2749	3013	0	915	0	0
212	1	SLO City	0	1	0	0	56928	0	0	0	0	0	0	0	0	0	0	0	23394	0	0	0	0	0	0	0	355	0	0
214	1	SLO City	6	0	0	0	42615	0	0	0	0	0	0	0	0	0	0	0	88367	0	0	0	0	0	0	0	742	0	0
216	1	SLO City	56	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	175	0	0
218	1	SLO City	36	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	1	SLO City	47	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0
222	1	SLO City	63	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0
224	1	SLO City	222	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225	1	SLO City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	115	0	0
226	1	SLO City	89	278	1	0	0	0	0	0	3185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	0	0
228	1	SLO City	98	4	0	0	3266	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	0	0
230	1	SLO City	125	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0	0
232	1	SLO City	74	1	0	0	0	0	0	588944	8781	25300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160	0	0
234	1	SLO City	2	0	0	0	0	0	0	103618	0	0	0	0	0	0	0	0	0	220264	0	0	50	0	0	0	103	0	0
236	1	SLO City	46	172	1	0	36924	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	0	0	0	517	0	0
240	1	SLO City	248	163	2	0	3454	0	0	0	0	24712	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	0	0
242	1	SLO City	74	60	1	0	0	0	0	21576	61425	0	0	0	0	0	0	0	66587	0	0	0	0	0	0	0	77	0	0
246	1	SLO City	114	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0
248	1	SLO City	177	3	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
302	1	SLO City	30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	297	0	0
304	1	SLO City	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5055	0	0	0	0	0	0	19104	0	0
306	1	SLO City	147	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3690	0	0
308	1	SLO City	88	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	194	0	0
310	1	SLO City	131	2	1	0	0	0	0	0	8064	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
311	1	SLO City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	108	0	0
312	1	SLO City	62	113	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
314	1	SLO City	108	2	0	0	0	0	0	0	0	0	373	0	0	0	0	0	0	0	0	0	0	0	0	0	137	0	0
316	1	SLO City	380	171	2	0	0	0	0	0	51663	0	422	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0
318	1	SLO City	58	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0	0
320	1	SLO City	6	218	1	0	8417	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
322	1	SLO City	2	42	0	0	0	0	0	11134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
324	1	SLO City	0	0	0	0	3491	0	0	94614	0	3000	0	0	0	0	0	0	0	0	0	0	0	0	3766	0	0	0	0
326	1	SLO City	158	3	1	0	0	0	0	0	6278	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
328	1	SLO City	55	4	0	0	0	0	0	1420	5120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0
330	1	SLO City	173	328	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
332	1	SLO City	21	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0	0

City of Paso Robles Travel Demand Model

L□□□ U□□ C□□□□□□□B□□□ Y□□□ □2008□ □□□ F□t□□□ Y□□□ □2025□





0 0□5 1 2 3 Mi□□□

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City of Paso Robles Travel Demand Model

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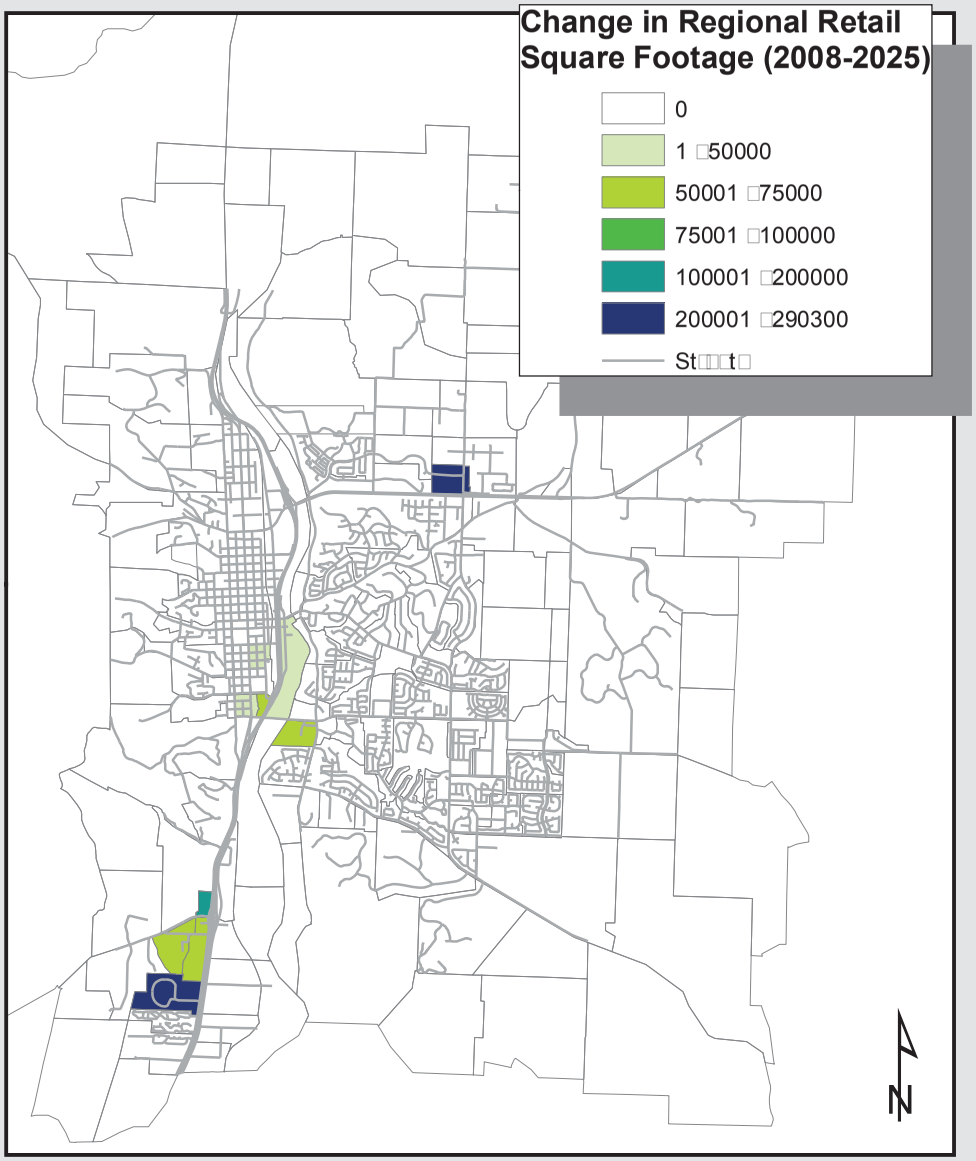

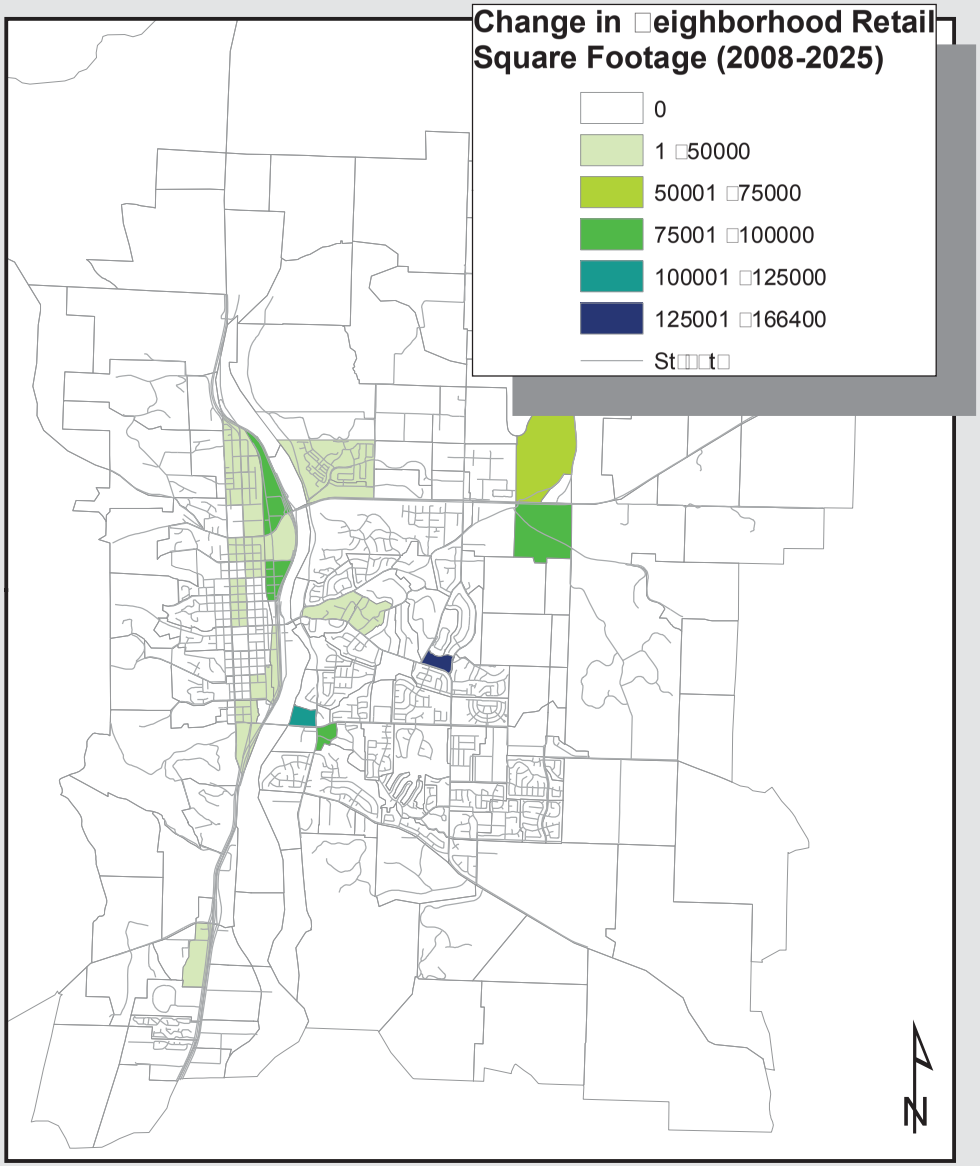

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City of Paso Robles Travel Demand Model

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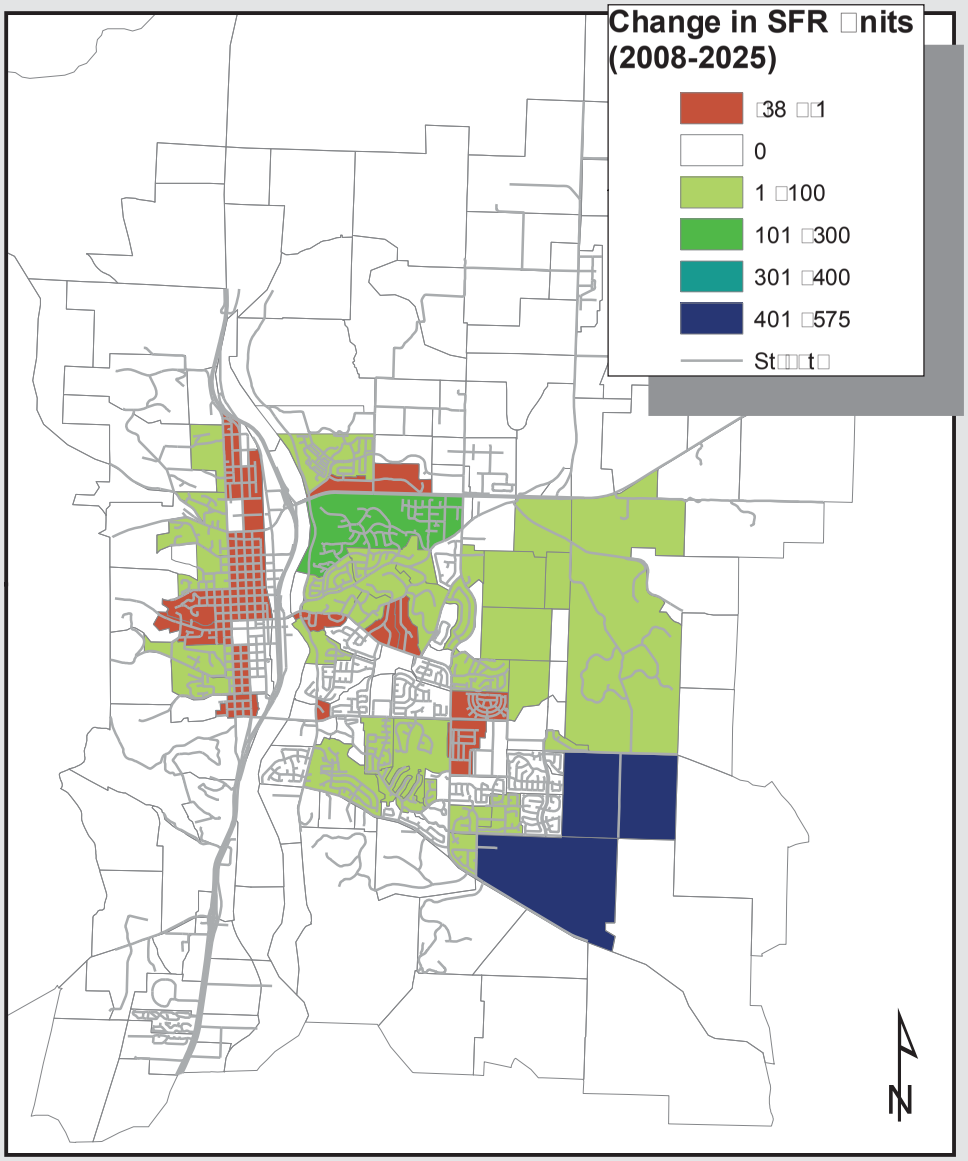

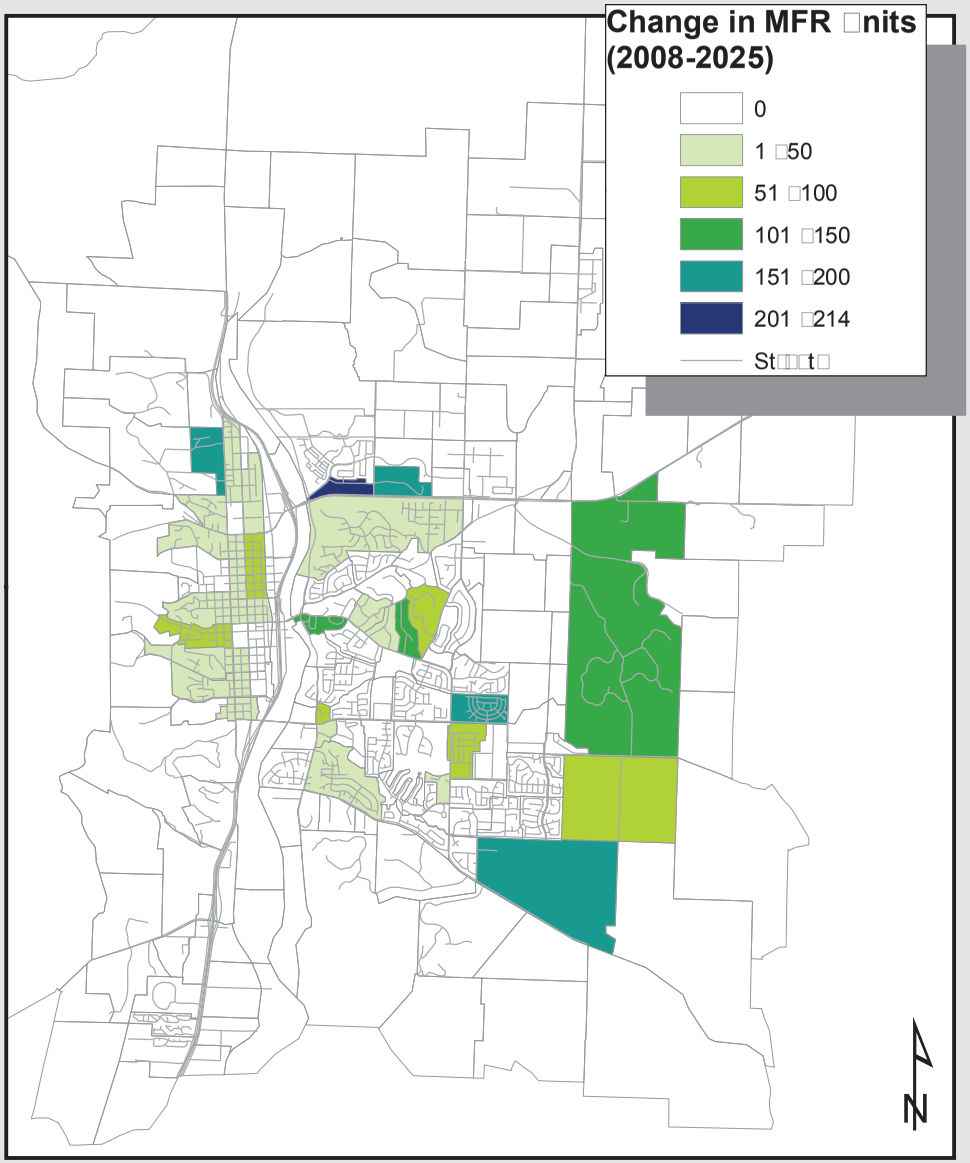

0 0□5 1 2 3 Mi□□□

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APPENDIX C:
COUNTY ASSESSORS PARCEL USE CODES

Level One	Level Two	Level Three	Primary/ Secondary	Notes
1000 - Residential	1010 – Single Family	1011 - Detached	P	1
		1012 – Second unit on lot	S	2
		1013 - Attached (2 units per building)	P	3
		1014 - Attached (3+ units per building)	P	4
	1020 – Mobile Homes	1021 – Mobile Home Park	P	5
		1022 – Mobile Home on individual lot	P	6
	1030 – Multi-Family	1031 - 2-4 units per lot	P	7
		1032 - 5+ units per lot	P	7
		1033 – long-term residency motel	P	
	1040 – Group Homes	1041 - Elderly – Ambulatory	P	8
		1042 - Convalescent Care	P	8
		1043 – Other (e.g. rooming/boarding house)	P	8
	1050 – Caretaker	1051 – Caretaker/employee housing	S	9

1. May include condominiums/PUDs (postage stamp lots).
2. Second unit may be attached or detached to primary unit.
3. Sierra Bonita/Royal Oak Meadows are the primary example.
4. Single Family Attached where the predominant arrangement is units attached in groups of 3 or more. Many of these are rented out as apartments.
5. Paso Robles MH Park; Trees MH Park, and Keene Trailer Park
6. Includes Mobile homes on single family lots (e.g. there are 9 in Oak Meadows) and all units in Quail Run Mobile Home Park, which is a condominium project.
7. Includes detached and attached units and mixes of both types; does not include condominiums; does not include motels converted to long-term occupancy.
8. Includes only facilities licensed under the Community Care Facilities Act by the State Dept of Social Services.
9. Residential as a secondary use to a commercial, industrial, or other-non-residential land use.

Level One	Level Two	Level Three	Primary/ Secondary	Notes
2000 - Commercial	2100 – Retail	2110 – General Retail		1
		2120 – Supermarkets, drug stores		
		2130 – Mini-marts, delis, liquor stores		
		2140 – Restaurants – sit down		
		2150 - Restaurants - drive thru/walk-up		
		2160 - Bar/Lounge, wine-tasting, micro-brewery	P/S	2
		2170 – Gasoline/fuel sales (retail and bulk)	P/S	
		2180 – Building supplies, nurseries, contractor supplies		
		2190 - Auto, marine, equipment sales		
	2200 – Services	2210 – Services, retail-compatible		3
		2220 – Banks, savings & loans, credit unions		
		2230 – Services, specialized		4
		2240 – Auto repair, tire and parts sales and installation	P/S	
		2250 – Car washes and detailing shops		
	2300 – Offices	2310 – General offices		5
		2320 – Medical offices		
		2330 – Veterinary offices, pet boarding		
	2400 – Indoor Recreational	2410 – Theaters		
		2420 – Athletic clubs, bowling alleys		
		2430 – Video arcades, pool halls, card rooms		
	2500 – Mixed Commercial buildings	2510 – Multi-tenant retail/personal service/office mix		6
		2520 – Multi-tenant service/light industrial mix		7

1. Includes auto parts retail – without installation
2. Would include dancing.
3. Includes barber/beauty shops/salons, locksmiths, laundry/drycleaning, parcel/mailing, printing, etc.
4. Includes mortuaries, upholstery shops, equipment rental, trade schools.
5. Includes finance, insurance, investment, real estate offices, accountants, architects, engineers, counselors, radio stations (e.g. KPRL). Does not include medical, dental, chiropractic offices
6. Typical multi-tenant mixes found in downtown, neighborhood, and regional commercial centers. Would exclude auto repair and the like.
7. Multi-tenant mixes with auto repair and the like, light industrial, contractor shops.

Level One	Level Two	Level Three	Primary/ Secondary	Notes
3000 – Tourism & Commercial Outdoor recreation				
	3100 – Hotels/motels	3110 – hotel, motel, bed & breakfast		
		3120 – RV Park		
	3200 – Outdoor Recreation	3210 – Golf Course		
		3220 – Hot springs spa, water slides, batting cages, etc.		

Level One	Level Two	Level Three	Primary/ Secondary	Notes
4000 – Industrial and Storage	4100 – Light Industrial	4110 – Indoor manufacturing/assembly		1

		4120 – contractor's shops		
		4130 – contractor's storage yards		
		4140 – aircraft service		
	4200 – Heavy Industrial	4210 – concrete batch plant, asphalt plant, roof tile plant		
		4220 – chemical manufacturing		
		4230 – meat and agricultural products packing,		
		4240 – outdoor metal fabrication (e.g., tanks)		
	4300 - Mining	4310 – sand and gravel extraction		
	4400 - Storage	4410 – warehouse		
		4420 – outdoor storage		
		4430 – mini-storage (indoors only)		
		4440 – RV storage/impound yard		
		4450 – hangars		

1. Would include apparel, electronics, glass products, printing, cabinet shops, small machinery.

Level One	Level Two	Level Three	Primary/ Secondary	Notes
5000 – Institutional	5100 – Private Schools	5110 – Private Daycare/Preschool		
		5120 - Private K-8		
	5200 - Churches	5210 – churches		
	5300 - Other	5310 – museums, lodges, scouts, Loaves & Fishes		

Level One	Level Two	Level Three	Primary/ Secondary	Notes
6000 – Agriculture	6100 – Crop production	6110 – Vineyard	P	
		6120 – Winery, wine storage	P	
		6130 – Other crops	P	
	6200 – Animal Raising	6210 – raising poultry, cattle, sheep, pigs; dairies; feedlots	P	

Level One	Level Two	Level Three	Primary/ Secondary	Notes
7000 – Public Facilities	7100 – City Government	7110 – City Hall, Library, No. County Transportation Center	P	
		7120 – Public Safety (police, fire station)	P	
		7130 – Parks, municipal pool, recreation centers	P	
		7140 – Sewer, water treatment/pumping, landfill	P	
		7150 – corporation yards, training facilities	P	
		7160 – Airport facilities (terminal, runways, clearzones)	P	
		7170 – public parking lots	P	
		7180 – street/alley right-of-way	P	
		7190 - detention basins	P	1
		7195 - City-owned open space	P	2
	7200 – County Government	7210 – Courthouse, offices, corp. yards and other facilities	P	
		7220 - other (e.g. vacant property owned by County)	P	
	7300 – State & Federal Gov't	7310 - Fairgrounds	P	
		7320 – Post office, FAA facilities, California Youth Authority	P	
	7400 – School District	7410 – public schools	P	3
		7420 – district offices, maintenance facilities/bus barn, other	P	
	7500 – Other District	7510 – cemetery property	P	
	7600 – Public Utilities	7610 – substations, corp. yards, antennas, switching	P/S	4
		7620 – rights-of-way	P	

1. Does not include parks that were designed as detention basins (e.g. Melody Park, Casa Robles Park).
2. Does not include privately-owned land with an open space-easement.
3. Would include County Superintendent of Schools' facilities.
4. Utilities include PG&E, SoCal Gas Co, SBC (Phone), Charter Communications (Cable), Cell Phone Co.'s, Union Pacific Railroad

Level One	Level Two	Level Three	Primary/ Secondary	Notes
8000 – Open Space and Undeveloped Land	8100 – Privately-Owned Open Space	8110 – Common open space for condominiums and planned developments, private roads, driveways	P	
	8200 - Undeveloped Land	8210 – Buildable	P/S	1
		8220 – Unbuildable	S	2

1. May be applied as a secondary land use for a parcel that is already partially-developed (e.g. with a SF unit), but has potential for more development.
2. May be applied as a secondary land use for a parcel with land in the Salinas River bottom, or with slopes 35% or steeper. Generally not applied to a full parcel.

APPENDIX D:
RESOURCE FILE

```
// Disclaimer:
// The SLOCOG Travel Demand Model script
// is developed by utilizing TransCAD Version 4.8 Build 400.
// We recommend you to be extra careful with any other versions of
TransCAD.
// This script may not work with other versions of TransCAD
// or the model result could be different.
//
// Key Words:  slocog, SLOCOG, SL, 2004, _04
//             HBW,HBO,NHB,SCHOOL,
//             CALPOLY,CUESTA,REGIONAL,MAGNET,SP1
//
// Structure of This Script:
//             - Land Use Categories:  33
//             - Trip Purposes      :  36 (9 Purposes * 4)
//
//             - Direct Feedback
//             - Conventional Assignment with free-flow travel time
//
//
//
// 2007.11.06 bp
//      Added a master network script
// 2006.09.29 bp
//      All assignments start with free-flow travel time
// 2006.09.05 bp
//      Removed MSA Assignment (Link Flow MSA)
// 2006.09.04 bp
//      Renumbered Sequence #s to match with Buttons (Stages)
// 2006.02.14 bp
//      Added Link Flow MSA with Direct Feedback Loop
//      RMSE Convergence is temporarily disabled
//      Converted the script to a dot notation
//      The following describes the changes:
//      3D version 2
//        (Job/Housing balance is included to 3D)
//        (Reading the scenario 3D inputs directly from Demographics)
//
//
Macro "SLOCOG Model Version"
    project_version_number = 1
    return(project_version_number)
endMacro

//DBox:  FPA ver11
DBox "SLOCOG Model"
    right, center toolbox NoKeyboard
    title: "SLOCOG Travel Demand Model"

    init do
      Shared  project_dbox, scenario_dbox, RetScenArr, ui_file,
scen_data_dir, project_name

      if project_dbox then
          do ShowMessage("Another project is currently running.") return
() end

      {mod_file, ui_file, scenario_file, scen_data_dir} = RunMacro("TCP
Get Project Files", "SLOCOG_2004.ini", &errMsg)
      if mod_file = null then do ShowMessage(errMsg) return() end
```

```
      project_name = "SLOCOG Model"
      {MacroInfo, Args, Opts, VarInfo} = RunMacro("TCP Read Planning
Model", mod_file, scen_data_dir)
      {StepMacro, StepTitle, StepFlag} = MacroInfo
      StageName = Args[1]
      stages = StageName.length
      single_stage = 1

      RunMacro("TCP Run All Steps", &do_all_steps, &StepFlag)
      if !RunMacro("TCP Update Scenarios in Project Dbox",
scenario_file, &ScenArr, &ScenSel, &ScenNames, stages, 0, Args) then
          return()
      enditem

    update do
      if project_dbox = -99 then
          runmacro("closing")
      else
          RunMacro("TCP Update Scenarios in Project Dbox",
scenario_file, &ScenArr, &ScenSel, &ScenNames, stages, 1, Args)
      endItem

    close do Runmacro("closing") endItem

    button  0,0
    icons: "bmp\\pasorobles.bmp", "bmp\\pasorobles.bmp"

    frame 0.5, 6, 34.5, 7.4 prompt: "Scenarios"
    Scroll List 1.5, 7.0, 32.0, 3.5 multiple list: ScenNames variable:
ScenSel do
      RunMacro("TCP Save Scenario File", ScenArr, ScenSel,
scenario_file)
      endItem

    checkbox "stops"        2, 10.8, 15 variable: single_stage prompt:
"Stop after stage"
    checkbox "all steps" Same, 12.0, 10 variable: do_all_steps prompt:
"Run all steps" do
      RunMacro("TCP Run All Steps", &do_all_steps, &StepFlag)
      endItem
    button 20, 11.0, 13, 2.0 prompt: "Setup" do
      RunDbox("TCP Scenario dBox", scenario_file, scen_data_dir,
project_name, Args)
      enditem

    button 1,    14 icons: "bmp\\dr_tgen.bmp", "bmp\\dr_tgen.bmp" do
cur_stage = 1  Runmacro("set steps") enditem
    button "slocog1" After, Same, 20, 2 disabled prompt:StageName[1]  do
cur_stage = 1  Runmacro("run stages") enditem

    button 1, After icons: "bmp\\dr_skim.bmp", "bmp\\dr_skim.bmp" do
cur_stage = 2  Runmacro("set steps") enditem
    button "slocog2" After, Same, 20, 2 disabled prompt:StageName[2]  do
cur_stage = 2  Runmacro("run stages") enditem

    button 1, After icons: "bmp\\dr_dist.bmp", "bmp\\dr_dist.bmp" do
cur_stage = 3  Runmacro("set steps") enditem
    button "slocog3" After, Same, 20, 2 disabled prompt:StageName[3]  do
cur_stage = 3  Runmacro("run stages") enditem
```

```
    button 1, After icons: "bmp\\dr_assn.bmp", "bmp\\dr_assn.bmp" do
cur_stage = 4  Runmacro("set steps") enditem
    button "slocog4" After, Same, 20, 2 disabled prompt:StageName[4]  do
cur_stage = 4  Runmacro("run stages") enditem

    button 1, After icons: "bmp\\dr_feed.bmp", "bmp\\dr_feed.bmp" do
cur_stage = 5  Runmacro("set steps") enditem
    button "slocog5" After, Same, 20, 2 disabled prompt:StageName[5]  do
cur_stage = 5  Runmacro("run stages") enditem

    button 1, After icons: "bmp\\dr_assn.bmp", "bmp\\dr_assn.bmp" do
cur_stage = 6  Runmacro("set steps") enditem
    button "slocog6" After, Same, 20, 2 disabled prompt:StageName[6]  do
cur_stage = 6  Runmacro("run stages") enditem

    button 1, After icons: "bmp\\dr_map.bmp", "bmp\\dr_map.bmp" do
cur_stage = 7  Runmacro("set steps") enditem
    button "slocog7" After, Same, 20, 2 disabled prompt:StageName[7]  do
cur_stage = 7  Runmacro("run stages") enditem

    button     1,  after, 34, 2  prompt: "Quit"      do Runmacro
("closing") enditem

    macro "set steps" do
      SetAlternateInterface()
      RunMacro("TCP Set Steps", StepTitle[cur_stage], &StepFlag
[cur_stage])

      do_all_steps = null
      RunMacro("TCP Run All Steps", &do_all_steps, &StepFlag)
      enditem

    macro "run stages" do
      RunMacro("TCP Run Stages", cur_stage, single_stage, StepMacro,
StepFlag, ScenArr, ScenSel, LocalArgs)
      endItem

    macro "closing" do
      if RunMacro("TCP Close Project Dbox") = 1 then
          return()
      endItem
EndDbox


//====== Trip Generation ======//

// Occupancy Rate Lookup
Macro "FPA ver31SL Occupancy Rate Lookup" (Args)

    // Input Files
    demographic_table      = Args.[Demographic Table]
//    demographic_dcb        = Args.[Demographic DCB]
    occupancy_lookup         = Args.[Occupancy Lookup]
    // Output Files
    occupied_demographic_tab = Args.[Occupied Demographic Table]
//    occupied_demographic_dcb = Args.[Occupied Demographic DCB]

    // Keep The Original Demographics File as it is
    CopyFile(demographic_table, occupied_demographic_tab)
```

```
//    // Duplicate the Demographics files including DCB file
//    CopyFile(demographic_dcb, occupied_demographic_dcb)

    // Define View Names
    ftype_demo = RunMacro("G30 table type", occupied_demographic_tab)
    pth_demo   = SplitPath(occupied_demographic_tab)
    vw_demo    = OpenTable(pth_demo[3], ftype_demo,
{occupied_demographic_tab})

    // Define View Names
    ftype_occu_rate = RunMacro("G30 table type", occupancy_lookup)
    pth_occu_rate   = SplitPath(occupancy_lookup)
    vw_occu_rate    = OpenTable(pth_occu_rate[3], ftype_occu_rate,
{occupancy_lookup})

    // Define Fields in Demographics
    sfr  = GetDataVector(vw_demo + "|", "SFR", )
    mfr  = GetDataVector(vw_demo + "|", "MFR", )
    mh   = GetDataVector(vw_demo + "|", "MH", )

    // Define Fields in Occupancy Rates
    occu_sfd = GetDataVector(vw_occu_rate + "|", "SFD_OCC", )
    occu_mfd = GetDataVector(vw_occu_rate + "|", "MFD_OCC", )

// Calculation (These are really Occupancy Rates, not Vacancy Rates)
    sfr  = sfr * occu_sfd
    mfr  = mfr * occu_mfd  // mfd uses its own occupancy rate
    mh   = mh  * occu_sfd

    SetDataVector(vw_demo + "|", "SFR", sfr,)
    SetDataVector(vw_demo + "|", "MFR", mfr,)
    SetDataVector(vw_demo + "|", "MH", mh,)

    CloseView(vw_demo)
    CloseView(vw_occu_rate)

    return(1)
    quit:
    return(0)
endMacro


// Trip Generation
Macro "FPA ver32SL Trip Generation w 3D" (Args)

    // Input Files
    occupied_demographic_tab = Args.[Occupied Demographic Table]
    cross_class_pa_table = Args.[Cross Class PA Table]
    d3_table = Args.[3D Table]
    // Output Files
    unbalanced_pa = Args.[Unbalanced PA]
    balanced_pa = Args.[Balanced PA]

    // Define View Names
    vw_demo = RunMacro("TCU Get File Name", occupied_demographic_tab)
    vw_rate = RunMacro("TCU Get File Name", cross_class_pa_table)
    vw_pa_u = RunMacro("TCU Get File Name", unbalanced_pa)
    vw_pa_b = RunMacro("TCU Get File Name", balanced_pa)
```

```
// Pre-step 1: Prepare a long array
fieldopt1 = {{"Unit Field1",          vw_demo +".SFR"},
             {"Unit Field2",          vw_demo +".MFR"},
             {"Unit Field3",          vw_demo +".MH"},
             {"Unit Field4",          vw_demo +".RURAL"},
             {"Unit Field5",          vw_demo +".OFF_GEN"},
             {"Unit Field6",          vw_demo +".DWNTWN"},
             {"Unit Field7",          vw_demo +".RET_REG"},
             {"Unit Field8",          vw_demo +".RET_NEI"},
             {"Unit Field9",          vw_demo +".Church"},
             {"Unit Field10",         vw_demo +".GAS"},
             {"Unit Field11",         vw_demo +".ELEM"},
             {"Unit Field12",         vw_demo +".HIGHSCH"},
             {"Unit Field13",         vw_demo +".CAL_S"},
             {"Unit Field14",         vw_demo +".CAL_E"},
             {"Unit Field15",         vw_demo +".CUE_S"},
             {"Unit Field16",         vw_demo +".CUE_E"},
             {"Unit Field17",         vw_demo +".HOSPITL"},
             {"Unit Field18",         vw_demo +".IND_LIT"},
             {"Unit Field19",         vw_demo +".IND_HVY"},
             {"Unit Field20",         vw_demo +".MOTEL"},
             {"Unit Field21",         vw_demo +".REC"},
             {"Unit Field22",         vw_demo +".PQP_HI"},
             {"Unit Field23",         vw_demo +".PQP_LO"},
             {"Unit Field24",         vw_demo +".AGR"},
             {"Unit Field25",         vw_demo +".UNDEV"},
             {"Unit Field26",         vw_demo +".SPECIAL"},
             {"Unit Field27",         vw_demo +".Beach"},
             {"Unit Field28",         vw_demo +".LU_SPARE06"},
             {"Unit Field29",         vw_demo +".LU_SPARE05"},
             {"Unit Field30",         vw_demo +".LU_SPARE04"},
             {"Unit Field31",         vw_demo +".LU_SPARE03"},
             {"Unit Field32",         vw_demo +".LU_SPARE02"},
             {"Unit Field33",         vw_demo +".LU_Spare01"},
             {"Purpose Field1",       vw_rate +".R_HBW_P"},
             {"Purpose Field2",       vw_rate +".R_HBO_P"},
             {"Purpose Field3",       vw_rate +".R_NHB_P"},
             {"Purpose Field4",       vw_rate +".R_SCHOOL_P"},
             {"Purpose Field5",       vw_rate +".R_CALPOLY_P"},
             {"Purpose Field6",       vw_rate +".R_CUESTA_P"},
             {"Purpose Field7",       vw_rate +".R_REGIONAL_P"},
             {"Purpose Field8",       vw_rate +".R_MAGNET_P"},
             {"Purpose Field9",       vw_rate +".R_SP1_P"},
             {"Purpose Field10",      vw_rate +".R_HBW_A"},
             {"Purpose Field11",      vw_rate +".R_HBO_A"},
             {"Purpose Field12",      vw_rate +".R_NHB_A"},
             {"Purpose Field13",      vw_rate +".R_SCHOOL_A"},
             {"Purpose Field14",      vw_rate +".R_CALPOLY_A"},
             {"Purpose Field15",      vw_rate +".R_CUESTA_A"},
             {"Purpose Field16",      vw_rate +".R_REGIONAL_A"},
             {"Purpose Field17",      vw_rate +".R_MAGNET_A"},
             {"Purpose Field18",      vw_rate +".R_SP1_A"},
             {"Purpose Field19",      vw_rate +".R_HBW_IX_P"},
             {"Purpose Field20",      vw_rate +".R_HBO_IX_P"},
             {"Purpose Field21",      vw_rate +".R_NHB_IX_P"},
             {"Purpose Field22",      vw_rate +".R_SCHOOL_IX_P"},
             {"Purpose Field23",      vw_rate +".R_CALPOLY_IX_P"},
             {"Purpose Field24",      vw_rate +".R_CUESTA_IX_P"},
             {"Purpose Field25",      vw_rate +".R_REGIONAL_IX_P"},
             {"Purpose Field26",      vw_rate +".R_MAGNET_IX_P"},
```

```
                {"Purpose Field27",      vw_rate +".R_SP1_IX_P"},
                {"Purpose Field28",      vw_rate +".R_HBW_XI_A"},
                {"Purpose Field29",      vw_rate +".R_HBO_XI_A"},
                {"Purpose Field30",      vw_rate +".R_NHB_XI_A"},
                {"Purpose Field31",      vw_rate +".R_SCHOOL_XI_A"},
                {"Purpose Field32",      vw_rate +".R_CALPOLY_XI_A"},
                {"Purpose Field33",      vw_rate +".R_CUESTA_XI_A"},
                {"Purpose Field34",      vw_rate +".R_REGIONAL_XI_A"},
                {"Purpose Field35",      vw_rate +".R_MAGNET_XI_A"},
                {"Purpose Field36",      vw_rate +".R_SP1_XI_A"}}

fieldopt2 = {{"Unit Class Type11",    "True"},
                {"Unit Class Field11",   vw_demo +".ATYPE"},
                {"Unit Class Type12",    "False"},
                {"Unit Class Value12",   1},
                {"Unit Class Type21",    "True"},
                {"Unit Class Field21",   vw_demo +".ATYPE"},
                {"Unit Class Type22",    "False"},
                {"Unit Class Value22",   2},
                {"Unit Class Type31",    "True"},
                {"Unit Class Field31",   vw_demo +".ATYPE"},
                {"Unit Class Type32",    "False"},
                {"Unit Class Value32",   3},
                {"Unit Class Type41",    "True"},
                {"Unit Class Field41",   vw_demo +".ATYPE"},
                {"Unit Class Type42",    "False"},
                {"Unit Class Value42",   4},
                {"Unit Class Type51",    "True"},
                {"Unit Class Field51",   vw_demo +".ATYPE"},
                {"Unit Class Type52",    "False"},
                {"Unit Class Value52",   5},
                {"Unit Class Type61",    "True"},
                {"Unit Class Field61",   vw_demo +".ATYPE"},
                {"Unit Class Type62",    "False"},
                {"Unit Class Value62",   6},
                {"Unit Class Type71",    "True"},
                {"Unit Class Field71",   vw_demo +".ATYPE"},
                {"Unit Class Type72",    "False"},
                {"Unit Class Value72",   7},
                {"Unit Class Type81",    "True"},
                {"Unit Class Field81",   vw_demo +".ATYPE"},
                {"Unit Class Type82",    "False"},
                {"Unit Class Value82",   8},
                {"Unit Class Type91",    "True"},
                {"Unit Class Field91",   vw_demo +".ATYPE"},
                {"Unit Class Type92",    "False"},
                {"Unit Class Value92",   9},
                {"Unit Class Type101",   "True"},
                {"Unit Class Field101",  vw_demo +".ATYPE"},
                {"Unit Class Type102",   "False"},
                {"Unit Class Value102",  10},
                {"Unit Class Type111",   "True"},
                {"Unit Class Field111",  vw_demo +".ATYPE"},
                {"Unit Class Type112",   "False"},
                {"Unit Class Value112",  11},
                {"Unit Class Type121",   "True"},
                {"Unit Class Field121",  vw_demo +".ATYPE"},
                {"Unit Class Type122",   "False"},
                {"Unit Class Value122",  12},
                {"Unit Class Type131",   "True"},
```

```
                {"Unit Class Field131",  vw_demo +".ATYPE"},
                {"Unit Class Type132",   "False"},
                {"Unit Class Value132",  13},
                {"Unit Class Type141",   "True"},
                {"Unit Class Field141",  vw_demo +".ATYPE"},
                {"Unit Class Type142",   "False"},
                {"Unit Class Value142",  14},
                {"Unit Class Type151",   "True"},
                {"Unit Class Field151",  vw_demo +".ATYPE"},
                {"Unit Class Type152",   "False"},
                {"Unit Class Value152",  15},
                {"Unit Class Type161",   "True"},
                {"Unit Class Field161",  vw_demo +".ATYPE"},
                {"Unit Class Type162",   "False"},
                {"Unit Class Value162",  16},
                {"Unit Class Type171",   "True"},
                {"Unit Class Field171",  vw_demo +".ATYPE"},
                {"Unit Class Type172",   "False"},
                {"Unit Class Value172",  17},
                {"Unit Class Type181",   "True"},
                {"Unit Class Field181",  vw_demo +".ATYPE"},
                {"Unit Class Type182",   "False"},
                {"Unit Class Value182",  18}}

fieldopt3 = {{"Unit Class Type191",   "True"},
                {"Unit Class Field191",  vw_demo +".ATYPE"},
                {"Unit Class Type192",   "False"},
                {"Unit Class Value192",  19},
                {"Unit Class Type201",   "True"},
                {"Unit Class Field201",  vw_demo +".ATYPE"},
                {"Unit Class Type202",   "False"},
                {"Unit Class Value202",  20},
                {"Unit Class Type211",   "True"},
                {"Unit Class Field211",  vw_demo +".ATYPE"},
                {"Unit Class Type212",   "False"},
                {"Unit Class Value212",  21},
                {"Unit Class Type221",   "True"},
                {"Unit Class Field221",  vw_demo +".ATYPE"},
                {"Unit Class Type222",   "False"},
                {"Unit Class Value222",  22},
                {"Unit Class Type231",   "True"},
                {"Unit Class Field231",  vw_demo +".ATYPE"},
                {"Unit Class Type232",   "False"},
                {"Unit Class Value232",  23},
                {"Unit Class Type241",   "True"},
                {"Unit Class Field241",  vw_demo +".ATYPE"},
                {"Unit Class Type242",   "False"},
                {"Unit Class Value242",  24},
                {"Unit Class Type251",   "True"},
                {"Unit Class Field251",  vw_demo +".ATYPE"},
                {"Unit Class Type252",   "False"},
                {"Unit Class Value252",  25},
                {"Unit Class Type261",   "True"},
                {"Unit Class Field261",  vw_demo +".ATYPE"},
                {"Unit Class Type262",   "False"},
                {"Unit Class Value262",  26},
                {"Unit Class Type271",   "True"},
                {"Unit Class Field271",  vw_demo +".ATYPE"},
                {"Unit Class Type272",   "False"},
                {"Unit Class Value272",  27},
```

```
            {"Unit Class Type281",   "True"},
            {"Unit Class Field281",  vw_demo +".ATYPE"},
            {"Unit Class Type282",   "False"},
            {"Unit Class Value282",  28},
            {"Unit Class Type291",   "True"},
            {"Unit Class Field291",  vw_demo +".ATYPE"},
            {"Unit Class Type292",   "False"},
            {"Unit Class Value292",  29},
            {"Unit Class Type301",   "True"},
            {"Unit Class Field301",  vw_demo +".ATYPE"},
            {"Unit Class Type302",   "False"},
            {"Unit Class Value302",  30},
            {"Unit Class Type311",   "True"},
            {"Unit Class Field311",  vw_demo +".ATYPE"},
            {"Unit Class Type312",   "False"},
            {"Unit Class Value312",  31},
            {"Unit Class Type321",   "True"},
            {"Unit Class Field321",  vw_demo +".ATYPE"},
            {"Unit Class Type322",   "False"},
            {"Unit Class Value322",  32},
            {"Unit Class Type331",   "True"},
            {"Unit Class Field331",  vw_demo +".ATYPE"},
            {"Unit Class Type332",   "False"},
            {"Unit Class Value332",  33}}

// Crosclas
Opts = null
Opts.Input.[Trip Rate Set]   = {cross_class_pa_table, vw_rate}
Opts.Input.[Zone View Set]   = {occupied_demographic_tab, vw_demo}
Opts.Input.[Output Field 1]  = "HBW_P"
Opts.Input.[Output Field 2]  = "HBO_P"
Opts.Input.[Output Field 3]  = "NHB_P"
Opts.Input.[Output Field 4]  = "SCHOOL_P"
Opts.Input.[Output Field 5]  = "CALPOLY_P"
Opts.Input.[Output Field 6]  = "CUESTA_P"
Opts.Input.[Output Field 7]  = "REGIONAL_P"
Opts.Input.[Output Field 8]  = "MAGNET_P"
Opts.Input.[Output Field 9]  = "SP1_P"
Opts.Input.[Output Field 10] = "HBW_A"
Opts.Input.[Output Field 11] = "HBO_A"
Opts.Input.[Output Field 12] = "NHB_A"
Opts.Input.[Output Field 13] = "SCHOOL_A"
Opts.Input.[Output Field 14] = "CALPOLY_A"
Opts.Input.[Output Field 15] = "CUESTA_A"
Opts.Input.[Output Field 16] = "REGIONAL_A"
Opts.Input.[Output Field 17] = "MAGNET_A"
Opts.Input.[Output Field 18] = "SP1_A"
Opts.Input.[Output Field 19] = "HBW_IX_P"
Opts.Input.[Output Field 20] = "HBO_IX_P"
Opts.Input.[Output Field 21] = "NHB_IX_P"
Opts.Input.[Output Field 22] = "SCHOOL_IX_P"
Opts.Input.[Output Field 23] = "CALPOLY_IX_P"
Opts.Input.[Output Field 24] = "CUESTA_IX_P"
Opts.Input.[Output Field 25] = "REGIONAL_IX_P"
Opts.Input.[Output Field 26] = "MAGNET_IX_P"
Opts.Input.[Output Field 27] = "SP1_IX_P"
Opts.Input.[Output Field 28] = "HBW_XI_A"
Opts.Input.[Output Field 29] = "HBO_XI_A"
Opts.Input.[Output Field 30] = "NHB_XI_A"
Opts.Input.[Output Field 31] = "SCHOOL_XI_A"
```

```
     Opts.Input.[Output Field 32] = "CALPOLY_XI_A"
     Opts.Input.[Output Field 33] = "CUESTA_XI_A"
     Opts.Input.[Output Field 34] = "REGIONAL_XI_A"
     Opts.Input.[Output Field 35] = "MAGNET_XI_A"
     Opts.Input.[Output Field 36] = "SP1_XI_A"
     Opts.Global.[Number Classifications] = 2
     Opts.Global.[Number Purposes] = 36
     Opts.Global.[Number Units] = 33
     Opts.Global.[Urban Pop Option] = "No"
     Opts.Field = fieldopt1 + fieldopt2 + fieldopt3
     Opts.Output.[Output Table] = unbalanced_pa

     ret_value = RunMacro("TCB Run Procedure", 101, "Crosclas", Opts)
     if !ret_value then goto quit

    // Fill HBW_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"HBW_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF HBW_P = null THEN 0 ELSE HBW_P"
    ret_value = RunMacro("TCB Run Operation", 102, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill HBO_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"HBO_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF HBO_P = null THEN 0 ELSE HBO_P"
    ret_value = RunMacro("TCB Run Operation", 103, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill NHB_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"NHB_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF NHB_P = null THEN 0 ELSE NHB_P"
    ret_value = RunMacro("TCB Run Operation", 104, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill SCHOOL_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"SCHOOL_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF SCHOOL_P = null THEN 0 ELSE
SCHOOL_P"
    ret_value = RunMacro("TCB Run Operation", 105, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill CALPOLY_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"CALPOLY_P"}
```

```
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF CALPOLY_P = null THEN 0 ELSE
CALPOLY_P"
    ret_value = RunMacro("TCB Run Operation", 106, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill CUESTA_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"CUESTA_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF CUESTA_P = null THEN 0 ELSE
CUESTA_P"
    ret_value = RunMacro("TCB Run Operation", 107, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill REGIONAL_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"REGIONAL_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF REGIONAL_P = null THEN 0 ELSE
REGIONAL_P"
    ret_value = RunMacro("TCB Run Operation", 108, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill MAGNET_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"MAGNET_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF MAGNET_P = null THEN 0 ELSE
MAGNET_P"
    ret_value = RunMacro("TCB Run Operation", 109, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill SP1_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"SP1_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF SP1_P = null THEN 0 ELSE SP1_P"
    ret_value = RunMacro("TCB Run Operation", 110, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill HBW_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"HBW_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF HBW_A = null THEN 0 ELSE HBW_A"
    ret_value = RunMacro("TCB Run Operation", 111, "Fill Dataview",
Opts)
    if !ret_value then goto quit
```

```
    // Fill HBO_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"HBO_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF HBO_A = null THEN 0 ELSE HBO_A"
    ret_value = RunMacro("TCB Run Operation", 112, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill NHB_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"NHB_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF NHB_A = null THEN 0 ELSE NHB_A"
    ret_value = RunMacro("TCB Run Operation", 113, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill SCHOOL_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"SCHOOL_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF SCHOOL_A = null THEN 0 ELSE
SCHOOL_A"
    ret_value = RunMacro("TCB Run Operation", 114, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill CALPOLY_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"CALPOLY_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF CALPOLY_A = null THEN 0 ELSE
CALPOLY_A"
    ret_value = RunMacro("TCB Run Operation", 115, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill CUESTA_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"CUESTA_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF CUESTA_A = null THEN 0 ELSE
CUESTA_A"
    ret_value = RunMacro("TCB Run Operation", 116, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill REGIONAL_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"REGIONAL_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF REGIONAL_A = null THEN 0 ELSE
REGIONAL_A"
```

```
    ret_value = RunMacro("TCB Run Operation", 117, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill MAGNET_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"MAGNET_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF MAGNET_A = null THEN 0 ELSE
MAGNET_A"
    ret_value = RunMacro("TCB Run Operation", 118, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill SP1_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"SP1_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF SP1_A = null THEN 0 ELSE SP1_A"
    ret_value = RunMacro("TCB Run Operation", 119, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill HBW_IX_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"HBW_IX_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF HBW_IX_P = null THEN 0 ELSE
HBW_IX_P"
    ret_value = RunMacro("TCB Run Operation", 120, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill HBO_IX_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"HBO_IX_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF HBO_IX_P = null THEN 0 ELSE
HBO_IX_P"
    ret_value = RunMacro("TCB Run Operation", 121, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill NHB_IX_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"NHB_IX_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF NHB_IX_P = null THEN 0 ELSE
NHB_IX_P"
    ret_value = RunMacro("TCB Run Operation", 122, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill SCHOOL_IX_P
    Opts = null
```

```
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"SCHOOL_IX_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF SCHOOL_IX_P = null THEN 0 ELSE
SCHOOL_IX_P"
    ret_value = RunMacro("TCB Run Operation", 123, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill CALPOLY_IX_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"CALPOLY_IX_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF CALPOLY_IX_P = null THEN 0 ELSE
CALPOLY_IX_P"
    ret_value = RunMacro("TCB Run Operation", 124, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill CUESTA_IX_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"CUESTA_IX_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF CUESTA_IX_P = null THEN 0 ELSE
CUESTA_IX_P"
    ret_value = RunMacro("TCB Run Operation", 125, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill REGIONAL_IX_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"REGIONAL_IX_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF REGIONAL_IX_P = null THEN 0 ELSE
REGIONAL_IX_P"
    ret_value = RunMacro("TCB Run Operation", 126, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill MAGNET_IX_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"MAGNET_IX_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF MAGNET_IX_P = null THEN 0 ELSE
MAGNET_IX_P"
    ret_value = RunMacro("TCB Run Operation", 127, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill SP1_IX_P
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"SP1_IX_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF SP1_IX_P = null THEN 0 ELSE SP1
_IX_P"
```

```
    ret_value = RunMacro("TCB Run Operation", 128, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill HBW_XI_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"HBW_XI_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF HBW_XI_A = null THEN 0 ELSE
HBW_XI_A"
    ret_value = RunMacro("TCB Run Operation", 129, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill HBO_XI_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"HBO_XI_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF HBO_XI_A = null THEN 0 ELSE
HBO_XI_A"
    ret_value = RunMacro("TCB Run Operation", 130, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill NHB_XI_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"NHB_XI_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF NHB_XI_A = null THEN 0 ELSE
NHB_XI_A"
    ret_value = RunMacro("TCB Run Operation", 131, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill SCHOOL_XI_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"SCHOOL_XI_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF SCHOOL_XI_A = null THEN 0 ELSE
SCHOOL_XI_A"
    ret_value = RunMacro("TCB Run Operation", 132, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill CALPOLY_XI_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"CALPOLY_XI_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF CALPOLY_XI_A = null THEN 0 ELSE
CALPOLY_XI_A"
    ret_value = RunMacro("TCB Run Operation", 133, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill CUESTA_XI_A
```

```
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"CUESTA_XI_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF CUESTA_XI_A = null THEN 0 ELSE
CUESTA_XI_A"
    ret_value = RunMacro("TCB Run Operation", 134, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill REGIONAL_XI_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"REGIONAL_XI_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF REGIONAL_XI_A = null THEN 0 ELSE
REGIONAL_XI_A"
    ret_value = RunMacro("TCB Run Operation", 135, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill MAGNET_XI_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"MAGNET_XI_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF MAGNET_XI_A = null THEN 0 ELSE
MAGNET_XI_A"
    ret_value = RunMacro("TCB Run Operation", 136, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill SP1_XI_A
    Opts = null
    Opts.Input.[Dataview Set] = {unbalanced_pa, vw_pa_u}
    Opts.Global.Fields        = {"SP1_XI_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "IF SP1_XI_A = null THEN 0 ELSE SP1
_XI_A"
    ret_value = RunMacro("TCB Run Operation", 137, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Join (Occupied Demographics, Unbalanced PA)
    ftype_demo = RunMacro("G30 table type", occupied_demographic_tab)
    pth_demo   = SplitPath(occupied_demographic_tab)
    vw_demo    = OpenTable(pth_demo[3], ftype_demo,
{occupied_demographic_tab})

    ftype_pa_u = RunMacro("G30 table type", unbalanced_pa)
    pth_pa_u   = SplitPath(unbalanced_pa)
    vw_pa_u    = OpenTable(pth_pa_u[3], ftype_pa_u, {unbalanced_pa})

    join_view_du = JoinViews(vw_demo + "+" + vw_pa_u, vw_demo + ".TAZ",
vw_pa_u + ".ID",)

    // Fill IX_P
    Opts = null
    Opts.Input.[Dataview Set] = {{occupied_demographic_tab,
unbalanced_pa, "TAZ", "ID"}, join_view_du}
```

```
    Opts.Global.Fields        = {"IX_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "HBW_IX_P+ HBO_IX_P+ NHB_IX_P+
SCHOOL_IX_P+ CALPOLY_IX_P+ CUESTA_IX_P+ REGIONAL_IX_P+ MAGNET_IX_P+ SP1
_IX_P"
    ret_value = RunMacro("TCB Run Operation", 138, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill XI_A
    Opts = null
    Opts.Input.[Dataview Set] = {{occupied_demographic_tab,
unbalanced_pa, "TAZ", "ID"}, join_view_du}
    Opts.Global.Fields        = {"XI_A"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "HBW_XI_A+ HBO_XI_A+ NHB_XI_A+
SCHOOL_XI_A+ CALPOLY_XI_A+ CUESTA_XI_A+ REGIONAL_XI_A+ MAGNET_XI_A+ SP1
_XI_A"
    ret_value = RunMacro("TCB Run Operation", 139, "Fill Dataview",
Opts)
    if !ret_value then goto quit


//---------------------- Beginning of 3D Adjustment
----------------------
    // 3D Version 2b

    // Define View Names
    ftype_d3 = RunMacro("G30 table type", d3_table)
    pth_d3   = SplitPath(d3_table)
    vw_d3    = OpenTable(pth_d3[3], ftype_d3, {d3_table})

    // Define View Names
    ftype_demo = RunMacro("G30 table type", occupied_demographic_tab)
    pth_demo   = SplitPath(occupied_demographic_tab)
    vw_demo    = OpenTable(pth_demo[3], ftype_demo,
{occupied_demographic_tab})

    // Define Fields in Demographics
    scen2_res_den    = GetDataVector(vw_demo + "|", "Density_R", )
    scen2_emp_den    = GetDataVector(vw_demo + "|", "Density_E", )
    scen2_job_mix    = GetDataVector(vw_demo + "|", "Job_Mix", )
    scen2_job_hhs    = GetDataVector(vw_demo + "|", "Job_per_HH", )
    scen2_ped_des    = GetDataVector(vw_demo + "|", "Ped_Design", )

    // Define Fields in 3D Table
    base_res_den     = GetDataVector(vw_d3 + "|", "BC_Res_Den", )
    base_emp_den     = GetDataVector(vw_d3 + "|", "BC_Emp_Den", )
    base_job_mix     = GetDataVector(vw_d3 + "|", "BC_Job_Mix", )
    base_job_hhs     = GetDataVector(vw_d3 + "|", "BC_Job_HH", )
    base_ped_des     = GetDataVector(vw_d3 + "|", "BC_Ped_Des", )

    diff_res_den     = GetDataVector(vw_d3 + "|", "Diff_Res_Den", )
    diff_emp_den     = GetDataVector(vw_d3 + "|", "Diff_Emp_Den", )
    diff_job_mix     = GetDataVector(vw_d3 + "|", "Diff_Job_Mix", )
    diff_job_hhs     = GetDataVector(vw_d3 + "|", "Diff_Job_HH", )
    diff_ped_des     = GetDataVector(vw_d3 + "|", "Diff_Ped_Des", )

    elas_hbw_res_den = GetDataVector(vw_d3 + "|", "Elas_HBW_Res_Den", )
    elas_hbw_emp_den = GetDataVector(vw_d3 + "|", "Elas_HBW_Emp_Den", )
```

```
    elas_hbw_job_mix = GetDataVector(vw_d3 + "|", "Elas_HBW_Job_Mix", )
    elas_hbw_job_hhs = GetDataVector(vw_d3 + "|", "Elas_HBW_Job_HH", )
    elas_hbw_ped_des = GetDataVector(vw_d3 + "|", "Elas_HBW_Ped_Des", )

    elas_hbo_res_den = GetDataVector(vw_d3 + "|", "Elas_HBO_Res_Den", )
    elas_hbo_emp_den = GetDataVector(vw_d3 + "|", "Elas_HBO_Emp_Den", )
    elas_hbo_job_mix = GetDataVector(vw_d3 + "|", "Elas_HBO_Job_Mix", )
    elas_hbo_job_hhs = GetDataVector(vw_d3 + "|", "Elas_HBO_Job_HH", )
    elas_hbo_ped_des = GetDataVector(vw_d3 + "|", "Elas_HBO_Ped_Des", )

    elas_nhb_res_den = GetDataVector(vw_d3 + "|", "Elas_NHB_Res_Den", )
    elas_nhb_emp_den = GetDataVector(vw_d3 + "|", "Elas_NHB_Emp_Den", )
    elas_nhb_job_mix = GetDataVector(vw_d3 + "|", "Elas_NHB_Job_Mix", )
    elas_nhb_job_hhs = GetDataVector(vw_d3 + "|", "Elas_NHB_Job_HH", )
    elas_nhb_ped_des = GetDataVector(vw_d3 + "|", "Elas_NHB_Ped_Des", )

    adj_hbw_res_den  = GetDataVector(vw_d3 + "|", "Adj_HBW_Res_Den", )
    adj_hbw_emp_den  = GetDataVector(vw_d3 + "|", "Adj_HBW_Emp_Den", )
    adj_hbw_job_mix  = GetDataVector(vw_d3 + "|", "Adj_HBW_Job_Mix", )
    adj_hbw_job_hhs  = GetDataVector(vw_d3 + "|", "Adj_HBW_Job_HH", )
    adj_hbw_ped_des  = GetDataVector(vw_d3 + "|", "Adj_HBW_Ped_Des", )

    adj_hbo_res_den  = GetDataVector(vw_d3 + "|", "Adj_HBO_Res_Den", )
    adj_hbo_emp_den  = GetDataVector(vw_d3 + "|", "Adj_HBO_Emp_Den", )
    adj_hbo_job_mix  = GetDataVector(vw_d3 + "|", "Adj_HBO_Job_Mix", )
    adj_hbo_job_hhs  = GetDataVector(vw_d3 + "|", "Adj_HBO_Job_HH", )
    adj_hbo_ped_des  = GetDataVector(vw_d3 + "|", "Adj_HBO_Ped_Des", )

    adj_nhb_res_den  = GetDataVector(vw_d3 + "|", "Adj_NHB_Res_Den", )
    adj_nhb_emp_den  = GetDataVector(vw_d3 + "|", "Adj_NHB_Emp_Den", )
    adj_nhb_job_mix  = GetDataVector(vw_d3 + "|", "Adj_NHB_Job_Mix", )
    adj_nhb_job_hhs  = GetDataVector(vw_d3 + "|", "Adj_NHB_Job_HH", )
    adj_nhb_ped_des  = GetDataVector(vw_d3 + "|", "Adj_NHB_Ped_Des", )

    hbw_tmp          = GetDataVector(vw_d3 + "|", "HBW_tmp", )
    hbo_tmp          = GetDataVector(vw_d3 + "|", "HBO_tmp", )
    nhb_tmp          = GetDataVector(vw_d3 + "|", "NHB_tmp", )

    hbw              = GetDataVector(vw_d3 + "|", "HBW", )
    hbo              = GetDataVector(vw_d3 + "|", "HBO", )
    nhb              = GetDataVector(vw_d3 + "|", "NHB", )

    // Calculation
    base_res_den     = (if base_res_den  < 0.01 then 0.01 else
base_res_den )
    base_emp_den     = (if base_emp_den  < 0.01 then 0.01 else
base_emp_den )
    base_job_mix     = (if base_job_mix  < 0.01 then 0.01 else
base_job_mix )
    base_job_hhs     = (if base_job_hhs  < 0.01 then 0.01 else
base_job_hhs )
    base_ped_des     = (if base_ped_des  < 0.01 then 0.01 else
base_ped_des )

//  Demographics file takes care of too low values
//    scen2_res_den    = (if scen2_res_den < 0.01 then 0.01 else scen2
_res_den)
//    scen2_emp_den    = (if scen2_emp_den < 0.01 then 0.01 else scen2
_emp_den)
//    scen2_job_mix    = (if scen2_job_mix < 0.01 then 0.01 else scen2
```

```
_job_mix)
//    scen2_job_hhs    = (if scen2_job_hhs < 0.01 then 0.01 else scen2
_job_hhs)
//    scen2_ped_des    = (if scen2_ped_des < 0.01 then 0.01 else scen2
_ped_des)

    diff_res_den     = (scen2_res_den / base_res_den) - 1
    diff_emp_den     = (scen2_emp_den / base_emp_den) - 1
    diff_job_mix     = (scen2_job_mix / base_job_mix) - 1
    diff_job_hhs     = (scen2_job_hhs / base_job_hhs) - 1
    diff_ped_des     = (scen2_ped_des / base_ped_des) - 1

    adj_hbw_res_den  = elas_hbw_res_den * diff_res_den
    adj_hbw_emp_den  = elas_hbw_emp_den * diff_emp_den
    adj_hbw_job_mix  = elas_hbw_job_mix * diff_job_mix
    adj_hbw_job_hhs  = elas_hbw_job_hhs * diff_job_hhs
    adj_hbw_ped_des  = elas_hbw_ped_des * diff_ped_des

    adj_hbo_res_den  = elas_hbo_res_den * diff_res_den
    adj_hbo_emp_den  = elas_hbo_emp_den * diff_emp_den
    adj_hbo_job_mix  = elas_hbo_job_mix * diff_job_mix
    adj_hbo_job_hhs  = elas_hbo_job_hhs * diff_job_hhs
    adj_hbo_ped_des  = elas_hbo_ped_des * diff_ped_des

    adj_nhb_res_den  = elas_nhb_res_den * diff_res_den
    adj_nhb_emp_den  = elas_nhb_emp_den * diff_emp_den
    adj_nhb_job_mix  = elas_nhb_job_mix * diff_job_mix
    adj_nhb_job_hhs  = elas_nhb_job_hhs * diff_job_hhs
    adj_nhb_ped_des  = elas_nhb_ped_des * diff_ped_des

    hbw_tmp = (1 + adj_hbw_res_den)*(1 + adj_hbw_emp_den)*(1 +
adj_hbw_job_mix)*(1 + adj_hbw_job_hhs)*(1 + adj_hbw_ped_des)
    hbo_tmp = (1 + adj_hbo_res_den)*(1 + adj_hbo_emp_den)*(1 +
adj_hbo_job_mix)*(1 + adj_hbo_job_hhs)*(1 + adj_hbo_ped_des)
    nhb_tmp = (1 + adj_nhb_res_den)*(1 + adj_nhb_emp_den)*(1 +
adj_nhb_job_mix)*(1 + adj_nhb_job_hhs)*(1 + adj_nhb_ped_des)

    hbw = hbw_tmp
    hbo = hbo_tmp
    nhb = nhb_tmp

    hbw = (if hbw < 0.75 then 0.75 else hbw)
    hbw = (if hbw > 1.25 then 1.25 else hbw)

    hbo = (if hbo < 0.75 then 0.75 else hbo)
    hbo = (if hbo > 1.25 then 1.25 else hbo)

    nhb = (if nhb < 0.75 then 0.75 else nhb)
    nhb = (if nhb > 1.25 then 1.25 else nhb)

    SetDataVector(vw_d3 + "|", "Diff_Res_Den", diff_res_den,)
    SetDataVector(vw_d3 + "|", "Diff_Emp_Den", diff_emp_den,)
    SetDataVector(vw_d3 + "|", "Diff_Job_Mix", diff_job_mix,)
    SetDataVector(vw_d3 + "|", "Diff_Job_HH",  diff_job_hhs,)
    SetDataVector(vw_d3 + "|", "Diff_Ped_Des", diff_ped_des,)

    SetDataVector(vw_d3 + "|", "Adj_HBW_Res_Den", adj_hbw_res_den,)
    SetDataVector(vw_d3 + "|", "Adj_HBW_Emp_Den", adj_hbw_emp_den,)
    SetDataVector(vw_d3 + "|", "Adj_HBW_Job_Mix", adj_hbw_job_mix,)
    SetDataVector(vw_d3 + "|", "Adj_HBW_Job_HH",  adj_hbw_job_hhs,)
```

```
    SetDataVector(vw_d3 + "|", "Adj_HBW_Ped_Des", adj_hbw_ped_des,)

    SetDataVector(vw_d3 + "|", "Adj_HBO_Res_Den", adj_hbo_res_den,)
    SetDataVector(vw_d3 + "|", "Adj_HBO_Emp_Den", adj_hbo_emp_den,)
    SetDataVector(vw_d3 + "|", "Adj_HBO_Job_Mix", adj_hbo_job_mix,)
    SetDataVector(vw_d3 + "|", "Adj_HBO_Job_HH",  adj_hbo_job_hhs,)
    SetDataVector(vw_d3 + "|", "Adj_HBO_Ped_Des", adj_hbo_ped_des,)

    SetDataVector(vw_d3 + "|", "Adj_NHB_Res_Den", adj_nhb_res_den,)
    SetDataVector(vw_d3 + "|", "Adj_NHB_Emp_Den", adj_nhb_emp_den,)
    SetDataVector(vw_d3 + "|", "Adj_NHB_Job_Mix", adj_nhb_job_mix,)
    SetDataVector(vw_d3 + "|", "Adj_NHB_Job_HH",  adj_nhb_job_hhs,)
    SetDataVector(vw_d3 + "|", "Adj_NHB_Ped_Des", adj_nhb_ped_des,)

    SetDataVector(vw_d3 + "|", "HBW_tmp", hbw_tmp,)
    SetDataVector(vw_d3 + "|", "HBO_tmp", hbo_tmp,)
    SetDataVector(vw_d3 + "|", "NHB_tmp", nhb_tmp,)

    SetDataVector(vw_d3 + "|", "HBW", hbw,)
    SetDataVector(vw_d3 + "|", "HBO", hbo,)
    SetDataVector(vw_d3 + "|", "NHB", nhb,)

    // Join (Unbalanced PA, SLOCOG 2004 3D)
    ftype_pa_u = RunMacro("G30 table type", unbalanced_pa)
    pth_pa_u   = SplitPath(unbalanced_pa)
    vw_pa_u    = OpenTable(pth_pa_u[3], ftype_pa_u, {unbalanced_pa})

    ftype_d3 = RunMacro("G30 table type", d3_table)
    pth_d3   = SplitPath(d3_table)
    vw_d3    = OpenTable(pth_d3[3], ftype_d3, {d3_table})

    join_view_u3 = JoinViews(vw_demo + "+" + vw_pa_u, vw_demo + ".TAZ",
vw_pa_u + ".ID",)

    // Adjust Unbalanced_PA.BIN with 3D adjustment factors
    // Fill HBW_P
    Opts = null
    Opts.Input.[Dataview Set] = {{unbalanced_pa, d3_table, "ID", "TAZ"},
join_view_u3}
    Opts.Global.Fields        = {"HBW_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "HBW_P * HBW"
    ret_value = RunMacro("TCB Run Operation", 140, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill HBO_P
    Opts = null
    Opts.Input.[Dataview Set] = {{unbalanced_pa, d3_table, "ID", "TAZ"},
join_view_u3}
    Opts.Global.Fields        = {"HBO_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "HBO_P * HBO"
    ret_value = RunMacro("TCB Run Operation", 141, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    // Fill NHB_P
    Opts = null
    Opts.Input.[Dataview Set] = {{unbalanced_pa, d3_table, "ID", "TAZ"},
```

```
join_view_u3}
    Opts.Global.Fields        = {"NHB_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "NHB_P * NHB"
    ret_value = RunMacro("TCB Run Operation", 142, "Fill Dataview",
Opts)
    if !ret_value then goto quit

//---------------------- End of 3D Adjustment ----------------------


    // Join (Occupied Demographics, Unbalanced PA)
    ftype_demo = RunMacro("G30 table type", occupied_demographic_tab)
    pth_demo   = SplitPath(occupied_demographic_tab)
    vw_demo    = OpenTable(pth_demo[3], ftype_demo,
{occupied_demographic_tab})

    ftype_pa_u = RunMacro("G30 table type", unbalanced_pa)
    pth_pa_u   = SplitPath(unbalanced_pa)
    vw_pa_u    = OpenTable(pth_pa_u[3], ftype_pa_u, {unbalanced_pa})

    join_view_du = JoinViews(vw_demo + "+" + vw_pa_u, vw_demo + ".TAZ",
vw_pa_u + ".ID",)

    // Balance
    Opts = null
    Opts.Input.[Data Set]        = {{occupied_demographic_tab,
unbalanced_pa, "TAZ", "ID"}, join_view_du}
    Opts.Input.[Data View]       = {{occupied_demographic_tab,
unbalanced_pa, "TAZ", "ID"}, join_view_du}
    Opts.Input.[V1 Holding Sets] = {, , , , , , , , , , }
    Opts.Input.[V2 Holding Sets] = {, , , , , , , , , , }
    Opts.Field.[Vector 1]        = {join_view_du + ".HBW_P",
join_view_du + ".HBO_P",
                                     join_view_du + ".NHB_P",
join_view_du + ".SCHOOL_P",
                                     join_view_du + ".CALPOLY_P",
join_view_du + ".CUESTA_P",
                                     join_view_du + ".REGIONAL_P",
join_view_du + ".MAGNET_P",
                                     join_view_du + ".SP1_P",
                                     join_view_du + ".IX_P",
join_view_du + ".XI_P"}
    Opts.Field.[Vector 2]        = {join_view_du + ".HBW_A",
join_view_du + ".HBO_A",
                                     join_view_du + ".NHB_A",
join_view_du + ".SCHOOL_A",
                                     join_view_du + ".CALPOLY_A",
join_view_du + ".CUESTA_A",
                                     join_view_du + ".REGIONAL_A",
join_view_du + ".MAGNET_A",
                                     join_view_du + ".SP1_A",
                                     join_view_du + ".IX_A",
join_view_du + ".XI_A"}
    Opts.Global.Pairs = 11
    Opts.Global.[Holding Method] = {1, 1, 2, 2, 2, 2, 1, 1, 1, 1, 2}
    Opts.Global.[Percent Weight] = {50, 50, 50, 50, 50, 50, 50, 50, 50,
50, 50}
    Opts.Global.[Sum Weight]     = {100, 100, 100, 100, 100, 100, 100,
100, 100, 100, 100}
```

```
    Opts.Global.[V1 Options]     = {1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1}
    Opts.Global.[V2 Options]     = {1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1}
    Opts.Global.[Store Type]     = 1
    Opts.Output.[Output Table]   = balanced_pa
    ret_value = RunMacro("TCB Run Procedure", 143, "Balance", Opts)
    if !ret_value then goto quit

    // Transfer NHB_A to NHB_P
    Opts = null
    Opts.Input.[Dataview Set] = {balanced_pa, vw_pa_b}
    Opts.Global.Fields        = {"NHB_P"}
    Opts.Global.Method        = "Formula"
    Opts.Global.Parameter     = "NHB_A"
    ret_value = RunMacro("TCB Run Operation", 144, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    return(1)
    quit:
    return(0)
endMacro


//====== Master Network ======//

Macro "FPA ver20 Master Network" (Args)
feedback_iteration = 1 // This will ensure to reset the feedback # to 1

// Input Files
    master_hwy   = Args.[Master Highway DB]
    master_link  = Args.[Master Link Setting]
    master_node  = Args.[Master Node Setting]

// Output Files
    highway_db   = Args.[Highway DB]
    link_setting = Args.[Link Setting]
    node_setting = Args.[Node Setting]

    map = RunMacro("G30 new map", master_hwy, "False")
      layers = RunMacro("TCU get database line and node layers")
      node_lyr = layers[1]
      link_lyr = layers[2]

    SetLayer(link_lyr)
    qry = "Select * where RTP_YEAR <= 2004 and (AB_LANE_04 > 0 or
BA_LANE_04 > 0)"    // For Year 2004 Network
    n = SelectByQuery("set", "Several", qry,)

    flds     = {link_lyr + ".NAME",
              link_lyr + ".FUNC_CLASS",
              link_lyr + ".LANE_CAPACITY",
              link_lyr + ".AB_LANE_04",
                link_lyr + ".BA_LANE_04",
              link_lyr + ".AB_SPEED",
                link_lyr + ".BA_SPEED",
              link_lyr + ".AB_TIME",
                link_lyr + ".BA_TIME",
              link_lyr + ".AB_CONG_TT",
                link_lyr + ".BA_CONG_TT",
                link_lyr + ".ALPHA",
```

```
                link_lyr + ".BETA",
                link_lyr + ".FROM_ID",
                link_lyr + ".TO_ID",
                link_lyr + ".DAILY_CNT",
                link_lyr + ".RTP_Year",
                link_lyr + ".Comments"}

    outflds  = {"NAME",
              "FUNC_CLASS",
              "LANE_CAPACITY",
              "AB_LANE",
                "BA_LANE",
              "AB_SPEED",
                "BA_SPEED",
              "AB_TIME",
                "BA_TIME",
              "AB_CONG_TT",
                "BA_CONG_TT",
                "ALPHA",
                "BETA",
                "FROM_ID",
                "TO_ID",
                "DAILY_CNT",
                "RTP_Year",
                "Comments"}

    nodeflds = {node_lyr + ".TAZ",
              node_lyr + ".Study_Intersection"}

    Opts = null
    Opts.[Layer Name]      = link_lyr
    Opts.[File Type]       = "FFB"
    Opts.[Field Spec]      = flds
    Opts.[Field Name]      = outflds
    Opts.[Node Field Spec] = nodeflds
    Opts.[Node Name]       = node_lyr

    ExportGeography(link_lyr + "|set", highway_db, Opts)

    RunMacro("Close All")

    return(1)
    quit:
    return(0)
endMacro


//====== Initialization ======//

Macro "FPA ver60SL Network Initialization" (Args)
Shared feedback_iteration

    // Input Files
    highway_db = Args.[Highway DB]
    turn_penalty = Args.[Turn Penalty]
    daily_flow_table = Args.[Daily Flow Table]  // from 2nd iteration
    // Output Files
    highway_net = Args.[Highway Net]

    map = RunMacro("G30 new map",highway_db, "False")
```

```
      layers = RunMacro("TCU get database line and node layers")
      node_lyr = layers[1]
      link_lyr = layers[2]

    // Fill AB_TIME & BA_TIME
    if feedback_iteration = 1 then do

        // At 1st iteration, fill with free flow travel times
        Opts = null
        Opts.Input.[Dataview Set] = {highway_db + "|" + link_lyr,
link_lyr}
        Opts.Global.Fields = {"AB_TIME"}
        Opts.Global.Method = "Formula"
        Opts.Global.Parameter = "Length/AB_SPEED*60"
        ret_value = RunMacro("TCB Run Operation", 201, "Fill Dataview",
Opts)
        if !ret_value then goto quit

        Opts = null
        Opts.Input.[Dataview Set] = {highway_db + "|" + link_lyr,
link_lyr}
        Opts.Global.Fields = {"BA_TIME"}
        Opts.Global.Method = "Formula"
        Opts.Global.Parameter = "Length/BA_SPEED*60"
        ret_value = RunMacro("TCB Run Operation", 202, "Fill Dataview",
Opts)
        if !ret_value then goto quit
        end

    else do

        // if feedback_iteration >= 2, fill with congested travel times
        Opts = null
        Opts.Input.[Dataview Set] = {{highway_db + "|" + link_lyr,
                                      daily_flow_table,
                                      "ID",
                                      "ID1"},
                                      link_lyr + "+Volumes_Daily"}
        Opts.Global.Fields        = {link_lyr + ".AB_Cong_TT"}
        Opts.Global.Method        = "Formula"
        Opts.Global.Parameter     = "Volumes_Daily.AB_Time"
        ret_value = RunMacro("TCB Run Operation", 203, "Fill Dataview",
Opts)
        if !ret_value then goto quit

        Opts = null
        Opts.Input.[Dataview Set] = {{highway_db + "|" + link_lyr,
                                      daily_flow_table,
                                      "ID",
                                      "ID1"},
                                      link_lyr + "+Volumes_Daily"}
        Opts.Global.Fields        = {link_lyr + ".BA_Cong_TT"}
        Opts.Global.Method        = "Formula"
        Opts.Global.Parameter     = "Volumes_Daily.BA_Time"
        ret_value = RunMacro("TCB Run Operation", 204, "Fill Dataview",
Opts)
        if !ret_value then goto quit

    end  // for if feedback_iteration >= 2
```

```
    // Create Capacity Fields
    Opts = null
    Opts.Input.[View Set]      = {highway_db + "|" + link_lyr, link_lyr}
    Opts.Global.[Field Name]   = "AB_HOURLY_CAPACITY"
    Opts.Global.[Formula Text] = "LANE_CAPACITY * AB_LANE"
    Opts.Global.[Field Type]   = "Integer"
    ret_value = RunMacro("TCB Run Operation", 205, "Formula Field",
Opts)
    if !ret_value then goto quit

    Opts = null
    Opts.Input.[View Set]      = {highway_db + "|" + link_lyr, link_lyr}
    Opts.Global.[Field Name]   = "BA_HOURLY_CAPACITY"
    Opts.Global.[Formula Text] = "LANE_CAPACITY * BA_LANE"
    Opts.Global.[Field Type]   = "Integer"
    ret_value = RunMacro("TCB Run Operation", 206, "Formula Field",
Opts)
    if !ret_value then goto quit

    Opts = null
    Opts.Input.[View Set]      = {highway_db + "|" + link_lyr, link_lyr}
    Opts.Global.[Field Name]   = "AB_DAILY_CAPACITY"
    Opts.Global.[Formula Text] = "LANE_CAPACITY * AB_LANE * 12.5"
    Opts.Global.[Field Type]   = "Integer"
    ret_value = RunMacro("TCB Run Operation", 207, "Formula Field",
Opts)
    if !ret_value then goto quit

    Opts = null
    Opts.Input.[View Set]      = {highway_db + "|" + link_lyr, link_lyr}
    Opts.Global.[Field Name]   = "BA_DAILY_CAPACITY"
    Opts.Global.[Formula Text] = "LANE_CAPACITY * BA_LANE * 12.5"
    Opts.Global.[Field Type]   = "Integer"
    ret_value = RunMacro("TCB Run Operation", 208, "Formula Field",
Opts)
    if !ret_value then goto quit

        SetLayer(link_lyr)
        Opts = {{"Turn Penalties", "Yes"}}
        netflds = {{"Length", link_lyr+".Length"},
                   {"*_Time", link_lyr+".AB_Time", link_lyr +
".BA_Time"},
                   {"*_Cong_TT", link_lyr+".AB_Cong_TT", link_lyr +
".BA_Cong_TT"},
                 {"*_Hourly_Capacity", link_lyr+".AB_Hourly_Capacity",
link_lyr+".BA_Hourly_Capacity"},
                   {"*_Daily_Capacity", link_lyr+".AB_Daily_Capacity",
link_lyr+".BA_Daily_Capacity"},
                 {"ALPHA", link_lyr+".Alpha"},
                 {"BETA", link_lyr+".Beta"}}

        net = CreateNetwork(, highway_net,, netflds,, Opts)
        ActiveNetwork = net
        RunMacro("G30 setup tc defaults")

        ftype = RunMacro("G30 table type", turn_penalty)
        tpen = OpenTable("Specific", ftype, {turn_penalty})
        Flds = GetFields(tpen, "All")
        TpOpts = {{"Global Penalties", {{"Left", 0}, {"Right", 0},
{"Straight", 0}, {"Uturn", 1}}},
```

```
                  {"Specific Penalties", {tpen, Flds[1][1], Flds[1][2],
,Flds[1][3]}}}
        LoadNetworkMovementTable(net, TpOpts)
        f_type = RunMacro("G30 table type", turn_penalty)
        f_name = RunMacro("TCU Get File Name", turn_penalty)

        SetLayer(node_lyr)
        setname = "Centroids"
        qry = "Select * where TAZ <> null"
        n = SelectByQuery(setname, "Several", qry,)
        SetCursor("Hourglass")
        idxSet = node_lyr + "|" + setname
        Opts = {{"Use Centroids",       "True"},
                    {"Centroids Set",       idxSet},
                {"Use Turn Penalties",  "True"}}
        ChangeNetworkSettings(net, Opts)

        SetNetworkInformationItem(net, "Global Turn Penalties", {0, 0,
0, 1})
        SetNetworkInformationItem(net, "Default Turn Penalties", {,
"None"})
        SetNetworkInformationItem(net, "Specific Turn Penalties",
{turn_penalty, f_name})

    return(1)
    quit:
    return(0)
endMacro


//====== Network Skimming ======//

// Compute Highway Skim Matrix
Macro "FPA ver60 Network Skimming" (Args)
Shared feedback_iteration

    // Input Files
    highway_db = Args.[Highway DB]
    highway_net = Args.[Highway Net]
    terminal_times_matrix = Args.[Terminal Times Matrix]
    // Output Files
    skim_matrix = Args.[Skim Matrix]

    RunMacro("TCB Add DB Layers", highway_db,,)
    Lyrs = RunMacro("TCB get DB line and node layers", highway_db)
    node_lyr = Lyrs[1]
    link_lyr = Lyrs[2]
    db_nodelyr = highway_db + "|" + node_lyr
    db_linklyr = highway_db + "|" + link_lyr

    if feedback_iteration = 1 then do
        skim_field =  "*_Time"
        CoreLabel =  "Shortest Path - *_Time"
        end
    else do
        skim_field =  "*_Cong_TT"
        CoreLabel =  "Shortest Path - *_Cong_TT"
    end  // for if feedback_iteration = 1

    // TCSPMAT (Create Initial Skim Matrix)
```

```
    Opts = null
    Opts.Input.Network                      = highway_net
    Opts.Input.[Origin Set]                 = {db_nodelyr, node_lyr,
"Centroids", "Select * where TAZ <> null"}
    Opts.Input.[Destination Set]            = {db_nodelyr, node_lyr,
"Centroids"}
    Opts.Input.[Via Set]                    = {db_nodelyr, node_lyr}
    Opts.Field.Minimize                     = skim_field
    Opts.Field.Nodes                        = node_lyr+".ID"
    Opts.Output.[Output Matrix].Label       = "Shortest Path"
    Opts.Output.[Output Matrix].Compression = 1
    Opts.Output.[Output Matrix].[File Name] = skim_matrix

    ret_value = RunMacro("TCB Run Procedure", 209, "TCSPMAT", Opts)
    if !ret_value then goto quit

    // Intrazonal
    Opts = null
    Opts.Input.[Matrix Currency] = {skim_matrix, CoreLabel, "RCIndex",
"RCIndex"}
    Opts.Global.Factor           = 0.5
    Opts.Global.Neighbors        = 1
    Opts.Global.Operation        = 1        // default value
    Opts.Global.[Treat Missing]  = 1  // default value

    ret_value = RunMacro("TCB Run Procedure", 210, "Intrazonal", Opts)
    if !ret_value then goto quit

    // Add Terminal Times
    Opts = null
    Opts.Input.[Matrix Currency] =  {skim_matrix, CoreLabel, "RCIndex",
"RCIndex"}
    Opts.Input.[Core Currencies] = {{skim_matrix, CoreLabel, "RCIndex",
"RCIndex"},
                                    {terminal_times_matrix, "Minutes",
"RCIndex", "RCIndex"}}
    Opts.Global.Method           = 7
    Opts.Global.[Cell Range]     = 2
    Opts.Global.[Matrix K]       = {1, 1}
    Opts.Global.[Force Missing]  = "Yes"

    ret_value = RunMacro("TCB Run Operation", 211, "Fill Matrices",
Opts)
    if !ret_value then goto quit

    return(1)
    quit:
    return(0)
endMacro


//====== Trip Distribution ======//

// Trip Distribution
Macro "FPA ver40SL Daily Trip Distribution" (Args)

    // Input Files
    balanced_pa = Args.[Balanced PA]
    skim_matrix = Args.[Skim Matrix]
    friction_factors = Args.[Friction Factors]
```

```
    through_trip_matrix = Args.[Through Trip Matrix]
    // Output Files
    pa_matrix = Args.[PA Matrix]

    // Parameters
    gravity_model_iterations = r2i(Args.[Gravity Model Iterations])

    // Define View/File Names
    vw_pa_b = RunMacro("TCU Get File Name", balanced_pa)
    ffct_vw = RunMacro("TCU Get File Name", friction_factors)

    // Gravity
    Opts = null
    Opts.Input.[PA View Set] = {balanced_pa, vw_pa_b}
    Opts.Input.[FF Matrix Currencies]       = {{skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"}}
    Opts.Input.[Imp Matrix Currencies]      = {{skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                               {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"}}
    Opts.Input.[FF Tables]                  = {{friction_factors},
{friction_factors},
```

```
                                                   {friction_factors},
{friction_factors},
                                                   {friction_factors},
{friction_factors},
                                                   {friction_factors},
{friction_factors},
                                                   {friction_factors},
                                                   {friction_factors},
{friction_factors}}
    Opts.Input.[KF Matrix Currencies]       = {{skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                                   {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                                   {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                                   {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                                   {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                                   {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                                   {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                                   {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                                   {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                                   {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"},
                                                   {skim_matrix, CoreLabel,
"RCIndex", "RCIndex"}}
    Opts.Field.[Prod Fields]                =  {vw_pa_b+".HBW_P",
vw_pa_b+".HBO_P",
                                                    vw_pa_b+".NHB_P",
vw_pa_b+".SCHOOL_P",
                                                    vw_pa_b+".CALPOLY_P",
vw_pa_b+".CUESTA_P",
                                                    vw_pa_b+".REGIONAL_P",
vw_pa_b+".MAGNET_P",
                                                    vw_pa_b+".SP1_P",
                                                    vw_pa_b+".IX_P",
vw_pa_b+".XI_P"}
    Opts.Field.[Attr Fields]                =  {vw_pa_b+".HBW_A",
vw_pa_b+".HBO_A",
                                                    vw_pa_b+".NHB_A",
vw_pa_b+".SCHOOL_A",
                                                    vw_pa_b+".CALPOLY_A",
vw_pa_b+".CUESTA_A",
                                                    vw_pa_b+".REGIONAL_A",
vw_pa_b+".MAGNET_A",
                                                    vw_pa_b+".SP1_A",
                                                    vw_pa_b+".IX_A",
vw_pa_b+".XI_A"}
    Opts.Field.[FF Table Fields]            =  {ffct_vw+".HBW",
ffct_vw+".HBO",
                                                    ffct_vw+".NHB",
ffct_vw+".SCHOOL",
                                                    ffct_vw+".CALPOLY",
ffct_vw+".CUESTA",
                                                    ffct_vw+".REGIONAL",
```

```
ffct_vw+".MAGNET",
                                                ffct_vw+".SP1",
                                                ffct_vw+".IX",
ffct_vw+".XI"}
    Opts.Field.[FF Table Times]             =  {ffct_vw+".TIME",
ffct_vw+".TIME",
                                                ffct_vw+".TIME",
ffct_vw+".TIME",
                                                ffct_vw+".TIME",
ffct_vw+".TIME",
                                                ffct_vw+".TIME",
ffct_vw+".TIME",
                                                ffct_vw+".TIME",
                                                ffct_vw+".TIME",
ffct_vw+".TIME"}
    Opts.Global.[Purpose Names]             =  {"HBW", "HBO", "NHB",
"SCHOOL", "CALPOLY",
                                                "CUESTA", "REGIONAL",
"MAGNET", "SP1",
                                                "IX", "XI"}
    Opts.Global.Iterations                  =
{gravity_model_iterations, gravity_model_iterations,

gravity_model_iterations, gravity_model_iterations,

gravity_model_iterations, gravity_model_iterations,

gravity_model_iterations, gravity_model_iterations,

gravity_model_iterations,

gravity_model_iterations, gravity_model_iterations}
    Opts.Global.Convergence                 =  {0.01, 0.01, 0.01, 0.01,
0.01, 0.01, 0.01, 0.01, 0.01, 0.01, 0.01}
    Opts.Global.[Constraint Type]           =  {"Double", "Double",
"Double", "Double", "Double",
                                                "Double", "Double",
"Double", "Double",
                                                "Double", "Double"}
    Opts.Global.[Fric Factor Type]          =  {"Table", "Table",
"Table", "Table", "Table",
                                                "Table", "Table",
"Table", "Table",
                                                "Table", "Table"}
    Opts.Global.[A List]                    =  {1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1}
    Opts.Global.[B List]                    =  {0.3, 0.3, 0.3, 0.3, 0.3,
0.3, 0.3, 0.3, 0.3, 0.3, 0.3}
    Opts.Global.[C List]                    =  {0.01, 0.01, 0.01, 0.01,
0.01, 0.01, 0.01, 0.01, 0.01, 0.01, 0.01}
    Opts.Flag.[Use K Factors]               =  {0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0}
    Opts.Output.[Output Matrix].Label       = "PA"
    Opts.Output.[Output Matrix].Compression = 1
    Opts.Output.[Output Matrix].[File Name] = pa_matrix

    ret_value = RunMacro("TCB Run Procedure", 301, "Gravity", Opts)
    if !ret_value then goto quit

    // Add Matrix Core
```

```
    Opts = null
    Opts.Input.[Input Matrix] = pa_matrix
    Opts.Input.[New Core] = "EE"

    ret_value = RunMacro("TCB Run Operation", 302, "Add Matrix Core",
Opts)
    if !ret_value then goto quit

    // Merge EE Matrix
    Opts = null
    Opts.Input.[Target Currency] = {pa_matrix, "EE", "Row ID's", "Col
ID's"}
    Opts.Input.[Source Currencies] = {{through_trip_matrix, "FLOW",
"FROM", "TO"}}
    Opts.Global.[Missing Option].[Force Missing] = "No"

    ret_value = RunMacro("TCB Run Operation", 303, "Merge Matrices",
Opts)
    if !ret_value then goto quit

    return(1)
    quit:
    return(0)
endMacro


// Daily PA to OD
Macro "FPA ver40SL Daily PA to OD" (Args)

    // Input Files
    pa_matrix = Args.[PA Matrix]
    // Output Files
    daily_od_matrix = Args.[Daily OD Matrix]

    // PA2OD
    Opts = null
    Opts.Input.[PA Matrix Currency]         = {pa_matrix, "HBW", "Row
ID's", "Col ID's"}
    Opts.Field.[Matrix Cores]               = {1, 2, 3, 4, 5, 6, 7, 8,
9, 10, 11, 12}
    Opts.Field.[Adjust Fields]              = {, , , , , , , , , , , }
    Opts.Field.[Peak Hour Field]            = {, , , , , , , , , , , }
    Opts.Global.[Method Type]               = "PA to OD"
    Opts.Global.[Cache Size]                = 500000
    Opts.Global.[Average Occupancies]       = {1.5, 1.5, 1.5, 1.5, 1.5,
1.5,
                                               1.5, 1.5, 1.5, 1.5, 1.5,
1.5}
    Opts.Global.[Adjust Occupancies]        = {"No", "No", "No", "No",
"No", "No",
                                               "No", "No", "No", "No",
"No", "No"}
    Opts.Global.[Peak Hour Factor]          = {0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0}
    Opts.Flag.[Separate Matrices]           = "No"
    Opts.Flag.[Convert to Vehicles]         = {"No", "No", "No", "No",
"No", "No",
                                               "No", "No", "No", "No",
"No", "No"}
    Opts.Flag.[Include PHF]                 = {"No", "No", "No", "No",
```

```
"No", "No",
                                                   "No", "No", "No", "No",
"No", "No"}
    Opts.Flag.[Adjust Peak Hour]            = {"No", "No", "No", "No",
"No", "No",
                                                   "No", "No", "No", "No",
"No", "No"}
    Opts.Output.[Output Matrix].Label       = "OD_Daily"
    Opts.Output.[Output Matrix].Compression = 1
    Opts.Output.[Output Matrix].[File Name] = daily_od_matrix

    ret_value = RunMacro("TCB Run Procedure", 304, "PA2OD", Opts)
    if !ret_value then goto quit

    // QuickSum Daily Trips
    Opts = null
    Opts.Input.[Input Currency] = {daily_od_matrix, "HBW (0-24)",
"Rows", "Cols"}

    ret_value = RunMacro("TCB Run Operation", 305, "Matrix QuickSum",
Opts)
    if !ret_value then goto quit

    return(1)
    quit:
    return(0)
endMacro


//====== Assignment ======//

// Traffic Assignment (Daily)
Macro "FPA ver31 Daily Road Assign" (Args)
Shared feedback_iteration
Shared rmse

    // Input Files
    highway_db = Args.[Highway DB]
    highway_net = Args.[Highway Net]
    daily_od_matrix = Args.[Daily OD Matrix]

    // Output Files
    daily_flow_table = Args.[Daily Flow Table]
    daily_dbf = Args.[Daily Flow DBF]

    // Parameters
    assignment_convergence = Args.[Assignment Convergence]
    assignment_iterations = r2i(Args.[Assignment Iterations])

    map = RunMacro("G30 new map",highway_db, "False")
        layers = RunMacro("TCU get database line and node layers")
        node_lyr = layers[1]
        link_lyr = layers[2]

    Opts = null
    Opts.Input.Database = highway_db
    Opts.Input.Network = highway_net
    Opts.Input.[OD Matrix Currency] = {daily_od_matrix, "QuickSum",
"Rows", "Cols"}
    Opts.Field.[FF Time] = "*_Time"
```

```
    Opts.Field.Capacity = "*_Daily_Capacity"
    Opts.Field.Alpha = "ALPHA"
    Opts.Field.Beta = "BETA"
    Opts.Field.Preload = "None"
    Opts.Global.[Load Method] = 5
    Opts.Global.Convergence = assignment_convergence
    Opts.Global.Iterations = assignment_iterations
    Opts.Flag.[Do Critical] = 0
    Opts.Output.[Flow Table] = daily_flow_table

    ret_value = RunMacro("TCB Run Procedure", 401, "Assignment", Opts,
&Ret)
    if !ret_value then goto quit

    ftype_24flow = RunMacro("G30 table type", daily_flow_table)
    pth_dlytab   = SplitPath(daily_flow_table)
    dailytab = OpenTable(pth_dlytab[3],ftype_24flow,{daily_flow_table})
    ab = GetDataVector(dailytab + "|", "AB_FLOW", )
    ba = GetDataVector(dailytab + "|", "BA_FLOW", )
    tot = GetDataVector(dailytab + "|", "TOT_FLOW", )
    ab = Round(ab, 0)
    ba = Round(ba, 0)
    tot = Round(tot, 0)
    SetDataVector(dailytab + "|", "AB_FLOW", ab,)
    SetDataVector(dailytab + "|", "BA_FLOW", ba,)
    SetDataVector(dailytab + "|", "TOT_FLOW", tot,)
    CloseView(dailytab)

    ftype_24flow = RunMacro("G30 table type", daily_flow_table)
    pth_dlytab   = SplitPath(daily_flow_table)
    dailytab = OpenTable(pth_dlytab[3],ftype_24flow,{daily_flow_table})

    strct = GetTableStructure(dailytab)
    for i = 1 to strct.length do

    strct[i] = strct[i] + {strct[i][1]}
    end
    new_struct = strct + {
                          {"FROM_ID", "integer", 10, , "False",,,,,,, },
                          {"TO_ID", "integer", 10, , "False",,,,,,, }
                         }
    ModifyTable(dailytab, new_struct)

    // Join (Link Layer, Daily Flow Table)
    join_view_ld = JoinViews(link_lyr + "+" + dailytab, link_lyr +
".ID", dailytab + ".ID1",)

    Opts = null
    Opts.Input.[Dataview Set] = {{highway_db + "|" + link_lyr,
                                  daily_flow_table,
                                  "ID",
                                  "ID1"},
                                  join_view_ld}
    Opts.Global.Fields = {dailytab + ".FROM_ID"}
    Opts.Global.Method = "Formula"
    Opts.Global.Parameter = link_lyr + ".FROM_ID"

    ret_value = RunMacro("TCB Run Operation", 402, "Fill Dataview",
Opts)
    if !ret_value then goto quit
```

```
    Opts = null
    Opts.Input.[Dataview Set] = {{highway_db + "|" + link_lyr,
                                 daily_flow_table,
                                 "ID",
                                 "ID1"},
                                 join_view_ld}
    Opts.Global.Fields = {dailytab + ".TO_ID"}
    Opts.Global.Method = "Formula"
    Opts.Global.Parameter = link_lyr + ".TO_ID"

    ret_value = RunMacro("TCB Run Operation", 403, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    ftype_24flow = RunMacro("G30 table type", daily_flow_table)
    pth_dlytab   = SplitPath(daily_flow_table)
    dailytab = OpenTable("Volumes_Daily",ftype_24flow,
{daily_flow_table})
    ExportView(dailytab + "|","dBASE",daily_dbf,,)
    CloseView(dailytab)

    return(1)
    quit:
    return(0)
endMacro


Macro "FPA ver50 Feedback Loop" (Args)
Shared feedback_iteration
Shared rmse

    // Parameters
    max_iter  = Args.[Max Feedback Iteration]

//feedback_iteration = 2 // This sets the feedback # to 2 before the
feedback loop (FOR statement)

FOR feedback_iteration = 2 to max_iter do

    RunMacro("Close All")
    RunMacro("FPA ver60SL Network Initialization", Args)  // Update
Network with Congested Travel Time

    RunMacro("Close All")
    RunMacro("FPA ver60 Network Skimming", Args)  // Use Congested
Travel Times for Skimming

    RunMacro("Close All")
    RunMacro("FPA ver40SL Daily Trip Distribution", Args)

    RunMacro("Close All")
    RunMacro("FPA ver40SL Daily PA to OD", Args)

    RunMacro("Close All")
    RunMacro("FPA ver31 Daily Road Assign", Args)  // Use Free-flow
travel time for assignment

//  // Check Convergence
//    if feedback_iteration > 1 then do
```

```
//        if rmse < 200 then goto endloop
//    end
//
end  // FOR feedback_iteration = 2 to max_iter do

feedback_iteration = null

    endloop:
    return(1)
    quit:
    return(0)
endMacro


// AM Peak PA to OD
// Key Words Between AM and PM PA to OD
// AM       PM
// am       pm
// 7-8     16-17
//  7        16
// 601      603
// 602      604
Macro "FPA ver40SL AM Peak PA to OD" (Args)

    // Input Files
    pa_matrix = Args.[PA Matrix]
    hourly_lookup_table = Args.[Hourly Lookup Table]
    // Output Files
    am_peak_hour_od_matrix = Args.[AM Peak Hour OD Matrix]

    // Define File Name
    hour_vw = RunMacro("TCU Get File Name", hourly_lookup_table)

    // PA2OD
    Opts = null
    Opts.Input.[PA Matrix Currency]         = {pa_matrix, "HBW", "Row
ID's", "Col ID's"}
    Opts.Input.[Lookup Set]                 = {hourly_lookup_table,
hour_vw}
    Opts.Field.[Matrix Cores]               = {1, 2, 3, 4, 5, 6, 7, 8,
9, 10, 11, 12}
    Opts.Field.[Adjust Fields]              = {, , , , , , , , , , , }
    Opts.Field.[Peak Hour Field]            = {, , , , , , , , , , , }
    Opts.Field.[Hourly AB Field]            = {hour_vw+".DEP_HBW",
hour_vw+".DEP_HBO",
                                               hour_vw+".DEP_NHB",
hour_vw+".DEP_SCHOOL",
                                               hour_vw+".DEP_CALPOLY",
hour_vw+".DEP_CUESTA",
                                               hour_vw+".DEP_REGIONAL",
hour_vw+".DEP_MAGNET",
                                               hour_vw+".DEP_SP1",
                                               hour_vw+".DEP_IX",
hour_vw+".DEP_XI",
                                               hour_vw+".DEP_XX"}
    Opts.Field.[Hourly BA Field]            = {hour_vw+".RET_HBW",
hour_vw+".RET_HBO",
                                               hour_vw+".RET_NHB",
hour_vw+".RET_SCHOOL",
                                               hour_vw+".RET_CALPOLY",
```

```
hour_vw+".RET_CUESTA",
                                                hour_vw+".RET_REGIONAL",
hour_vw+".RET_MAGNET",
                                                hour_vw+".RET_SP1",
                                                hour_vw+".RET_IX",
hour_vw+".RET_XI",
                                                hour_vw+".RET_XX"}
    Opts.Global.[Method Type]               = "PA to OD"
    Opts.Global.[Start Hour]                = 7
    Opts.Global.[End Hour]                  = 7
    Opts.Global.[Cache Size]                = 500000
    Opts.Global.[Average Occupancies]       = {1.5, 1.5, 1.5, 1.5, 1.5,
1.5,
                                                1.5, 1.5, 1.5, 1.5, 1.5,
1.5}
    Opts.Global.[Adjust Occupancies]        = {"No", "No", "No", "No",
"No", "No",
                                                "No", "No", "No", "No",
"No", "No"}
    Opts.Global.[Peak Hour Factor]          = {0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0}
    Opts.Flag.[Separate Matrices]           = "Yes"
    Opts.Flag.[Convert to Vehicles]         = {"No", "No", "No", "No",
"No", "No",
                                                "No", "No", "No", "No",
"No", "No"}
    Opts.Flag.[Include PHF]                 = {"No", "No", "No", "No",
"No", "No",
                                                "No", "No", "No", "No",
"No", "No"}
    Opts.Flag.[Adjust Peak Hour]            = {"No", "No", "No", "No",
"No", "No",
                                                "No", "No", "No", "No",
"No", "No"}
    Opts.Output.[Output Matrix].Label       = "OD_AM"
    Opts.Output.[Output Matrix].Compression = 1
    Opts.Output.[Output Matrix].[File Name] = am_peak_hour_od_matrix

    ret_value = RunMacro("TCB Run Procedure", 601, "PA2OD", Opts)
    if !ret_value then goto quit

    // QuickSum AM Peak Trips
    Opts = null
    Opts.Input.[Input Currency] = {am_peak_hour_od_matrix, "HBW (7-8)",
"Rows", "Cols"}

    ret_value = RunMacro("TCB Run Operation", 602, "Matrix QuickSum",
Opts)
    if !ret_value then goto quit

    return(1)
    quit:
    return(0)
endMacro


// PM Peak PA to OD
// Key Words Between AM and PM PA to OD
// AM       PM
// am       pm
```

```
// 7-8     16-17
//  7        16
// 601      603
// 602      604
Macro "FPA ver40SL PM Peak PA to OD" (Args)

    // Input Files
    pa_matrix = Args.[PA Matrix]
    hourly_lookup_table = Args.[Hourly Lookup Table]
    // Output Files
    pm_peak_hour_od_matrix = Args.[PM Peak Hour OD Matrix]

    // Define File Name
    hour_vw = RunMacro("TCU Get File Name", hourly_lookup_table)

    // PA2OD
    Opts = null
    Opts.Input.[PA Matrix Currency]         = {pa_matrix, "HBW", "Row
ID's", "Col ID's"}
    Opts.Input.[Lookup Set]                 = {hourly_lookup_table,
hour_vw}
    Opts.Field.[Matrix Cores]               = {1, 2, 3, 4, 5, 6, 7, 8,
9, 10, 11, 12}
    Opts.Field.[Adjust Fields]              = {, , , , , , , , , , , }
    Opts.Field.[Peak Hour Field]            = {, , , , , , , , , , , }
    Opts.Field.[Hourly AB Field]            = {hour_vw+".DEP_HBW",
hour_vw+".DEP_HBO",
                                               hour_vw+".DEP_NHB",
hour_vw+".DEP_SCHOOL",
                                               hour_vw+".DEP_CALPOLY",
hour_vw+".DEP_CUESTA",
                                               hour_vw+".DEP_REGIONAL",
hour_vw+".DEP_MAGNET",
                                               hour_vw+".DEP_SP1",
                                               hour_vw+".DEP_IX",
hour_vw+".DEP_XI",
                                               hour_vw+".DEP_XX"}
    Opts.Field.[Hourly BA Field]            = {hour_vw+".RET_HBW",
hour_vw+".RET_HBO",
                                               hour_vw+".RET_NHB",
hour_vw+".RET_SCHOOL",
                                               hour_vw+".RET_CALPOLY",
hour_vw+".RET_CUESTA",
                                               hour_vw+".RET_REGIONAL",
hour_vw+".RET_MAGNET",
                                               hour_vw+".RET_SP1",
                                               hour_vw+".RET_IX",
hour_vw+".RET_XI",
                                               hour_vw+".RET_XX"}
    Opts.Global.[Method Type]               = "PA to OD"
    Opts.Global.[Start Hour]                = 16
    Opts.Global.[End Hour]                  = 16
    Opts.Global.[Cache Size]                = 500000
    Opts.Global.[Average Occupancies]       = {1.5, 1.5, 1.5, 1.5, 1.5,
1.5,
                                               1.5, 1.5, 1.5, 1.5, 1.5,
1.5}
    Opts.Global.[Adjust Occupancies]        = {"No", "No", "No", "No",
"No", "No",
                                               "No", "No", "No", "No",
```

```
"No", "No"}
    Opts.Global.[Peak Hour Factor]          = {0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0}
    Opts.Flag.[Separate Matrices]           = "Yes"
    Opts.Flag.[Convert to Vehicles]         = {"No", "No", "No", "No",
"No", "No",
                                               "No", "No", "No", "No",
"No", "No"}
    Opts.Flag.[Include PHF]                 = {"No", "No", "No", "No",
"No", "No",
                                               "No", "No", "No", "No",
"No", "No"}
    Opts.Flag.[Adjust Peak Hour]            = {"No", "No", "No", "No",
"No", "No",
                                               "No", "No", "No", "No",
"No", "No"}
    Opts.Output.[Output Matrix].Label       = "OD_PM"
    Opts.Output.[Output Matrix].Compression = 1
    Opts.Output.[Output Matrix].[File Name] = pm_peak_hour_od_matrix

    ret_value = RunMacro("TCB Run Procedure", 603, "PA2OD", Opts)
    if !ret_value then goto quit

    // QuickSum PM Peak Trips
    Opts = null
    Opts.Input.[Input Currency] = {pm_peak_hour_od_matrix, "HBW (16-
17)", "Rows", "Cols"}

    ret_value = RunMacro("TCB Run Operation", 604, "Matrix QuickSum",
Opts)
    if !ret_value then goto quit

    return(1)
    quit:
    return(0)
endMacro


// Traffic Assignment (AM Peak)
// Key Words Between AM and PM Assignments
// AM       PM
// am       pm
// _la      _lp
// 605      608
// 606      609
// 607      610
Macro "FPA ver31 AM Peak Hr Road Assign" (Args)
Shared feedback_iteration

    // Input Files
    highway_db             = Args.[Highway DB]
    highway_net            = Args.[Highway Net]
    am_peak_hour_od_matrix = Args.[AM Peak Hour OD Matrix]

    // Output Files
    am_peak_flow_table     = Args.[AM Peak Flow Table]
    amturn_tab             = Args.[AM Turning Movement]
    am_dbf                 = Args.[AM Peak Flow DBF]
    amturn_dbf             = Args.[AM Turning Movement DBF]
```

```
    // Parameters
    assignment_convergence = Args.[Assignment Convergence]
    assignment_iterations = r2i(Args.[Assignment Iterations])

    map = RunMacro("G30 new map",highway_db, "False")
        layers = RunMacro("TCU get database line and node layers")
        node_lyr = layers[1]
        link_lyr = layers[2]

    qry = "Select * where Study_Intersection <> null"
    idxSet = highway_db + "|" + node_lyr

    Opts = null
    Opts.Input.Database = highway_db
    Opts.Input.Network = highway_net
    Opts.Input.[OD Matrix Currency] = {am_peak_hour_od_matrix,
"QuickSum", "Rows", "Cols"}
    Opts.Input.[Turning Movement Node Set] = {idxSet, node_lyr, "Study
Intersection", qry}
    Opts.Field.[FF Time] = "*_Time"
    Opts.Field.Capacity = "*_Hourly_Capacity"
    Opts.Field.Alpha = "ALPHA"
    Opts.Field.Beta = "BETA"
    Opts.Field.Preload = "None"
    Opts.Global.[Load Method] = 5
    Opts.Global.[Movement Set Name] = "Study Intersection"
    Opts.Global.Convergence = assignment_convergence
    Opts.Global.Iterations = assignment_iterations
    Opts.Flag.[Do Critical] = 0
    Opts.Flag.[Do Turn Movement] = 1
    Opts.Output.[Flow Table] = am_peak_flow_table
    Opts.Output.[Movement Table] = amturn_tab

    ret_value = RunMacro("TCB Run Procedure", 605, "Assignment", Opts,
&Ret)
    if !ret_value then goto quit

    ftype_amflow = RunMacro("G30 table type", am_peak_flow_table)
    pth_amtab   = SplitPath(am_peak_flow_table)
    amtab = OpenTable(pth_amtab[3],ftype_amflow,{am_peak_flow_table})
    ab = GetDataVector(amtab + "|", "AB_FLOW", )
    ba = GetDataVector(amtab + "|", "BA_FLOW", )
    tot = GetDataVector(amtab + "|", "TOT_FLOW", )
    ab = Round(ab, 0)
    ba = Round(ba, 0)
    tot = Round(tot, 0)
    SetDataVector(amtab + "|", "AB_FLOW", ab,)
    SetDataVector(amtab + "|", "BA_FLOW", ba,)
    SetDataVector(amtab + "|", "TOT_FLOW", tot,)
    CloseView(amtab)

    ftype_amflow = RunMacro("G30 table type", am_peak_flow_table)
    pth_amtab   = SplitPath(am_peak_flow_table)
    amtab = OpenTable(pth_amtab[3],ftype_amflow,{am_peak_flow_table})

    strct = GetTableStructure(amtab)
    for i = 1 to strct.length do
    strct[i] = strct[i] + {strct[i][1]}
    end
    new_struct = strct + {
```

```
                          {"FROM_ID", "integer", 10, , "False",,,,,,, },
                          {"TO_ID", "integer", 10, , "False",,,,,,, }
                         }
    ModifyTable(amtab, new_struct)

    // Join (Link Layer, AM Flow Table)
    join_view_la = JoinViews(link_lyr + "+" + amtab, link_lyr + ".ID",
amtab + ".ID1",)

    Opts = null
    Opts.Input.[Dataview Set] = {{highway_db + "|" + link_lyr,
                                  am_peak_flow_table,
                                  "ID",
                                  "ID1"},
                                  join_view_la}
    Opts.Global.Fields = {amtab + ".FROM_ID"}
    Opts.Global.Method = "Formula"
    Opts.Global.Parameter = link_lyr + ".FROM_ID"

    ret_value = RunMacro("TCB Run Operation", 606, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    Opts = null
    Opts.Input.[Dataview Set] = {{highway_db + "|" + link_lyr,
                                  am_peak_flow_table,
                                  "ID",
                                  "ID1"},
                                  join_view_la}
    Opts.Global.Fields = {amtab + ".TO_ID"}
    Opts.Global.Method = "Formula"
    Opts.Global.Parameter = link_lyr + ".TO_ID"

    ret_value = RunMacro("TCB Run Operation", 607, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    ftype_amflow = RunMacro("G30 table type", am_peak_flow_table)
    pth_amtab   = SplitPath(am_peak_flow_table)
    amtab = OpenTable(pth_amtab[3],ftype_amflow,{am_peak_flow_table})
    ExportView(amtab + "|","dBASE",am_dbf,,)
    CloseView(amtab)

    ftype_amturnflow = RunMacro("G30 table type", amturn_tab)
    pth_amturntab   = SplitPath(amturn_tab)
    am_turn_tab = OpenTable(pth_amturntab[3],ftype_amturnflow,
{amturn_tab})
    vol = GetDataVector(am_turn_tab + "|", "VOLUME", )
    vol = Round(vol, 0)
    SetDataVector(am_turn_tab + "|", "VOLUME", vol,)
    ExportView(am_turn_tab + "|","dBASE",amturn_dbf,,)
    CloseView(am_turn_tab)

    return(1)
    quit:
    return(0)
endMacro


// Traffic Assignment (PM Peak)
```

```
// Key Words Between AM and PM Assignments
// AM       PM
// am       pm
// _la      _lp
// 605      608
// 606      609
// 607      610
Macro "FPA ver31 PM Peak Hr Road Assign" (Args)
Shared feedback_iteration

    // Input Files
    highway_db             = Args.[Highway DB]
    highway_net            = Args.[Highway Net]
    pm_peak_hour_od_matrix = Args.[PM Peak Hour OD Matrix]

    // Output Files
    pm_peak_flow_table     = Args.[PM Peak Flow Table]
    pmturn_tab             = Args.[PM Turning Movement]
    pm_dbf                 = Args.[PM Peak Flow DBF]
    pmturn_dbf             = Args.[PM Turning Movement DBF]

    // Parameters
    assignment_convergence = Args.[Assignment Convergence]
    assignment_iterations = r2i(Args.[Assignment Iterations])

    map = RunMacro("G30 new map",highway_db, "False")
        layers = RunMacro("TCU get database line and node layers")
        node_lyr = layers[1]
        link_lyr = layers[2]

    qry = "Select * where Study_Intersection <> null"
    idxSet = highway_db + "|" + node_lyr

    Opts = null
    Opts.Input.Database = highway_db
    Opts.Input.Network = highway_net
    Opts.Input.[OD Matrix Currency] = {pm_peak_hour_od_matrix,
"QuickSum", "Rows", "Cols"}
    Opts.Input.[Turning Movement Node Set] = {idxSet, node_lyr, "Study
Intersection", qry}
    Opts.Field.[FF Time] = "*_Time"
    Opts.Field.Capacity = "*_Hourly_Capacity"
    Opts.Field.Alpha = "ALPHA"
    Opts.Field.Beta = "BETA"
    Opts.Field.Preload = "None"
    Opts.Global.[Load Method] = 5
    Opts.Global.[Movement Set Name] = "Study Intersection"
    Opts.Global.Convergence = assignment_convergence
    Opts.Global.Iterations = assignment_iterations
    Opts.Flag.[Do Critical] = 0
    Opts.Flag.[Do Turn Movement] = 1
    Opts.Output.[Flow Table] = pm_peak_flow_table
    Opts.Output.[Movement Table] = pmturn_tab

    ret_value = RunMacro("TCB Run Procedure", 608, "Assignment", Opts,
&Ret)
    if !ret_value then goto quit

    ftype_pmflow = RunMacro("G30 table type", pm_peak_flow_table)
    pth_pmtab   = SplitPath(pm_peak_flow_table)
```

```
    pmtab = OpenTable(pth_pmtab[3],ftype_pmflow,{pm_peak_flow_table})
    ab = GetDataVector(pmtab + "|", "AB_FLOW", )
    ba = GetDataVector(pmtab + "|", "BA_FLOW", )
    tot = GetDataVector(pmtab + "|", "TOT_FLOW", )
    ab = Round(ab, 0)
    ba = Round(ba, 0)
    tot = Round(tot, 0)
    SetDataVector(pmtab + "|", "AB_FLOW", ab,)
    SetDataVector(pmtab + "|", "BA_FLOW", ba,)
    SetDataVector(pmtab + "|", "TOT_FLOW", tot,)
    CloseView(pmtab)

    ftype_pmflow = RunMacro("G30 table type", pm_peak_flow_table)
    pth_pmtab   = SplitPath(pm_peak_flow_table)
    pmtab = OpenTable(pth_pmtab[3],ftype_pmflow,{pm_peak_flow_table})

    strct = GetTableStructure(pmtab)
    for i = 1 to strct.length do
    strct[i] = strct[i] + {strct[i][1]}
    end
    new_struct = strct + {
                          {"FROM_ID", "integer", 10, , "False",,,,,,, },
                          {"TO_ID", "integer", 10, , "False",,,,,,, }
                         }
    ModifyTable(pmtab, new_struct)

    // Join (Link Layer, PM Flow Table)
    join_view_lp = JoinViews(link_lyr + "+" + pmtab, link_lyr + ".ID",
pmtab + ".ID1",)

    Opts = null
    Opts.Input.[Dataview Set] = {{highway_db + "|" + link_lyr,
                                  pm_peak_flow_table,
                                  "ID",
                                  "ID1"},
                                  join_view_lp}
    Opts.Global.Fields = {pmtab + ".FROM_ID"}
    Opts.Global.Method = "Formula"
    Opts.Global.Parameter = link_lyr + ".FROM_ID"

    ret_value = RunMacro("TCB Run Operation", 609, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    Opts = null
    Opts.Input.[Dataview Set] = {{highway_db + "|" + link_lyr,
                                  pm_peak_flow_table,
                                  "ID",
                                  "ID1"},
                                  join_view_lp}
    Opts.Global.Fields = {pmtab + ".TO_ID"}
    Opts.Global.Method = "Formula"
    Opts.Global.Parameter = link_lyr + ".TO_ID"

    ret_value = RunMacro("TCB Run Operation", 610, "Fill Dataview",
Opts)
    if !ret_value then goto quit

    ftype_pmflow = RunMacro("G30 table type", pm_peak_flow_table)
    pth_pmtab   = SplitPath(pm_peak_flow_table)
```

```
    pmtab = OpenTable(pth_pmtab[3],ftype_pmflow,{pm_peak_flow_table})
    ExportView(pmtab + "|","dBASE",pm_dbf,,)
    CloseView(pmtab)

    ftype_pmturnflow = RunMacro("G30 table type", pmturn_tab)
    pth_pmturntab   = SplitPath(pmturn_tab)
    pm_turn_tab = OpenTable(pth_pmturntab[3],ftype_pmturnflow,
{pmturn_tab})
    vol = GetDataVector(pm_turn_tab + "|", "VOLUME", )
    vol = Round(vol, 0)
    SetDataVector(pm_turn_tab + "|", "VOLUME", vol,)
    ExportView(pm_turn_tab + "|","dBASE",pmturn_dbf,,)
    CloseView(pm_turn_tab)

    return(1)
    quit:
    return(0)
endMacro


Macro "FPA ver12 Map VC Ratios" (Args)

    shared d_map_options
    shared d_linestyles,d_fillstyles,d_colors

    // Input Files
    highway_db = Args.[Highway DB]
    daily_flow_table = Args.[Daily Flow Table]
    taz_db     = Args.[TAZ boundary]

    labelopts = {}
    labelopts.Visibility = "True"
    labelopts.Priority = "-ID"
    labelopts.Font = "Arial|Bold|10"
    labelopts.Color = ColorRGB(65500,0,0)
    labelopts.Uniqueness = "Off"
    labelopts.[Set Priority] = 5
    labelopts.Format = "*.##"
    labelopts.Rotation = "Off"

    ftype_24flow = RunMacro("G30 table type", daily_flow_table)
    dailytab = OpenTable("Volumes_Daily",ftype_24flow,
{daily_flow_table})

    ret = runmacro ("create a map","Link Volumes and V/C
Ratios",highway_db,"Off")

    map2 = ret.map
    curr_layer = ret.[Link Layer]
    SetLayer(curr_layer)

    joined = JoinViews(curr_layer+"+"+dailytab, "["+curr_layer+"].ID",
"["+dailytab+"].ID1",)
    {flds,fldx} = GetFields(joined,"Numeric")

    pos = ArrayPosition(flds,{"TOT_Flow"},)
    if pos > 0 then do
        scale_theme_name = CreateContinuousTheme("Link Volumes", {fldx
[pos]}, {{"Minimum Value",0},{"Minimum Size",0}})
        SetThemeOptions(scale_theme_name, {{"title", "Link Volumes"}})
```

```
        ShowTheme(, scale_theme_name)
    end
    pos = ArrayPosition(flds,{"Max_voc"},)
    if pos > 0 then do
        theme_value_arr = {
                {0,   "True",0.60,"False"},
                {0.60,"True",0.89,"False"},
                {0.89,"True",1.09,"False"},
                {1.09,"True",1.29,"False"},
                {1.29,"True",1000,"False"}
            }

        opts.Statistics = "True"
        opts.Values = theme_value_arr

        color_name = CreateTheme("V/C Ratios", fldx[pos], "Manual", 5,
opts)
        if color_name <> null then do
            SetThemeOptions(color_name, {{"title", "V/C Ratios"}})
            RunMacro("G30 Palette Manager", color_name, 0, input_clrs)

            SetLineColor( color_name+"|2", d_colors[62])
            SetLineColor( color_name+"|3", d_colors[60])
            SetLineColor( color_name+"|4", d_colors[44])
            SetLineColor( color_name+"|5", d_colors[7])
            SetLineColor( color_name+"|6", d_colors[5])

            ShowTheme(, color_name)
        end
    end

    RunMacro("FPA create legend", "Theme")

    return(1)
    quit:
    return(0)
endMacro


Macro "Close All"
    maps = GetMaps()
    if maps <> null then do
        for i = 1 to maps[1].length do
            SetMapSaveFlag(maps[1][i],"False")
        end
    end
    RunMacro("G30 File Close All")
endMacro


Macro "add annotation" (mapname,anno_txt)
    shared d_linestyles,d_fillstyles,d_colors

    SetMap(mapname)
    scp = GetMapScope(mapname)
    corners = GetScopeCorners(scp)
    c = Coord((r2i(corners[2].Lon+corners[3].Lon)/2),corners[3].Lat)

    window_spec    = "Map|" + mapname
```

```
    s_anno = AddAnnotation(window_spec, "Text", {
      {"Location", {c, "S"}},
      {"Alignment","S"},
      {"Anchor Point", c},
      {"Font",      "Arial|bold|14"},
      {"Color",     ColorRGB(0,0,0)},
      {"Text",      anno_txt}
      })

    opts = {}
    opts.Text  = anno_txt
    opts.Angle = 0
    opts.Color = ColorRGB(0,0,0)
    opts.Font  = "Arial|bold|14"
    opts.Alignment = "S"
    opts.[Anchor Point] = c
    opts.Location = {c,"S"}
    opts.Framed = "True"
    opts.[Frame Type] = "Rectangle"
    opts.[Frame Border Width] = 0
    opts.[Frame Border Color] = ColorRGB(0,0,0)
    opts.[Frame Border Style] = d_linestyles[1]
    opts.[Frame Fill Style] = d_fillstyles[2]
    opts.[Frame Fill Color] = ColorRGB(65535,65535,65535)

    SetAnnotation(window_spec,s_anno,opts)
endMacro


Macro "create a map" (map_desc,layer_db,point_layer_display)
    shared d_map_options

    layers = GetDBLayers(layer_db)
    db_info = GetDBInfo(layer_db)

    map = CreateMap(map_desc, d_map_options+ {{"scope", db_info[1]}}) //
+{{"Scale Change Macro","Move Annotation"}}+{{"Activate Macro","Move
Annotation"}})
    SetWindow("Map|" + map)
    SetMap(map)

    for i = 1 to layers.length do
        newlayer = AddLayer(map,layers[i], layer_db,layers[i])
        RunMacro("G30 new layer default settings", newlayer)
        if IsLayer(layers[i],{"Point"}) then do
            if point_layer_display = "Off" then
                SetLayerVisibility(layers[i], "Off")
            else
                SetDisplayStatus(layers[i]+"|", "Invisible")

            node_layer = layers[i]
        end
        else link_layer = layers[i]
    end

    scp = GetLayerScope(layers[1])
    SetMapScope(map,scp)

    runmacro("add annotation",map,map_desc)
    RunMacro("G30 update map toolbar")
```

```
    ret = {}
    ret.map = map
    ret.[Node Layer] = node_layer
    ret.[Link Layer] = link_layer

    return(ret)
endMacro


Macro "FPA create legend" (typ,layer_name_arr)

    shared d_leg_settings, d_thmleg_settings, d_colors, d_fillstyles

    opt_names = {"Layers Label", "Background Color", "Background Style",
                 "Border Color", "Border Width", "Border Style", "Layers
label flag"}
    tmp = GetMapLayers(map_name, "All")
    lyrs = tmp[1]

    leg_settings = CopyArray(d_leg_settings)
    leg_settings[3][1] = 1

    thmleg_settings = CopyArray(d_thmleg_settings)
    thmleg_settings[3][1] = 1

    m = GetMap()
    if m = null then Return()

    on notfound do
        if typ = "Theme" then
            CreateLegend(m, thmleg_settings,
                {{"click macro","G30 edit the legend"},
                 {"Background Style", d_fillstyles[2]},
                 {"Background Color", d_colors[3]}
                })
        else
            CreateLegend(m, leg_settings,
                {{"click macro","G30 edit the legend"},
                 {"Background Style", d_fillstyles[2]},
                 {"Background Color", d_colors[3]}
                })


        list = null
        tmp = GetLegendOptions(m, {"Layers label"})
        leg_opts   = GetLegendOptions(m, opt_names)
        leg_settings = GetLegendSettings(m)

        layers_label = tmp[1]
        if leg_opts[6] = "True" then
            list = list + {layers_label}
        else
            list = list + {""}
        for i = 1 to lyrs.length do
            list = list + {lyrs[i]}
        end

    if layer_name_arr <> null then
        for kk = 1 to layer_name_arr.length do
```

```
            for jj = 1 to list.length do
                if Upper(layer_name_arr[kk]) = "MAP LAYERS" then do
                    leg_opts[6] = "False" // no layer label
                    opts = null
                    for i = 1 to opt_names.length do
                        opts = opts + {{opt_names[i], leg_opts[i]}}
                        end
                    SetLegendOptions(m, opts)
                    jj = list.length
                end
                else if Upper(list[jj]) = Upper( layer_name_arr[kk])
then do
                    SetLegendDisplayStatus(list[jj] + "|", "False")
                    jj = list.length
                end
            end
        end

        Return()
        end

    leg_settings = GetLegendSettings(m)

        if typ = "Set"   then leg_settings[2][4] = 1
        if typ = "Theme" then leg_settings[2][5] = 1
        leg_settings[1] = "Automatic"
        leg_settings[3][1] = 1
        SetLegendSettings(,leg_settings)

endMacro
```

APPENDIX E:
MODEL INPUT SUMMARIES

Summary of Trips Produced and Attracted

Total Trips

Area		HBW	NHB	SCHOOL	HBO	CALPOLY	CUESTA	REGIONAL	MAGNET	IX	XI	Total	% HB Trips	% of HHs
Produced Area 1	SLO City	39,811	130,451	11,187	61,013	21,663	10,041	23,661	5,738	9,272		312,838	35.9%	17.2%
Produced Area 2	Nipomo	7,072	3,232	2,088	11,957	147	6	3,293	1,045	11,302		40,143	7.1%	7.8%
Produced Area 3	Central County	30,840	56,507	8,673	49,406	1,058	2,327	13,831	5,708	10,898		179,249	23.5%	34.5%
Produced Area 4	Rural Areas	6,635	3,346	1,958	11,784	38	245	3,084	245	1,236		28,572	4.8%	9.7%
Produced Area 5	Atasc & Paso R	45,174	133,311	10,323	58,511	1,843	4,751	24,888	2,074	7,464		288,339	29.7%	30.8%
Total Productions		129,533	326,848	34,230	192,672	24,749	17,370	68,757	14,810	40,172	0	849,142	101%	100%
Attracted Area 1	SLO City	64,875	130,451	4,776	74,623	26,196	0	20,116	0		20,325	341,362		
Attracted Area 2	Nipomo	1,661	3,232	2,969	9,991	0	0	1,070	2,933		9,117	30,973		
Attracted Area 3	Central County	25,389	55,344	11,776	65,167	0	15,277	14,098	61,789		55,650	304,490		
Produced Area 4	Rural Areas	2,571	3,346	2,351	7,458	0	0	669	0		708	17,104		
Produced Area 5	Atasc & Paso R	39,909	132,478	12,779	57,558	0	3,278	32,252	0		7,372	285,627		
Total Attractions		134,405	324,852	34,651	214,798	26,196	18,555	68,206	64,722	0	93,173	979,556		
Ratio		**0.96**	**1.01**	**0.99**	**0.90**	**0.94**	**0.94**	**1.01**	**0.23**		**0.43**	**0.87**		
Balance to		Prod's	Prod's	Attr's	Prod's	Attr's	Attr's	Attr's	Attr's	Prod's	Attr's			

Other Checks:	HH Survey	Model
% of school traffic that is NHB	30%	32%

Internal Trips

Area		HBW	NHB	SCHOOL	HBO	CALPOLY	CUESTA	REGIONAL	MAGNET	TOTAL
Produced Area 1	SLO City	38,378	124,769	12,174	58,817	21,663	10,041	22,714	5,738	294,293
Produced Area 2	Nipomo	4,293	1,428	2,233	6,577	147	6	1,811	1,045	17,540
Produced Area 3	Central County	28,897	50,205	11,020	44,959	1,058	2,327	13,278	5,708	157,453
Produced Area 4	Rural Areas	6,304	2,700	2,413	11,195	38	245	2,961	245	26,100
Produced Area 5	Atasc & Paso R	43,954	125,567	14,398	56,931	1,843	4,751	23,892	2,074	273,411
Total Productions		121,826	304,669	42,237	178,479	24,749	17,370	64,657	14,810	768,797
Attracted Area 1	SLO City	58,387	122,957	5,748	70,892	24,624	0	18,105	0	300,713
Attracted Area 2	Nipomo	1,008	1,428	3,319	5,495	0	0	1,048	440	12,738
Attracted Area 3	Central County	21,835	50,708	14,198	61,909	0	15,277	13,816	15,447	193,190
Produced Area 4	Rural Areas	2,417	2,700	2,830	7,085	0	0	656	0	15,688
Produced Area 5	Atasc & Paso R	38,312	124,756	16,924	56,004	0	3,278	31,607	0	270,882
Total Attractions		121,959	302,549	43,019	201,385	24,624	18,555	65,233	15,887	793,210
Ratio of Prod's/Attr's		**1.00**	**1.01**	**0.98**	**0.89**	**1.01**	**0.94**	**0.99**	**0.93**	**0.97**
% of Internal Trips		**15.8%**	**39.4%**	**5.6%**			**39.2%**			
% of Trips in Statewide Survey		**10.6%**	**31.8%**	**9.0%**			**48.6%**			

HBW Productions

Type	Trips	%	Census %
Internal	121,826	94%	93%
IX	7,707	6%	7%
Total	129,533	100%	100%

HBW Attractions

Type	Trips	%	Census %
Internal	121,959	91%	91%
XI	12,445	9.3%	9.0%
Total	134,405	100%	100%

Total Households	**96,833** [from model]	[HH survey]	Ratio Model/Survey
Total II, IX, & XI Trips Assigned	**994,727**		
Total Trips Produced/ Household	**10.27**	9.57	1.07
Total HB II, IX, & XI Trips Assigned	**522,293**		
Total HB Trips Produced/ Household	**5.39**	3.77	1.43

Estimated IX & XI	**133,345**
Through Trips	**13,900**
Estimated Total External Trips	**147,245**
Total Station Weights	**103,209**
	143%

1.01

Area	Master Factors Prod's	Attr's	Retail			
SLO City	0.44	0.38	0.27	0.38	0.32	0.27
Nipomo	0.40	0.38	0.27	0.342	0.32	0.27
Central County	0.40	0.53	0.38	0.342	0.448	0.378
Rural Areas	0.31	0.25	0.18	0.266	0.2112	0.1782
Atascadero & Paso Robles	0.79	0.63	0.27	0.65	0.5	0.27

	1 SLO City			2 Nipomo			3 Central			4 Rural Areas			5 Atascadero & Paso Robles		
Trips attracted to:	Trips Attracted	% of Trips	% of KSF	Trips Attracted	% of Trips	% of KSF	Trips Attracted	% of Trips	% of KSF	Trips Attracted	% of Trips	% of KSF	ips Attracte	% of Trips	% of KSF
Offices	23,244	65%	49%	109	0%	1%	3,763	11%	17%	134	0%	1%	8,553	24%	32%
Retail	86,083	30%	45%	6,173	2%	2%	78,712	28%	23%	3,972	1%	3%	111,116	39%	27%

Cross Classification Table

8/10/2010

Input Table for Area 1

Prod Factor= 1.03 Attr Factor= 1.14 Retail Factor= 0.38

Emp. Type	Unit	Land Use Type	Daily Trip Rate	Productions									Attractions								
				HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1	HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1
1	DU	SFR	9.8112	27.0%	31.0%	1.0%	8.0%	3.0%	7.0%	18.0%	4.0%	0.0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
2	DU	MFR	6.7561	30%	31%	1%	8%	6%	7%	13%	4%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
3	DU	MH	5.1157	27%	37%	1%	4%	2%	7%	18%	4%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
4	DU	RURAL	6.7567	27%	31%	1%	8%	3%	7%	18%	4%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
5	sqft	OFF_GEN	0.0126	0%	0%	25%	0%	0%	0%	0%	0%	0%	45%	5%	25%	0%	0%	0%	0%	0%	0%
6	sqft	DWNTWN	0.0096	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	31%	19%	0%	0%	0%	25%	0%	0%
7	sqft	RET_REG	0.0230	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	11%	19%	0%	0%	0%	45%	0%	0%
8	sqft	RET_NEI	0.0134	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	46%	19%	0%	0%	0%	10%	0%	0%
9	sqft	CHURCH	0.0104	0%	0%	[illegible]	[illegible]	0%	0%	0%	0%	0%	10%	46%	22%	0%	0%	0%	0%	0%	0%
10	sqft	GAS	1.0655	0%	0%	[illegible]	[illegible]	0%	0%	0%	0%	0%	10%	10%	40%	0%	0%	0%	0%	0%	0%
11	Students	ELEM	1.2900	0%	0%	[illegible]	[illegible]	0%	0%	0%	0%	0%	0%	0%	15%	70%	0%	0%	0%	0%	0%
12	Students	HIGHSCH	1.7100	0%	0%	[illegible]	[illegible]	0%	0%	0%	0%	0%	0%	0%	15%	70%	0%	0%	0%	0%	0%
13	Students	CAL_S	2.1690	0%	50%	[illegible]	[illegible]	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	Jobs	CAL_E	8.2170	0%	0%	[illegible]	[illegible]	0%	0%	0%	0%	0%	20%	0%	0%	0%	80%	0%	0%	0%	0%
15	Students	CUE_S	1.2000	10%	15%	15%	0%	0%	30%	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%
16	Jobs	CUE_E	15.5500	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	80%	0%	0%	0%
17	sqft	HOSPITL	0.0200	0%	0%	30%	0%	0%	0%	0%	0%	0%	6%	2%	30%	0%	0%	0%	32%	0%	0%
18	sqft	IND_LIT	0.0079	0%	0%	17%	0%	0%	0%	0%	0%	0%	45%	21%	17%	0%	0%	0%	0%	0%	0%
19	sqft	IND_HVY	0.0017	0%	0%	17%	0%	0%	0%	0%	0%	0%	45%	21%	17%	0%	0%	0%	0%	0%	0%
20	Rooms	MOTEL	8.5362	0%	0%	25%	0%	0%	0%	0%	0%	0%	45%	5%	25%	0%	0%	0%	0%	0%	0%
21	Acres	REC	0.7410	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	90%	0%	0%	0%	0%	0%	0%	0%
22	sqft	PQP_HI	0.0303	0%	0%	20%	0%	0%	0%	0%	0%	0%	10%	50%	20%	0%	0%	0%	0%	0%	0%
23	sqft	PQP_LO	0.0121	0%	0%	20%	0%	0%	0%	0%	0%	0%	10%	50%	20%	0%	0%	0%	0%	0%	0%
24	Acres	AGR	0.0000	0%	0%	20%	0%	0%	0%	0%	0%	0%	60%	0%	20%	0%	0%	0%	0%	0%	0%
25	Acres	UNDEV	0.0000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
26	Trips	SPECIAL	1.0000	0%	0%	10%	0%	0%	0%	0%	0%	0%	55%	5%	10%	0%	0%	0%	20%	0%	0%
27	Acres	BEACH	25.6500	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
28		LU_SPARE06	0.0000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
29		LU_SPARE05	0.0000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
30		LU_SPARE04	0.0000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
31		LU_SPARE03	0.0000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
32		LU_SPARE02	0.0000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
33		LU_SPARE01	0.0000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
			IX, XI	**3.6%**	**3.6%**	**3.6%**	**0.0%**	**0.0%**	**0.0%**	**4.0%**	**0.0%**	**0.0%**	**10.0%**	**5.0%**	**5.0%**	**0.0%**	**6.0%**	**2.0%**	**10.0%**	**85.0%**	**0.0%**
			Internal	96.4%	96.4%	96.4%	100.0%	100.0%	100.0%	96.0%	100.0%	100.0%	90.0%	95.0%	95.0%	100.0%	94.0%	98.0%	90.0%	15.0%	100.0%
			Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Items in aqua are affected by the Production factor and items in red are affected by the attractions factor. These factors are used for macro-level adjustments to trip-gen rates

Cross Classification Table

8/10/2010

Input Table for Area 2

Prod Factor= 0.4 Attr Factor= 0.4 Retail Factor= 0.27

Emp. Type	Unit	Land Use Type	Daily Trip Rate	Productions									Attractions								
				HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1	HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1
1	DU	SFR	3.79	27%	46%	1%	8%	0%	0%	13%	4%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
2	DU	MFR	2.61	30%	41%	1%	8%	1%	1%	13%	4%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
3	DU	MH	1.98	27%	49%	1%	4%	1%	0%	13%	4%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
4	DU	RURAL	2.61	27%	45%	1%	8%	1%	0%	13%	4%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
5	sqft	OFF_GEN	0.00	0%	0%	25%	0%	0%	0%	0%	0%	0%	45%	5%	25%	0%	0%	0%	0%	0%	0%
6	sqft	DWNTWN	0.01	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	31%	19%	0%	0%	0%	25%	0%	0%
7	sqft	RET_REG	0.02	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	11%	19%	0%	0%	0%	45%	0%	0%
8	sqft	RET_NEI	0.02	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	46%	19%	0%	0%	0%	10%	0%	0%
9	sqft	CHURCH	0.00	0%	0%			0%	0%	0%	0%	0%	10%	20%	35%	0%	0%	0%	0%	0%	0%
10	sqft	GAS	0.36	0%	0%			0%	0%	0%	0%	0%	10%	10%	40%	0%	0%	0%	0%	0%	0%
11	Students	ELEM	1.29	0%	0%			0%	0%	0%	0%	0%	0%	0%	15%	70%	0%	0%	0%	0%	0%
12	Students	HIGHSCH	1.71	0%	0%			0%	0%	0%	0%	0%	0%	0%	15%	70%	0%	0%	0%	0%	0%
13	Students	CAL_S	2.17	0%	0%			0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
14	Jobs	CAL_E	8.22	0%	0%			0%	0%	0%	0%	0%	20%	0%	0%	0%	80%	0%	0%	0%	0%
15	Students	CUE_S	1.20	10%	15%	15%	0%	0%	30%	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%
16	Jobs	CUE_E	15.55	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	80%	0%	0%	0%
17	sqft	HOSPITL	0.01	0%	0%	30%	0%	0%	0%	0%	0%	0%	6%	2%	30%	0%	0%	0%	32%	0%	0%
18	sqft	IND_LIT	0.00	0%	0%	17%	0%	0%	0%	0%	0%	0%	45%	21%	17%	0%	0%	0%	0%	0%	0%
19	sqft	IND_HVY	0.00	0%	0%	17%	0%	0%	0%	0%	0%	0%	45%	21%	17%	0%	0%	0%	0%	0%	0%
20	Rooms	MOTEL	2.85	0%	0%	25%	0%	0%	0%	0%	0%	0%	20%	30%	25%	0%	0%	0%	0%	0%	0%
21	Acres	REC	0.25	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	90%	0%	0%	0%	0%	0%	0%	0%
22	sqft	PQP_HI	0.01	0%	0%	20%	0%	0%	0%	0%	0%	0%	10%	50%	20%	0%	0%	0%	0%	0%	0%
23	sqft	PQP_LO	0.00	0%	0%	20%	0%	0%	0%	0%	0%	0%	10%	50%	20%	0%	0%	0%	0%	0%	0%
24	Acres	AGR	0.00	0%	0%	20%	0%	0%	0%	0%	0%	0%	60%	0%	20%	0%	0%	0%	0%	0%	0%
25	Acres	UNDEV	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
26	Trips	SPECIAL	1.00	0%	0%	10%	0%	0%	0%	0%	0%	0%	55%	5%	10%	0%	0%	0%	20%	0%	0%
27	Acres	BEACH	8.55	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
28		LU_SPARE06	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
29		LU_SPARE05	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
30		LU_SPARE04	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
31		LU_SPARE03	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
32		LU_SPARE02	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
33		LU_SPARE01	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
			IX, XI	**39.3%**	**45.0%**	**45.0%**	**9.8%**	**0.0%**	**0.0%**	**45.0%**	**0.0%**	**0.0%**	**39.3%**	**45.0%**	**45.0%**	**0.0%**	**1.0%**	**0.0%**	**2.0%**	**85.0%**	**0.0%**
			Internal	60.7%	55.0%	55.0%	90.2%	100.0%	100.0%	55.0%	100.0%	100.0%	60.7%	55.0%	55.0%	100.0%	99.0%	100.0%	98.0%	15.0%	100.0%
			Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Items in aqua are affected by the Production factor and items in red are affected by the attractions factor. These factors are used for macro-level adjustments to trip-gen rates

Cross Classification Table

8/10/2010

Input Table for Area 3

Prod Factor= 0.4 Attr Factor= 0.5 Retail Factor= 0.30

Emp. Type	Unit	Land Use Type	Daily Trip Rate	Productions									Attractions								
				HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1	HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1
1	DU	SFR	3.79	27%	44%	1%	8%	1%	0%	13%	5%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
2	DU	MFR	2.61	30%	41%	1%	8%	1%	0%	13%	5%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
3	DU	MH	1.98	27%	49%	1%	4%	0%	0%	13%	5%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
4	DU	RURAL	2.61	27%	45%	1%	8%	0%	0%	13%	5%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
5	sqft	OFF_GEN	0.01	0%	0%	25%	0%	0%	0%	0%	0%	0%	45%	5%	25%	0%	0%	0%	0%	0%	0%
6	sqft	DWNTWN	0.01	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	31%	19%	0%	0%	0%	25%	0%	0%
7	sqft	RET_REG	0.03	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	11%	19%	0%	0%	0%	45%	0%	0%
8	sqft	RET_NEI	0.02	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	46%	19%	0%	0%	0%	10%	0%	0%
9	sqft	CHURCH	0.00	0%	0%	35%	0%	0%	0%	0%	0%	0%	10%	20%	35%	0%	0%	0%	0%	0%	0%
10	sqft	GAS	0.50	0%	0%	40%	0%	0%	0%	0%	0%	0%	10%	10%	40%	0%	0%	0%	0%	0%	0%
11	Students	ELEM	1.29	0%	0%	15%	0%	0%	0%	0%	0%	0%	0%	0%	15%	70%	0%	0%	0%	0%	0%
12	Students	HIGHSCH	1.71	0%	0%	15%	0%	0%	0%	0%	0%	0%	0%	0%	15%	70%	0%	0%	0%	0%	0%
13	Students	CAL_S	2.17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
14	Jobs	CAL_E	8.22	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	80%	0%	0%	0%	0%
15	Students	CUE_S	1.20	10%	15%	15%	0%	0%	30%	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%
16	Jobs	CUE_E	15.55	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	80%	0%	0%	0%
17	sqft	HOSPITL	0.01	0%	0%	30%	0%	0%	0%	0%	0%	0%	6%	2%	30%	0%	0%	0%	32%	0%	0%
18	sqft	IND_LIT	0.00	0%	0%	17%	0%	0%	0%	0%	0%	0%	45%	21%	17%	0%	0%	0%	0%	0%	0%
19	sqft	IND_HVY	0.00	0%	0%	17%	0%	0%	0%	0%	0%	0%	45%	21%	17%	0%	0%	0%	0%	0%	0%
20	Rooms	MOTEL	3.98	0%	0%	25%	0%	0%	0%	0%	0%	0%	20%	30%	25%	0%	0%	0%	0%	0%	0%
21	Acres	REC	0.35	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	90%	0%	0%	0%	0%	0%	0%	0%
22	sqft	PQP_HI	0.01	0%	0%	20%	0%	0%	0%	0%	0%	0%	10%	50%	20%	0%	0%	0%	0%	0%	0%
23	sqft	PQP_LO	0.01	0%	0%	20%	0%	0%	0%	0%	0%	0%	10%	50%	20%	0%	0%	0%	0%	0%	0%
24	Acres	AGR	0.00	0%	0%	20%	0%	0%	0%	0%	0%	0%	60%	0%	20%	0%	0%	0%	0%	0%	0%
25	Acres	UNDEV	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
26	Trips	SPECIAL	1.00	0%	0%	10%	0%	0%	0%	0%	0%	0%	55%	5%	10%	0%	0%	0%	20%	0%	0%
27	Acres	BEACH	11.97	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
28		LU_SPARE06	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
29		LU_SPARE05	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
30		LU_SPARE04	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
31		LU_SPARE03	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
32		LU_SPARE02	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
33		LU_SPARE01	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
			IX, XI	**6.3%**	**9.0%**	**7.0%**	**0.0%**	**0.0%**	**0.0%**	**4.0%**	**0.0%**	**0.0%**	**14.0%**	**5.0%**	**4.0%**	**0.0%**	**1.0%**	**0.0%**	**2.0%**	**75.0%**	**0.0%**
			Internal	93.7%	91.0%	93.0%	100.0%	100.0%	100.0%	96.0%	100.0%	100.0%	86.0%	95.0%	96.0%	100.0%	99.0%	100.0%	98.0%	25.0%	100.0%
			Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Cross Classification Table

8/10/2010

Input Table for Area 4

Prod Factor= 0.3 Attr Factor= 0.3 Retail Factor= 0.18

Emp. Type	Unit	Land Use Type	Daily Trip Rate	Productions									Attractions								
				HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1	HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1
1	DU	SFR	2.95	27%	48%	1%	8%	0%	1%	13%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
2	DU	MFR	2.03	30%	45%	1%	8%	0%	1%	13%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
3	DU	MH	1.54	27%	52%	1%	4%	0%	1%	13%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
4	DU	RURAL	2.03	27%	48%	1%	8%	0%	1%	13%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
5	sqft	OFF_GEN	0.00	0%	0%	25%	0%	0%	0%	0%	0%	0%	45%	5%	25%	0%	0%	0%	0%	0%	0%
6	sqft	DWNTWN	0.01	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	31%	19%	0%	0%	0%	25%	0%	0%
7	sqft	RET_REG	0.02	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	11%	19%	0%	0%	0%	45%	0%	0%
8	sqft	RET_NEI	0.01	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	46%	19%	0%	0%	0%	10%	0%	0%
9	sqft	CHURCH	0.00	0%	0%	35%	0%	0%	0%	0%	0%	0%	10%	20%	35%	0%	0%	0%	0%	0%	0%
10	sqft	GAS	0.23	0%	0%	40%	0%	0%	0%	0%	0%	0%	10%	10%	40%	0%	0%	0%	0%	0%	0%
11	Students	ELEM	1.29	0%	0%	15%	0%	0%	0%	0%	0%	0%	0%	0%	15%	70%	0%	0%	0%	0%	0%
12	Students	HIGHSCH	1.71	0%	0%	15%	0%	0%	0%	0%	0%	0%	0%	0%	15%	70%	0%	0%	0%	0%	0%
13	Students	CAL_S	2.17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
14	Jobs	CAL_E	8.22	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	80%	0%	0%	0%	0%
15	Students	CUE_S	1.20	10%	15%	15%	0%	0%	30%	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%
16	Jobs	CUE_E	15.55	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	80%	0%	0%	0%
17	sqft	HOSPITL	0.00	0%	0%	30%	0%	0%	0%	0%	0%	0%	6%	2%	30%	0%	0%	0%	32%	0%	0%
18	sqft	IND_LIT	0.00	0%	0%	17%	0%	0%	0%	0%	0%	0%	45%	21%	17%	0%	0%	0%	0%	0%	0%
19	sqft	IND_HVY	0.00	0%	0%	17%	0%	0%	0%	0%	0%	0%	45%	21%	17%	0%	0%	0%	0%	0%	0%
20	Rooms	MOTEL	1.88	0%	0%	25%	0%	0%	0%	0%	0%	0%	45%	5%	25%	0%	0%	0%	0%	0%	0%
21	Acres	REC	0.16	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	90%	0%	0%	0%	0%	0%	0%	0%
22	sqft	PQP_HI	0.01	0%	0%	20%	0%	0%	0%	0%	0%	0%	10%	50%	20%	0%	0%	0%	0%	0%	0%
23	sqft	PQP_LO	0.00	0%	0%	20%	0%	0%	0%	0%	0%	0%	10%	50%	20%	0%	0%	0%	0%	0%	0%
24	Acres	AGR	0.00	0%	0%	20%	0%	0%	0%	0%	0%	0%	60%	0%	20%	0%	0%	0%	0%	0%	0%
25	Acres	UNDEV	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
26	Trips	SPECIAL	1.00	0%	0%	10%	0%	0%	0%	0%	0%	0%	55%	5%	10%	0%	0%	0%	20%	0%	0%
27	Acres	BEACH	5.64	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
28		LU_SPARE06	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
29		LU_SPARE05	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
30		LU_SPARE04	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
31		LU_SPARE03	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
32		LU_SPARE02	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
33		LU_SPARE01	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
			IX, XI	**5.0%**	**5.0%**	**5.0%**	**1.3%**	**0.0%**	**0.0%**	**4.0%**	**0.0%**	**0.0%**	**6.0%**	**5.0%**	**5.0%**	**0.0%**	**1.0%**	**0.0%**	**2.0%**	**85.0%**	**0.0%**
			Internal	95.0%	95.0%	95.0%	98.8%	100.0%	100.0%	96.0%	100.0%	100.0%	94.0%	95.0%	95.0%	100.0%	99.0%	100.0%	98.0%	15.0%	100.0%
			Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Cross Classification Table

8/10/2010

Input Table for Area 5

Prod Factor= 0.8 Attr Factor= 0.6 Retail Factor= 0.27

Emp. Type	Unit	Land Use Type	Daily Trip Rate	Productions									Attractions								
				HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1	HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1
1	DU	SFR	7.56	21%	28%	15%	5%	1%	2%	12%	1%	0%	0%	0%	15%	0%	0%	0%	0%	0%	0%
2	DU	MFR	5.21	25%	25%	15%	5%	1%	1%	12%	1%	0%	0%	0%	15%	0%	0%	0%	0%	0%	0%
3	DU	MH	3.94	25%	28%	15%	3%	0%	1%	12%	1%	0%	0%	0%	15%	0%	0%	0%	0%	0%	0%
4	DU	RURAL	5.21	21%	31%	15%	5%	0%	1%	12%	1%	0%	0%	0%	14%	0%	0%	0%	0%	0%	0%
5	sqft	OFF_GEN	0.01	0%	0%	25%	0%	0%	0%	0%	0%	0%	45%	5%	25%	0%	0%	0%	0%	0%	0%
6	sqft	DWNTWN	0.02	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	31%	19%	0%	0%	0%	25%	0%	0%
7	sqft	RET_REG	0.04	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	11%	19%	0%	0%	0%	45%	0%	0%
8	sqft	RET_NEI	0.03	0%	0%	19%	0%	0%	0%	0%	0%	0%	6%	46%	19%	0%	0%	0%	10%	0%	0%
9	sqft	CHURCH	0.01	0%	0%	20%	0%	0%	0%	0%	0%	0%	10%	50%	20%	0%	0%	0%	0%	0%	0%
10	sqft	GAS	0.59	0%	0%	40%	0%	0%	0%	0%	0%	0%	10%	10%	40%	0%	0%	0%	0%	0%	0%
11	Students	ELEM	1.29	0%	0%	20%	0%	0%	0%	0%	0%	0%	0%	0%	20%	60%	0%	0%	0%	0%	0%
12	Students	HIGHSCH	1.71	0%	0%	20%	0%	0%	0%	0%	0%	0%	0%	0%	20%	60%	0%	0%	0%	0%	0%
13	Students	CAL_S	2.17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
14	Jobs	CAL_E	8.22	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	80%	0%	0%	0%	0%
15	Students	CUE_S	1.20	10%	15%	15%	0%	0%	30%	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%
16	Jobs	CUE_E	15.55	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	80%	0%	0%	0%
17	sqft	HOSPITL	0.01	0%	0%	30%	0%	0%	0%	0%	0%	0%	6%	2%	30%	0%	0%	0%	32%	0%	0%
18	sqft	IND_LIT	0.00	0%	0%	18%	0%	0%	0%	0%	0%	0%	45%	20%	18%	0%	0%	0%	0%	0%	0%
19	sqft	IND_HVY	0.00	0%	0%	18%	0%	0%	0%	0%	0%	0%	45%	20%	18%	0%	0%	0%	0%	0%	0%
20	Rooms	MOTEL	4.72	0%	0%	30%	0%	0%	0%	0%	0%	0%	20%	20%	30%	0%	0%	0%	0%	0%	0%
21	Acres	REC	0.41	0%	0%	10%	0%	0%	0%	0%	0%	0%	10%	70%	10%	0%	0%	0%	0%	0%	0%
22	sqft	PQP_HI	0.02	0%	0%	20%	0%	0%	0%	0%	0%	0%	10%	50%	20%	0%	0%	0%	0%	0%	0%
23	sqft	PQP_LO	0.01	0%	0%	25%	0%	0%	0%	0%	0%	0%	10%	40%	25%	0%	0%	0%	0%	0%	0%
24	Acres	AGR	0.00	0%	0%	20%	0%	0%	0%	0%	0%	0%	60%	0%	20%	0%	0%	0%	0%	0%	0%
25	Acres	UNDEV	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
26	Trips	SPECIAL	1.00	0%	0%	10%	0%	0%	0%	0%	0%	0%	55%	5%	10%	0%	0%	0%	20%	0%	0%
27	Acres	BEACH	14.18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
28		LU_SPARE06	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
29		LU_SPARE05	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
30		LU_SPARE04	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
31		LU_SPARE03	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
32		LU_SPARE02	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
33		LU_SPARE01	0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
			IX, XI	**2.7%**	**2.7%**	**2.7%**	**0.7%**	**0.0%**	**0.0%**	**4.0%**	**0.0%**	**0.0%**	**4.0%**	**2.7%**	**2.7%**	**0.0%**	**1.0%**	**0.0%**	**2.0%**	**70.0%**	**0.0%**
			Internal	97.3%	97.3%	97.3%	99.3%	100.0%	100.0%	96.0%	100.0%	100.0%	96.0%	97.3%	97.3%	100.0%	99.0%	100.0%	98.0%	30.0%	100.0%
			Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Station Weights

8/10/2010

Station	Road	Caltrans 2000 Volume/Count	Adjusted Volume	Weight (%)	Through Trips	Adjusted Station Weights
9001	Hwy 1 north end	2,000	3,045	19	1,400	1,645
9002	Hwy 101 north end	18,700	19,745	176	5,000	14,745
9003	Hwy 41	6,400	6,400	60	450	5,950
9004	Hwy 46	7,700	7,700	72	2,250	5,450
9005	Hwy 58	350	489	3	0	489
9006	Hwy 166 east end	3,600	3,948	34	250	3,698
9007	Hwy 33 south end	420	559	4	250	309
9008	Hwy 101 south end	62,325	56,323	585	4,300	52,023
9009	Hwy 1 south end	5,000	5,000	47	0	5,000
		106,495		**1000**	**13,900**	**89,309**
						103,209

APPENDIX F:
FRICTION FACTORS

City □□P□□□ R□□□□□ TDF M□□□□
F□i□ti□□ F□□t□□□

TIME	HBW	HBO	NHB	SCHOOL	CALPOLY	CUESTA	REGIONAL	MAGNET	SP1	I□	□I
1	5500□00	4000□00	4000□00	3000□00	5500□00	6000□00	6000	6000	6000	5054	5054
2	4675□00	3000□00	3000□00	2250□00	4400□00	4800□00	5899	5899	6000	4257	4257
3	3973□75	2250□00	2250□00	1687□50	3520□00	3840□00	5630	5630	2714	3586	3586
4	3377□69	1687□50	1687□50	1265□63	2816□00	3072□00	5307	5307	1271	3020	3020
5	2871□03	1265□63	1265□63	949□22	2252□80	2457□60	4969	4969	619	2544	2544
6	2440□38	949□22	949□22	711□91	1802□24	1966□08	4632	4632	314	2143	2143
7	2074□32	711□91	711□91	533□94	1441□79	1572□86	4306	4306	166	1805	1805
8	1763□17	533□94	533□94	400□45	1153□43	1258□29	3993	3993	92	1520	1520
9	1498□70	400□45	400□45	300□34	922□75	1006□63	3697	3697	53	1281	1281
10	1273□89	300□34	300□34	225□25	738□20	805□31	3419	3419	32	1079	1079
11	1082□81	225□25	225□25	168□94	590□56	644□25	3158	3158	20	909	909
12	920□39	168□94	168□94	126□71	472□45	515□40	2915	2915	13	765	765
13	782□33	126□71	126□71	95□03	377□96	412□32	2688	2688	9	645	645
14	664□98	95□03	95□03	71□27	302□37	329□85	2477	2477	6	543	543
15	565□23	71□27	71□27	53□45	241□89	263□88	2282	2282	4	457	457
16	480□45	53□45	53□45	40□09	193□51	211□11	2101	2101	3	385	385
17	408□38	40□09	40□09	30□07	154□81	168□88	1934	1934	2	325	325
18	347□12	30□07	30□07	22□55	123□85	135□11	1779	1779	2	273	273
19	295□06	22□55	22□55	16□91	99□08	108□09	1636	1636	1	230	230
20	250□80	16□91	16□91	12□68	79□26	86□47	1505	1505	1	194	194
21	213□18	12□68	12□68	9□51	63□41	69□18	1383	1383	1	163	163
22	181□20	9□51	9□51	7□14	50□73	55□34	1271	1271	1	138	138
23	154□02	7□14	7□14	5□35	40□58	44□27	1168	1168	1	116	116
24	130□92	5□35	5□35	4□01	32□47	35□42	1073	1073	1	98	98
25	111□28	4□01	4□01	3□01	25□97	28□33	985	985	0	82	82
26	94□59	3□01	3□01	2□26	20□78	22□67	905	905	0	69	69
27	80□40	2□26	2□26	1□69	16□62	18□13	831	831	0	58	58
28	68□34	1□69	1□69	1□27	13□30	14□51	762	762	0	49	49
29	58□09	1□27	1□27	0□95	10□64	11□61	700	700	0	41	41
30	49□38	0□95	0□95	0□71	8□51	9□28	642	642	0	35	35
31	41□97	0□71	0□71	0□54	6□81	7□43	580	580	0	29	29
32	35□67	0□54	0□54	0□40	5□45	5□94	520	520	0	25	25
33	30□32	0□40	0□40	0□30	4□36	4□75	460	460	0	21	21
34	25□77	0□30	0□30	0□23	3□49	3□80	420	420	0	18	18
35	21□91	0□23	0□23	0□17	2□79	3□04	380	380	0	15	15
36	18□62	0□17	0□17	0□13	2□23	2□43	320	320	0	12	12
37	15□83	0□13	0□13	0□10	1□78	1□95	250	250	0	10	10
38	13□45	0□10	0□10	0□07	1□43	1□56	150	150	0	9	9

APPENDIX G:
STATIC VALIDATION SUMMARY REPORTS (YEAR 2008)

Paso Robles Model □alidation Results□□M Pea□ □our T□o-□ay Total Traffic □olumes

Road□ay	Segment	Functional Class	Model Lin□ ID	Model □olume	Traffic Count	Model □Count	Model □Deviation	Ma□imum Deviation	□ithin Deviation	Model - Count	Difference Squared
US 101 SB	□t S□□ R□□ □□	F□□□□y	6994	2□673	1970	1□36	0□57	0□63	Y□□	703	494□209
US 101 NB	□t S□□ R□□ □□	F□□□□y	6039	2□821	2212	1□28	0□44	0□63	Y□□	609	370□881
US 101 NB	□t E□i□□ □□□□S□□ Mi□□□□	F□□□□y	23335	365	434	0□84	□0□23	0□68	Y□□	□69	4□761
□S □0□S□□	at □□line (s□o San Miguel)	F□□□□y	23046	970	346	2□80	2□64	0□68	□o	624	389□376
HWY 46 □WB	UNION RD TO US 101	Hi□□□□y	16485	2□030	1□935	1□05	0□18	0□28	Y□□	95	9□025
HWY 46 □WB	UNION RD TO AIRPORT	Hi□□□□y	18180	1□547	1□805	0□86	□0□50	0□29	Y□□	□258	66□564
HWY 46	AIRPORT TO DRY CREE□ RD	Hi□□□□y	16355	1□252	1□344	0□93	□0□21	0□33	Y□□	□92	8□464
24TH ST	SPRING ST TO US 101	A□t□□i□□	18649	916	1□193	0□77	□0□68	0□34	Y□□	□277	76□729
AIRPORT RD	SR 46 TO DRY CREE□ RD	A□t□□i□□	15131	320	487	0□66	□0□66	0□52	Y□□	□167	27□889
CHAROLAIS RD	S RIVER RD TO RAMBOULLET	A□t□□i□□	23526	314	595	0□53	□0□99	0□48	Y□□	□281	78□961
CHAROLAIS RD	RAMBOUILLET RD TO CRESTON	A□t□□i□□	26098	272	436	0□62	□0□72	0□52	Y□□	□164	26□896
13TH ST	SPRING ST TO RIVERSIDE AVE	C□□□□t□□	17009	360	572	0□63	□0□78	0□48	Y□□	□212	44□944
13TH ST	RIVERSIDE AVE TO S RIVER	A□t□□i□□	14537	2□053	1□954	1□05	0□18	0□28	Y□□	99	9□801
CR□STO□ RD	S RI□□R RD TO □OLD□□□ILL	A□t□□i□□	14912	816	1□282	0□64	□1□12	0□33	□o	□466	217□156
CRESTON RD	GOLDEN HILL RD TO NIBLIC□	A□t□□i□□	26124	1□182	1□494	0□79	□0□67	0□31	Y□□	□312	97□344
CR□STO□ RD	□I□LIC□ RD TO C□□ROL□IS	A□t□□i□□	19218	163	570	0□29	□1□50	0□48	□o	□407	165□649
CRESTON RD	CHAROLAIS RD TO EAST CITY LIMIT	A□t□□i□□	28507	231	387	0□60	□0□78	0□52	Y□□	□156	24□336
DALLONS DR	BUENA VISTA RD TO GOLDEN HILL	C□□□□t□□	26986	141	148	0□95	□0□08	0□63	Y□□	□7	49
□OLD□□ □ILL RD	D□LLO□S DR TO SR □□	A□t□□i□□	25994	495	225	2□20	1□90	0□63	□o	270	72□900
GOLDEN HILL RD	CRESTON RD TO ROLLING HILL	A□t□□i□□	27066	629	725	0□87	□0□30	0□44	Y□□	□96	9□216
GOLDEN HILL RD	ROLLING HILLS RD TO UNION	A□t□□i□□	26325	818	1□001	0□82	□0□51	0□36	Y□□	□183	33□489
GOLDEN HILL RD	UNION RD TO SR46	A□t□□i□□	19030	518	601	0□86	□0□29	0□48	Y□□	□83	6□889
LINNE RD	FONTANA RD TO EAST CITY	A□t□□i□□	14578	229	359	0□64	□0□63	0□58	Y□□	□130	16□900
NACIMIENTO LA□E DR	WEST CITY LIMIT	A□t□□i□□	18246	413	632	0□65	□0□79	0□44	Y□□	□219	47□961
NIBLIC□ RD	SPRING ST TO S RIVER	A□t□□i□□	28487	2□276	2□112	1□08	0□28	0□28	Y□□	164	26□896
NIBLIC□ RD	S RIVER RD TO MELODY DR	A□t□□i□□	26106	1□334	1□866	0□71	□1□00	0□29	Y□□	□532	283□024
NIBLIC□ RD	MELODY DR TO CRESTON RD	A□t□□i□□	14972	1□111	1□059	1□05	0□14	0□36	Y□□	52	2□704
N RIVER RD	UNION RD TO SR 46E	C□□□□t□□	14710	150	310	0□48	□0□90	0□58	Y□□	□160	25□600
□ RI□□R RD	SR□□□ TO □ORT□ CIT□ LIMIT	C□□□□t□□	26981	2	94	0□02	□1□43	0□68	□o	□92	8□464
ROLLI□□□□ILLS RD	CR□STO□ RD TO □OLD□□□□ILL	C□□□□t□□	25931	130	353	0□37	□1□10	0□58	□o	□223	49□729
PASO ROBLES ST	FREEWAY OFFRAMP TO CRESTON	L□□□□	17753	544	394	1□38	0□73	0□52	Y□□	150	22□500
RIVER OA□S DR	N RIVER RD TO BUENA VISTA	C□□□□t□□	25970	142	256	0□55	□0□77	0□58	Y□□	□114	12□996
RIVERSIDE AVE	13TH ST TO 24TH ST	A□t□□i□□	26972	732	910	0□80	□0□51	0□38	Y□□	□178	31□684
SHERWOOD RD	CRESTON RD TO FONTANA	A□t□□i□□	14938	875	742	1□18	0□41	0□44	Y□□	133	17□689
S RIVER RD	SOUTH CITY LIMITS TO C	C□□□□t□□	16086	144	174	0□83	□0□27	0□63	Y□□	□30	900
S RIVER RD	CHAROLAIS RD TO NIBLIC□	A□t□□i□□	25813	768	1□088	0□71	□0□82	0□36	Y□□	□320	102□400
S RIVER RD	NIBLIC□ RD TO NAVA□	C□□□□t□□	18190	920	1□068	0□86	□0□39	0□36	Y□□	□148	21□904
SPRING ST	10TH ST TO 11TH ST	C□□□□t□□	18502	909	750	1□21	0□52	0□41	Y□□	159	25□281
SPRING ST	16TH ST TO 17TH ST	C□□□□t□□	18589	654	938	0□70	□0□80	0□38	Y□□	□284	80□656
SPRING ST	28TH ST TO 30TH ST	C□□□□t□□	16579	341	349	0□98	□0□04	0□58	Y□□	□8	64
UNION RD	N RIVER RD TO WALNUT DR	A□t□□i□□	26261	366	391	0□94	□0□12	0□52	Y□□	□25	625
UNION RD	WALNUT DR TO GOLDEN HILL	A□t□□i□□	26318	291	371	0□78	□0□38	0□58	Y□□	□80	6□400
UNION RD	GOLDEN HILL RD TO SR46E	A□t□□i□□	19033	376	587	0□64	□0□76	0□48	Y□□	□211	44□521
UNION RD	SR46E TO EAST CITY LIMIT	A□t□□i□□	16082	160	187	0□86	□0□23	0□63	Y□□	□27	729
BUENA VISTA DR	SR 46E TO E□PERIMENTAL STATION	A□t□□i□□	26194	421	421	1□00	0□00	0□52	Y□□	0	0
BUENA VISTA DR	NORTH OF CUESTA COLLEGE	A□t□□i□□	15144	258	170	1□52	0□82	0□63	Y□□	88	7□744
DRY CREE□ RD	AIRPORT RD TO SR 46E	A□t□□i□□	14860	116	130	0□89	□0□17	0□63	Y□□	□14	196
□IC□□RSO□ DR	□I□LIC□ RD TO CR□STO□□	C□□□□t□□	14511	65	339	0□19	□1□41	0□58	□o	□274	75□076
PINE ST	6TH ST TO CRESTON RD	L□□□□	18497	147	150	0□98	□0□03	0□63	Y□□	□3	9
R□M□D□ DR	SR □□□ TO C□LL□ PROP□□□	A□t□□i□□	15942	17	128	0□13	□1□38	0□63	□o	□111	12□321
R□M□D□ DR	SR □□□ TO SO□T□ CIT□	L□□□□	15952	17	216	0□08	□1□46	0□63	□o	□199	39□601
RAMBOUILLET RD	CHAROLAIS RD TO NIBLIC□	C□□□□t□□	15842	88	229	0□38	□0□98	0□63	Y□□	□141	19□881
S RIVER RD	NAVA□O RD TO CRESTON	C□□□□t□□	27019	666	898	0□74	□0□68	0□38	Y□□	□232	53□824
T□□□TR□ DR	SR □□□ TO SO□T□ CIT□ LIMIT	C□□□□t□□	5835	844	412	2□05	2□02	0□52	□o	432	186□624
S VINE ST	SR 46W TO 1ST ST	C□□□□t□□	15160	154	260	0□59	□0□71	0□58	Y□□	□106	11□236
□I□□ST	□RD TO □T□ ST	C□□□□t□□	15272	169	405	0□42	□1□12	0□52	□o	□236	55□696
VINE ST	30TH ST TO 32ND ST	C□□□□t□□	16617	15	43	0□35	□0□95	0□68	Y□□	□28	784
SPRING ST	3RD ST TO 4TH ST	C□□□□t□□	26404	1□243	1□096	1□13	0□37	0□36	Y□□	147	21□609
SPRING ST	6TH ST TO 7TH ST	C□□□□t□□	17297	1□021	878	1□16	0□43	0□38	Y□□	143	20□449
S□i□□St□□t	30t□t□28t□St□□t	C□□□□t□□	16579	341	579	0□59	□0□87	0□48	Y□□	□238	56□644
S□i□□St□□t	24t□St t□26t□St	A□t□□i□□	18547	814	809	1□01	0□02	0□41	Y□□	5	25
24t□St□□t	□□Ri□□□i□□	A□t□□i□□	26316	815	1□039	0□78	□0□60	0□36	Y□□	□224	50□176
Riverside	2□th to □regory	C□□□□t□□	14472	199	425	0□47	□1□02	0□52	□o	□226	51□076
S□i□□	20t□ □□□ 19t□	A□t□□i□□	18650	591	929	0□64	□0□96	0□38	Y□□	□338	114□244
Ri□□□i□□	18t□t□101SB □□□□□ □	L□□□□	18594	506	551	0□92	□0□17	0□48	Y□□	□45	2□025
□□th Street	Par□to □ine Street	L□□□□	18966	10	839	0□01	□2□41	0□41	□o	□829	687□241
Ri□□□i□□	12t□t□10t□	A□t□□i□□	17284	499	617	0□81	□0□40	0□48	Y□□	□118	13□924
S□ring Street	□0th to □th Street	A□t□□i□□	18487	898	1□463	0□61	□1□23	0□31	□o	□565	319□225
S□i□□St□□t	4t□t□3□□	C□□□□t□□	26404	1□243	1□657	0□75	□0□85	0□29	Y□□	□414	171□396
			Subtotal	□□□□**0**	**5□□8□**				**Model□Count Ratio □**	**0□8□**	
									Percent □ithin Caltrans Ma□imum Deviation □	**80□**	□75□
									Percent Root Mean Square □rror □	□□□	□40□
									Correlation Coefficient □	**0□□2**	□0□88

Total Count	□□
Lin□ □ithin Deviation	**55**
Lin□Outside Deviation	□□

Paso Robles Model □alidation Results□PM Pea□ □our T□o-□ay Total Traffic □olumes

Road□ay	Segment	Functional Class	Model Lin□ID	Model □olume	Traffic Count	Model □Count	Model □Deviation	Ma□imum Deviation	□ ithin Deviation	Model - Count	Difference Squared
□S □0□ S□	at San Ramon	F□□□□y	6994	3□667	**28□0**	1□30	1□23	0□25	□o	857	734□449
□S □0□ □□	at San Ramon	F□□□□y	6039	3□158	**25□2**	1□26	1□01	0□26	□o	646	417□316
US 101 NB	□t E□i□□ □□□S□□Mi□□□□	F□□□□y	23335	992	590	1□68	1□00	0□68	Y□□	402	161□604
US 101 SB	□t E□i□□ □□□S□□Mi□□□□	F□□□□y	23046	1□201	738	1□63	0□92	0□68	Y□□	463	214□369
HWY 46 □WB	UNION RD TO US 101	Hi□□□y	16485	2□821	3□034	0□93	□0□29	0□24	Y□□	□213	45□369
HWY 46 □WB	UNION RD TO AIRPORT	Hi□□□y	18180	2□125	1□951	1□09	0□32	0□28	Y□□	174	30□276
HWY 46	AIRPORT TO DRY CREE□ RD	Hi□□□y	16355	1□790	1□472	1□22	0□69	0□31	Y□□	318	101□124
24TH ST	SPRING ST TO US 101	A□□□□	18649	1□135	1□335	0□85	□0□46	0□33	Y□□	□200	40□000
AIRPORT RD	SR 46 TO DRY CREE□ RD	A□□□□	15131	358	495	0□72	□0□53	0□52	Y□□	□137	18□769
CHAROLAIS RD	S RIVER RD TO RAMBOULLET	A□□□□	23526	381	643	0□59	□0□93	0□44	Y□□	□262	68□644
CHAROLAIS RD	RAMBOUILLET RD TO CRESTON	A□□□□	26098	321	412	0□78	□0□42	0□52	Y□□	□91	8□281
13TH ST	SPRING ST TO RIVERSIDE AVE	C□□□□t□□	17009	797	741	1□08	0□17	0□44	Y□□	56	3□136
13TH ST	RIVERSIDE AVE TO S RIVER	A□□□□	14537	2□804	2□219	1□26	0□98	0□27	Y□□	585	342□225
CRESTON RD	S RIVER RD TO GOLDEN HILL	A□□□□	14912	1□042	1□440	0□72	□0□88	0□31	Y□□	□398	158□404
CRESTON RD	GOLDEN HILL RD TO NIBLIC□	A□□□□	26124	1□483	1□512	0□98	□0□06	0□30	Y□□	□29	841
CR□STO□ RD	**□I□LIC□ RD TO C□□ROL□IS**	A□□□□	19218	190	470	0□40	□1□15	0□52	□o	□280	78□400
CRESTON RD	CHAROLAIS RD TO EAST CITY LIMIT	A□□□□	28507	270	384	0□70	□0□57	0□52	Y□□	□114	12□996
DALLONS DR	BUENA VISTA RD TO GOLDEN HILL	C□□□□t□□	26986	141	96	1□47	0□69	0□68	Y□□	45	2□025
□OLD□□□ □ILL RD	**D□LLO□S DR TO SR □□**	A□□□□	25994	684	175	3□91	4□62	0□63	□o	509	259□081
GOLDEN HILL RD	CRESTON RD TO ROLLING HILL	A□□□□	27066	801	816	0□98	□0□04	0□41	Y□□	□15	225
GOLDEN HILL RD	ROLLING HILLS RD TO UNION	A□□□□	26325	1□068	995	1□07	0□19	0□38	Y□□	73	5□329
GOLDEN HILL RD	UNION RD TO SR46	A□□□□	19030	767	595	1□29	0□61	0□48	Y□□	172	29□584
LINNE RD	FONTANA RD TO EAST CITY	A□□□□	14578	223	345	0□65	0□61	0□58	Y□□	□122	14□884
NACIMIENTO LA□E DR	WEST CITY LIMIT	A□□□□	18246	452	634	0□71	0□65	0□44	Y□□	□182	33□124
NIBLIC□ RD	SPRING ST TO S RIVER	A□□□□	28487	2□853	2□632	1□08	0□33	0□25	Y□□	221	48□841
NIBLIC□ RD	S RIVER RD TO MELODY DR	A□□□□	26106	1□537	1□480	1□04	0□12	0□31	Y□□	57	3□249
NIBLIC□ RD	MELODY DR TO CRESTON RD	A□□□□	14972	1□273	1□156	1□10	0□30	0□34	Y□□	117	13□689
N RIVER RD	UNION RD TO SR 46E	C□□□□t□□	14710	183	237	0□77	□0□36	0□63	Y□□	□54	2□916
□ RI□□R RD	**SR□□□ TO □ORT□ CIT□ LIMIT**	C□□□□t□□	26981	6	102	0□06	□1□38	0□68	□o	□96	9□216
ROLLING HILLS RD	CRESTON RD TO GOLDEN HILL	C□□□□t□□	25931	166	241	0□69	□0□49	0□63	Y□□	□75	5□625
PASO ROBLES ST	FREEWAY OFFRAMP TO CRESTON	L□□□□	17753	606	608	1□00	□0□01	0□48	Y□□	□2	4
RIVER OA□S DR	N RIVER RD TO BUENA VISTA	C□□□□t□□	25970	168	143	1□17	0□28	0□63	Y□□	25	625
RIVERSIDE AVE	13TH ST TO 24TH ST	A□□□□	26972	1□003	1□052	0□95	□0□13	0□36	Y□□	□49	2□401
SHERWOOD RD	CRESTON RD TO FONTANA	A□□□□	14938	966	834	1□16	0□39	0□41	Y□□	132	17□424
S RIVER RD	SOUTH CITY LIMITS TO C	C□□□□t□□	16086	159	182	0□87	□0□20	0□63	Y□□	□23	529
S RIVER RD	CHAROLAIS RD TO NIBLIC□	A□□□□	25813	900	1□125	0□80	□0□59	0□34	Y□□	□225	50□625
S RIVER RD	NIBLIC□ RD TO NAVA□	C□□□□t□□	18190	1□311	1□185	1□11	0□31	0□34	Y□□	126	15□876
SPRING ST	10TH ST TO 11TH ST	C□□□□t□□	18502	1□095	1□208	0□91	□0□28	0□34	Y□□	□113	12□769
SPRING ST	16TH ST TO 17TH ST	C□□□□t□□	18589	848	1□135	0□75	□0□74	0□34	Y□□	□287	82□369
SPRING ST	28TH ST TO 30TH ST	C□□□□t□□	16579	467	461	1□01	0□03	0□52	Y□□	6	36
UNION RD	N RIVER RD TO WALNUT DR	A□□□□	26261	593	527	1□13	0□26	0□48	Y□□	66	4□356
UNION RD	WALNUT DR TO GOLDEN HILL	A□□□□	26318	422	506	0□83	□0□35	0□48	Y□□	□84	7□056
UNION RD	GOLDEN HILL RD TO SR46E	A□□□□	19033	461	729	0□63	□0□84	0□44	Y□□	□268	71□824
UNION RD	SR46E TO EAST CITY LIMIT	A□□□□	16082	140	320	0□44	□0□98	0□58	Y□□	□180	32□400
BUENA VISTA DR	SR 46E TO E□PERIMENTAL STATION	A□□□□	26194	457	339	1□35	0□61	0□58	Y□□	118	13□924
BUENA VISTA DR	NORTH OF CUESTA COLLEGE	A□□□□	15144	261	172	1□52	0□82	0□63	Y□□	89	7□921
DRY CREE□ RD	AIRPORT RD TO SR 46E	A□□□□	14860	129	129	1□00	0□00	0□63	Y□□	0	0
NIC□ERSON DR	NIBLIC□ RD TO CRESTON	C□□□□t□□	14511	94	174	0□54	□0□73	0□63	Y□□	□80	6□400
PINE ST	6TH ST TO CRESTON RD	L□□□□	18497	359	329	1□09	0□16	0□58	Y□□	30	900
R□M□D□ DR	**SR□□□ TO C□LL□ PROP□□□**	A□□□□	15942	50	141	0□35	□1□02	0□63	□o	□91	8□281
R□M□D□ DR	**SR□□□□ TO SO□T□ CIT□**	L□□□□	15952	50	238	0□21	□1□25	0□63	□o	□188	35□344
RAMBOUILLET RD	CHAROLAIS RD TO NIBLIC□	C□□□□t□□	15842	103	120	0□86	□0□21	0□68	Y□□	□17	289
S RIVER RD	NAVA□ RD TO CRESTON	C□□□□t□□	27019	955	1□012	0□94	□0□16	0□36	Y□□	□57	3□249
T□□□TR□ DR	**SR□□□ TO SO□T□ CIT□ LIMIT**	C□□□□t□□	5835	1□153	794	1□45	1□10	0□41	□o	359	128□881
S VINE ST	SR 46W TO 1ST ST	C□□□□t□□	15160	576	452	1□27	0□53	0□52	Y□□	124	15□376
VINE ST	3RD TO 4TH ST	C□□□□t□□	15272	326	401	0□81	□0□36	0□52	Y□□	□75	5□625
VINE ST	30TH ST TO 32ND ST	C□□□□t□□	16617	16	29	0□55	□0□66	0□68	Y□□	□13	169
SPRING ST	3RD ST TO 4TH ST	C□□□□t□□	26404	1□433	1□667	0□86	□0□48	0□29	Y□□	□234	54□756
SPRING ST	6TH ST TO 7TH ST	C□□□□t□□	17297	1□156	1□313	0□88	□0□37	0□33	Y□□	□157	24□649
S□□□□ St□□□t	30t□□t□28t□ St□□□t	C□□□□t□□	16579	467	726	0□64	□0□81	0□44	Y□□	□259	67□081
S□□□□ St□□□t	26t□□t□24t□ St□□□t	A□□□□	18547	1□088	1□012	1□08	0□21	0□36	Y□□	76	5□776
24t□ St□□□t	□□□Ri□□□□□	A□□□□	26316	1□025	1□216	0□84	□0□46	0□34	Y□□	□191	36□481
Ri□□□□□	24t□□t□G□□□□y	C□□□□t□□	14472	561	419	1□34	0□65	0□52	Y□□	142	20□164
S□□□□	20t□ □□□19t□	A□□□□	18650	766	1□040	0□74	□0□73	0□36	Y□□	□274	75□076
Ri□□□□□	18t□□t□101SB □□□□□□□	L□□□□	18594	774	668	1□16	0□36	0□44	Y□□	106	11□236
□□th Street	**Par□to □ine**	L□□□□	18966	26	1□030	0□03	□2□72	0□36	□o	□1□004	1□008□016
Ri□□□□□	12t□□t□10□	A□□□□	17284	728	709	1□03	0□06	0□44	Y□□	19	361
S□□□□ St□□□t	10t□□t□9t□ St□□□	A□□□□	18487	1□045	1□425	0□73	□0□85	0□31	Y□□	□380	144□400
S□□□□ St□□□t	4t□□t□3□□	C□□□□t□□	26404	1□433	1□801	0□80	□0□71	0□29	Y□□	□368	135□424
			Subtotal	**58□85□**	**5□□□□**				**Model□Count Ratio □**	**0□□□**	
									Percent □ithin Caltrans Ma□imum Deviation □	**8□□**	□75□
									Percent Root Mean Square □rror □	□□□	□40□
									Correlation Coefficient □	**0□□□**	□0□88

Total Count	□□
Lin□ □ ithin Deviation	□**0**
Lin□Outside Deviation	□

Paso City□ide Model □alidation Results□Daily T□o-□ay Total Traffic □olumes

Road□ay	Segment	Functional Class	Model Lin□ ID	Model □olume	Traffic Count	Model □Count	Model □Deviation	Ma□imum Deviation	□ithin Deviation	Model - Count	Difference Squared
US 101 SB	□t S□□ R□□ □□	F□□□□y	6994	38/056	31398	1/21	0/88	0/24	Y□□	6/658	44/328/964
US 101 NB	□t S□□ R□□ □□	F□□□□y	6039	38/087	31358	1/21	0/89	0/24	Y□□	6/729	45/279/441
US 101 NB	□t E□i□□ □□□ S□□ Mi□□□□	F□□□□y	23335	11/974	9438	1/27	0/71	0/38	Y□□	2/536	6/431/296
US 101 SB	□t E□i□□ □□□ S□□ Mi□□□□	F□□□□y	23046	11/966	9779	1/22	0/59	0/38	Y□□	2/187	4/782/969
HWY 46 □WB	UNION RD TO US 101	Hi□□□y	16485	30/148	26564	1/13	0/54	0/25	Y□□	3/584	12/845/056
HWY 46 □WB	UNION RD TO AIRPORT	Hi□□□y	18180	23/793	24825	0/96	0/16	0/26	Y□□	□1/032	1/065/024
HWY 46	AIRPORT TO DRY CREE□ RD	Hi□□□y	16355	20/460	19709	1/04	0/14	0/28	Y□□	751	564/001
24TH ST	SPRING ST TO US 101	A□ti□□	18649	12/150	15682	0/77	0/74	0/30	Y□□	□3/532	12/475/024
AIRPORT RD	SR 46 TO DRY CREE□ RD	A□ti□□	15131	3/581	5351	0/67	0/70	0/48	Y□□	□1/770	3/132/900
CHAROLAIS RD	S RIVER RD TO RAMBOULLET	A□ti□□	23526	4/159	7073	0/59	0/94	0/44	Y□□	□2/914	8/491/396
CHAROLAIS RD	RAMBOUILLET RD TO CRESTON	A□ti□□	26098	3/427	4747	0/72	0/53	0/52	Y□□	□1/320	1/742/400
13TH ST	SPRING ST TO RIVERSIDE AVE	C□□□t□□	17009	6/124	8628	0/71	0/71	0/41	Y□□	□2/504	6/270/016
13TH ST	RIVERSIDE AVE TO S RIVER	A□ti□□	14537	29/630	25354	1/17	0/66	0/26	Y□□	4/276	18/284/176
CR□STO□ RD	S RI□□R RD TO □OLD□□ □ILL	A□ti□□	14912	10/787	15765	0/68	1/04	0/30	□o	□4/978	24/780/484
CRESTON RD	GOLDEN HILL RD TO NIBLIC□	A□ti□□	26124	15/130	17689	0/86	0/51	0/29	Y□□	□2/559	6/548/481
CR□STO□ RD	□ LIC□ RD TO C□□ROL□IS	A□ti□□	19218	1/930	5482	0/35	1/36	0/48	□o	□3/552	12/616/704
CRESTON RD	CHAROLAIS RD TO EAST CITY LIMIT	A□ti□□	28507	2/772	4156	0/67	0/64	0/52	Y□□	□1/384	1/915/456
DALLONS DR	BUENA VISTA RD TO GOLDEN HILL	C□□□t□□	26986	1/399	1330	1/05	0/08	0/63	Y□□	69	4/761
□OLD□□ □ILL RD	D□LLO□S DR TO SR □□	A□ti□□	25994	6/956	2233	3/12	3/36	0/63	□o	□4/723	22/306/729
GOLDEN HILL RD	CRESTON RD TO ROLLING HILL	A□ti□□	27066	7/992	9250	0/86	0/36	0/38	Y□□	□1/258	1/582/564
GOLDEN HILL RD	ROLLING HILLS RD TO UNION	A□ti□□	26325	10/593	11159	0/95	0/14	0/36	Y□□	□566	320/356
GOLDEN HILL RD	UNION RD TO SR46	A□ti□□	19030	7/509	7063	1/06	0/14	0/44	Y□□	446	198/916
LINNE RD	FONTANA RD TO EAST CITY	A□ti□□	14578	2/561	4145	0/62	0/73	0/52	Y□□	□1/584	2/509/056
NACIMIENTO LA□E DR	WEST CITY LIMIT	A□ti□□	18246	4/857	7260	0/67	0/75	0/44	Y□□	□2/403	5/774/409
NIBLIC□ RD	SPRING ST TO S RIVER	A□ti□□	28487	31/001	30055	1/03	0/13	0/24	Y□□	946	894/916
NIBLIC□ RD	S RIVER RD TO MELODY DR	A□ti□□	26106	16/906	19400	0/87	0/46	0/28	Y□□	□2/494	6/220/036
NIBLIC□ RD	MELODY DR TO CRESTON RD	A□ti□□	14972	13/959	14077	0/99	0/03	0/31	Y□□	□118	13/924
N RIVER RD	UNION RD TO SR 46E	C□□□t□□	14710	1/911	2749	0/70	0/53	0/58	Y□□	□838	702/244
□RI□□R RD	SR□□□ TO □ORT□□CIT□ LIMIT	C□□□t□□	26981	37	1176	0/03	1/42	0/68	□o	□1/139	1/297/321
ROLLING HILLS RD	CRESTON RD TO GOLDEN HILL	C□□□t□□	25931	1/738	2797	0/62	0/66	0/58	Y□□	□1/059	1/121/481
PASO ROBLES ST	FREEWAY OFFRAMP TO CRESTON	L□□□□	17753	7/268	5820	1/25	0/52	0/48	Y□□	1/448	2/096/704
RIVER OA□S DR	N RIVER RD TO BUENA VISTA	C□□□t□□	25970	1/785	1917	0/93	0/11	0/63	Y□□	□132	17/424
RIVERSIDE AVE	13TH ST TO 24TH ST	A□ti□□	26972	11/169	11776	0/95	0/15	0/34	Y□□	□607	368/449
SHERWOOD RD	CRESTON RD TO FONTANA	A□ti□□	14938	10/350	9985	1/04	0/10	0/38	Y□□	365	133/225
S RIVER RD	SOUTH CITY LIMITS TO C	C□□□t□□	16086	1/714	2309	0/74	0/41	0/63	Y□□	□595	354/025
S RIVER RD	CHAROLAIS RD TO NIBLIC□	A□ti□□	25813	9/714	12849	0/76	0/75	0/33	Y□□	□3/135	9/828/225
S RIVER RD	NIBLIC□ RD TO NAVA□	C□□□t□□	18190	13/143	13359	0/98	0/05	0/33	Y□□	□216	46/656
SPRING ST	10TH ST TO 11TH ST	C□□□t□□	18502	12/574	13913	0/90	0/31	0/31	Y□□	□1/339	1/792/921
SPRI□□□ ST	□□T□ ST TO □□T□ ST	C□□□t□□	18589	9/127	13790	0/66	1/08	0/31	□o	□4/663	21/743/569
SPRING ST	28TH ST TO 30TH ST	C□□□t□□	16579	4/898	4890	1/00	0/00	0/52	Y□□	8	64
UNION RD	N RIVER RD TO WALNUT DR	A□ti□□	26261	5/633	5536	1/02	0/04	0/48	Y□□	97	9/409
UNION RD	WALNUT DR TO GOLDEN HILL	A□ti□□	26318	4/662	5277	0/88	0/25	0/48	Y□□	□615	378/225
UNION RD	GOLDEN HILL RD TO SR46E	A□ti□□	19033	5/074	7847	0/65	0/86	0/41	Y□□	□2/773	7/689/529
UNION RD	SR46E TO EAST CITY LIMIT	A□ti□□	16082	1/502	3256	0/46	0/94	0/58	Y□□	□1/754	3/076/516
BUENA VISTA DR	SR 46E TO E□PERIMENTAL STATION	A□ti□□	26194	4/716	4427	1/07	0/13	0/52	Y□□	289	83/521
BUENA VISTA DR	NORTH OF CUESTA COLLEGE	A□ti□□	15144	2/624	2592	1/01	0/02	0/58	Y□□	32	1/024
DRY CREE□ RD	AIRPORT RD TO SR 46E	A□ti□□	14860	1/244	1260	0/99	0/02	0/63	Y□□	□16	256
NIC□ERSON DR	NIBLIC□ RD TO CRESTON	C□□□t□□	14511	823	2014	0/41	0/94	0/63	Y□□	□1/191	1/418/481
PINE ST	6TH ST TO CRESTON RD	L□□□□	18497	2/991	3402	0/88	0/21	0/58	Y□□	□411	168/921
R□M□D□ DR	SR □□□ TO C□LL□PROP□□□	A□ti□□	15942	379	1734	0/22	1/24	0/63	□o	□1/355	1/836/025
R□M□D□ DR	SR □□□ TO SO□T□CIT□	L□□□□	15952	379	3137	0/12	1/53	0/58	□o	□2/758	7/606/564
RAMBOUILLET RD	CHAROLAIS RD TO NIBLIC□	C□□□t□□	15842	1/099	1582	0/69	0/48	0/63	Y□□	□483	233/289
S RIVER RD	NAVA□O RD TO CRESTON	C□□□t□□	27019	9/590	11226	0/85	0/41	0/36	Y□□	□1/636	2/676/496
T□□□TR□ DR	SR □□□ TO SO□T□CIT□ LIMIT	C□□□t□□	5835	13/512	9606	1/41	1/07	0/38	□o	3/906	15/256/836
S VINE ST	SR 46W TO 1ST ST	C□□□t□□	15160	3/428	4842	0/71	0/56	0/52	Y□□	□1/414	1/999/396
VINE ST	3RD TO 4TH ST	C□□□t□□	15272	2/464	4037	0/61	0/75	0/52	Y□□	□1/573	2/474/329
VINE ST	30TH ST TO 32ND ST	C□□□t□□	16617	178	341	0/52	0/70	0/68	Y□□	□163	26/569
SPRING ST	3RD ST TO 4TH ST	C□□□t□□	26404	16/831	19332	0/87	0/46	0/28	Y□□	□2/501	6/255/001
SPRING ST	6TH ST TO 7TH ST	C□□□t□□	17297	13/806	15635	0/88	0/39	0/30	Y□□	□1/829	3/345/241
101 S ON □ 46W	53/956	R□□ □	5888	1/671	1/009	1/66	0/96	0/68	Y□□	662	438/244
101 S OFF □ 46 W	54/260	R□□ □	16599	8/731	6/641	1/31	0/72	0/44	Y□□	2/090	4/368/100
101 N ON □ 46 W	54/270	R□□ □	14666	7/115	6/840	1/04	0/09	0/44	Y□□	275	75/625
101 N OFF □ 46W	53/980	R□□ □	15940	2/964	2/578	1/15	0/26	0/58	Y□□	386	148/996
101 N OFF □ S□□t□S□i□□S P□□□	2004 C□□□t □4□ □□□□□□□□□□t□ □□□4 y□□□□	R□□ □	28488	12/185	14/964	0/81	0/59	0/31	Y□□	□2/779	7/722/841
101 S ON □ S□□t□S□i□□S P□□□	55/660	R□□ □	22911	12/257	12/141	1/01	0/03	0/34	Y□□	116	13/456
□0□S OFF □ PI□□	5□2□0	R□□ □	17312	1/174	601	1/95	1/40	0/68	□o	573	328/329
101 S ON □ PINE	56/060	R□□ □	17293	5/941	4/694	1/27	0/51	0/52	Y□□	1/247	1/555/009
101 N OFF □ P□□□R□□□□St□□□t	2004 C□□□t □3/9□ □□□□□□□□□□t□ □□□4 y□□□□	R□□ □	18201	5/800	4/277	1/36	0/68	0/52	Y□□	1/523	2/318/920
101 S OFF □ 16t□	57/220	R□□ □	17015	2/869	1/793	1/60	0/95	0/63	Y□□	1/076	1/157/776
101 N ON □ C□□t□□13	57/070	R□□ □	29411	3/194	2/949	1/08	0/14	0/58	Y□□	245	60/025
□0□S O□□ □□□	5□□□0	R□□ □	14486	16/284	10/438	1/56	1/56	0/36	□o	5/846	34/175/716
101 S OFF □ 46E	58/060	R□□ □	14485	1/666	3/477	0/48	0/91	0/58	Y□□	□1/811	3/279/721
101 N OFF □ 46E	57/800	R□□ □	14720	13/103	10/913	1/20	0/56	0/36	Y□□	2/190	4/796/100
101 N ON □ 46E	58/056	R□□ □	16483	1/916	3/640	0/53	0/82	0/58	Y□□	□1/724	2/972/176
101 NB ON □ S□i□□	2003 C□□□t □□07□ □□□□t□ □□□5 y□□□□	R□□ □	16335	426	813	0/52	0/70	0/68	Y□□	□387	149/382
NB ON/OFF S□□□ □□t□t S□i□□	2004 C□□□t □□02□ □□□□t□ □□□5 y□□□□	R□□ □	16339	704	1/800	0/39	0/97	0/63	Y□□	□1/096	1/201/216
101 SB OFF □ S□i□□	2005 C□□□t □□02□ □□□□t□ □□□5 y□□□□	R□□ □	14462	521	990	0/53	0/69	0/68	Y□□	□469	219/961
101 NB OFF □ S□i□□	2006 C□□□t □□02□ □□□□t□ □□□5 y□□□□	R□□ □	16329	278	540	0/51	0/71	0/68	Y□□	□262	68/644
S□i□□ St□□t	30t□t□28t□St□□t	C□□□t□□	16579	4/898	7/947	0/62	0/94	0/41	Y□□	□3/049	9/296/401
S□i□□ St□□t	26t□t□24t□St□□t□	A□t□i□□	18547	11/493	11/464	1/00	0/01	0/34	Y□□	29	841
24t□St□□t	□□□Ri□□□i□□	A□t□i□□	26316	10/656	12/257	0/87	0/38	0/34	Y□□	□1/601	2/563/201
Ri□□□i□□	24t□t□G□□□y	C□□□t□□	14472	4/688	4/894	0/96	0/08	0/52	Y□□	□206	42/436
S□ring	20th and □th	A□ti□□	18650	8/435	12/755	0/66	1/04	0/33	□o	□4/320	18/662/400
Ri□□□i□□	18t□t□101SB □□□□□ □	L□□□□	18594	8/364	7/569	1/11	0/26	0/41	Y□□	795	632/025
□th Street	Par□to □ine Street	L□□□□	18966	172	11/504	0/01	2/90	0/34	□o	□11/332	128/414/224
Ri□□□i□□	12t□t□10t□	A□t□i□□	17284	7/878	8/077	0/98	0/06	0/41	Y□□	□199	39/601
S□i□□ St□□t	10t□t□9t□St□□t	A□t□i□□	18487	12/251	16/176	0/76	0/80	0/30	Y□□	□3/925	15/405/625
S□i□□ St□□t	4t□t□3□□St□□t	C□□□t□□	26404	16/831	21/078	0/80	0/73	0/28	Y□□	□4/247	18/037/009
			Subtotal	**□28□□5**	**□8/202**					**Model Count Ratio □**	**0□□**
										Percent □ithin Caltrans Ma□imum Deviation □	**8□□ □75□**
										Percent Root Mean Square □rror □	**28□ □40□**
										Correlation Coefficient □	**0□□5 □0/88**

Total Count	**88**
Lin□ □ ithin Deviation	**□□**
Lin□ Outside Deviation	**□2**