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EXECUTIVE SUMMARY

This Traffic Impact Analysis (TIA) has been prepared to analyze land use scenarios and their effects on major roadways and intersections in the La Quinta General Plan planning area. The TIA presents the results of analyses performed to 1) evaluate existing traffic operations in the City of La Quinta, and 2) to analyze in detail the impacts of the new Preferred Land Use Plan for year 2035 (Land Use Plan). The TIA also addresses the broader mobility issues of the City, including opportunities to better manage traffic and the shift to greater use of alternative modes of travel.

As part of the analysis, a focused and detailed travel demand model for the City was developed based on existing and planned land uses and the traffic they generate. In addition to providing General Plan traffic forecasting, the TIA will facilitate and inform analysis of future projects such as specific plans and development plans. The La Quinta Traffic Analysis Model (LQTAM) covers all of the Coachella Valley and all six counties in the SCAG region.

The LQTAM is a focused, fined-grain and refined version of the regional model developed by the County and known as the 2008 RivTAM model. Therefore, LQTAM is an outgrowth, extension, and refinement to the RivTAM model. For purposes of providing a detailed and tailored analysis for the City General Plan a new transportation analysis zone (TAZ) structure was developed. The land uses in each TAZ are analyzed across a wide set of parameters and the resulting traffic is distributed across the roadway network and assigned to specific streets and specific times of the day. The LQTAM’s 949 zones were designed to detail the La Quinta area and to aggregate a set of zones outside of the area. Of the 949 zones, 101 zones were contained within the City of La Quinta and 22 zones were contained within the Sphere of Influence (SOI). It should be noted that certain areas in the RivTAM model that are influential to future traffic in the La Quinta planning area, especially those adjoining the southeast quadrant of the planning area, reflect land uses that are more intense than those assigned by the currently adopted County General Plan. Extensive efforts were undertaken to adjust buildout conditions in this area to reflect the current County General Plan.

The La Quinta General Plan Circulation Element study area was defined through collaboration among City staff from both the Departments of Planning and Public Works, and engineering and planning professionals of Iteris, Inc. and Terra Nova. The study area consists of all intersections and roadway segments considered necessary to analyze the impacts of the future Land Use Plan. The LQTAM analyzed 63 roadway segments and 37 intersections within the city limits and SOI. The analysis indicated that the General Plan buildout of the proposed Preferred Land Use Plan would require enhanced improvements and/or management strategies (beyond those set forth in the 2002 General Plan) to be implemented at 23 intersections in order to provide traffic operations at acceptable peak period Levels of Service (LOS D or better) during the peak season. Some of the identified improvements are in adjacent cities, and others may impact adjacent land uses.
Of the 37 intersections analyzed, the following four have the potential to be operating at unacceptable levels of service by 2035 General Plan buildout:

- Washington Street/Fred Waring Drive;
- Adams Street/Miles Avenue;
- Jefferson Street/Highway 111;
- Madison Street/Avenue 50.

Of the 63 midblock segments analyzed for average daily operations, 57 are forecast to operate at acceptable peak season LOS, while 3 are forecast to operate at LOS E and 3 are forecast to operate at LOS F based on the standard capacities set forth in the General Plan (see list below):

- Washington Street between Avenue 42 and Fred Waring Drive (LOS E);
- Washington Street between Highway 111 to Avenue 48 (LOS E);
- Washington Street between Avenue 48 and Eisenhower Drive (LOS E);
- Washington Street between Fred Waring Drive and Miles Avenue (LOS F);
- Madison Street between Avenue 54 and Airport Boulevard (LOS F);
- Harrison Street between Airport Boulevard and Avenue 58 (LOS F).

The physical widening at intersections and roadway segments would be needed to provide traffic operations at acceptable peak period LOS D or better, if the approach to providing acceptable peak period LOS is solely through traditional roadway widening. This report gives consideration to alternative physical improvements and management strategies that would require an ongoing commitment to systems operations or deliver conditions worse than LOS D. These include implementation of a "Complete Streets" strategy that maximizes opportunities for alternative modes of travel, including walking, bicycling, golf carts and NEVs.

The California Complete Streets Act (Assembly Bill 1358, signed into law in 2008) requires that any substantive local General Plan Circulation Element revision, “plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways, defined to include motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation, in a manner that is suitable to the rural, suburban, or urban context of the general plan”. Successful long-term implementation of this policy is intended to result in:

- More options for people to go from one place to another,
- Less traffic congestion and greenhouse gas emissions,
- More walkable communities (with healthier, more active people), and
- Fewer barriers for older adults, children, and people with disabilities.

Management and operations of the City’s arterial network should include monitoring of actual levels of service. This would allow for identification of timely capital improvements, and/or initiation of transportation demand management (TDM) and transportation systems management (TSM) programs during peak season peak periods and other times of the year. With the thoughtful application of recommended physical improvements and management strategies, it is expected that all or most
components of the City's transportation system will operate at acceptable levels of service upon General Plan buildout.

1.0 INTRODUCTION

This Traffic Impact Analysis (TIA) presents the results of analyses performed to 1) evaluate existing traffic operations in the City of La Quinta, and 2) to analyze the impacts of the new Preferred Land Use Plan for year 2035 (Land Use Plan). Relevant information from this Traffic Impact Analysis (TIA) will be included in the City's General Plan Circulation Element Update and shall also serve as the basis for impact analysis pursuant to the California Environmental Quality Act (CEQA). The impact analyses for the three alternative land use allocations are included in the Appendices. Figure 1 shows the City of La Quinta study area, including city boundaries and sphere of influence.

Before describing the details of this TIA, it is important to note that existing and future traffic conditions can be improved throughout the City with individual and collective choices to contribute to a more efficiently used transportation system. For example, the forecast peak season traffic volumes analyzed in this TIA may be reduced by transportation demand management (TDM) measures and service levels improved by operational efficiencies gained through transportation systems management (TSM) programs.

In pursuit of this strategic approach, policies and programs are recommended in TIA Section 7 for implementation in the City of La Quinta, and for the City of La Quinta advocacy along shared boundaries and for Coachella Valley-wide implementation. Such advocacy would address the large volume of forecast regional traffic that has no origin or destination in the City, but simply passes through the City, especially along the Highway 111 and Fred Waring Drive corridors.

TDM programs aim to put more person trips into fewer vehicles, by increasing bicycling, carpools, vanpools, transit ridership, and neighborhood electric vehicles (NEVs). Their effectiveness depends on their levels of adoption. For example, ongoing study of approximately 10 NEVs used in the South Bay communities in Los Angeles County document that 28 percent of household trips are made by NEV. The potential for reducing demand in a destination resort community like La Quinta is equally favorable.

TSM programs and projects support travelers with real time travel information so that they can make smart travel choices in selection of time of travel, mode of travel, and routes of travel. TSM projects can also offer Intelligent Transportation Systems (ITS) projects for the most efficient traffic signal coordination, and for informing motorists of routes around traffic congestion that may result from special events and traffic incidents. TSM programs are very effective when integrated into planned major events, such as scheduled art festivals, golf or tennis matches.
1.1 Study Area

The General Plan Circulation Element study area was defined through collaboration among City staff from both the Departments of Planning and Public Works, and engineering and planning professionals of Iteris, Inc., a leading firm in transportation planning and Intelligent Transportation Systems engineering consulting. The study area consists of all intersections considered necessary to analyze the impacts of the future Land Use Plan. Intersections which were not selected for analysis were deemed to be locations where impacts would be considered less than significant. The study area includes the following thirty-seven (37) intersections, which were selected along arterials that provide primary access to and/or mobility through the City of La Quinta:

1. Washington Street/Fred Waring Drive
2. Washington Street/Miles Avenue
3. Washington Street/Channel Drive
4. Washington Street/Highway 111
5. Washington Street/Avenue 48
6. Washington Street/Eisenhower Drive
7. Washington Street/Avenue 50
8. Washington Street/Calle Tampico
9. Washington Street/Avenue 52
10. Eisenhower Drive/Calle Tampico
11. Avenida Bermudas/Avenue 52
12. Adams Street/Fred Waring Drive
13. Adams Street/Miles Avenue
14. Adams Street/Highway 111
15. Adams Street/Avenue 48
16. Dune Palms Road/Fred Waring Drive
17. Dune Palms Road/Miles Avenue
18. Dune Palms Road/Westward Ho Drive
19. Dune Palms Road/Highway 111
20. Dune Palms Road/Avenue 48
21. Jefferson Street/Fred Waring Drive
22. Jefferson Street/Highway 111
23. Jefferson Street/Avenue 48
24. Jefferson Street/Avenue 49
25. Jefferson Street/Avenue 50
26. Jefferson Street/Avenue 52
27. Jefferson Street/Avenue 54
28. Madison Street/Avenue 50
29. Madison Street/Avenue 52
30. Madison Street/Avenue 54
31. Madison Street/Avenue 58
32. Madison Street/Avenue 60
33. Monroe Street/Avenue 52
34. Monroe Street/Avenue 54
35. Monroe Street/Avenue 58
36. Monroe Street/Avenue 60
37. Monroe Street/Avenue 62

The locations of the study intersections are illustrated in Figure 2.
FIGURE 2
Study Intersection Locations
2.0 EXISTING CONDITIONS

This section presents an overview of the study area roadway system as it existed in October 2010. It also describes the methodology used to determine existing traffic volumes, as well as existing bicycle, transit, truck, and golf cart routes within the City of La Quinta and its Sphere of Influence (SOI).

2.1 ROADWAY CONFIGURATIONS

The existing lane configurations of the study intersections are illustrated in Figure 3, and are described below:

Washington Street, oriented in a north-south direction, consists of three lanes in each direction through the majority of the study area, and is currently classified as an Augmented Major Arterial. Washington Street provides access to State Highway 111 and to Interstate 10 (I-10) north of city limits.

Eisenhower Drive is oriented in an east-west direction at Washington Street, and transitions to a north-south roadway at Avenue 50. Eisenhower Drive consists of two lanes in each direction and is classified as a Primary Arterial.

Avenida Bermudas, oriented in a north-south direction, consists of two lanes in each direction, and is classified as a Secondary Arterial.

Adams Street, oriented in a north-south direction, consists of two lanes in each direction. It is classified as a Secondary Arterial, and built as a Primary Arterial between Highway 111 and Avenue 48.

Dune Palms Road, oriented in a north-south direction, consists of two lanes in each direction between Fred Waring Drive and Westward Ho Drive, one lane in each direction between Westward Ho Drive and Highway 111, and two lanes in each direction between Highway 111 and Avenue 48. Dune Palms Road is classified as a Secondary Arterial.

Jefferson Street, oriented in a north-south direction, consists of three lanes in each direction, and is classified as a Major Arterial north of Avenue 54 and as a Modified Secondary Arterial between Avenue 58 and Avenue 62. Jefferson Street provides access to State Highway 111 and to Interstate 10 (I-10) north of city limits.

Madison Street, oriented in a north-south direction, consists of one lane in each direction between Avenue 50 and Avenue 54 and two lanes in each direction between Avenue 54 and Avenue 60. Madison Street is classified as a Primary Arterial between Avenue 50 and Avenue 58, as a Secondary Arterial between Avenue 58 and Avenue 60, and as a Modified Secondary Arterial between Avenue 60 and Avenue 62.

Monroe Street, oriented in a north-south direction, consists of one lane in each direction, and is classified as a Primary Arterial between Avenue 52 and Avenue 60 and as a Modified Secondary Arterial between Avenue 60 and Avenue 62. Monroe Street provides access to State Highway 111 and to Interstate 10 (I-10) north of city limits.
FIGURE 3

Existing Intersection Configurations

Legend

- City Boundary
- Sphere of Influence
- Split-phased Control
- Right Turn Overlap Phase
- Signalized Intersection
- Stop Controlled Approach
- Roundabout Intersection

1. Washington St & Fred Waring Dr
2. Washington St & Miles Ave
3. Washington St & Channel Dr
4. Washington St & Hwy 111
5. Washington St & Eisenhower Dr
6. Washington St & Ave 48
7. Washington St & Calle Tampico
8. Washington St & Ave 50
9. Washington St & Ave 52
10. Eisenhower Dr & Calle Tampico
11. Ave 52 & Avenida Bermudas
12. Adams St & Miles Ave
13. Adams St & Hwy 111
14. Adams St & Ave 48
15. Adams St & Fred Waring Dr
16. Dune Palms Rd & Fred Waring Dr
17. Dune Palms Rd & Miles Ave
18. Dune Palms Rd & Westward Ho Dr
19. Dune Palms Rd & Hwy 111
20. Dune Palms Rd & Ave 48
21. Jefferson St & Fred Waring Dr
22. Jefferson St & Hwy 111
23. Jefferson St & Ave 48
24. Jefferson St & Ave 50
25. Jefferson St & Ave 52
26. Jefferson St & Ave 54
27. Jefferson St & Ave 56
28. Madison St & Ave 52
29. Madison St & Ave 54
30. Madison St & Ave 56
31. Madison St & Ave 58
32. Madison St & Ave 60
33. Monroe St & Ave 52
34. Monroe St & Ave 54
35. Monroe St & Ave 58
36. Monroe St & Ave 60
37. Monroe St & Ave 62
Jackson Street, oriented in a north-south direction, consists of one lane in each direction, and is classified as a Primary Arterial. Jackson Street is located in the City’s SOI and provides access to State Highway 111 and to Interstate 10 (I-10) north of city limits.

Van Buren Street, oriented in a north-south direction, consists of one lane in each direction, and is classified as a Primary Arterial between Avenue 52 and Avenue 60 and as a Secondary Arterial between Avenue 60 and Avenue 62. Van Buren Street is located in the City’s SOI.

Harrison Street, oriented in a north-south direction, consists of one lane in each direction, and is classified as a Major Arterial. Harrison Street is located in the City’s SOI.

Fred Waring Drive (Avenue 44), oriented in an east-west direction, consists of three lanes in each direction between Washington Street and Adams Street and between Dune Palms Road and Jefferson Street. Between Adams Street and Dune Palms Road, Fred Waring Drive consists of two lanes in the eastbound direction and one lane in the westbound direction. Fred Waring Drive is classified as a Primary Arterial.

Miles Avenue, oriented in an east-west direction, consists of two lanes in each direction, and is classified as a Primary Arterial.

Highway 111, oriented in an east-west direction, consists of three lanes in each direction, and is classified as a Major Arterial.

Avenue 48, oriented in an east-west direction, consists of two lanes in each direction, and is classified as a Primary Arterial.

Avenue 50, oriented in an east-west direction, consists of two lanes in each direction, and is classified as a Primary Arterial.

Calle Tampico, oriented in an east-west direction, consists of two lanes in each direction, and is classified as a Primary Arterial west of Washington Street. East of Washington Street, Calle Tampico consists of one lane in each direction and is classified as a Collector Street.

Avenue 52, oriented in an east-west direction, consists of two lanes in each direction between Avenida Bermudas and Jefferson Street. Between Jefferson Street and Monroe Street, Avenue 52 consists of two eastbound lanes and one westbound lane. Between Monroe Street and Jackson Street, Avenue 52 consists of one eastbound lane and two westbound lanes. Avenue 52 is classified as a Primary Arterial throughout the City and the City’s SOI.

Avenue 54, oriented in an east-west direction, consists of two lanes in each direction, and is classified as a Primary Arterial between Jefferson Street and Madison Street and as a Secondary Arterial between Madison Street and Van Buren Street.

Avenue 56/Airport Boulevard, oriented in an east-west direction, consists of two lanes in each direction, and is classified as a Primary Arterial.
Avenue 58, oriented in an east-west direction, consists of two lanes in each direction between Madison Street and Monroe Street and one lane in each direction between Monroe Street and Harrison Street. Avenue 58 is classified as a Secondary Arterial.

Avenue 60, oriented in an east-west direction, consists of one lane in each direction, and is classified as a Secondary Arterial between Madison Street and Monroe Street and as a Primary Arterial between Monroe Street and Harrison Street.

Avenue 62, oriented in an east-west direction, consists of one lane in each direction, and is classified as a Modified Secondary Arterial between Jefferson Street and Madison Street, as a Modified Collector Street between Madison Street and Monroe Street, and as a Secondary Arterial east of Monroe Street.

Figure 4 shows the existing City of La Quinta roadway classifications.

2.2 Existing Lane Width Standards

Existing City of La Quinta Street standards call for 12 foot standard thru lanes with a 14 foot maximum outside thru lane, 12 foot standard combination (thru/turn option) lanes, 11 foot standard turn pocket, 12 foot standard right turn lane, and 8 foot maximum bike/golf cart lane. A 6 foot bike lane typical on lower speed streets (4 foot AC plus 2 foot Gutter pan) is also noted. Flexibility in applying these standards is sometimes needed to address special circumstances.

These existing City standards are generally consistent with the California Highway Design Manual, which calls for the basic lane width for new construction on roadways to be 12 feet. The American Association of State Highway and Transportation Officials (AASHTO) 2004 Policy on Geometric Design of Highways and Streets documents that “there are circumstances where lanes less than 12 feet wide should be used where pedestrian crossings, right-of-way, or existing development become stringent controls the use of 11 foot lanes is acceptable”. AASHTO further calls for a four foot minimum bicycle lane width. It does not reference combination lanes for bicycles and Neighborhood Electric Vehicles.

The National Complete Street Coalition supports the AASHTO Green Book reference to providing substantial flexibility for use of lane widths narrower than 12 ft on urban and suburban arterials. The Coalition cites the Transportation Research Board 2007 paper “Relationship of Lane Width to Safety for Urban and Suburban Arterials” that use of narrower lanes along both midblock and intersection approaches can provide benefits to users and the surrounding community including shorter pedestrian crossing distances, and reduced interference with surrounding development.

A comparison table of existing City lane width standards and the above-referenced standards is shown in Table 1.
FIGURE 4
Existing City Roadway Classifications

Legend
- City Boundary
- Sphere of Influence
- Freeway
- Major Road
- Primary Road
- Collector Road
- Secondary Road
- Modified Secondary Arterial

City of La Quinta
General Plan Update
### Table 1: Lane Width Standards Comparison

<table>
<thead>
<tr>
<th>Agency</th>
<th>Left Turn lane</th>
<th>Thru Lane</th>
<th>Right Turn Lane</th>
<th>Bicycle Lane</th>
<th>Bike/NEV Lane</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of La Quinta</td>
<td>11 ft</td>
<td>12 – 14 ft</td>
<td>12 ft</td>
<td>6 – 8 ft</td>
<td>8 ft</td>
</tr>
<tr>
<td>CA Highway Design Manual</td>
<td>12 ft</td>
<td>12 ft</td>
<td>12 ft</td>
<td>4 ft minimum</td>
<td>--</td>
</tr>
<tr>
<td>AASHTO</td>
<td>10 – 12 ft</td>
<td>10 – 13 ft</td>
<td>10 – 12 ft</td>
<td>4 ft minimum</td>
<td>--</td>
</tr>
</tbody>
</table>

#### 2.3 Existing Traffic Volumes

Vehicle turning movement counts were conducted at the study intersections in October 2010 on typical weekdays of Tuesday (October 5), Wednesday (October 6), and Thursday (October 7) weekdays; no counts were taken Monday or Friday. Counts were collected during the a.m. (6:30 – 9:30) and p.m. (1:45 – 4:45) peak periods. The afternoon peak period was confirmed to be earlier than the typical 4 pm to 6 pm peaks in suburban areas. Determination of these peak periods was based on an analysis of Coachella Valley Association of Governments (CVAG) 24-hour traffic count data within the study area. The peak hour volume used in the analysis was the highest single hour of traffic during each of the peak periods. Detailed vehicle turning movement data are included in Appendix A. Figure 5 shows the existing peak hour volumes at the study intersections.

The months of January, February, and March are considered the peak months in terms of traffic volumes in the City of La Quinta. Therefore, to reflect peak season conditions, existing October traffic volumes were increased by a seasonal growth factor. The seasonal growth factor was calculated by comparing previous peak season volumes with October volumes at several intersections. The results of the comparison showed that the peak season volumes were approximately nine percent higher in both the a.m. and p.m. peak hours. Therefore, a conservatively high seasonal growth factor of ten percent was used in this analysis, rounded up from nine percent to be conservative (with the resulting potential to slightly overestimate future traffic demands). The ten percent seasonal growth factor is consistent with the City’s Traffic Impact Study Guidelines.
Existing 24-hour roadway segment volumes, which were collected during peak season conditions at 58 locations, were obtained from CVAG. At 7 additional locations where CVAG data was not available, 24-hour roadway segment volumes were calculated from peak hour intersection counts at adjacent intersections. In order to determine an appropriate ratio of peak hour traffic to 24-hour traffic (known as the K factor), data was compared at several roadway segments where both CVAG volumes and October 2010 peak hour counts were available. Comparison of the data showed that, on average, October 2010 peak hour counts were equal to 8% of the CVAG 24-hour count data, thus resulting in a K factor of 0.08. In most urbanized areas, the K factor ranges between 0.09 and 0.10 (i.e., the peak hour typically comprises 9% to 10% of the average daily traffic volume). The 0.08 K factor value is not unexpected in the City of La Quinta, where peak hours are less than typical in most urban areas. This is beneficial in consideration of average daily traffic (ADT) operations, as a lower K factor translates to higher ADT capacities. These higher capacities, as defined from the 2010 Highway Capacity Manual (released in 2011), were assigned to La Quinta arterials that were forecast to exceed the lower capacity values that are used in the City’s Engineering Bulletin #06-13 (September 22, 2010).

2.4 Multimodal Mobility

This section presents existing multimodal mobility routes throughout the City of La Quinta. Existing transportation choices that the City has invested in include pedestrian facilities along most streets, bicycle routes, multi-purpose paths, truck routes, bus routes and stops, and golf cart/Neighborhood Electric Vehicle (NEV) routes.

**Figure 6** shows the existing bicycle routes within the City. The bicycle routes provide a transportation choice for both recreation and commute trips during favorable weather periods, which is most of the year in the City. For trips of five miles or less, which includes most of the internal City of La Quinta trips, bicycles have been demonstrated in several communities to be a preferred choice vs. driving and parking a vehicle.

**Figure 7** depicts the existing truck routes to facilitate goods movement within and through the City.

**Figure 8** shows the existing SunLine bus routes within the City. As shown, Bus Line 111 generally runs along Highway 111. It currently offers 20-minute service in each direction (i.e., headways) during typical weekdays. Bus Line 70 generally runs along Washington Street and currently offers 45-minute headways during typical weekdays.

**Figure 9** shows the existing Phase I golf cart/Neighborhood Electric Vehicle (NEV) routes. These are currently located primarily in the City’s southwest portion. **Figures 10a and 10b** show the future, Phase II, proposed NEV routes. This is a recent multimodal initiative of the City, and holds great promise for contributing transportation choices for sustainable communities. Electric golf carts, the first mass-produced electric vehicles for private consumer use, are now purpose-built for general transportation. Street legal golf carts come with various operating limitations such as top speed and heavy regulation on which type of streets these types of carts are permitted to be used. They are now used in many communities to deliver the benefits of reduced pollution emissions, and are marketed as being ideal for
driving to the neighborhood golf course, to a neighborhood restaurant, or for other local trip making needs. They are touted as being easy to recharge and cost only pennies per day to operate.

The California Vehicle Code (CVC) confirms some important distinctions between golf carts and Neighborhood Electric Vehicles (NEVs). Golf carts are designed to be operated at not more than 15 miles per hour, have at least three wheels, and weigh not more than 1,300 pounds. Registration is not required to operate a golf cart on a highway designated for such use by ordinance or resolution within one mile of a golf course. Golf carts may not be operated on roads with speed zones above 25 mph except by ordinance or resolution by a local authority, and must meet equipment Requirements for On-Road Use as specified in CVC §24001.5.

NEVs, also known as Low-Speed Vehicles (LSV), are four wheeled motor vehicles that reach a speed of more than 20 miles per hour (mph) but not more than 25 mph within one mile on a paved level roadway. Their gross vehicle weight rating is less than 3,000 pounds. They are actually a motor vehicle requiring a 17-digit conforming vehicle identification number, registration, insurance, and the operator’s valid California driver license. NEV/LSVs can travel on streets posted more than 35 miles per hour if an NEV lane is provided.

The effectiveness of authorized traffic devices and the perceived safety of NEVs were evaluated in the referenced “Neighborhood Electric Vehicle Transportation Plan Evaluation” 2008 report to the California Legislature. The survey of NEV users, bicyclists, and the general public (traditional motorists, users of public transit, etc) contained questions for all road users regarding the perceived safety of NEVs and their perceived effect on traffic flow. Traditional motorists and bicyclists were questioned about their opinions regarding safety issues and potential conflicts in shared use lanes with NEVs. NEV users were asked to express their opinion about many different aspects of their NEV usage including but not limited to: 1) implemented signage, striping, and pavement markings, 2) safety concerns with motorists, such as at intersection or in left turning lanes, and 3) safety concerns with bicyclists and shared NEV/bicycle lanes.

Major findings are summarized below.

- The introduction of NEVs was found to have little effect on the speed of traffic flow. An approximate 3 mph reduction in average speeds after NEV installation led to a finding that the introduction of NEVs may have a calming effect on vehicle speeds. Page 26 of the above referenced report to the California Legislature states: “With regards to traffic flow, the survey indicates that traditional automobile drivers feel that NEVs slightly decrease the travel speed. A speed study...confirmed this finding, but it should be noted that the reduced speed was still above the posted speed limit”.

- Bicyclists expressed concern about the quiet nature of NEVs which surprise bicyclists when an NEV passes. NEVs are quieter than traditional automobiles and bicyclists may not have rear-view mirrors, so a potential conflict can arise when an NEV passes a slower moving bicyclist from the rear. Pedestrians would be expected to have similar, and potentially greater concerns if NEVs were combined with them on multipurpose trails. Such combination is not recommended.
FIGURE 6
Existing Bicycle Routes

Legend
- City Boundary
- Sphere of Influence
- Bike Route
- Bear Creek Path
- Shared Route
- Existing Bike Route

NOT TO SCALE

City of La Quinta
General Plan Update

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FIGURE 7
Existing SunLine Bus Routes

Legend
- City Boundary
- Sphere of Influence
- SunLine Bus Route
- Bus Line 111
- Bus Line 70
FIGURE 8

Existing Truck Routes
FIGURE 9
Existing Golf Cart Routes
FIGURE 10a
Future Buildout Golf Cart/NEV Paths

Note: Any installation of Golf Cart/NEV paths shall be consistent with California Vehicle Code 21260.

Source: Iteris, 05.11.2011
Note: Any installation of Golf Cart/NEV paths shall be consistent with California Vehicle Code 21260.
3.0 TRAFFIC OPERATIONS ANALYSIS METHODOLOGY

This section details the methodologies applied to the traffic analyses included in Sections 4.0, 5.0, and 6.0. The efficiency of traffic operations on a facility can be described in terms of Level of Service (LOS). The level of service concept is a measure of average operating conditions along a given roadway segment and is especially important at an intersection during the peak hour. For both roadway segments and intersections, levels range from A to F, with A representing excellent (free-flow) conditions and F representing extreme congestion.

3.1 INTERSECTION ANALYSIS METHODOLOGY

Intersections are the most critical and typically most constrained portion of the vehicular roadway network. In this report, intersection levels of service are analyzed using the *Highway Capacity Manual* (HCM) 2000 operations method, employing TRAFFIX software developed by Dowling Corporation, Version 7.9. In this methodology, level of service (LOS) is defined by the average peak hour control delay experienced by vehicles at an intersection, taking into account the effects of intersection characteristics such as lane geometry and signal phasing. **Table 2** presents the delay associated with each LOS grade, as well as a qualitative description of intersection operations at that grade, for both signalized and unsignalized intersections.

### Table 2: Intersection Level of Service Definitions

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Description</th>
<th>Signalized Intersection Delay (seconds per vehicle)</th>
<th>Unsignalized Intersection Delay (seconds per vehicle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.</td>
<td>≤ 10</td>
<td>≤ 10</td>
</tr>
<tr>
<td>B</td>
<td>Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.</td>
<td>&gt;10 and ≤ 20</td>
<td>&gt;10 and ≤ 15</td>
</tr>
<tr>
<td>C</td>
<td>Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.</td>
<td>&gt;20 and ≤ 35</td>
<td>&gt;15 and ≤ 25</td>
</tr>
<tr>
<td>D</td>
<td>Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.</td>
<td>&gt;35 and ≤ 55</td>
<td>&gt;25 and ≤ 35</td>
</tr>
<tr>
<td>E</td>
<td>Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.</td>
<td>&gt;55 and ≤ 80</td>
<td>&gt;35 and ≤ 50</td>
</tr>
<tr>
<td>F</td>
<td>Forced flow. Represents jammed conditions. Backups form locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.</td>
<td>&gt; 80</td>
<td>&gt; 50</td>
</tr>
</tbody>
</table>

The City of La Quinta Engineering Bulletin #06-13 (September 22, 2010) states that the City strives to maintain the minimum level of service for its intersections at not worse than LOS D. The County of Riverside Measure A funding guidelines do not specify a minimum level of service.

At intersections along roadways contained in the Riverside County Congestion Management Program (CMP) System of Highway and Roadways, the minimum level of service required is to be not worse than LOS E. Within the City of La Quinta, Highway 111 is designated as a CMP facility. Therefore, LOS E operations are considered acceptable at intersections along Highway 111.

3.2 ROADWAY ANALYSIS METHODOLOGY

Table 3 presents the maximum daily capacity of a roadway in the City of La Quinta based on its functional classification. Average daily traffic (ADT) represents the total number of vehicles (both directions) traveling on a roadway segment throughout the course of 24 hours.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Lane Configuration</th>
<th>Capacity (ADT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>2U</td>
<td>9,000</td>
</tr>
<tr>
<td>Collector</td>
<td>2U</td>
<td>14,000</td>
</tr>
<tr>
<td>Modified Secondary</td>
<td>2D</td>
<td>19,000</td>
</tr>
<tr>
<td>Secondary</td>
<td>4U</td>
<td>28,000</td>
</tr>
<tr>
<td>Primary</td>
<td>4D</td>
<td>41,400</td>
</tr>
<tr>
<td>Major</td>
<td>6D</td>
<td>59,300</td>
</tr>
<tr>
<td>Augmented Major</td>
<td>8D</td>
<td>76,000</td>
</tr>
</tbody>
</table>

Source: City of La Quinta Engineering Bulletin #06-13 (September 22, 2010).

The roadway capacities are approximate, general plan level values. They are affected by many factors including percentage of trucks, road grade, vertical and horizontal sight distance, driveway spacing, median island presence/openings, and on-street parking. The City of La Quinta Engineering Bulletin #06-13 (September 22, 2010) specifies that the maximum daily volume to capacity (V/C) ratio of 0.90 shall be used for all roadway segments being analyzed.

For Primary and Major Arterial classifications the 2010 Highway Capacity Manual (HCM) was referenced to give consideration to the City of La Quinta lower than typical peak hour K factor of 8 percent, and the resulting increase in average daily capacities. Table 4 summarizes the level of service ranges for each roadway classification. The lower end of capacity values are for facilities designed for 30 mph posted speed limits, average signal spacing of 1,050 feet, and 20 access points per mile. The high end of capacity values, which are most appropriate for the City of La Quinta, are for facilities designed for 45 mph posted speed limits, average signal spacing of 1,500 feet, and 10 access points per mile. To the extent that less access driveways and further spacing between traffic signals are provided, capacity values would be qualitatively higher than documented by the 2010 HCM.
The 0.90 of LOS E is the maximum service volume that can theoretically be accommodated on City of La Quinta arterials while still delivering the desired levels of service. As indicated, a Primary Arterial should not exceed 38,340 vehicles and a Major Arterial should not exceed 54,990 vehicles per day.

4.0 EXISTING INTERSECTION LEVELS OF SERVICE

This section evaluates traffic operations at the study intersections for each of the following scenarios during the a.m. and p.m. peak hours:

- Existing Conditions (October 2010 traffic volumes)
- Existing Conditions With Seasonal Factor

4.1 EXISTING CONDITIONS (OCTOBER 2010)

A level of service analysis was conducted to evaluate existing intersection operations during the a.m. and p.m. peak hours based on intersection volumes collected in October 2010 using the TRAFFIX Software (City of La Quinta Engineering Bulletin #06-13, September 22, 2010). Table 5 summarizes the existing levels of service at the study intersections.
## TABLE 5: EXISTING PEAK HOUR INTERSECTION LOS WITHOUT SEASONAL FACTOR

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Traffic Control</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LOS</td>
<td>Delay (Sec)</td>
</tr>
<tr>
<td>1. Washington St &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>C</td>
<td>33.2</td>
</tr>
<tr>
<td>2. Washington St &amp; Miles Ave</td>
<td>Signal</td>
<td>C</td>
<td>28.6</td>
</tr>
<tr>
<td>3. Washington St &amp; Channel Dr</td>
<td>Signal</td>
<td>B</td>
<td>18.1</td>
</tr>
<tr>
<td>4. Washington St &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>33.8</td>
</tr>
<tr>
<td>5. Washington St &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>26.9</td>
</tr>
<tr>
<td>6. Washington St &amp; Eisenhower Dr</td>
<td>Signal</td>
<td>C</td>
<td>23.0</td>
</tr>
<tr>
<td>7. Washington St &amp; Ave 50</td>
<td>Signal</td>
<td>C</td>
<td>28.6</td>
</tr>
<tr>
<td>8. Washington St &amp; Calle Tampico</td>
<td>Signal</td>
<td>C</td>
<td>24.6</td>
</tr>
<tr>
<td>9. Washington St &amp; Ave 52</td>
<td>Signal</td>
<td>C</td>
<td>20.5</td>
</tr>
<tr>
<td>10. Eisenhower Dr &amp; Calle Tampico</td>
<td>Signal</td>
<td>C</td>
<td>23.7</td>
</tr>
<tr>
<td>11. Avenida Bermudas &amp; Ave 52</td>
<td>Signal</td>
<td>C</td>
<td>31.6</td>
</tr>
<tr>
<td>12. Adams St &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>C</td>
<td>32.0</td>
</tr>
<tr>
<td>13. Adams St &amp; Miles Ave</td>
<td>Signal</td>
<td>C</td>
<td>31.2</td>
</tr>
<tr>
<td>14. Adams St &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>28.8</td>
</tr>
<tr>
<td>15. Adams St &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>28.8</td>
</tr>
<tr>
<td>16. Dune Palms Rd &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>C</td>
<td>24.3</td>
</tr>
<tr>
<td>17. Dune Palms Rd &amp; Miles Ave</td>
<td>Signal</td>
<td>C</td>
<td>32.1</td>
</tr>
<tr>
<td>18. Dune Palms Rd &amp; Westward Ho Dr</td>
<td>Signal</td>
<td>C</td>
<td>30.1</td>
</tr>
<tr>
<td>19. Dune Palms Rd &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>30.2</td>
</tr>
<tr>
<td>20. Dune Palms Rd &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>23.5</td>
</tr>
<tr>
<td>21. Jefferson St &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>C</td>
<td>30.6</td>
</tr>
<tr>
<td>22. Jefferson St &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>30.0</td>
</tr>
<tr>
<td>23. Jefferson St &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>31.9</td>
</tr>
<tr>
<td>24. Jefferson St &amp; Ave 49</td>
<td>Signal</td>
<td>C</td>
<td>23.7</td>
</tr>
<tr>
<td>25. Jefferson St &amp; Ave 50</td>
<td>Signal</td>
<td>C</td>
<td>32.2</td>
</tr>
<tr>
<td>26. Jefferson St &amp; Ave 52</td>
<td>Roundabout</td>
<td>A</td>
<td>6.6</td>
</tr>
<tr>
<td>27. Jefferson St &amp; Ave 54</td>
<td>AWSC</td>
<td>B</td>
<td>10.9</td>
</tr>
<tr>
<td>28. Madison St &amp; Ave 50</td>
<td>AWSC</td>
<td>B</td>
<td>14.5</td>
</tr>
<tr>
<td>29. Madison St &amp; Ave 52</td>
<td>AWSC</td>
<td>B</td>
<td>11.3</td>
</tr>
<tr>
<td>30. Madison St &amp; Ave 54</td>
<td>AWSC</td>
<td>B</td>
<td>10.3</td>
</tr>
<tr>
<td>31. Madison St &amp; Ave 58</td>
<td>AWSC</td>
<td>A</td>
<td>8.3</td>
</tr>
<tr>
<td>32. Madison St &amp; Ave 60</td>
<td>AWSC</td>
<td>A</td>
<td>7.9</td>
</tr>
<tr>
<td>33. Monroe St &amp; Ave 52</td>
<td>AWSC</td>
<td>B</td>
<td>12.6</td>
</tr>
<tr>
<td>34. Monroe St &amp; Ave 54</td>
<td>AWSC</td>
<td>A</td>
<td>9.8</td>
</tr>
<tr>
<td>35. Monroe St &amp; Ave 58</td>
<td>AWSC</td>
<td>A</td>
<td>7.6</td>
</tr>
<tr>
<td>36. Monroe St &amp; Ave 60</td>
<td>AWSC</td>
<td>A</td>
<td>7.8</td>
</tr>
<tr>
<td>37. Monroe St &amp; Ave 62</td>
<td>AWSC</td>
<td>A</td>
<td>7.4</td>
</tr>
</tbody>
</table>

Notes:
- HCM 2000 Operations Methodology; AWSC = All-way Stop-controlled
- LOS = Level of Service, Delay = Average Vehicle Delay (Seconds), V/C = Volume-to-Capacity Ratio.

During the October “shoulder” season, and as shown in Table 5, all but one of the 37 study intersections currently operate at LOS C or better. Only the intersection of Washington Street/Highway 111 is operating in the LOS D range, very near LOS C, and only during the p.m. peak hour. Clearly, all study intersections are operating at acceptable levels of service (LOS D or better).
4.2 Existing Conditions With Seasonal Factor

In order to reflect existing traffic conditions during the peak season, an existing conditions with seasonal factor analysis was evaluated using the TRAFFIX Software, consistent with the City of La Quinta Engineering Bulletin #06-13 (September 22, 2010). Based on input from City staff and consistent with the City’s Engineering Bulletin #06-13, a modestly conservative ten percent seasonal growth factor was added to the existing traffic counts. The results of the intersection level of service analysis are summarized in Table 6.
### Table 6: Existing Peak Hour Intersection LOS with Seasonal Factor

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Traffic Control</th>
<th>AM Peak Hour</th>
<th></th>
<th>PM Peak Hour</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LOS</td>
<td>Delay (Sec)</td>
<td>V/C</td>
<td>LOS</td>
</tr>
<tr>
<td>1. Washington St &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>C</td>
<td>34.9</td>
<td>0.810</td>
<td>C</td>
</tr>
<tr>
<td>2. Washington St &amp; Miles Ave</td>
<td>Signal</td>
<td>C</td>
<td>29.2</td>
<td>0.592</td>
<td>C</td>
</tr>
<tr>
<td>3. Washington St &amp; Channel Dr</td>
<td>Signal</td>
<td>B</td>
<td>18.2</td>
<td>0.422</td>
<td>C</td>
</tr>
<tr>
<td>4. Washington St &amp; Hwy 111</td>
<td>Signal</td>
<td>D</td>
<td>35.3</td>
<td>0.753</td>
<td>D</td>
</tr>
<tr>
<td>5. Washington St &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>32.3</td>
<td>0.907</td>
<td>C</td>
</tr>
<tr>
<td>6. Washington St &amp; Eisenhower Dr</td>
<td>Signal</td>
<td>C</td>
<td>23.7</td>
<td>0.579</td>
<td>C</td>
</tr>
<tr>
<td>7. Washington St &amp; Ave 50</td>
<td>Signal</td>
<td>C</td>
<td>30.3</td>
<td>0.750</td>
<td>C</td>
</tr>
<tr>
<td>8. Washington St &amp; Calle Tampico</td>
<td>Signal</td>
<td>C</td>
<td>24.7</td>
<td>0.442</td>
<td>C</td>
</tr>
<tr>
<td>9. Washington St &amp; Ave 52</td>
<td>Signal</td>
<td>C</td>
<td>20.6</td>
<td>0.407</td>
<td>C</td>
</tr>
<tr>
<td>10. Eisenhower Dr &amp; Calle Tampico</td>
<td>Signal</td>
<td>C</td>
<td>24.1</td>
<td>0.422</td>
<td>C</td>
</tr>
<tr>
<td>11. Avenida Bermudas &amp; Ave 52</td>
<td>Signal</td>
<td>D</td>
<td>38.6</td>
<td>0.855</td>
<td>C</td>
</tr>
<tr>
<td>12. Adams St &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>C</td>
<td>34.6</td>
<td>0.773</td>
<td>C</td>
</tr>
<tr>
<td>13. Adams St &amp; Miles Ave</td>
<td>Signal</td>
<td>C</td>
<td>31.4</td>
<td>0.447</td>
<td>C</td>
</tr>
<tr>
<td>14. Adams St &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>29.0</td>
<td>0.443</td>
<td>C</td>
</tr>
<tr>
<td>15. Adams St &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>29.6</td>
<td>0.605</td>
<td>C</td>
</tr>
<tr>
<td>16. Dune Palms Rd &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>C</td>
<td>25.4</td>
<td>0.659</td>
<td>C</td>
</tr>
<tr>
<td>17. Dune Palms Rd &amp; Miles Ave</td>
<td>Signal</td>
<td>C</td>
<td>31.9</td>
<td>0.494</td>
<td>C</td>
</tr>
<tr>
<td>18. Dune Palms Rd &amp; Westward Ho Dr</td>
<td>Signal</td>
<td>C</td>
<td>30.8</td>
<td>0.561</td>
<td>C</td>
</tr>
<tr>
<td>19. Dune Palms Rd &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>30.3</td>
<td>0.488</td>
<td>C</td>
</tr>
<tr>
<td>20. Dune Palms Rd &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>24.1</td>
<td>0.529</td>
<td>C</td>
</tr>
<tr>
<td>21. Jefferson St &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>C</td>
<td>31.2</td>
<td>0.520</td>
<td>C</td>
</tr>
<tr>
<td>22. Jefferson St &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>30.3</td>
<td>0.494</td>
<td>C</td>
</tr>
<tr>
<td>23. Jefferson St &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>32.5</td>
<td>0.591</td>
<td>C</td>
</tr>
<tr>
<td>24. Jefferson St &amp; Ave 49</td>
<td>Signal</td>
<td>C</td>
<td>23.9</td>
<td>0.435</td>
<td>C</td>
</tr>
<tr>
<td>25. Jefferson St &amp; Ave 50</td>
<td>Signal</td>
<td>C</td>
<td>32.7</td>
<td>0.574</td>
<td>C</td>
</tr>
<tr>
<td>26. Jefferson St &amp; Ave 52</td>
<td>Roundabout</td>
<td>A</td>
<td>7.5</td>
<td>-</td>
<td>A</td>
</tr>
<tr>
<td>27. Jefferson St &amp; Ave 54</td>
<td>AWSC</td>
<td>B</td>
<td>11.6</td>
<td>0.481</td>
<td>B</td>
</tr>
<tr>
<td>28. Madison St &amp; Ave 50</td>
<td>AWSC</td>
<td>C</td>
<td>17.1</td>
<td>0.725</td>
<td>D</td>
</tr>
<tr>
<td>29. Madison St &amp; Ave 52</td>
<td>AWSC</td>
<td>B</td>
<td>12.1</td>
<td>0.483</td>
<td>B</td>
</tr>
<tr>
<td>30. Madison St &amp; Ave 54</td>
<td>AWSC</td>
<td>B</td>
<td>10.8</td>
<td>0.354</td>
<td>B</td>
</tr>
<tr>
<td>31. Madison St &amp; Ave 58</td>
<td>AWSC</td>
<td>A</td>
<td>8.4</td>
<td>0.107</td>
<td>A</td>
</tr>
<tr>
<td>32. Madison St &amp; Ave 60</td>
<td>AWSC</td>
<td>A</td>
<td>8.0</td>
<td>0.143</td>
<td>A</td>
</tr>
<tr>
<td>33. Monroe St &amp; Ave 52</td>
<td>AWSC</td>
<td>B</td>
<td>13.8</td>
<td>0.528</td>
<td>B</td>
</tr>
<tr>
<td>34. Monroe St &amp; Ave 54</td>
<td>AWSC</td>
<td>A</td>
<td>10.2</td>
<td>0.272</td>
<td>B</td>
</tr>
<tr>
<td>35. Monroe St &amp; Ave 58</td>
<td>AWSC</td>
<td>A</td>
<td>7.7</td>
<td>0.091</td>
<td>A</td>
</tr>
<tr>
<td>36. Monroe St &amp; Ave 60</td>
<td>AWSC</td>
<td>A</td>
<td>7.9</td>
<td>0.094</td>
<td>A</td>
</tr>
<tr>
<td>37. Monroe St &amp; Ave 62</td>
<td>AWSC</td>
<td>A</td>
<td>7.5</td>
<td>0.073</td>
<td>A</td>
</tr>
</tbody>
</table>

**Notes:**
- Seasonal factor equal to a 10% increase of October 2010 traffic counts.
- HCM 2000 Operations Methodology; AWSC = All-way Stop-controlled
- LOS = Level of Service, Delay = Average Vehicle Delay (Seconds), V/C = Volume-to-Capacity Ratio.

During the peak season, and as shown in Table 6, all but four of the 37 study intersections operate at LOS C or better. The intersection of Washington Street/Highway 111 operates at LOS D, very near LOS C, during the a.m. peak hour. During the p.m. peak hour, this intersection operates at a slightly worse delay during peak season conditions, but remains at LOS D. The intersection of Avenida Bermudas/Avenue 52 operates at LOS D and very near LOS C, during the a.m. peak hour. The
intersection of Madison Street/Avenue 50 operates at LOS D during only the p.m. peak hour. This intersection is all-way stop-controlled, therefore LOS ranges are smaller than those applied to signalized intersections. All study intersections are operating at acceptable levels of service (LOS D or better).

5.0 EXISTING ROADWAY ANALYSIS

Existing 24-hour roadway segment volumes were obtained from CVAG, which were collected during peak season conditions (January, February, and March 2010). The existing roadway segment average daily volume-to-capacity ratio and level of service analysis results, based on the methodologies described in Section 3.2, are summarized in Table 7.

TABLE 7: EXISTING ROADWAY SEGMENT ANALYSIS

<table>
<thead>
<tr>
<th>Roadway Link</th>
<th>Existing ADT</th>
<th>Roadway Designation</th>
<th>Alternate Modes Served</th>
<th>Existing Number of Lanes</th>
<th>Existing Capacity</th>
<th>Existing V/C Ratio - LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington St</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Ave 42 to Fred Waring Dr</td>
<td>37,426</td>
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<td>SunLine Bus</td>
<td>6</td>
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<td>0.63 – B</td>
</tr>
<tr>
<td>Fred Waring Dr to Miles Ave</td>
<td>40,633</td>
<td>Major</td>
<td>SunLine Bus</td>
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<td>32,915</td>
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<td>36,710</td>
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<tr>
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<tr>
<td>Eisenhower Dr to 600’ north of Ave 50</td>
<td>27,129</td>
<td>Major</td>
<td>Bicycles, SunLine Bus</td>
<td>6</td>
<td>59,300</td>
<td>0.46 – A</td>
</tr>
<tr>
<td>600’ north of Ave 50 to Ave 50</td>
<td>27,129</td>
<td>Major</td>
<td>Bicycles, SunLine Bus</td>
<td>5</td>
<td>47,500*</td>
<td>0.57 – A</td>
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<td>23,434</td>
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<td>59,300</td>
<td>0.40 – A</td>
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<td>41,400</td>
<td>0.29 – A</td>
</tr>
<tr>
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<td>0.24 – A</td>
</tr>
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</tr>
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</tr>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Westward Ho Dr to Hwy 111</td>
<td>9,282</td>
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<td>Bicycles</td>
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<td>41,400</td>
<td>0.20 – A</td>
</tr>
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<td>Roadway Link</td>
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<td>Roadway Designation</td>
<td>Alternate Modes Served</td>
<td>Existing Number of Lanes</td>
<td>Existing Capacity</td>
<td>Existing V/C Ratio - LOS</td>
</tr>
<tr>
<td>------------------------------------</td>
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<td>---------------------</td>
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<td>------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Jefferson St</td>
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</tr>
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<td>Major</td>
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<td>Ave 50 to Ave 52</td>
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<td>0.27 – A</td>
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<td>Ave 52 to Ave 54</td>
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<td>Major</td>
<td>Bicycles</td>
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<td>0.21 – A</td>
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<tr>
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<td>0.40 – A</td>
</tr>
<tr>
<td>Ave 54 to Airport Blvd</td>
<td>9,219</td>
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<td>0.22 – A</td>
</tr>
<tr>
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<td>6,348</td>
<td>Primary</td>
<td>Bicycles</td>
<td>4</td>
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<td>0.15 – A</td>
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<td>Bicycles</td>
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<td>0.08 – A</td>
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<td>0.22 – A</td>
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<td>0.18 – A</td>
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<tr>
<td>Ave 54 to Airport Blvd</td>
<td>3,338</td>
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<td>14,000</td>
<td>0.24 – A</td>
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<td>2,326</td>
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<td>0.17 – A</td>
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<td>14,000</td>
<td>0.12 – A</td>
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<td>Primary</td>
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<td>2</td>
<td>14,000</td>
<td>0.11 – A</td>
</tr>
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<td>Van Buren St</td>
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<td>14,000</td>
<td>0.33 – A</td>
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<td>2</td>
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<td>0.24 – A</td>
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<td>14,000</td>
<td>0.11 – A</td>
</tr>
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<td>0.08 – A</td>
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<td>14,000</td>
<td>0.07 – A</td>
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<td>14,000</td>
<td>0.48 – A</td>
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<td></td>
<td></td>
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<td>Washington St to Adams St</td>
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<td>6</td>
<td>59,300</td>
<td>0.41 – A</td>
</tr>
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<td>Roadway Link</td>
<td>Existing ADT</td>
<td>Roadway Designation</td>
<td>Alternate Modes Served</td>
<td>Existing Number of Lanes</td>
<td>Existing Capacity</td>
<td>Existing V/C Ratio - LOS</td>
</tr>
<tr>
<td>---------------------------------------</td>
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<td>---------------------</td>
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<td>--------------------------</td>
<td>-------------------</td>
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</tr>
<tr>
<td>Miles Ave</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Washington St to Adams St</td>
<td>9,828</td>
<td>Primary</td>
<td>Bicycles, SunLine Bus</td>
<td>4</td>
<td>41,400</td>
<td>0.24 – A</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Washington St to Adams St</td>
<td>29,726</td>
<td>Major</td>
<td>SunLine Bus, Trucks</td>
<td>6</td>
<td>59,300</td>
<td>0.50 – A</td>
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<tr>
<td>Adams St to Dune Palms Rd</td>
<td>31,348</td>
<td>Major</td>
<td>SunLine Bus, Trucks</td>
<td>6</td>
<td>59,300</td>
<td>0.53 – A</td>
</tr>
<tr>
<td>Dune Palms Rd to Jefferson St</td>
<td>38,037</td>
<td>Major</td>
<td>SunLine Bus, Trucks</td>
<td>6</td>
<td>59,300</td>
<td>0.64 – B</td>
</tr>
<tr>
<td>Ave 48</td>
<td></td>
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</tr>
<tr>
<td>Washington St to Adams St</td>
<td>12,903</td>
<td>Primary</td>
<td>Bicycles</td>
<td>4</td>
<td>41,400</td>
<td>0.31 – A</td>
</tr>
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<td>Dune Palms Rd to Jefferson St</td>
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<td>4</td>
<td>41,400</td>
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<tr>
<td>Washington St to Jefferson St</td>
<td>9,663</td>
<td>Primary</td>
<td>Bicycles</td>
<td>4</td>
<td>41,400</td>
<td>0.23 – A</td>
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<td>None</td>
<td>4</td>
<td>41,400</td>
<td>0.24 – A</td>
</tr>
<tr>
<td>Calle Tampico</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eisenhower Dr to Avenida Bermudas</td>
<td>5,350¹</td>
<td>Primary</td>
<td>Bicycles, Golf carts</td>
<td></td>
<td>41,400</td>
<td>0.13 – A</td>
</tr>
<tr>
<td>Avenida Bermudas to Washington St</td>
<td>10,063¹</td>
<td>Primary</td>
<td>Sunline Bus, Golf carts</td>
<td></td>
<td>41,400</td>
<td>0.24 – A</td>
</tr>
<tr>
<td>Ave 52</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Avenida Bermudas to Washington St</td>
<td>16,133</td>
<td>Primary</td>
<td>Bicycles, Golf carts</td>
<td>4</td>
<td>41,400</td>
<td>0.39 – A</td>
</tr>
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<td>Washington St to Jefferson St</td>
<td>13,529</td>
<td>Primary</td>
<td>Bicycles</td>
<td>4</td>
<td>41,400</td>
<td>0.33 – A</td>
</tr>
<tr>
<td>Jefferson St to Madison St</td>
<td>10,306</td>
<td>Primary</td>
<td>Bicycles</td>
<td>2</td>
<td>19,000</td>
<td>0.54 – A</td>
</tr>
<tr>
<td>Madison St to Monroe St</td>
<td>7,238</td>
<td>Primary</td>
<td>None</td>
<td>2</td>
<td>19,000</td>
<td>0.38 – A</td>
</tr>
<tr>
<td>Ave 54</td>
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<td></td>
</tr>
<tr>
<td>Jefferson St to Madison St</td>
<td>8,386</td>
<td>Primary</td>
<td>Bicycles</td>
<td>4</td>
<td>41,400</td>
<td>0.20 – A</td>
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<td></td>
</tr>
<tr>
<td>Madison St to Monroe St</td>
<td>1,893</td>
<td>Primary</td>
<td>Bicycles</td>
<td>4</td>
<td>41,400</td>
<td>0.05 – A</td>
</tr>
<tr>
<td>Ave 58</td>
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<td></td>
</tr>
<tr>
<td>Madison St to Monroe St</td>
<td>2,188</td>
<td>Secondary</td>
<td>Bicycles</td>
<td>4</td>
<td>41,400</td>
<td>0.05 – A</td>
</tr>
<tr>
<td>Monroe St to Jackson St</td>
<td>1,554</td>
<td>Secondary</td>
<td>None</td>
<td>2</td>
<td>14,000</td>
<td>0.11 – A</td>
</tr>
<tr>
<td>Ave 60</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Madison St to Monroe St</td>
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<td>Secondary</td>
<td>None</td>
<td>2</td>
<td>19,000</td>
<td>0.16 – A</td>
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<tr>
<td>Monroe St to Jackson St</td>
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<td>Primary</td>
<td>None</td>
<td>2</td>
<td>14,000</td>
<td>0.06 – A</td>
</tr>
</tbody>
</table>
As shown in Table 7, the roadway segments analyzed are currently operating at LOS A, with the exception of three segments of Washington Street and one segment of Highway 111 operating at LOS B. Clearly all analyzed roadway segments are currently operating well within the acceptable levels of service.

### 6.0 FORECAST YEAR 2035 WITH PREFERRED LAND USE PLAN

This section discusses traffic forecast methodology and evaluates traffic operations at the study intersections and roadway segments in forecast year 2035 assuming buildout of the City of La Quinta Preferred Land Use Plan. The analysis also assumes regional growth in background traffic outside the city limits and SOI. Regional growth outside of the City of La Quinta is directly derived from and is consistent with the SCAG and CVAG socioeconomic data projections of population, housing and employment. These regional growth assumptions are inputs to RivTAM, and are established and accepted official regional projections that are required by State and regional agencies to be used in all models in order to maintain the validity of the traffic model and legality of forecasts for use in environmental analyses.

It should be noted that certain areas in the RivTAM model that are influential to future traffic in the La Quinta planning area, especially those adjoining the southeast quadrant of the planning area, reflect land uses that are more intense than those assigned by the currently adopted County General Plan. Prior planning work by the County concluded that an eight-lane facility would be needed along Harrison Street. Extensive efforts were undertaken to adjust buildout conditions in this area to reflect the current County General Plan.

### 6.1 TRAFFIC FORECAST METHODOLOGY

This section discusses the development of the La Quinta focused travel demand model based on the Year 2008 Riverside Traffic Analysis Model (RivTAM). The entire travel demand model was developed using the TransCAD modeling software package by Caliper Corporation, Version 5.0R2. TransCAD is one of the predominantly used commercial travel demand forecasting software platforms that incorporates Geographic Information System (GIS), enhanced network editing and travel demand modeling.
capabilities and is the official software used by Southern California Association of Governments (SCAG) and the County of Riverside. The purpose for developing a focused and detailed model for the City is for use in General Plan traffic forecasting as well as other applications such as specific plans and development plan analyses. The La Quinta Traffic Analysis Model (LQTAM) covers all of the six counties in the SCAG region. A new zone structure with 949 zones was designed to detail the La Quinta area and to aggregate a set of zones outside of the area. Of the 949 zones, 101 zones were contained within the City of La Quinta and 22 zones were contained within the SOI. The model roadway network within the City and SOI area was expanded to include roadways classified as Collector and above, as shown in the City of La Quinta General Plan Circulation Element.

The structure of the La Quinta Model is consistent with the RivTAM model to ensure compatibility between the two models. Building on RivTAM will also minimize the time and effort needed to maintain and update the LQTAM as new elements of the RivTAM model are put into the model job stream. As noted above, the RivTAM model includes land uses and intensities planned east and southeast of the City planning area that have not yet been adopted by the County. Therefore, the unadjusted model substantially overstates the potential effects of traffic from these areas on the southeast quadrant of the City planning area. The analysis conducted for this La Quinta General Plan first evaluated the socioeconomic data that is in the adopted RivTAM to reflect the assigned but not yet adopted land use designations for the Vista Santa Rosa area and the South Valley Implementation Project planning area. Because those assumptions generate about 10% more trips than what would be generated with build out of only approved General Plan land uses, the latter scenario was used for this analysis.

Specifically, the model consists of a traditional four step modeling process including (1) trip generation, (2) trip distribution, (3) mode split (travel mode choice), and (4) traffic assignment. Two model scenarios were included in the La Quinta Model, namely the base year 2009 peak season and the forecast year 2035 peak season. Given the updated zone structure, corresponding modifications regarding the input data tables and matrices in the four steps were conducted for both of the model scenarios.

The validation for base year 2009 was followed to ensure the results match with both the RivTAM model and traffic counts. Detailed information on model development and validation can be obtained in LQTAM Model Documentation and Validation (Iteris, February 2011).

Year 2035 turning movement volumes at the study intersections were developed by post-processing existing turning movement volumes and year 2009 and 2035 approach and departure volumes using the methodology described in National Cooperative Highway Research Program Report (NCHRP) 255, Highway Traffic Data for Urbanized Area Project Planning and Design (Transportation Research Board, 1982). Figure 11 shows the forecast year 2035 with Preferred Land Use Plan peak hour volumes at the study intersections, and with traffic generated outside of La Quinta and passing through La Quinta during peak season conditions.

6.2 INTERSECTION LEVELS OF SERVICE

A level of service analysis was conducted to evaluate forecast year 2035 with Preferred Land Use Plan intersection operations during the a.m. and p.m. peak hours, using the TRAFFIX Software (City of La
Quinta Engineering Bulletin #06-13, September 22, 2010), assuming the adopted General Plan roadway network will be modified to downgrade Washington Street to a 6-lane facility between Highway 111 and Avenue 48.

Forecast year 2035 with Preferred Land Use Plan traffic volumes were developed as described in the “Traffic Forecast Methodology” section. The future lane configurations of the study intersections reflect buildout of both the currently adopted general plan roadway network and City of La Quinta Capital Improvement Program (CIP) improvements (as of 2011) as shown in Figure 12. The CIP is a five-year capital improvement plan. Table 8 summarizes the forecast year 2035 with Preferred Land Use Plan levels of service at the study intersections based on the future lane configurations shown in Figure 11. These levels of service do not reflect any additional improvements (such as signalization of stop-controlled intersections and intersection widening), which are discussed further in the following sections.
FIGURE 12
General Plan Buildout (2035) Intersection Configurations

Legend
- City Boundary
- Sphere of Influence
- Split-phased Control
- OVR Right Turn Overlap Phase
- Existing Signal
- Existing Stop Controlled Approach
- Existing Roundabout

1. Washington St & Fred Waring Dr
2. Washington St & Miles Ave
3. Washington St & Channel Dr
4. Washington St & Hwy 111
5. Washington St & Eisenhower Dr
6. Washington St & Ave 48
7. Washington St & Ave 50
8. Washington St & Calle Tampico
9. Washington St & Ave 52
10. Eisenhower Dr & Calle Tampico
11. Ave 52 & Avenida Bermudas
12. Adams St & Miles Ave
13. Adams St & Hwy 111
14. Adams St & Ave 48
15. Adams St & Ave 45
16. Dune Palms Rd & Fred Waring Dr
17. Dune Palms Rd & Miles Ave
18. Dune Palms Rd & Westward Ho Dr
19. Dune Palms Rd & Hwy 111
20. Dune Palms Rd & Ave 48
21. Jefferson St & Fred Waring Dr
22. Jefferson St & Hwy 111
23. Jefferson St & Ave 48
24. Jefferson St & Ave 49
25. Jefferson St & Ave 50
26. Jefferson St & Ave 52
27. Jefferson St & Ave 54
28. Madison St & Ave 50
29. Madison St & Ave 52
30. Madison St & Ave 54
31. Madison St & Ave 58
32. Madison St & Ave 60
33. Monroe St & Ave 52
34. Monroe St & Ave 54
35. Monroe St & Ave 58
36. Monroe St & Ave 60
37. Monroe St & Ave 62

Re-stripe at two-lane roundabout

Future Signal

General Plan Buildout or CIP Improvement

Lane Added

OVR
### Table 8: General Plan Buildout (2035) Peak Hour Intersection LOS With Preferred Land Use Plan (2002 General Plan Network - Peak Season)

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Traffic Control</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LOS</td>
<td>Delay (Sec)</td>
</tr>
<tr>
<td>1. Washington St &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>F</td>
<td>82.4</td>
</tr>
<tr>
<td>2. Washington St &amp; Miles Ave</td>
<td>Signal</td>
<td>D</td>
<td>36.2</td>
</tr>
<tr>
<td>3. Washington St &amp; Channel Dr</td>
<td>Signal</td>
<td>B</td>
<td>13.1</td>
</tr>
<tr>
<td>4. Washington St &amp; Hwy 111</td>
<td>Signal</td>
<td>D</td>
<td>41.5</td>
</tr>
<tr>
<td>5. Washington St &amp; Ave 48</td>
<td>Signal</td>
<td>E</td>
<td>61.1</td>
</tr>
<tr>
<td>6. Washington St &amp; Eisenhower Dr&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Signal</td>
<td>C</td>
<td>28.3</td>
</tr>
<tr>
<td>7. Washington St &amp; Ave 50</td>
<td>Signal</td>
<td>C</td>
<td>33.5</td>
</tr>
<tr>
<td>8. Washington St &amp; Calle Tampico&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Signal</td>
<td>C</td>
<td>20.4</td>
</tr>
<tr>
<td>9. Washington St &amp; Ave 52</td>
<td>Signal</td>
<td>C</td>
<td>31.8</td>
</tr>
<tr>
<td>10. Eisenhower Dr &amp; Calle Tampico</td>
<td>Signal</td>
<td>C</td>
<td>23.1</td>
</tr>
<tr>
<td>11. Avenida Bermudas &amp; Ave 52</td>
<td>Signal</td>
<td>C</td>
<td>27.2</td>
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<tr>
<td>12. Adams St &amp; Fred Waring Dr</td>
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<td>39.9</td>
</tr>
<tr>
<td>13. Adams St &amp; Miles Ave</td>
<td>Signal</td>
<td>D</td>
<td>35.1</td>
</tr>
<tr>
<td>14. Adams St &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>32.8</td>
</tr>
<tr>
<td>15. Adams St &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>30.0</td>
</tr>
<tr>
<td>16. Dune Palms Rd &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>C</td>
<td>24.7</td>
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<tr>
<td>17. Dune Palms Rd &amp; Miles Ave</td>
<td>Signal</td>
<td>D</td>
<td>36.3</td>
</tr>
<tr>
<td>18. Dune Palms Rd &amp; Westward Ho Dr</td>
<td>Signal</td>
<td>C</td>
<td>32.5</td>
</tr>
<tr>
<td>19. Dune Palms Rd &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>32.4</td>
</tr>
<tr>
<td>20. Dune Palms Rd &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>33.2</td>
</tr>
<tr>
<td>21. Jefferson St &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>D</td>
<td>36.9</td>
</tr>
<tr>
<td>22. Jefferson St &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>34.6</td>
</tr>
<tr>
<td>23. Jefferson St &amp; Ave 48</td>
<td>Signal</td>
<td>E</td>
<td>57.3</td>
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<tr>
<td>24. Jefferson St &amp; Ave 49</td>
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</tr>
<tr>
<td>25. Jefferson St &amp; Ave 50</td>
<td>Signal</td>
<td>D</td>
<td>37.3</td>
</tr>
<tr>
<td>26. Jefferson St &amp; Ave 52</td>
<td>Roundabout</td>
<td>C</td>
<td>21.3</td>
</tr>
<tr>
<td>27. Jefferson St &amp; Ave 54</td>
<td>New Signal&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>200.8</td>
</tr>
<tr>
<td>28. Madison St &amp; Ave 50</td>
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<td>E</td>
<td>72.9</td>
</tr>
<tr>
<td>29. Madison St &amp; Ave 52</td>
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<td>D</td>
<td>47.9</td>
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<td>New Signal&lt;sup&gt;2&lt;/sup&gt;</td>
<td>F</td>
<td>213.0</td>
</tr>
<tr>
<td>31. Madison St &amp; Ave 58</td>
<td>New Signal&lt;sup&gt;2&lt;/sup&gt;</td>
<td>C</td>
<td>25.9</td>
</tr>
<tr>
<td>32. Madison St &amp; Ave 60</td>
<td>New Signal&lt;sup&gt;2&lt;/sup&gt;</td>
<td>F</td>
<td>130.3</td>
</tr>
<tr>
<td>33. Monroe St &amp; Ave 52</td>
<td>New Signal&lt;sup&gt;2&lt;/sup&gt;</td>
<td>D</td>
<td>48.2</td>
</tr>
<tr>
<td>34. Monroe St &amp; Ave 54</td>
<td>New Signal&lt;sup&gt;2&lt;/sup&gt;</td>
<td>D</td>
<td>36.2</td>
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<tr>
<td>35. Monroe St &amp; Ave 58</td>
<td>New Signal&lt;sup&gt;2&lt;/sup&gt;</td>
<td>D</td>
<td>36.5</td>
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<tr>
<td>36. Monroe St &amp; Ave 60</td>
<td>New Signal&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>35.0</td>
</tr>
<tr>
<td>37. Monroe St &amp; Ave 62</td>
<td>New Signal&lt;sup&gt;2&lt;/sup&gt;</td>
<td>C</td>
<td>29.6</td>
</tr>
</tbody>
</table>

**Notes:**

**BOLD** indicates unsatisfactory level of service.

LOS = Level of Service, Delay = Average Vehicle Delay (Seconds), V/C = Volume-to-Capacity Ratio.

1 = Calculation based on implementation of a second southbound right-turn lane (per 2011 CIP).

2 = Calculation based on implementation of a third eastbound left-turn lane (per 2011 CIP).

3 = 2035 Conditions assume signalization of existing lanes.
As shown in Table 8, based upon the assumed buildout of the currently adopted General Plan roadway network, maintaining Washington Street at six lanes, the following intersections are forecast to operate at unsatisfactory peak season peak period levels of service (LOS E or worse during peak season peak periods):

- Washington Street/Fred Waring Drive (a.m. and p.m. peak hour);
- Washington Street/Miles Avenue (p.m. peak hour);
- Washington Street/Avenue 48 (a.m. and p.m. peak hour);
- Washington Street/Avenue 50 (p.m. peak hour);
- Adams Street/Fred Waring Drive (p.m. peak hour);
- Adams Street/Miles Avenue (p.m. peak hour);
- Dune Palms Road/Fred Waring Drive (p.m. peak hour);
- Dune Palms Road/Avenue 48 (p.m. peak hour);
- Jefferson Street/Highway 111 (p.m. peak hour);
- Jefferson Street/Avenue 48 (a.m. and p.m. peak hour);
- Jefferson Street/Avenue 50 (p.m. peak hour);
- Jefferson Street/Avenue 52 (p.m. peak hour);
- Jefferson Street/Avenue 54 (a.m. and p.m. peak hour);
- Madison Street/Avenue 50 (a.m. and p.m. peak hour);
- Madison Street/Avenue 52 (p.m. peak hour);
- Madison Street/Avenue 54 (a.m. and p.m. peak hour);
- Madison Street/Avenue 58 (p.m. peak hour);
- Madison Street/Avenue 60 (a.m. and p.m. peak hour);
- Monroe Street/Avenue 52 (a.m. and p.m. peak hour);
- Monroe Street/Avenue 54 (p.m. peak hour);
- Monroe Street/Avenue 58 (p.m. peak hour);
- Monroe Street/Avenue 60 (p.m. peak hour); and
- Monroe Street/Avenue 62 (p.m. peak hour).

### 6.2.1 Needed Intersection Enhancements for LOS D

By the year 2035, with General Plan buildout for the Preferred Land Use Plan there will be a need for improvements beyond those set forth in the current City General Plan at the above listed intersections to maintain acceptable LOS D. Additional widening at some intersections is not always viewed as a community improvement, and overriding considerations may be identified by the community that would not allow completion of the physical widening necessary to implement the number of travel lanes needed to achieve LOS D.

Proper consideration of balancing mobility with other values requires that the potential widening projects be viewed from the perspectives of the users (vehicles, transit, bicyclist, NEV, pedestrian), and the nearby community that is often more concerned about local aesthetic, social and economic impacts. The intent is to increase highway mobility and safety in a manner that is compatible with, and enhancing to, City of La Quinta community values and plans.
Management and operations of the City’s arterial network should include monitoring of actual levels of service. This would allow for identification of timely capital improvements, and/or initiation of transportation demand management (TDM) and transportation systems management (TSM) programs during peak season peak periods and other times of the year when needed to reduce volumes and to reduce the needed improvements.

TDM programs aim to put more person trips into fewer vehicles, by increasing bicycling, carpools, vanpools, and transit ridership. TSM programs and projects support travelers with real time travel information so that they can make smart travel choices in selection of time of travel, mode of travel, and routes of travel.

The physical widening at intersections shown below would be needed to provide traffic operations at acceptable peak period LOS D or better, if the approach to providing acceptable peak period LOS is solely through traditional roadway widening. Section 7 gives consideration to alternative physical improvements and management strategies that would require an ongoing commitment to systems operations or deliver conditions worse than LOS D.

- **Washington Street/Fred Waring Drive** –
  - Add a third northbound left-turn lane and a fourth northbound through lane.
  - Add fourth southbound through lane and a right-turn overlap phase.
  - Add a fourth eastbound through lane and a second eastbound right-turn lane.
  - Add a fourth westbound through lane and a right-turn overlap phase.

- **Washington Street/Miles Avenue** –
  - Add a second southbound left-turn lane.
  - Add a dedicated westbound right-turn lane, converting the number two through lane to a through lane only, and add a westbound right-turn overlap phase.

- **Washington Street/Avenue 48** –
  - Add a second southbound left-turn lane (CIP improvement).
  - Add a third westbound left-turn lane and a right-turn overlap phase.

- **Washington Street/Avenue 50** –
  - Add a dedicated northbound right-turn lane, converting the number three through lane to a through only lane.
  - Add a second westbound left-turn lane (CIP improvement), convert the number two westbound through lane to a through/right-turn lane, and add a second westbound right-turn lane.
  - Lengthen the existing eastbound single left turn pocket from the existing 130-feet to the maximum effective left turn pocket length of 300-feet; or add a second eastbound left-turn lane in order to provide adequate capacity for school-related traffic occurring during non-peak hours, as well as to line up with the recommended dual westbound left-turn lanes.
• **Adams Street/Fred Waring Drive** –
  o Add a second northbound left-turn lane by removal of one southbound departure lane.
  o Add a third eastbound through lane (CIP improvement).
  o Add a third westbound through lane (CIP improvement).

• **Adams Street/Miles Avenue** –
  o Add a dedicated northbound right-turn lane, converting the number two through lane to a through only lane.
  o Add a dedicated westbound right-turn lane, converting the number two through lane to a through only lane.

• **Dune Palms Road/Fred Waring Drive** –
  o Add a second northbound left-turn lane.
  o Add a third eastbound through lane (CIP improvement).
  o Add a third westbound through lane (CIP improvement).

• **Dune Palms Road/Avenue 48** –
  o Add a dedicated westbound right-turn lane, converting the number two through lane to a through only lane.
  o Add a westbound right-turn overlap phase.

• **Jefferson Street/Highway 111** –
  o Add a fourth northbound through lane.
  o Add a third southbound left-turn lane and a fourth southbound through lane.

• **Jefferson Street/Avenue 48** –
  o Add an eastbound right-turn overlap phase.

• **Jefferson Street/Avenue 50** –
  o Add a second westbound left-turn lane.
  o Add a second eastbound left-turn lane in order to provide adequate capacity for school-related traffic occurring during non-peak hours, as well as to line up with the recommended dual westbound left-turn lanes.

• **Jefferson Street/Avenue 52** –
  o Add a third lane to the roundabout; or replace with a traditional signalized intersection of:
    o Northbound approach of two left-turn lanes, two through lanes, and one right-turn lane;
    o Southbound approach of one left-turn lane, two through lanes, and one right-turn lane;
    o Eastbound approach of one left-turn lane, two through lanes, and one right-turn lane with a right-turn overlap phase; and
    o Westbound approach of one left-turn lane, two through lanes, and one right-turn lane with a right-turn overlap phase.
• Jefferson Street/Avenue 54 –
  o Construct a two-lane roundabout (will require further detailed analysis); or
  o Signalize intersection and add a second westbound right-turn lane and a right-turn overlap phase.

• Madison Street/Avenue 50 –
  o Construct a two-lane roundabout (will require further detailed analysis); or
  o Signalize intersection.
  o Add a third northbound through lane and a dedicated right-turn lane, converting the new number three through lane to a through only lane.
  o Add a second southbound left-turn lane and a dedicated right-turn lane, converting the number two through lane to a through only lane.
  o Add a dedicated westbound right-turn lane with a right-turn overlap phase, converting the number two through lane to a through only lane.

In consideration of potential community concerns with the channel bridge/cover widening costs that would be needed to enable these improvements, other options are considered in Section 7.

• Madison Street/Avenue 52 –
  o Construct a two-lane roundabout (will require further detailed analysis); or
  o Signalize intersection.
  o Add a dedicated northbound right-turn lane, converting the number two through lane to a through only lane.
  o Add a second southbound left-turn lane and a dedicated right-turn lane, converting the number two through lane to a through only lane.
  o Add a dedicated westbound right-turn lane, converting the number two through lane to a through only lane.

• Madison Street/Avenue 54 –
  o Construct a two-lane roundabout (will require further detailed analysis); or
  o Signalize intersection.
  o Add a dedicated eastbound free right-turn lane, converting the number two through lane to a through only lane.
  o Add a westbound right-turn overlap phase.

• Madison Street/Avenue 58 –
  o Construct a two-lane roundabout (will require further detailed analysis); or
  o Signalize intersection.
  o Add a westbound right-turn overlap phase.

• Madison Street/Avenue 60 –
  o Construct a two-lane roundabout (will require further detailed analysis); or
  o Signalize intersection.
- **Monroe Street/Avenue 52**
  - Add a second southbound left-turn lane and a dedicated right-turn lane with a right-turn overlap phase, converting the number two through lane to a through only lane.
  - Add a second eastbound left-turn lane.
  - Add a dedicated westbound right-turn lane, converting the number two through lane to a through only lane.

- **Monroe Street/Avenue 54**
  - Construct a two-lane roundabout (will require further detailed analysis); or
  - Signalize intersection.
  - Add a second northbound left-turn lane and a dedicated right-turn lane, converting the number two through lane to a through only lane.
  - Add a second southbound left-turn lane and a dedicated right-turn lane, converting the number two through lane to a through only lane.
  - Add a dedicated eastbound right-turn lane, converting the number two through lane to a through only lane.
  - Add a dedicated westbound right-turn lane, converting the number two through lane to a through only lane.

- **Monroe Street/Avenue 58**
  - Construct a two-lane roundabout (will require further detailed analysis); or
  - Signalize intersection.
  - Add a dedicated northbound right-turn lane converting the number two through lane to a through only lane.

- **Monroe Street/Avenue 60**
  - Construct a two-lane roundabout (will require further detailed analysis); or
  - Signalize intersection.
  - Convert the westbound number two through/right-turn lane to a dedicated right-turn lane with a right-turn overlap phase.

- **Monroe Street/Avenue 62**
  - Construct a two-lane roundabout (will require further detailed analysis); or
  - Signalize intersection.
- Convert the number two westbound through/right-turn lane to a dedicated right-turn lane with a right-turn overlap phase.

**Figure 13** shows the future lane configurations of the study intersections assuming the lane widening to achieve LOS D. **Table 9** summarizes the forecast year 2035 with Preferred Land Use Plan levels of service at the study intersections if they were implementation.
FIGURE 13
General Plan Buildout (2035) With Enhanced Intersection Configurations

Legend
- City Boundary
- Sphere of Influence
- Split-phased Control
- Free Right Turn Lane
- Right Turn Overlap Phase
- Existing Signal
- Existing Stop Controlled Approach
- Existing Roundabout
- Lane Added
- Future Signal

Improvements

1. Washington St & Fred Waring Dr
2. Washington St & Miles Ave
3. Washington St & Channel Dr
4. Washington St & Hwy 111
5. Washington St & Eisenhower Dr
6. Washington St & Ave 48
7. Washington St & Ave 50
8. Washington St & Calle Tampico
9. Washington St & Ave 52
10. Eisenhower Dr & Calle Tampico
11. Ave 52 & Avenida Bermudas
12. Adams St & Miles Ave
13. Adams St & Hwy 111
14. Adams St & Ave 48
15. Adams St & Ave 50
16. Dune Palms Rd & Fred Waring Dr
17. Dune Palms Rd & Miles Ave
18. Dune Palms Rd & Westward Ho Dr
19. Dune Palms Rd & Hwy 111
20. Dune Palms Rd & Ave 48
21. Jefferson St & Fred Waring Dr
22. Jefferson St & Hwy 111
23. Jefferson St & Ave 48
24. Jefferson St & Ave 50
25. Jefferson St & Ave 52
26. Jefferson St & Ave 54
27. Jefferson St & Ave 55
28. Madison St & Ave 52
29. Madison St & Ave 54
30. Madison St & Ave 55
31. Madison St & Ave 56
32. Madison St & Ave 58
33. Monroe St & Ave 52
34. Monroe St & Ave 54
35. Monroe St & Ave 55
36. Monroe St & Ave 56
37. Monroe St & Ave 62
### TABLE 9: GENERAL PLAN BUILDOUT (2035) PEAK HOUR INTERSECTION LOS WITH PREFERRED LAND USE PLAN (ENHANCED GENERAL PLAN NETWORK — PEAK SEASON)

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Traffic Control</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>LOS</td>
<td>Delay (Sec)</td>
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</tr>
<tr>
<td>2. Washington St &amp; Miles Ave</td>
<td>Signal</td>
<td>C</td>
<td>25.5</td>
</tr>
<tr>
<td>3. Washington St &amp; Channel Dr</td>
<td>Signal</td>
<td>B</td>
<td>13.1</td>
</tr>
<tr>
<td>4. Washington St &amp; Hwy 111</td>
<td>Signal</td>
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<td>41.5</td>
</tr>
<tr>
<td>5. Washington St &amp; Ave 48</td>
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</tr>
<tr>
<td>6. Washington St &amp; Eisenhower Dr†</td>
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<td>C</td>
<td>28.3</td>
</tr>
<tr>
<td>7. Washington St &amp; Ave 50</td>
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<td>23.3</td>
</tr>
<tr>
<td>8. Washington St &amp; Calle Tampico†</td>
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<td>20.4</td>
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<tr>
<td>9. Washington St &amp; Ave 52</td>
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<td>C</td>
<td>31.8</td>
</tr>
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<td>10. Eisenhower Dr &amp; Calle Tampico</td>
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<tr>
<td>11. Avenida Bermudas &amp; Ave 52</td>
<td>Signal</td>
<td>C</td>
<td>27.2</td>
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</tr>
<tr>
<td>20. Dune Palms Rd &amp; Ave 48</td>
<td>Signal</td>
<td>C</td>
<td>25.3</td>
</tr>
<tr>
<td>21. Jefferson St &amp; Fred Waring Dr</td>
<td>Signal</td>
<td>D</td>
<td>36.9</td>
</tr>
<tr>
<td>22. Jefferson St &amp; Hwy 111</td>
<td>Signal</td>
<td>C</td>
<td>32.1</td>
</tr>
<tr>
<td>23. Jefferson St &amp; Ave 48</td>
<td>Signal</td>
<td>D</td>
<td>40.4</td>
</tr>
<tr>
<td>24. Jefferson St &amp; Ave 49</td>
<td>Signal</td>
<td>B</td>
<td>17.7</td>
</tr>
<tr>
<td>25. Jefferson St &amp; Ave 50</td>
<td>Signal</td>
<td>C</td>
<td>33.9</td>
</tr>
<tr>
<td>26. Jefferson St &amp; Ave 52</td>
<td>Roundabout</td>
<td>A</td>
<td>3.0</td>
</tr>
<tr>
<td>27. Jefferson St &amp; Ave 54</td>
<td>New Signal²</td>
<td>B</td>
<td>15.3</td>
</tr>
<tr>
<td>28. Madison St &amp; Ave 50</td>
<td>New Signal³</td>
<td>D</td>
<td>38.2</td>
</tr>
<tr>
<td>29. Madison St &amp; Ave 52</td>
<td>New Signal³</td>
<td>D</td>
<td>39.8</td>
</tr>
<tr>
<td>30. Madison St &amp; Ave 54</td>
<td>New Signal³</td>
<td>D</td>
<td>38.2</td>
</tr>
<tr>
<td>31. Madison St &amp; Ave 58</td>
<td>New Signal³</td>
<td>C</td>
<td>24.7</td>
</tr>
<tr>
<td>32. Madison St &amp; Ave 60</td>
<td>New Signal³</td>
<td>D</td>
<td>51.8</td>
</tr>
<tr>
<td>33. Monroe St &amp; Ave 52</td>
<td>New Signal³</td>
<td>C</td>
<td>33.9</td>
</tr>
<tr>
<td>34. Monroe St &amp; Ave 54</td>
<td>New Signal³</td>
<td>C</td>
<td>30.2</td>
</tr>
<tr>
<td>35. Monroe St &amp; Ave 58</td>
<td>New Signal³</td>
<td>C</td>
<td>34.9</td>
</tr>
<tr>
<td>36. Monroe St &amp; Ave 60</td>
<td>New Signal³</td>
<td>C</td>
<td>30.7</td>
</tr>
<tr>
<td>37. Monroe St &amp; Ave 62</td>
<td>New Signal³</td>
<td>B</td>
<td>10.3</td>
</tr>
</tbody>
</table>

Notes:
- **BOLD** indicates unsatisfactory level of service.
- LOS = Level of Service, Delay = Average Vehicle Delay (Seconds), V/C = Volume-to-Capacity Ratio.
- 1 = Calculation based on implementation of a second southbound right-turn lane (per 2011 CIP).
- 2 = Calculation based on implementation of a third eastbound left-turn lane (per 2011 CIP).
- 3 = 2035 Conditions assume signalization of existing lanes.
As shown in Table 9, all study intersections are forecast to operate at acceptable levels of service assuming implementation of the recommended improvements.

6.2.2 Final Intersection Configurations for LOS D

Based on the improvements recommended in Section 6.2.1, the final intersection configurations required to provide LOS D operations for all 37 intersections are described below:

- **Washington Street/Fred Waring Drive** –
  - Northbound approach: three left-turn lanes, four through lanes, one right-turn lane
  - Southbound approach: two left-turn lanes, four through lanes, one right-turn lane with a right-turn overlap phase
  - Eastbound approach: two left-turn lanes, four through lanes, two right-turn lanes
  - Westbound approach: two left-turn lanes, four through lanes, one right-turn lane with a right-turn overlap phase

- **Washington Street/Miles Avenue** –
  - Northbound approach: one left-turn lane, three through lanes, one right-turn lane
  - Southbound approach: two left-turn lanes, three through lanes, one right-turn lane
  - Eastbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  - Westbound approach: two left-turn lanes, two through lanes, one right-turn lane with a right-turn overlap phase.

- **Washington Street/Channel Drive** –
  - Northbound approach: one left-turn lane, two through lanes, one shared through/right-turn lane
  - Southbound approach: one left-turn lane, two through lanes, one shared through/right-turn lane
  - Eastbound approach: one shared left-turn/through/right-turn lane
  - Westbound approach: one shared left-turn/through lane, one right-turn lane.

- **Washington Street/Highway 111** –
  - Northbound approach: three left-turn lanes, three through lanes, one right-turn lane
  - Southbound approach: three left-turn lanes, two through lanes, one shared through/right-turn lane
  - Eastbound approach: two left-turn lanes, three through lanes, two right-turn lanes with a right-turn overlap phase
  - Westbound approach: two left-turn lanes, three through lanes, one right-turn lane with a right-turn overlap phase.
• **Washington Street/Avenue 48** –  
  o Northbound approach: two through lanes and one shared through/right-turn lane  
  o Southbound approach: two left-turn lanes, three through lanes  
  o Westbound approach: three left-turn lanes and one right-turn lane with a right-turn overlap phase.

• **Washington Street/Eisenhower Drive** –  
  o Northbound approach: one left-turn lane, three through lanes, one right-turn lane  
  o Southbound approach: one left-turn lane, two through lanes, one shared through/right-turn lane, one right-turn lane  
  o Eastbound approach: two left-turn lanes, one shared left-turn/through lane/right-turn lane  
  o Westbound approach: one shared left-turn/through lane/right-turn lane

• **Washington Street/Avenue 50** –  
  o Northbound approach: one left-turn lane, three through lanes, one right-turn lane  
  o Southbound approach: two left-turn lanes, two through lanes, one shared through/right-turn lane  
  o Eastbound approach: two left-turn lanes, one through lane, one shared through/right-turn lane  
  o Westbound approach: two left-turn lanes, one through lane, one shared through/right-turn lane with a right-turn overlap phase.

• **Washington Street/Calle Tampico** –  
  o Northbound approach: one left-turn lane, two through lanes, one shared through/right-turn lane  
  o Southbound approach: one left-turn lane, two through lanes, one right-turn lane with a right-turn overlap phase  
  o Eastbound approach: two left-turn lanes, one shared left-turn/through lane, one right-turn lane  
  o Westbound approach: one left-turn lane, one shared through/right-turn lane

• **Washington Street/Avenue 52** –  
  o Northbound approach: one shared left-turn/through/right-turn lane  
  o Southbound approach: one left-turn lane, one shared left-turn/through lane, two right-turn lanes with a right-turn overlap phase  
  o Eastbound approach: two left-turn lanes, one through lane, one shared through/right-turn lane  
  o Westbound approach: one left-turn lane, two through lanes, one right-turn lane with a right-turn overlap phase

• **Eisenhower Drive/Calle Tampico** –  
  o Northbound approach: one left-turn lane, two through lanes, one right-turn lane  
  o Southbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
• Eastbound approach: one shared left-turn/through/right-turn lane
• Westbound approach: one left-turn lane, one right-turn lane with a right-turn overlap phase

• Avenue 52/Avenida Bermudas –
  o Northbound approach: one shared left-turn/through, one right-turn lane with a right-turn overlap phase
  o Southbound approach: one left-turn lane, one through lane, one right-turn lane
  o Eastbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  o Westbound approach: two left-turn lanes, one through lane, one shared through/right-turn lane

• Adams Street/Fred Waring Drive –
  o Northbound approach: two left-turn lanes, one through lane, one right-turn lane
  o Southbound approach: one left-turn lane, one through lane, one right-turn lane
  o Eastbound approach: one left-turn lane, three through lanes, one right-turn lane
  o Westbound approach: one left-turn lane, three through lanes, one right-turn lane

• Adams Street/Miles Avenue –
  o Northbound approach: one left-turn lane, two through lanes, one right-turn lane
  o Southbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  o Eastbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  o Westbound approach: one left-turn lane, two through lanes, one right-turn lane

• Adams Street/Highway 111 –
  o Northbound approach: two left-turn lanes, two through lanes, one right-turn lane
  o Southbound approach: two left-turn lanes, two through lanes, one right-turn lane with a right-turn overlap phase
  o Eastbound approach: two left-turn lanes, three through lanes, one right-turn lane
  o Westbound approach: two left-turn lanes, three through lane, one right-turn lane

• Adams Street/Avenue 48 –
  o Northbound approach: one shared left-turn/through lane, one shared through/right-turn lane
  o Southbound approach: one left-turn lane, one left-turn/through lane, one right-turn lane
  o Eastbound approach: one left-turn lane, two through lanes, one right-turn lane
  o Westbound approach: one left-turn lane, two through lanes, one right-turn lane

• Dune Palms Road/Fred Waring Drive –
  o Northbound approach: two left-turn lanes, one right-turn lane
  o Eastbound approach: two through lanes, one shared through/right-turn lane
• **Dune Palms Road/Miles Avenue** –
  o Northbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  o Southbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  o Eastbound approach: one left-turn lane, two through lanes, one right-turn lane
  o Westbound approach: one left-turn lane, one through lane, one shared through/right-turn lane

• **Dune Palms Road/Westward Ho Drive** –
  o Northbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  o Southbound approach: one left-turn lane, one through lane, one shared through/right-turn lane with a right-turn overlap phase
  o Eastbound approach: one left-turn lane, one shared through/right-turn lane
  o Westbound approach: one left-turn lane, one through lane, one right-turn lane with a right-turn overlap phase

• **Dune Palms Road/Highway 111** –
  o Northbound approach: two left-turn lanes, two through lanes, one right-turn lane
  o Southbound approach: two left-turn lanes, two through lanes, one right-turn lane
  o Eastbound approach: two left-turn lanes, three through lanes, one right-turn lane
  o Westbound approach: two left-turn lanes, three through lanes, one right-turn lane

• **Dune Palms Road/Avenue 48** –
  o Northbound approach: one shared left-turn/through/right-turn lane
  o Southbound approach: two left-turn lanes, one right-turn lane
  o Eastbound approach: two left-turn lanes, one through lane, one shared through/right-turn lane
  o Westbound approach: one left-turn lane, two through lanes, one right-turn lane with a right-turn overlap phase

• **Jefferson Street/Fred Waring Drive** –
  o Northbound approach: two left-turn lanes, three through lanes, one right-turn lane
  o Southbound approach: two left-turn lanes, three through lanes, one right-turn lane
  o Eastbound approach: two left-turn lanes, three through lanes, one right-turn lane with a right-turn overlap phase
  o Westbound approach: two left-turn lanes, three through lanes, one right-turn lane

• **Jefferson Street/Highway 111** –
  o Northbound approach: two left-turn lanes, four through lanes, one right-turn lane with a right-turn overlap phase
- **Jefferson Street/Avenue 48**
  - Northbound approach: two left-turn lanes, three through lanes, one right-turn lane
  - Southbound approach: two left-turn lanes, three through lanes, one right-turn lane
  - Eastbound approach: one left-turn lane, two through lanes, one right-turn lane with a right-turn overlap phase
  - Westbound approach: one left-turn lane, one通过 lane, one shared through/right-turn lane

- **Jefferson Street/Avenue 49**
  - Northbound approach: one left-turn lane, three through lanes, one right-turn lane
  - Southbound approach: one left-turn lane, two through lanes, one shared through/right-turn lane
  - Eastbound approach: one left-turn lane, one shared through/right-turn lane
  - Westbound approach: one left-turn lane, one shared through/right-turn lane

- **Jefferson Street/Avenue 50**
  - Northbound approach: one left-turn lane, three through lanes, one right-turn lane
  - Southbound approach: two left-turn lanes, three through lanes, one right-turn lane
  - Eastbound approach: two left-turn lanes, one through lane, one shared through/right-turn lane
  - Westbound approach: two left-turn lanes, one through lane, one shared through/right-turn lane

- **Jefferson Street/Avenue 50**
  - Three-lane roundabout

- **Jefferson Street/Avenue 54**
  - Northbound approach: one left-turn lane, two through lanes, one right-turn lane
  - Southbound approach: two left-turn lanes, two through lanes, one right-turn lane
  - Eastbound approach: one left-turn lane, one through lane, one right-turn lane
  - Westbound approach: one left-turn lane, one through lane, two right-turn lanes with a right-turn overlap phase

- **Madison Street/Avenue 50**
  - Northbound approach: one left-turn lane, three through lanes, one right-turn lane
  - Southbound approach: two left-turn lanes, two through lanes, one right-turn lane
  - Eastbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
- **Madison Street/Avenue 52** –
  - Northbound approach: one left-turn lane, two through lanes, one right-turn lane
  - Southbound approach: two left-turn lanes, two through lanes, one right-turn lane
  - Eastbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  - Westbound approach: one left-turn lane, two through lanes, one right-turn lane

- **Madison Street/Avenue 58** –
  - Northbound approach: one left-turn lane, two through lanes, one right-turn lane
  - Southbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  - Eastbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  - Westbound approach: one left-turn lane, two through lanes, one right-turn lane with a right-turn overlap phase

- **Madison Street/Avenue 60** –
  - Northbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  - Southbound approach: two left-turn lanes, two through lanes, one right-turn lane with a right-turn overlap phase
  - Eastbound approach: two left-turn lanes, one through lane, one shared through/right-turn lane
  - Westbound approach: one left-turn lane, two through lanes, one right-turn lane

- **Monroe Street/Avenue 52** –
  - Northbound approach: two left-turn lanes, two through lanes, one right-turn lane
  - Southbound approach: two left-turn lanes, two through lanes, one right-turn lane with a right-turn overlap phase
  - Eastbound approach: one left-turn lane, two through lanes, one right-turn lane
  - Westbound approach: one left-turn lane, two through lanes, one right-turn lane

- **Monroe Street/Avenue 54** –
  - Northbound approach: one left-turn lane, three through lanes, one right-turn lane
  - Southbound approach: one left-turn lane, two through lanes, one right-turn lane
  - Eastbound approach: one left-turn lane, two through lanes, one right-turn lane
  - Westbound approach: one left-turn lane, two through lanes, one right-turn lane

- **Monroe Street/Avenue 58** –
  - Northbound approach: one left-turn lane, two through lanes, one right-turn lane
  - Southbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
Eastbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
Westbound approach: one left-turn lane, one through lane, one shared through/right-turn lane

- **Monroe Street/Avenue 60** –
  - Northbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  - Southbound approach: two left-turn lanes, one through lane, one shared through/right-turn lane
  - Eastbound approach: one left-turn lane, one through lane, one shared through/right-turn lane
  - Westbound approach: one left-turn lane, one through lane, one right-turn lane with a right-turn overlap phase

- **Monroe Street/Avenue 62** –
  - Northbound approach: one shared left-turn/through/right-turn lane
  - Southbound approach: one shared left-turn/through lane, one right-turn lane
  - Eastbound approach: one left-turn lane, one shared through/right-turn lane
  - Westbound approach: one shared left-turn/through lane, one right-turn lane with a right-turn overlap phase

### 6.3 ROADWAY SEGMENT ANALYSIS

Forecast year 2035 with Preferred Land Use Plan 24-hour roadway segment volumes were derived by adding the growth in raw LQTAM volumes between 2009 and 2035 to the existing 24-hour roadway segment volumes obtained from CVAG, as shown in Section 5.0. The forecast year 2035 with Preferred Land Use Plan roadway segment volume-to-capacity ratio and level of service analysis results, based on the methodologies including the 2010 HCM capacities as described in Section 3.2, are summarized in Table 10.
### Table 10: General Plan Buildout (2035) Roadway Segment Analysis With Preferred Land Use Plan With Adopted General Plan Network (Peak Season)

<table>
<thead>
<tr>
<th>Roadway Link</th>
<th>2035 ADT</th>
<th>Roadway Designation</th>
<th>Modes Served</th>
<th>2035 Number of Lanes</th>
<th>2035 Capacity</th>
<th>2035 V/C Ratio - LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington St</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ave 42 to Fred Waring Dr</td>
<td>58,241</td>
<td>Major</td>
<td>SunLine Bus</td>
<td>6</td>
<td>61,100</td>
<td>0.95 – E</td>
</tr>
<tr>
<td>Fred Waring Dr to Miles Ave</td>
<td>64,210</td>
<td>Major</td>
<td>SunLine Bus</td>
<td>6</td>
<td>61,100</td>
<td>1.05 – F</td>
</tr>
<tr>
<td>Miles Ave to Hwy 111</td>
<td>54,141</td>
<td>Major</td>
<td>Bicycles</td>
<td>6</td>
<td>61,100</td>
<td>0.89 – D</td>
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<tr>
<td>Hwy 111 to Ave 48</td>
<td>57,955</td>
<td>Major</td>
<td>Bicycles, SunLine Bus</td>
<td>6</td>
<td>61,100</td>
<td>0.95 – E</td>
</tr>
<tr>
<td>Ave 48 to Eisenhower Dr</td>
<td>58,267</td>
<td>Major</td>
<td>SunLine Bus</td>
<td>6</td>
<td>61,100</td>
<td>0.95 – E</td>
</tr>
<tr>
<td>Eisenhower Dr to Ave 50</td>
<td>41,381</td>
<td>Major</td>
<td>Bicycles, SunLine Bus</td>
<td>6</td>
<td>61,100</td>
<td>0.68 – B</td>
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<tr>
<td>Ave 50 to Calle Tampico</td>
<td>36,164</td>
<td>Major</td>
<td>Bicycles, SunLine Bus</td>
<td>6</td>
<td>61,100</td>
<td>0.59 – A</td>
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<tr>
<td>Eisenhower Dr</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washington St to Ave 50</td>
<td>21,435</td>
<td>Primary</td>
<td>Bicycles, Golf carts</td>
<td>4</td>
<td>42,600</td>
<td>0.50 – A</td>
</tr>
<tr>
<td>Ave 50 to Calle Tampico</td>
<td>15,291</td>
<td>Primary</td>
<td>Bicycles, Golf carts</td>
<td>4</td>
<td>42,600</td>
<td>0.36 – A</td>
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<tr>
<td>Avenida Bermudas</td>
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<td>Calle Tampico to Ave 52</td>
<td>3,919</td>
<td>Secondary</td>
<td>SunLine Bus</td>
<td>4</td>
<td>28,000</td>
<td>0.14 – A</td>
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<td>Ave 52 to Calle Durango</td>
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<td>Secondary</td>
<td>Bicycles</td>
<td>4</td>
<td>28,000</td>
<td>0.39 – A</td>
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<td></td>
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<td>SunLine Bus</td>
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<td>0.50 – A</td>
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<tr>
<td>Hwy 111 to Ave 48</td>
<td>22,132</td>
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<td>Bicycles</td>
<td>4</td>
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<td>0.52 – A</td>
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<td></td>
<td></td>
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<tr>
<td>Westward Ho Dr to Hwy 111</td>
<td>16,547</td>
<td>Secondary</td>
<td>Bicycles</td>
<td>4</td>
<td>28,000</td>
<td>0.59 – A</td>
</tr>
<tr>
<td>Hwy 111 to Ave 48</td>
<td>20,999</td>
<td>Secondary</td>
<td>Bicycles</td>
<td>4</td>
<td>28,000</td>
<td>0.75 – C</td>
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<td>Jefferson St</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country Club Rd to Fred Waring Dr</td>
<td>34,274</td>
<td>Major</td>
<td>Bicycles</td>
<td>6</td>
<td>61,100</td>
<td>0.56 – A</td>
</tr>
<tr>
<td>Fred Waring Dr to Miles Ave</td>
<td>44,436</td>
<td>Major</td>
<td>Bicycles</td>
<td>6</td>
<td>61,100</td>
<td>0.73 – C</td>
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<tr>
<td>Westward Ho Dr to Hwy 111</td>
<td>48,090</td>
<td>Major</td>
<td>None</td>
<td>6</td>
<td>61,100</td>
<td>0.79 – C</td>
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<tr>
<td>Hwy 111 to Ave 48</td>
<td>46,656</td>
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<td>6</td>
<td>61,100</td>
<td>0.76 – C</td>
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<td>53,649</td>
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<td>Bicycles</td>
<td>6</td>
<td>61,100</td>
<td>0.88 – D</td>
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<tr>
<td>Ave 50 to Ave 52</td>
<td>35,143</td>
<td>Major</td>
<td>Bicycles</td>
<td>6</td>
<td>61,100</td>
<td>0.58 – A</td>
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<tr>
<td>Ave 50 to Ave 54</td>
<td>31,532</td>
<td>Major</td>
<td>Bicycles</td>
<td>6</td>
<td>61,100</td>
<td>0.52 – A</td>
</tr>
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<td>Madison St</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ave 50 to Ave 52</td>
<td>34,204</td>
<td>Primary</td>
<td>None</td>
<td>4</td>
<td>42,600</td>
<td>0.80 – C</td>
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<td>Ave 54 to Airport Blvd</td>
<td>47,529</td>
<td>Primary</td>
<td>None</td>
<td>4</td>
<td>42,600</td>
<td>1.12 – F</td>
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<tr>
<td>Airport Blvd to Ave 58</td>
<td>35,638</td>
<td>Primary</td>
<td>Bicycles</td>
<td>4</td>
<td>42,600</td>
<td>0.84 – D</td>
</tr>
<tr>
<td>Roadway Link</td>
<td>2035 ADT</td>
<td>Roadway Designation</td>
<td>Modes Served</td>
<td>2035 Number of Lanes</td>
<td>2035 Capacity</td>
<td>2035 V/C Ratio - LOS</td>
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<tr>
<td>Ave 58 to Ave 60</td>
<td>26,920</td>
<td>Secondary</td>
<td>Bicycles</td>
<td>4</td>
<td>42,600</td>
<td>0.63 – B</td>
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<tr>
<td><strong>Monroe St</strong></td>
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<td>4</td>
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<td>Roadway Designation</td>
<td>Modes Served</td>
<td>2035 Number of Lanes</td>
<td>2035 Capacity</td>
<td>2035 V/C Ratio - LOS</td>
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<td>Primary</td>
<td>Bicycles, Golf carts</td>
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<td>Bicycles</td>
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<td>0.23 – A</td>
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<td>28,000</td>
<td>0.13 – A</td>
</tr>
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</table>

Notes:

V/C = Volume-to-Capacity Ratio

As shown in Table 10, while the majority of the roadway segments are forecast to operate acceptably (V/C ratios less than or equal to 0.90 or LOS D or better), the segments bulleted below are forecast to operate unacceptably (V/C greater than 0.90) based on their current roadway classifications. They will require ongoing and diligent focus on well coordinated operations of traffic signals and access control along the segments to maximize efficient circulation. Roadway segment theoretical maximum carrying capacities, also called “service volumes”, can be increased with delivery of more uniform travel speeds and less slowing and stopping at red lights. This is best accomplished with implementation of an Intelligent Transportation Systems master plan.

- Washington Street between Avenue 42 and Miles Avenue and between Highway 111 and Eisenhower Drive as a 6-lane Major is forecast to exceed theoretical maximum carrying capacity by up to 3,000 vehicles per day (vpd), with the most problematic segment between Fred Waring Drive and Miles Avenue. LOS D service volumes are exceeded by over 9,000 vpd.
• Madison Street between Avenue 54 and Airport Boulevard as a 4-lane Primary is forecast to exceed theoretical maximum carrying capacity by approximately 4,900 vpd. LOS D service volumes are exceeded by over 9,000 vpd.
• Harrison Street between Airport Boulevard and Avenue 58 as an 8-lane Augmented Major is forecast to exceed theoretical maximum carrying capacity by approximately 3,800 vpd. Although the capacity of Harrison Street was assumed to be that of an Augmented Major Road (76,000 vehicles per day), it would likely operate as an Expressway due to limited accessibility compared to an Augmented Major Road, thus carrying a larger capacity. Prior study by the County raised the potential of grade separated intersections to further enhance capacity.

In order to increase roadway capacity without the addition of travel lanes along segments operating unacceptably, deployment of some or all of the following improvements should be considered:

• In cooperation and coordination with adjoining jurisdictions and major event centers to be served, commit to ongoing funding and operations of intelligent transportation systems to
  o Deliver traffic signal coordination along corridors in “real time” to optimize the progression of vehicles at the most efficient travel speeds;
  o Operate Transit Signal Priority at signal along major transit routes;
  o Operate Dynamic Message Signs to route traffic around congestion to alternate corridors/to available parking during peak periods and planned events.
• Continue with the City’s established minimum driveway spacing and access restrictions, and use of speed change lanes;
• Construct raised median islands with minimum opening spacing; and/or
• Work with Sunline Transit Agency to add bus stop amenities and improved peak period headways along major transit routes.
• Aggressively implement peak season bicycling, carpool and vanpool incentives with major employers.

7.0 RECOMMENDATIONS

A city’s circulation infrastructure affects more than mobility. Issues of local access and resulting “sense of place” are also important considerations in adopting a general plan circulation network. The following subsections consider intersection and midblock LOS.

The proposed General Plan buildout of the Preferred Land Use Plan would require additional improvements to be implemented at 23 intersections in order to provide traffic operations at acceptable peak period LOS (LOS D or better) during the peak season. Some of the identified improvements are in adjacent cities, and others may impact adjacent land uses. Recommended intersection improvements are detailed in section 7.1.

Of the 63 midblock segments analyzed for average daily operations, 57 are forecast to operate at acceptable peak season LOS, while 3 are forecast to operate at LOS E and 3 are forecast to operate at LOS F based on the standard capacities set forth in the General Plan. Opportunities to improve efficiency of general plan designated travel lanes are detailed in section 7.2.
7.1 **Intersection Improvements**

The intersection improvements necessary to provide acceptable LOS upon buildout of the preferred General Plan land use plan were detailed in Section 6.2.1. Some of the potential improvements would impact neighboring cities or require existing building acquisition/modification that may not be feasible. For such potentially impacted intersections, presented below are forecast LOS results of not implementing all of the intersection widening improvements. In addition, some recommendations from the *Washington Street/Highway 111 Transportation Systems Management (TSM)/Transportation Demand Management (TDM) Corridor Study* (VRPA, September 2009) are considered below. Also considered at relevant locations are benefits of Intelligent Transportation Systems to provide adaptive traffic signal timing for improved service levels.

- **Washington Street/Fred Waring Drive** – Acceptable intersection operations may be pursued by combinations of 1) widening, and 2) TSM/TDM measures. The extent of TSM/TDM will depend on the extent of widening that is determined to be feasible, as presented below:
  1. Intersection widening
     i) City of La Quinta and Indian Wells jurisdiction widening could add a third northbound left-turn lane and a fourth northbound through lane. This would improve a.m. peak hour conditions to LOS E. The p.m. peak hour conditions would remain at LOS F but the average intersection delay would be reduced by 38 seconds per signal cycle.
     ii) Coordinate with the City of Palm Desert to consider the potential for improvements in the northwest intersection quadrant, specifically the adding of a fourth southbound through lane, a southbound right-turn overlap phase, a fourth westbound through lane (La Quinta), and a westbound right-turn overlap phase (La Quinta). With construction of these added to the widening proposed in the City of La Quinta, p.m. peak hour conditions would improve to LOS E. The City of Palm Desert General Plan (2004) does not call for these improvements, but does call for consideration of a third northbound left-turn lane in the City of La Quinta/Indian Wells, which is consistent with improvements in the City of La Quinta identified above. In 2009 the City of Palm Desert considered coordinating with the City of Indian Wells for construction of an eastbound free-right turn lane.
     iii) Coordinate with the City of Indian Wells to consider improvements in the southwest intersection quadrant, specifically the adding of a fourth eastbound through lane and a second eastbound right-turn lane with a right-turn overlap phase. With construction of the two City of Indian Wells improvements impacting lanes, but not assuming improvements in the City of Palm Desert, p.m. peak hour conditions would remain at LOS F but the average intersection delay would be reduced by an additional 23 seconds.
     iv) If the recommended improvements in the Cities of La Quinta, Palm Desert, and Indian Wells are all implemented, the p.m. peak hour conditions would be improved to LOS D operations.

  2. TSM/TDM measures for trip rerouting, in addition to some of the above listed improvements that are determined feasible.
     i) Design and implement an Intelligent Transportation Systems (ITS) Master Plan in coordination with the cities of Palm Desert and Indian Wells, and in coordination with the Indian Wells Tennis Event Center. This ITS Plan would enable dynamic route reassignment
of traffic around congestion and to available parking through the use of Dynamic Message Signs and adaptive traffic signal control. It would deliver the best access to events for attendees, and around event traffic for residents that are not attending the events.

(1) To achieve LOS E, and to minimize the level of impacts experienced at nearby intersections, approximately 200 northbound left-turning vehicles would need to be diverted, approximately 100 southbound left-turning vehicles would need to be diverted, and approximately 100 southbound through movement vehicles would need to be diverted around congestion and onto adjacent Arterials. Assuming these trip diversions, the necessary roadway widening improvements would be reduced to the addition of the third northbound left-turn lane (City of La Quinta/Indian Wells), the second eastbound right-turn lane with a right-turn overlap phase (City of Indian Wells), and a fourth westbound through lane (Cities of La Quinta and Palm Desert). Therefore, the fourth northbound through lane, fourth southbound through lane, fourth eastbound through lane, and westbound right-turn overlap phase, recommended previously, would no longer be necessary.

(2) In order to achieve LOS D operations, assuming the same approximate ranges of trip diversion shown above, the addition of the fourth eastbound through lane, the westbound right-turn overlap phase, and third eastbound left-turn lane would be required. Therefore, the fourth northbound through lane and fourth southbound through lane, recommended previously, would continue to no longer be necessary.

(3) Federal Highways Administration confirms that Event Traffic Management can enhance community image by providing a safe, efficient, and convenient environment for those who travel to and from an event, while at the same time minimizing any congestion-related impacts it may have on other motorists. A trip that exceeds the expectations of those attending an event, or others whose trips may be affected by the event, are important factors to consider when making decisions regarding the provision of customer services and allocating agency resources. Advanced planning and coordination also allows agencies to develop and deploy the operational strategies, traffic control plans, protocols, procedures, and technologies needed to control traffic and share real-time information with other stakeholders on the day of the event. These capabilities allow agencies to proactively manage and control traffic to accommodate the increased travel demand generated by the event and use the available roadway capacity in the most efficient and effective manner.

- **Adams Street/Miles Avenue** – Add a dedicated westbound right-turn lane, converting the number two through lane to a through only lane. Implementation of this improvement alone will only achieve LOS E operations in the p.m. peak hour.

Consider adding a dedicated northbound right-turn lane, converting the number two through lane to a through only lane in order to achieve LOS D operations. This would impact three to four residential property side yards.
• **Jefferson Street/Highway 111** – Acceptable intersection operations may be pursued by the following improvement options:

1. LOS D operation may be attained with intersection widening with a fourth northbound through lane, a third southbound left-turn lane, a fourth southbound through lane. These improvements may be considered incompatible with adjacent community values and plans of both the cities of La Quinta and Indio.

2. LOS D operation may be attained with adaptive signal control along the Jefferson Street Corridor and intersection widening for a fourth southbound through lane, and a third southbound left-turn lane. This eliminates the need for a fourth northbound through lane.

   It is recommended that the City of La Quinta coordinate with the City of Indio on potential TSM measures to optimize the traffic carrying capacity of available pavement widths.

3. LOS E operations may be achieved with the addition of only a third southbound left-turn lane which may be considered in lieu of any additional through lanes, assuming coordination with the City of Indio.

• **Madison Street/Avenue 50** – Coordinate with the City of Indio to signalize intersection. Add a third northbound through lane and a dedicated right-turn lane, converting the new number three through lane to a through only lane. Add a second southbound left-turn lane and a dedicated right-turn lane, converting the number two through lane to a through only lane. Add a dedicated westbound right-turn lane with a right-turn overlap phase, converting the number two through lane to a through only lane.

   In lieu of the third northbound through lane, which is both costly and potentially conflicting with Coachella Valley Water District (CVWD) facilities, provide both a 2nd northbound left turn lane and a lengthened northbound right turn only lane, which will facilitate the shift of the forecast demand westerly to Jefferson Street and/or easterly to Monroe Street. Assuming the implementation of TSM/TDM measures for trip rerouting, it is estimated that approximately 400 northbound trips accommodated in the p.m. peak hour could be diverted to left or right-turn trips in order to achieve LOS D operations, assuming all other improvements listed above and shown in Figure 13.

### 7.2 Midblock Improvements

**Figure 14** depicts the midblock segments that are forecast to operate at unacceptable service levels for average daily operations. The three (3) LOS E and three (3) LOS F segments will require focus on methods to improve operating efficiencies and provide capacity beyond the standard set forth in the General Plan. Capacity is generally optimized with the provision of 12-foot lanes, 12-foot lateral clearances from the edge of the traveled lanes to obstructions along the edge of the road and in the median and median dividers and speed change lanes.
The HCM 2010, recently released by the highly esteemed Transportation Research Board of the National Academies (advisers to the Nation on Science, Engineering, and Medicine) was used to determine arterial improvement needs. Chapter 15 was consulted to confirm capacity attributes for arterials that are significantly influenced by signalized intersections. Signalized intersections have been defined as the most constraining and defining portions of roadway capacities, and as the ultimate arbiters of capacity. Where the intersection configurations noted in Section 7.1 can be provided, midblock capacities will be increased and midblock LOS improved.

In the General Plan study area, the highest forecast volumes for 2035 are along Harrison Street between Airport Boulevard and Avenue 58. The high traffic forecast of 72,700 ADT on Harrison Street, reflect land use assumptions incorporated into the RivTAM model by County traffic engineers, planners and demographers. These assumed land uses, including the South Valley Parkway Implementation Program (SVPIP) and the Vista Santa Rosa Community Plan area were considered during the process of reporting growth plans to SCAG for the 2008 Regional Transportation Plan (RTP). It should be noted that these are not adopted land use plans, although a major portion of their potential traffic has been assumed in the growth plans provided to SCAG and resulting in the 2008 RTP.

Harrison Street volumes forecast for 2035 indicate a need for an 8-lane facility. Here and elsewhere in the southeast quadrant of the General Plan planning area, the City may wish to retain the current lane designations. Whether and to what extent land use patterns may change to the east and south of the planning area, the City should monitor, evaluate and provide thoughtful input to the County and other jurisdictions that propose changes in area land uses.

The remaining forecast deficient midblock segments include the Washington Street/Fred Waring Drive intersection where buildout of identified improvements is uncertain. Focused and ongoing attention to operations will be required along the following corridor:

- Washington Street between Fred Waring Drive and Eisenhower Drive.

Capacity is generally optimized with the provision of 12-foot lanes, 12-foot lateral clearances from the edge of the traveled lanes to obstructions along the edge of the road and in the median and median dividers and speed change lanes. The number of access points (i.e., intersections, driveways, and median island openings) also has an influence on capacity, by affecting vehicle conflicts. Consideration of driveway consolidation and/or access restrictions along forecast deficient midblock segments is recommended.

The Complete Streets approach gives first priority to improving transit service on the Washington Street and Highway 111 corridors, providing a convenient and efficient system as a preferable alternative to automobile use.

- Work with Sunline Transit Agency to develop transit preferential treatments to establish consistency in treatment type and design. Potential treatments and measures include:
  - Traffic signal priority for buses; and
  - Enhanced bus stops and amenities, such as wider sidewalks, shelters, electronic vehicle arrival information.
• Make convenient transfers between transit lines, systems and modes possible by establishing common or closely located terminals for local and regional transit systems and by coordinating fares and schedules.

• Improve pedestrian, bicycle, and NEV access to transit facilities.

• Encourage the maintenance and efficient operation of the fleet of transit vehicles.

Signal operations are recommended to optimize traffic progression along all corridors. The Federal Highway Association (FHWA) has documented that outdated signal timing accounts for 5 to 10 percent of all traffic delay on major roadways, and is promoting Adaptive Signal Control Technology to continuously improve the efficiency of traffic signal timing by updating phase splits and offsets in response to current traffic conditions. Benefits have been demonstrated to reduce stops and delay up to 29%, and to decrease travel times by up to 35%.

The locations where roundabouts are recommended are generally one mile away from the nearest signalized intersection or adjacent roundabout. These isolated roundabouts would not disrupt traffic signal progression, since the further a signalized intersection is from a roundabout, the fewer closely spaced vehicle platoons would be expected to arrive at the roundabout, as platoons tend to disperse as they move down a corridor.

Incorporating Adaptive Signal Control Technology into existing closed loop traffic signal systems keeps signal timing operating at a high level of efficiency and provides the ability to actively monitor traffic conditions resulting in fewer complaints, increased capacities, and reduced congestion. It is eligible for Federal aid. The FHWA Resource Center Operations Technical Services Team will provide workshops, training, and technical assistance for agencies interested in pursuing deployment. In fact, FHWA will conduct outreach in 2012 in pursuit of helping 40 agencies implement Adaptive Signal Control Technology.
FIGURE 14
General Plan Buildout (2035)
Unacceptably Operating Roadway Segments

Legend
- City Boundary
- Sphere of Influence
- LOS E (V/C of 0.90-1.00)
- LOS F (V/C > 1.00)
- Intersection improvements uncertain due to feasibility
7.3  **Transportation Goals, Policies, and Programs for a Sustainable City of La Quinta**

With a legacy of transportation infrastructure largely constructed to maximize the movement of private vehicles, how can the City of La Quinta General Plan Circulation Element be crafted, constructed and operated to best move people and goods? As the City of La Quinta begins consideration of its circulation plans through the year 2035, there is need to take account of Federal, State and regional context in establishing policy direction.

7.3.1  **Complete Streets**

Federal transportation focus is now on economic competitiveness, sustainability, livability, state of repair, and environmental benefits. “Complete streets” are envisioned to enable safe access and travel for all users – pedestrians, bicyclists, motorists, transit users, and travelers of all ages and abilities. Ensuring that roads provide safe mobility for all travelers, not just motor vehicles, is at the heart of complete streets. Typical elements that make up a complete street include sidewalks, bicycle lanes, shared-use paths, designated bus lanes, safe and accessible transit stops, and frequent and safe crossings for pedestrians – including median islands, accessible pedestrian signals, and curb extensions. A design for a complete street in a rural area, such as Vista Santa Rosa, may look quite different from one in an urban or suburban area. As examples, a complete street in a rural area could involve providing wide shoulders or a separate multiuse path instead of sidewalks, while a complete street in a more urban/suburban area such as the Highway 111 corridor may be customized to accommodate the needs and expectations of travelers who either want to pass through the City or to gain orderly access to the adjacent uses.

Complete streets are closely associated with the principles promoted by the Interagency Partnership for Sustainable Communities. This Partnership is a joint endeavor involving the U.S. Department of Transportation, U.S. Department of Housing and Urban Development, and U.S. Environmental Protection Agency, and is intended to:

- Provide more transportation choices for all travelers;
- Support existing communities through transit-oriented, mixed-use development and land recycling (e.g., reuse of underused properties); and
- Value communities by investing in healthy, safe, and walkable neighborhoods.

The California Complete Streets Act (Assembly Bill 1358, signed into law in 2008) requires that any substantive local General Plan Circulation Element revision, “plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways, defined to include motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation, in a manner that is suitable to the rural, suburban, or urban context of the general plan”. Successful long-term implementation of this policy is intended to result in:

- More options for people to go from one place to another,
- Less traffic congestion and greenhouse gas emissions,
- More walkable communities (with healthier, more active people), and
- Fewer barriers for older adults, children, and people with disabilities.
7.3.2 **GREENHOUSE GAS REDUCTIONS**

State enactment of AB 32 and SB 375 legislation sets new standards for California's production of Greenhouse Gas (GHG) emissions. SB 375 specifically gives our regional Metropolitan Planning Organization, Southern California Association of Governments (SCAG) the responsibility to work with local jurisdictions to develop a regional strategy for reducing GHG. These efforts focus on reduction of Vehicle Miles Traveled (VMT), as transportation in California generates approximately 38% of GHG emissions. Best practices in transportation as espoused by the California Air Pollution Control Officers Association (CAPCOA), have been drawn upon in the following subsection.

The role of transportation in these efforts is expected to include:

- **Transportation Investment**, particularly transit and other multimodal infrastructure investment that may impact GHG emissions;
- **Transportation Planning and Demand Management**, planning and programs that reduce demand for low-occupancy auto traffic and improve efficiency of commercial vehicles; and
- **Transportation System Management** and operational policies and practices.

7.3.3 **EXISTING GOALS, POLICIES AND PROGRAMS**

In order to develop recommendations on Goals, Policies and Programs, the existing City of La Quinta General Plan policies were reviewed as detailed below.

- **Policy 1** of the Existing Circulation Element is to “Establish and maintain a master plan of roads...to assure minimal levels of 0.80 V/C roadway segment and LOS D intersection operations.

This Policy is inconsistent with the City of La Quinta Engineering Bulletin #06-13 reference that the maximum daily volume to capacity (V/C) ratio of 0.90 shall be used for all roadway segments being analyzed. Key to the V/C calculation is the capacity assumption. The recently released Highway Capacity Manual (HCM) 2010, provides generalized daily service volumes based on the percent of average daily traffic that is accounted for by the peak hour (i.e., the K-factor). However, 9% is the lowest K-factor addressed in HCM2010. Iteris has interpolated the values, presented below, for consideration by the City.

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Existing LQ</th>
<th>2010 HCM 8%</th>
<th>K Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V/C 0.90/E</td>
<td>LOS D</td>
<td>LOS E</td>
</tr>
<tr>
<td>4-Lane Divided</td>
<td>38,340</td>
<td>41,900</td>
<td>42,600</td>
</tr>
<tr>
<td>6-Lane Divided</td>
<td>54,990</td>
<td>60,800</td>
<td>61,100</td>
</tr>
</tbody>
</table>

It may be appropriate to revise Policy 1 to reflect the HCM 2010 capacity values, as adjusted above, given the City’s low peak hour K-factor.
• Policy 2 calls for coordination with adjacent and overlapping agencies to maximize capacities on regional roadways.

The City may wish to consider adding language to “Advocate for a regional system to operate managed lanes for transit on high volume arterials (e.g. Harrison Street), and consider market-based price or charge for single occupant auto use within them during peak periods, to capture the true cost of private vehicle use and encourage the use of ride-sharing and alternative transportation.

Programs 2.3 and 2.4 call for Major Arterials to provide a 60 mph design speed, and Primary Arterials to provide a 50 mph design speed. The Highway Design Manual calls for arterial streets to achieve a design speed range between 40 mph and 60 mph, and arterials with extensive development to achieve a design speed range between 30 mph and 40 mph. With the City intention to expand golf cart operations throughout much of the arterial network, it may be more appropriate to consider a lesser design speed of 50 to 55 mph rather than 60 mph for Major Arterials, and 40 to 45 mph for Primary Arterials. The typical driver proceeds at a speed that is perceived as comfortable, not at the posted speed limit. A 45 mph maximum speed posting to enable designation of an arterial for golf cart and NEV use would point to selection of a 55 mph design speed, using the guideline of design speed being 10 mph over posted speed limit.

Programs 2.3 and 2.4 also call for Major Arterials to provide intersection spacing of 2,600 feet in residential areas and 1,060 feet for commercial frontage. An issue brief on this topic was prepared by the Institute of Transportation Engineers (ITE) and US DOT. One of the most aggressive access management programs is in the State of Florida. The Florida Department of Transportation Systems Planning Office conducted an extensive literature search and concluded that minimum acceptable arterial signal distances range between 1,050 feet and 1,350 feet.

Programs 2.3 and 2.4 also call for right turn in/out driveways to be further than 250 feet on intersection approach, 150 feet on intersection exit leg, and 250 feet between driveways. The ITE issue brief includes further information on the functional area of intersection where driveways should not be located. An additional literature search was conducted, and the most relevant information was found in a summary of AASHTO and NCHRP information summarized by the Georgia Department of Transportation. Spacing between driveways is recommended to be at least equal to the distance traveled, at the posted speed limit, during the normal perception and reaction time plus the distance traveled as the vehicle decelerates to a stop. For an Arterial with a minimum posted speed limit of 45 mph, a 275-foot distance is recommended.

• Policy 3 calls for City participation in regional planning to encourage City policies on regional transportation issues.

These efforts may be strengthened with City use of the following National Traffic Operations Council (NTOC) examples of ways to broadly describe the benefits of a multimodal, intelligent transportation system:

- “Safer, smarter, more affordable roads”
- “Operations: Making your roads work for you”
- “Operations: The flexible alternative”
• **Policy 4** encourages Sunline Transit expansion of ridership and the service area.

An approach to build transit ridership is by promoting transit oriented development at the City’s highest served transit corridor crossings. During consideration of the Zoning Code, the City may explore opportunities for Transit Oriented Development Overlay Zones within one-quarter mile radii intersections where existing or future bus lines intersect (i.e., Highway 111/Adams Street, and Highway 111/Harrison Street).

• **Policy 6** is to encourage the use of bicycle routes and multi-use trails.

The City may consider creating an interconnected transportation system that allows a shift in travel from private passenger vehicles to alternative modes, including neighborhood electric vehicles (NEV) bicycling, bicycle-sharing, and walking. This consideration should ensure transportation centers are multi-modal to allow transportation modes to intersect, and are conveniently located.

• **Policy 7** is to assess the potential for perimeter trails.

These appear to be more recreation focus, and would be of limited benefit to the overall transportation network operations.

• **Policy 9** calls for a directional sign program for high use areas.

Changeable message signs may be considered at major activity centers to route traffic around congestion and to available parking. For example, Washington Street and Fred Waring Drive may route event attendees to available parking and through traffic around event related traffic congestion.

• **Policy 12** is to designate Washington Street, Jefferson Street and Highway 111 as Truck Routes.

The City may want to consider use of concrete travel lanes to enhance structural integrity. This has also been noted as a means of increasing solar reflectivity, thereby reducing the “heat island” intensity.
7.3.4 **Recommended Goals, Policies and Programs**

What is intended to be accomplished with the Circulation Element goal? The National Traffic Operations Council (NTOC) and others have worked to prepare a Business Plan to convince potential stakeholders like the City of La Quinta that their goal should be greater adoption of Intelligent Transportation Systems to deliver more efficient operations from existing or less new pavement widths. A possible goal could be:

“A multimodal and intelligent transportation system to improve the near and long term future safety, efficiency and costs of moving people and goods, both through the Coachella Valley and to the residential/commercial resort developments that are the City of La Quinta.”

Goals, Policies and Programs to promote multimodal transportation operations will be needed to meet the intent of Federal, State and regional transportation direction. The application of the California Air Pollution Control Officers Association (CAPCOA) best practices would call for Circulation Element goals to:

“Reduce GHG emissions by reducing vehicle miles traveled and vehicle hours of delay by increasing or encouraging the use of alternative modes and transportation technologies.”, and “Implement and manage a hierarchy of Complete Street multimodal transportation infrastructure and programs to deliver improved mobility and reduce associated GHG emissions.”

Policies (1.) and Programs (a.) for consideration as part of Goal I are outlined below.

“Reduce GHG emissions by reducing vehicle miles traveled and vehicle hours of delay by increasing or encouraging the use of alternative modes and transportation technologies.”

1. Create an interconnected transportation system that allows a shift in travel from private passenger vehicles to alternative modes, including public transit, golf carts, ride-sharing, car-sharing, bicycling, bicycle-sharing, and walking.
   a. Ensure transportation centers are multi-modal to allow transportation modes to intersect, and are conveniently located. Convenient locations may be in the vicinities of:
      i. Washington Street/Fred Waring Drive/Via Sevilla
      ii. Miles Avenue/Adams Street
      iii. Adams Street/Highway 111/Avenue 47
      iv. Avenue 47/Caleo Bay
      v. Washington Street/Calle Tampico
      vi. Eisenhower Drive/Avenida. Montezuma
   b. Work with SunLine Transit to expand bus routes and service, to include Bus Rapid Transit (BRT) along Highway 111 and along Harrison Street.
   c. Expand golf cart routes, and bicycle routes to connect residential and activity centers with transportation centers.
   d. Support programs that encourage private, for-profit community car-sharing to provide “station cars” and/or golf carts/NEVs for short trips to/from transit centers.
e. Include designated parking spaces for car share vehicles at convenient locations accessible by public transit.

f. Work with SunLine Transit to ensure transit stops are safe and sheltered, with adequate seating, lighting, trash receptacles, cleaning and maintenance.

g. Operate transit-preferential measures such as transit signal priority and bypass lanes.

h. Support “Smart bus” technology, using GPS and electronic displays at transit stops to provide customers with “real-time” arrival and departure time information (and allow the system operator to respond more quickly and effectively to disruptions in service).

i. Develop and implement bicycle-preferential measures such as deployment of video detection at traffic signals, and development of bicycle stations at intermodal hubs/transportation centers, with attended or “valet” service during peak use periods.

j. Encourage covered, secure bicycle parking near building entrances and at transportation centers.

k. Adopt bicycle parking standards that accommodate at least 5% of projected use at all public and commercial facilities (vs. current code for 3% of certain uses).

l. Conduct bicycle and pedestrian safety educational programs to teach drivers, riders, and walkers the laws, riding protocols, routes, safety tips, and “healthy community” benefits.

2. Promote ride sharing programs to reduce VMT by shifting demand to the greatest available source of unused travel capacity – empty seats in private vehicles.

   a. Designate a certain percentage of parking spaces for ride-sharing vehicles at employment and activity centers.

   b. Provide a web site or message board for coordinating shared rides.

3. Adopt a comprehensive parking policy to capture the true cost of private vehicle use and encourage the use of alternative transportation, including:

   a. Consider parking pricing to discourage private vehicle use, especially at peak times.

   b. Create parking benefit districts, which invest meter revenues in alternative mode infrastructure and other public amenities.

   c. Require new commercial and retail developments to provide preferred parking for electric vehicles and vehicles using alternative fuels.

4. Support and promote the use of low- and zero-emission vehicles, and alternative fuels, and other measures to directly reduce emissions from motor vehicles.

   a. Develop infrastructure necessary to encourage the use of zero-emission vehicles and clean alternative fuels, such as development of electric vehicle charging facilities and conveniently located alternative fueling stations.

   b. Support efforts to establish regionwide incentives to taxicab owners to use alternative fuel or gas-electric hybrid vehicles.

   c. Enforce State idling laws for commercial vehicles, including delivery and construction vehicles.

5. Conduct performance monitoring of the above-listed Policies and, based on documented levels of success, consider reducing existing off-street parking requirements. Many cities have found they can reduce minimum parking requirements for certain uses that are within convenient access of an intermodal transit hub. Consideration may be given to Urban Land Institute (ULI) recommended maximums compared with current City of La Quinta code requirements:

   a. Office: ULI 0.5 to 3 spaces per thousand square feet (tsf); La Quinta 4 spaces per tsf.
b. Retail: ULI 4.5 spaces per tsf; La Quinta 5 spaces per tsf.
6. During consideration of the Zoning Code, explore opportunities for Transit Oriented Development Overlay Zones within one-quarter mile radii of intersections where existing or future bus lines intersect.
   a. Highway 111/Adams Street
   b. Highway 111/Harrison Street

“Implement and manage a hierarchy of Complete Street multimodal transportation infrastructure and programs to deliver improved mobility and reduce associated GHG emissions.”

Policies and Programs for consideration:
1. Streets are fundamentally designed to serve people. Streets must work not only for motorists, but also for transit riders, bicyclists, golf cart/NEV users, and pedestrians. While every street is to provide for pedestrians, other non-vehicular modes will be incorporated wherever possible.
2. Complete streets match the street context with modal emphasis of streets. While many streets will continue to operate with an automobile emphasis, it is recommended that the City use Complete Street level of service (LOS) analyses to optimize modal LOS by designating mode-preferred streets. The Programs outlined below are recommended to be realized over time, and to be essential components of mobility in La Quinta by 2035.
   a. Transit-preferred
      i. Highway 111
      ii. Washington Street, north City limits to Miles Avenue
      iii. Miles Avenue, Washington Street to Adams Street
      iv. Adams Street, Miles Avenue to Avenue 47
      v. Washington Street, Avenue 47 to Calle Tampico
      vi. Calle Tampico, Washington Street to Eisenhower Drive
      vii. Harrison Street
      viii. Jefferson Street
   b. Golf cart/NEV/bicycle-preferred
      i. Eisenhower Drive
      ii. Park Avenue
      iii. Calle Tampico
      iv. Avenue 52
      v. Avenida. Bermudas
      vi. Dune Palms Road
      vii. Jefferson Street
      viii. Adams Street
      ix. Madison Street
      x. Avenue 62
3. As year 2035 approaches, and if forecast congestion levels do materialize, advocate for a regional system to operate managed lanes for transit on high volume arterials (e.g., Highway 111, Harrison Street), and consider market-based price or charge for single occupant auto use within them during peak periods, to capture the true cost of private vehicle use and encourage the use of ride-sharing and alternative transportation.
   a. Encourage construction of managed lanes or similar mechanisms whenever necessary to relieve congestion and reduce emissions.
i. Highway 111
ii. Harrison Street

b. Consider creation of benefit districts, which share toll revenues with 1) cities adjacent to tolled facilities for use in local transportation operations and/or other public amenities, and 2) the transit agency for enhanced transit operations.

c. Expand and optimize signal timing programs where emissions reduction benefits can be demonstrated, including coordinating with adjoining jurisdictions.

4. Explore FHWA’s program to encourage agencies to implement Adaptive Signal Control Technology, and pursue the FHWA model systems engineering documentation to define the most appropriate signal control for the City of La Quinta. In view of the potential constraints at intersections that are shared with adjacent jurisdictions, a regional or multiagency perspective through the model systems engineering process may be most appropriate.