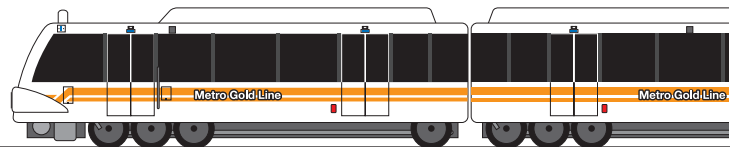




Metro Gold Line Foothill Extension Construction Authority

DEVELOPMENT ASSESSMENT STUDY OF THE METRO GOLD LINE  
FOOTHILL EXTENSION CORRIDOR

# Monrovia Station Area Transportation Study



in association with  
Melendrez | Strategic Economics | Reconnecting America

November, 2007

## Table of Contents

I.	INTRODUCTION .....	3
II.	EXISTING TRANSIT CONDITIONS .....	5
	<i>II.I DOWNTOWN TROLLEY</i> .....	5
	<i>II.II MONROVIA TRANSIT DIAL-A-RIDE SYSTEM</i> .....	6
	<i>II.III FOOTHILL TRANSIT</i> .....	10
	<i>II.IV METRO</i> .....	10
III.	MONROVIA TRANSIT OPERATIONS .....	11
	<i>III.I OPPORTUNITIES</i> .....	13
IV.	SETTING .....	14
	<i>IV.I DEMOGRAPHICS</i> .....	14
	<i>IV.II MONROVIA CORRIDORS AND ACTIVITY CENTERS</i> .....	20
V.	COMPARATIVE TRANSIT SYSTEMS .....	22
	<i>V.I SOUTH PASADENA GOLD LINK</i> .....	22
	<i>V.II BEACH CITIES TRANSIT</i> .....	22
VI.	TRANSIT SYSTEM RECOMMENDATIONS .....	24
	<i>VI.I ALTERNATIVE A: PEAK HOUR COMMUTER SERVICE</i> .....	24
	<i>VI.II ALTERNATIVE B: WEEKDAY SERVICE</i> .....	26
	<i>VI.III ALTERNATIVE C: FULL SERVICE</i> .....	28
	<i>VI.IV SUMMARY OF TRANSIT RECOMMENDATIONS</i> .....	30
VII.	CONCLUSIONS .....	31

## Table of Figures

Figure I.1: Project Study Area .....	4
Figure II.1: Weekday Transit Routes .....	8
Figure IV.1: Year 2000 Population Density .....	15
Figure IV.2: Year 2000 Employment Density .....	16
Figure IV.3: Population and Employment Growth Projections.....	17
Figure IV.4: Age Distribution of Residents in Monrovia .....	18
Figure IV.5: Income Distribution of Households in Monrovia .....	18
Figure IV.6: Commute Patterns to Work.....	19
Figure VI.1: Alternative A: Peak Hour Commuter Service.....	24
Figure VI.2 Alternative B: Weekday Service.....	26
Figure VI.3 Alternative C: Full Service.....	28

## I. INTRODUCTION

The Metro Gold Line light rail system currently runs from Union Station in Downtown Los Angeles to Sierra Madre Villa in Pasadena, with a total of 12 intermediate stations. The proposed Gold Line Foothill Extension would add 24 miles to the system with new stations in Arcadia, Monrovia, Duarte, Irwindale, Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, and Montclair. Construction of the first segment of the extension (which includes the stations in Arcadia, Monrovia, Duarte, Irwindale, and Azusa) is scheduled to begin in 2008, with service beginning in 2011.

The proposed location of the Monrovia Gold Line light rail transit (LRT) station is west of the intersection of Duarte Road and Myrtle Avenue. In addition to the station, a 300 space parking structure is proposed in the vicinity of Pomona Avenue and Myrtle Avenue on opening day. This structure could grow to 600 spaces by 2025. The station location is situated near the I-210 and is one-half mile south of the city's downtown area. Land uses within a ¼ mile radius of the station include older industrial uses and older residential developments. There are also nearby infill development projects in various stages of planning and development. The proposed Gold Line station location and study area of this technical analysis are shown in Figure I.1.

Outside of walking range of the station, Monrovia is home to a major high-tech business corridor along East Huntington Drive which attracts workers from areas surrounding the city. A retail district is located on West Huntington Drive and the downtown area is located north of I-201 on Myrtle Avenue. In addition, the City of Monrovia has plans underway for an integrated mix-use development around the future Gold Line Station as part of their goal to build a transit-oriented village.

This report consists of 5 sections.

1. Introduction
2. Existing Transit Conditions
3. Setting
4. Comparative Transit Systems
5. Transit System Recommendations

The transit conditions section includes a preliminary analysis of the City of Monrovia's Trolley and Dial-a-Ride operations. The setting section looks at the existing and future market characteristics of the city as well as current and future land use plans. Finally, the comparative transit systems and transit systems recommendations sections provide examples of other cities with similar transit services and provide recommendations for improvements to local transit within the City of Monrovia to connect the future Gold Line Station with employment, retail, and residential areas.

# MONROVIA STATION PLANNING AREA

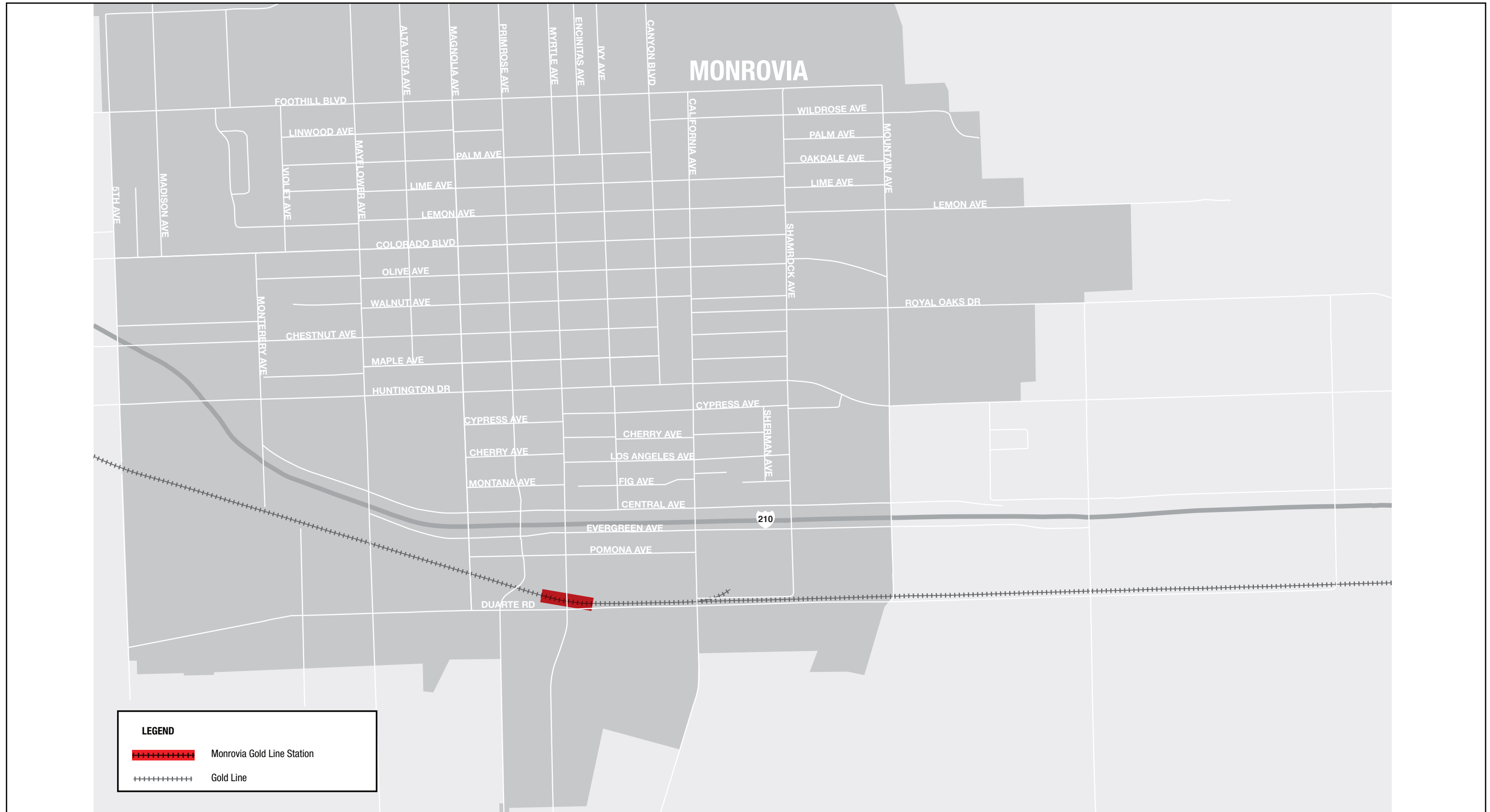


Figure I.1 – Study Area

## II. EXISTING TRANSIT CONDITIONS

This section describes the existing transit conditions in and around Monrovia near the Gold Line station area. Consideration of the existing conditions will inform strategies for developing local transit routes to serve the Gold Line. Existing transit services are described in detail below and illustrated in Figures II.1 and II.2 on the following pages.

### II.1 Downtown Trolley

The City of Monrovia has operated a free trolley service since 2002. The trolley connects the Huntington Drive high-tech business corridor with the Old Town section of the city on Myrtle Avenue. The route is served by two hybrid/electric buses that also run on propane. The two buses are designed to look like old-fashioned trolleys and will be referred to as trolleys in this report.

There are seven trolley stops on or close to Myrtle Avenue and two near the high tech business parks around Shamrock Avenue and Huntington Drive. The trolley route starts by circling the block around Shamrock Avenue, Royal Oaks Drive, and Mountain Avenue, and then proceeds west on Huntington Drive. At Myrtle Avenue, the trolley route proceeds north. The trolley route turns off of Myrtle Avenue at Olive Avenue and rides north one block on Ivy Avenue, and then returns to Myrtle Avenue on Colorado Boulevard. After turning north again on Myrtle Avenue, the trolley proceeds up to Foothill Boulevard where it turns eastward until Encinitas Avenue. There the trolley turns south and retraces its route back to Huntington Drive and Shamrock Avenue.



The trolley service operates from 11:00 am until 6:00 pm Monday through Thursday. On Friday the trolley runs from 11:00 am to 3:30 pm. The trolley runs on 15-20 minute headways during the hours of operation. The nearest stop is .69 miles from the proposed Gold Line station site, and the route itself runs within .61 miles of the station.

Ridership on the trolleys is fairly consistent with the exception of slight variations experienced in the summer of 2007. Recent and ongoing construction in the downtown area causes detours of the trolley service that can impact ridership. Ridership data provided by the City of Monrovia shows an average of 1,120 riders per month for the mid-day lunchtime trolley service during Fiscal Year 2007. Peak months during this fiscal year were February and March, with the trolley serving over 2,000 riders each month. During Fiscal Year 2006, average monthly ridership was reported to be significantly less at 548 riders per month. Peak months during FY 2006 were May and September. There is a significant increase in the monthly average ridership observed between FY 2007 and FY 2006. However, if the peak FY 2007 months of March and February are excluded from the average, the FY 2007 average for the remaining months was 880 riders. This is still a healthy increase over the average monthly ridership from FY 2006. Table II.1 summarizes the monthly mid-day ridership figures for the Trolley during FY 2006 and FY 2007.

**Table II.1: Monthly Trolley Mid-Day Ridership (FY2006/FY 2007)**

Month	FY 2006 Riders	FY 2007 Riders
July	549	345
August	n/a	633
September	669	783
October	569	989
November	557	1063
December	523	983
January	464	1199
February	416	2144
March	545	2060
April	466	n/a
May	828	1077
June	445	1051

Source: City of Monrovia

## II.II Monrovia Transit Dial-a-Ride System

The City of Monrovia has operated the Dial-A-Ride transit system since 1983. The Dial-a-Ride service is a general public service that is open to residents and visitors in the City of Monrovia. Reduced fares are charged for seniors and the disabled. The Dial-a-Ride system serves the city and selected areas in the unincorporated county areas to the south of the city. In addition to the regular service, the following specific locations outside of the city and unincorporated areas can be reached with a 24 hour reservation:

- Arcadia Methodist Hospital
- Arcadia Medical offices on Duarte Road
- Santa Teresita medical offices (Buena Vista Avenue, Duarte)
- Social Security office in Arcadia on Foothill Blvd.

The dial-a-ride service operates from Monday through Friday, 7:00 am to 10:00 pm and Saturday and Sunday, 8:30 am to 6:00 pm. Responses typically take anywhere from twenty to thirty minutes from the time of call. There are currently nine vehicles operating for Monrovia Transit, three vehicles seat 11 passengers and six vehicles seat 18 passengers. Fares are seventy-five cents (\$.75) for seniors and persons with disabilities and one dollar (\$1) for all others.

The number of passengers that use Dial-A-Ride is significantly higher than the trolley because of the longer service hours and curb-to-curb convenience of the service. Total ridership during the 2007 Fiscal Year was recorded to be 41,893. This figure represents an increase of 1.2% over the 2006 Fiscal Year ridership figure of 41,400. While the rate of increase from FY 2006 to FY 2007 is small, it is a positive increase and reverses a trend on declining ridership that the service had experienced during the previous five years. Monthly revenue hours for the dial-a-ride service during FY 2007 ranged from a low of 934 hours in October 2006 to 1,199 hours in March 2007.

# MONROVIA STATION PLANNING AREA

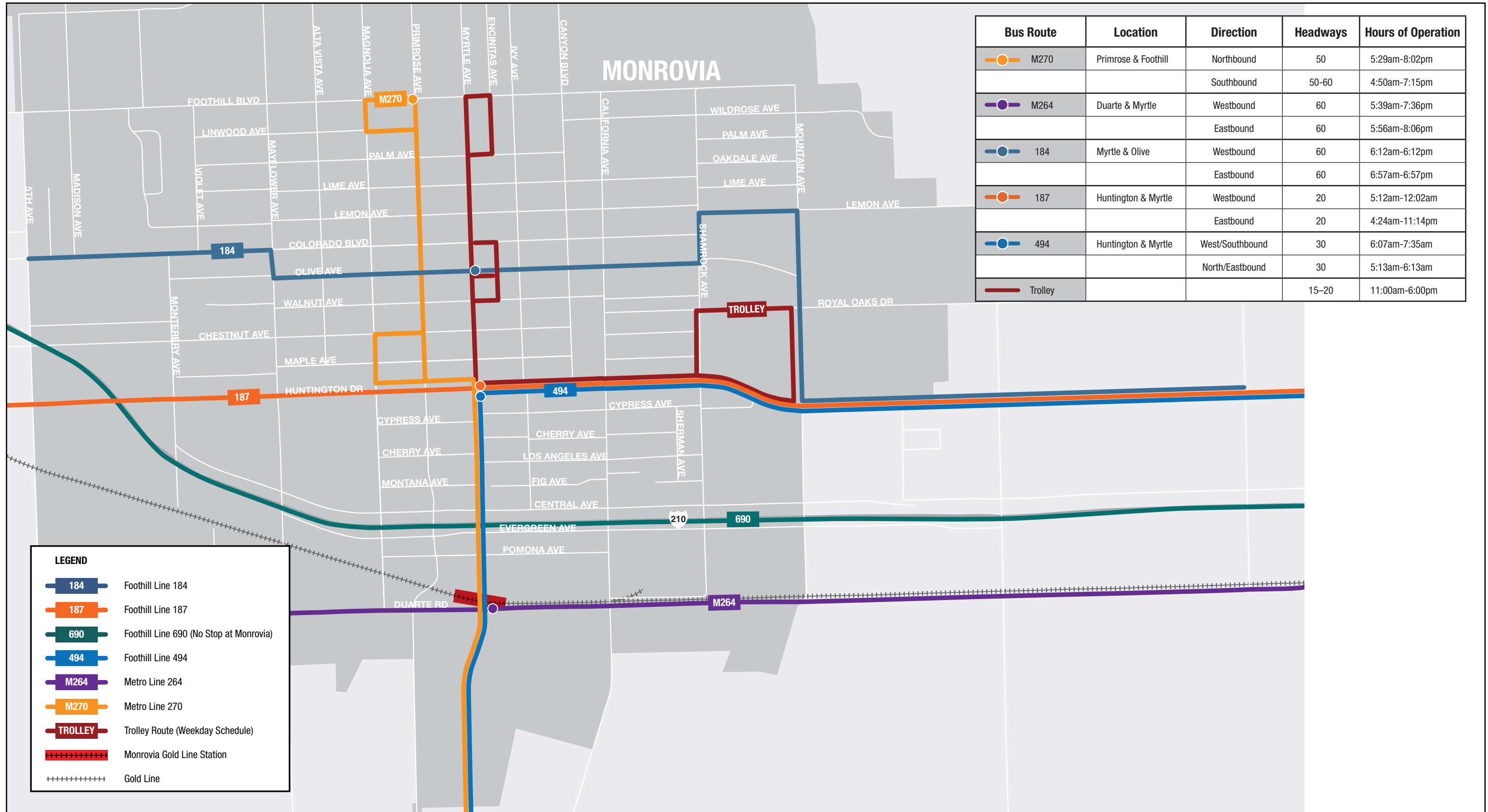


Figure II.1 – Weekday Transit Routes

# MONROVIA STATION PLANNING AREA

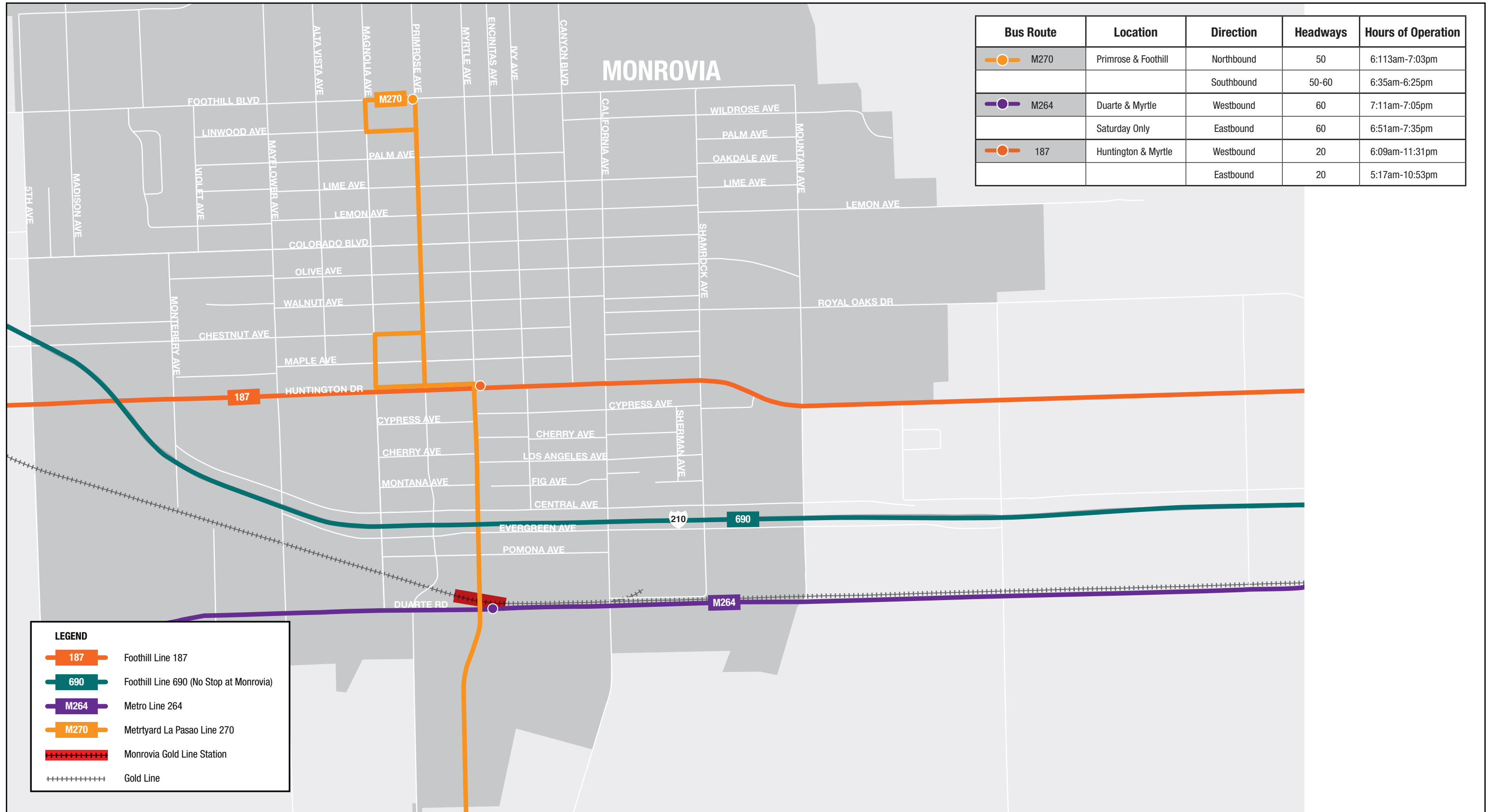


Figure II.2 – Weekend Transit Routes

### II.III Foothill Transit

Foothill Transit provides bus service in the City of Monrovia seven days a week, 20 hours a day. A total of three routes link the City of Monrovia with other San Gabriel Valley cities. Individual route descriptions are provided below. The specified roads refer to roads traveled in the City of Monrovia. Hours of service and headways range significantly between the different routes. The distance from the route to the proposed Gold Line LRT station is not necessarily the same as the distance from the nearest stop on that route to the station.

- Foothill Transit Line 184 Duarte – Monrovia - Arcadia: Travels east to west along Olive Avenue and West Colorado Boulevard connecting Duarte Road via Monrovia with Arcadia. Runs Monday to Friday only from 6:30 am~ 7:00 pm with one hour headways (Route runs 1/2 mile from station)
- Foothill Transit Line 187 Montclair - Claremont – Glendora - Pasadena: Travels southeast to northwest along Huntington Drive connecting Montclair and La Verne to Pasadena, via Monrovia. Runs Monday to Friday from 4:00 am – 12:40 am with 20 minute headways and Saturday to Sunday from 5:00 am – 12:00 am with 30 minute headways. (Route runs 1/2 mile from station)
- Foothill Transit Line 494 San Dimas - Glendora - El Monte: Travels East to West along Huntington Drive connecting San Dimas to Monrovia, then south along south Myrtle Avenue to El Monte. Runs Monday to Friday only, one-way commute service leaving San Dimas between 5:19 am – 6:47am with 30 minute headways passing through Monrovia from 5:59 am – 7:27 am. Evening service leaves El Monte at 4:48 pm – 5:48 pm with 30 minute headways passing through Monrovia from 5:13 pm – 6:13 pm (Route runs adjacent to station)

### II.IV Metro

The Los Angeles Metropolitan Transit Authority (Metro) provides bus services to the City of Monrovia seven days a week, 16 hours a day. Two routes link the City of Monrovia with other Los Angeles metropolitan cities, to the west and southwest. Individual route descriptions are provided below. Hours of service and headways range significantly between the different routes. The distance from the route to the station is not necessarily the same as the distance from the nearest stop on that route to the station.

- Metro Line 264 Duarte - Pasadena – Altadena [Metro Local]: Travels East to Northwest along Duarte Road, connecting the city of Duarte via Monrovia and Arcadia with Sierra Madre and Altadena. Runs Monday to Friday from 5:10 am – 8:20 pm with 60 minute headways, and Saturday to Sunday from 6:30 am – 7:50 pm with 60 minute headways (Route runs adjacent to station)
- Metro Line 270 Monrovia – El Monte – Whittier – Norwalk [Metro Local]: Travels North to South along south Primrose Avenue, connecting Norwalk to Monrovia via Workman Mill Road & Peck Road. Runs Monday to Friday from 5:35 am – 6:25 pm (in Monrovia) with 20-30 minute peak, 30-40 minute off peak, and 60 minute evening headways; and Saturday to Sunday from 7:00 am – 8:30 pm with 60 minute headways. (Route runs adjacent to station)

### III. MONROVIA TRANSIT OPERATIONS

This chapter provides additional insight into the performance of the transit services as well as observations based on a site visit and discussion with an official from the City's contract operator, Southland Transit Inc. This section is not meant to be an evaluation or audit of these Monrovia Transit operations.

Based on industry common practices, it appears that the City is getting good value for its investment in transit operations. Table III.1 profiles key operating characteristics of the Trolley and Dial-a-Ride operations. Dial-a-Ride performance for the first quarter of the 2007/08FY, productivity is reported to be in excess of 3.8 trips per hour for services operating both within the City and beyond the City boundaries/County (up from the 3.2 trips per hour in the 2006/07FY). The City's June 30, 2007 agreement with Southland appears to be a well crafted document reflecting performance based criteria including penalties as well as incentives. Criteria reflect both performance and qualitative considerations. The authors are unable to comment on contractor compliance with the entire agreement as the reporting responsibilities and the City's monitoring processes were not validated.

The City is able to benefit from economies of scale with their contract with Southland. Southland Transit Inc. operates both Trolley and Dial-a-Ride services out of their depot located on Rockwell Avenue in El Monte. Southland operates multiple transit operations (including Arcadia Transit and Access paratransit) out this site. Infrastructure and facilities including staff, technology, etc. are shared. Of particular note, opportunities for the shared use of call-taking/reservations, scheduling and dispatch resources for back-up as needed as well as the Trapeze scheduling software contribute to financial efficiencies for Dial-A-Ride operations and cost savings for the City. At an average cost per trip \$15.63 for Dial-a-Ride services is within industry norms for operations of comparable levels of service.

**Table III.1: Key Operating Characteristic  
Trolley and Dial-a-Ride Operations (2006/07)**

Operating / Performance Characteristic	Trolley	Dial-a-Ride		
		City	County	Total
Annual Passenger Trips	Approx. 11,500	Estimated Actual* 32,880	Estimated Actual* 8,620	Estimated Actual* 41,500
Total Annual Variable Hours	Approx. 3,280	Estimated Actual* 10,200	Estimated Actual* 2,700	Estimated Actual* 12,900
Trips per Hour	3.5	3.2	3.2	3.2
Annual Operating Cost	not available**	Estimated Actual* \$413,540. + fuel: \$105,520. Total: \$519,060.	Estimated Actual* \$129,420.	Estimated Actual* \$542,960. (less fuel) \$648,480. (with fuel)
Gross Cost per Hour	not available**	\$50.89	\$47.93	\$50.27
Gross Cost per Trip	not available**	\$15.79	\$15.01	\$15.63

\* Estimated Actual is based on 11 months data (2006/07 FY)

\*\* Financial data was not provided for Trolley services.

While “regular” residents of Monrovia comprise the majority of Dial-A-Ride passengers (58%), over forty percent of total ridership is made up of seniors and persons with a disability (including some 4% or over 1,500 trips using a wheelchair). Further, the review of 2006/07 passenger and trip profiles indicates that close to four percent (approx. 1,600) are no-shows. No shows have a negative impact on service performance. They require administrative resources to book and schedule the trip resulting in unused operational resources. Increased marketing/communication efforts as well as punitive measures that might include the charging for trips not taken will result in a reduction in the no-show rate. Similarly, the use of vehicle locating capabilities (GPS) would enable dispatch to confirm vehicle location and validate no-show occurrences.

Operating in a demand response mode, trip reservations are taken up to two weeks in advance as well as same day. While there are no reported trip refusals or denials, call-takers/reservationists do negotiate requested pick-up times within a one-hour window (1/2 hour before or 1/2 hour after a requested time). Once a pick-up time is negotiated and scheduled, callers are given a 15 minute scheduling window whereby they are given a guaranteed pick up time with the actual pick up time guaranteed within 5 minutes before and 10 minutes after the promised time. The guarantee is such that if the bus is late, the trip is free. Less than one percent of trips were late/free in the 2006/07FY. This trip guarantee and the actual performance is a positive indicator of quality of service and on-time performance. In addition to the advance booked trips, standing reservation service is available. Standing reservations are available to those who make the same trip (same origin and destination; same day of week; daily, weekly or monthly), requiring a single phone call to make the standing reservation and never having to call back unless travel plans change.

Monrovia Transit uses the commercially available Trapeze software for client data, trip reservations, scheduling and dispatch (trip management). The scheduling component, done in real-time provides route optimization capabilities, that is matching the most appropriate vehicle to accommodate any given trip request based on its location and not negatively impact on the travel times of previously booked passengers. This scheduling software application also generates a robust set of data for tracking service performance.

While sharing facilities, infrastructure and management personnel, there are dedicated staff resources for Dial-a-Ride’s call taking, scheduling and dispatching functions. Similarly, Monrovia uses dedicated drivers for the Trolley and Dial-a-Ride services. Trolley drivers are able to also drive the Dial-a-Ride vehicles. However, the converse is not true presenting challenges as not all Dial-a-Ride drivers are certified to drive the air-brake equipped Trolley buses. Given the reported unreliability of the Trolley buses (frequent road calls), the purpose-built Dial-a-Ride buses are used as spares for the Trolley service. With this occurrence there is an issue with a lack of “Trolley” signage on the Dial-a-Ride bus potentially causing confusion for Trolley passengers.

By the end of the 2007/08FY the Dial-a-Ride fleet will be relatively new with the oldest vehicles being the 2006 model year. The 2007/08FY Dial-A-Ride vehicle inventory will include four vehicles with a seated capacity of 16 plus two jump seats (2 wheelchairs), three vehicles with 9 seats plus two jump seats, and two vehicles with 12 seats plus two jump seats. There does not appear to be a replacement plan for the two 2002 Trolley buses which again have been reported to be unreliable.

### III.I OPPORTUNITIES

The following presents strategies for further action and opportunities for enhancements to transit services in the City of Monrovia.

- Position Dial-a-Ride as a transport mode of choice for commuters to access Gold Line rail services: More aggressive marketing of Dial-a-Ride services to choice, commuter riders to get curb-to-curb service/connectivity to the proposed Gold Line station site and proposed transit-oriented village. While requiring additional service and operational planning, consideration may also be given to other public policy considerations including fare policy. The latter may include a premium, peak hour fare for commuters.
- Reinvent trolley service: Explore phasing out existing Trolley service to accommodate new service providing connectivity between the proposed Gold Line station site and key attractors or activity centers including retail, hospitals and other employment centers. This scenario may include both an alternate service delivery scenario such as fixed route, fixed schedule with route deviation as well as consideration of an alternate fare policy. The latter may include the charging for peak hour service while maintaining a free fare policy for mid-day.
- Explore opportunities for collaborative arrangements with key community stakeholders including the business and health care communities. Such collaborative arrangements may include the prospect of cost-sharing/private-public partnerships with the goal of financial contributions for services to key activity centers.
- Additional research including outreach to gauge community acceptance to alternate Trolley and Dial-a-Ride service delivery scenarios and better understand potential demand or ridership potential.
- Capital asset management: There is a need to address the mechanical reliability of the Trolley vehicles. Additional efforts are required to monitor and document the mechanical records of these 2002 model year E-Buses. There is also an opportunity to further explore additional capital investment as well as documenting a business case for the use of vehicle locating capabilities for the Dial-a-Ride vehicles. Southland currently uses AVL with a Trapeze software interface on Arcadia Transit vehicles. There are likely economies of scale to be realized by expanding this application to the Monrovia Transit vehicles.

## IV. SETTING

An understanding of the existing and future socio-economic conditions in the City of Monrovia is necessary to effectively plan for future transit services. This section of the report includes information on existing and future population and employment levels as well as existing and planned land uses and activity centers.

### IV.1 Demographics

This section summarizes the population and employment market characteristics in the City of Monrovia. The City is currently undergoing many re-development projects that will generate new homes, jobs, and investments. A clear understanding of the existing and future demographics of the city is necessary in order to effectively plan for enhancements to the transit services that would connect the future Gold Line system to the rest of the city. Steady growth is projected for the City of Monrovia, with employment growth projected to increase at a slightly higher rate than population growth.

Existing population and employment patterns are shown in Figures IV.1 and IV.2 on the following page. The population and employment data show that existing population densities are greater in the southwestern and central portions of the city. Employment density is greater in the southern portion of the city, particularly along Huntington Drive. Employment density may be used as a measure of potential transit use.

# MONROVIA STATION PLANNING AREA

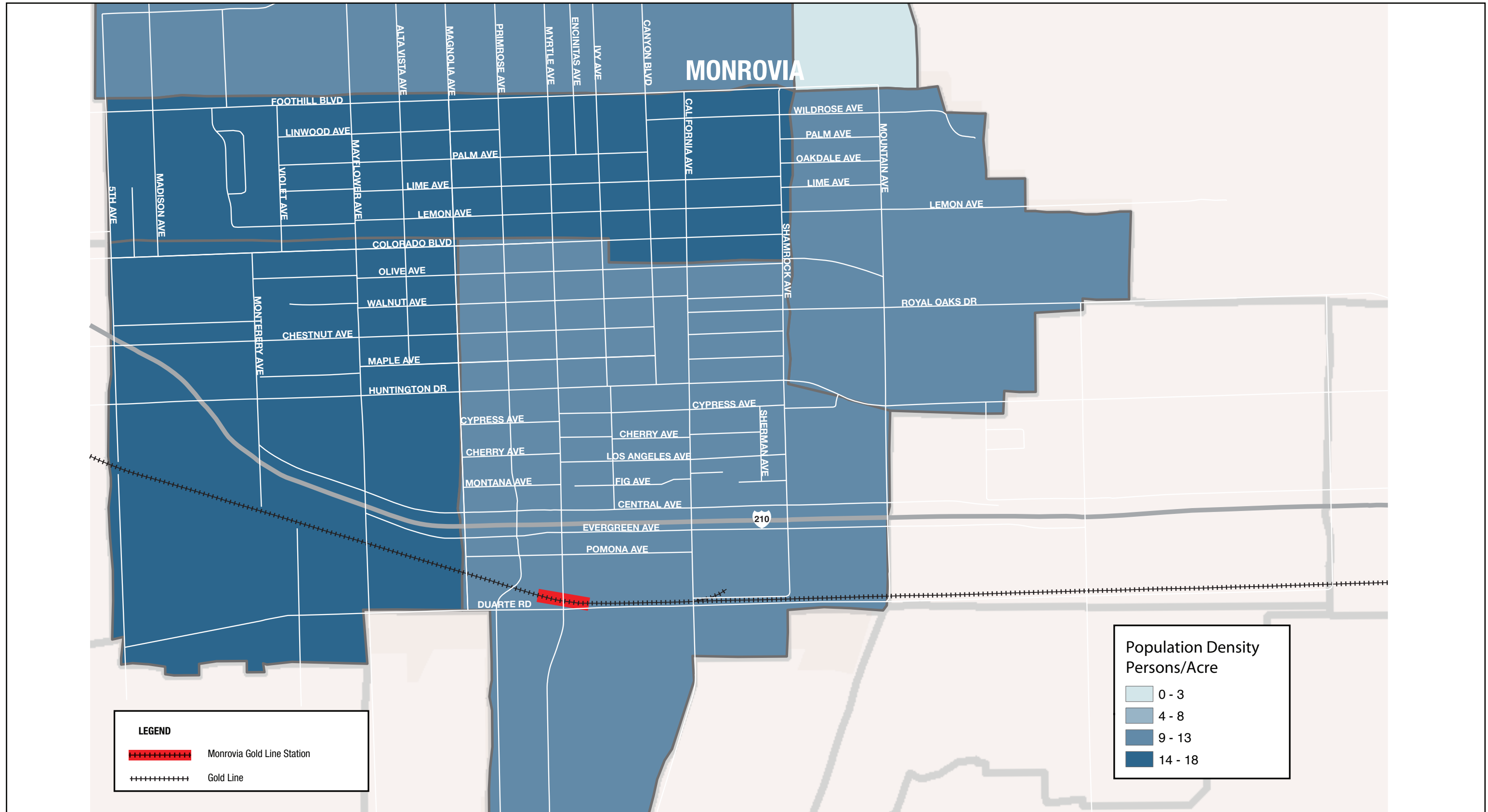


Figure IV.3 – Year 2000 Population Density

# MONROVIA STATION PLANNING AREA

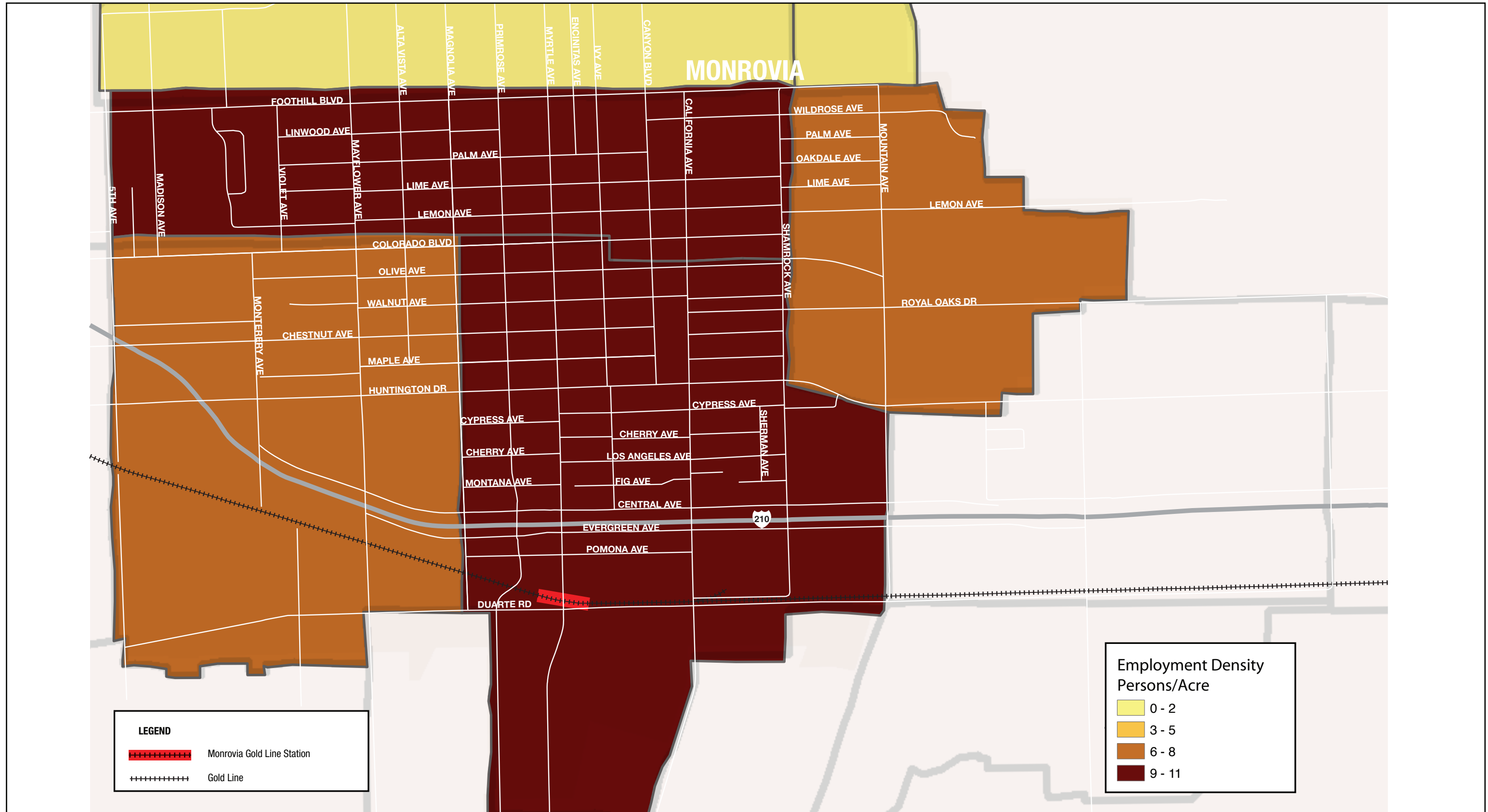
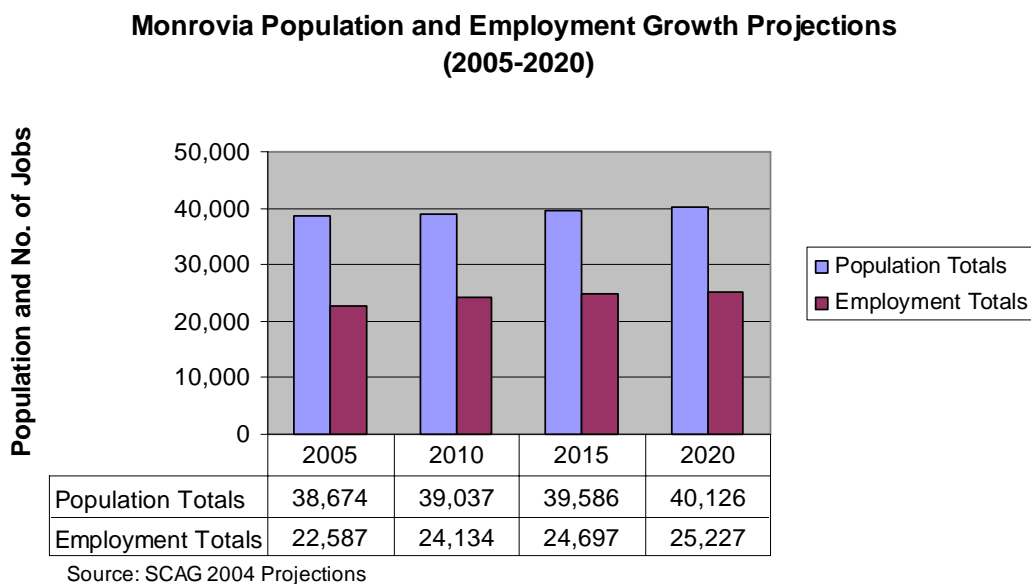


Figure IV.4 – Year 2000 Employment Density

Changes in the future population and employment levels are also important in order to understand the future environment and potential market for transit services. Figure IV.3 summarizes the population and employment growth projections for the City of Monrovia through the Year 2020.



*Figure IV.3: Population and Employment Growth Projections*

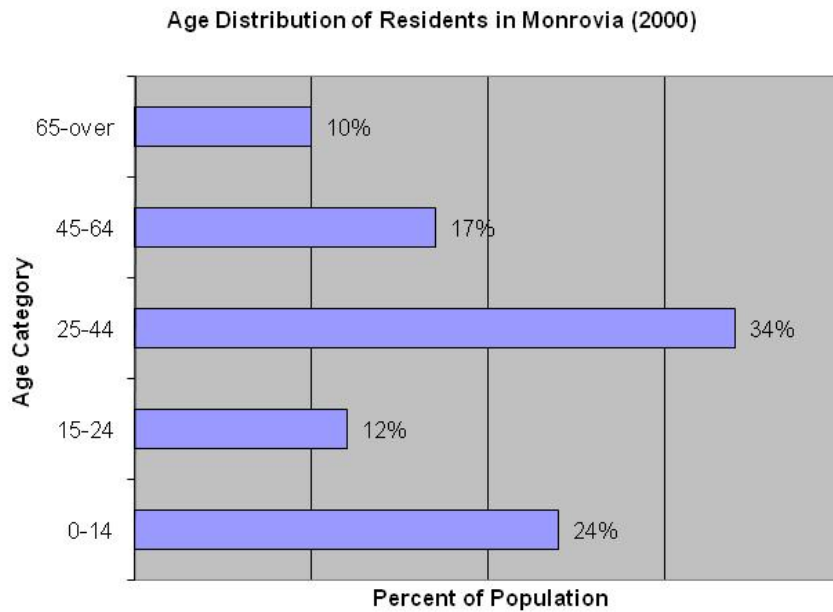
Information on the number of employed residents in the city is also beneficial. The most current SCAG data for employed residents in the City of Monrovia is summarized in Table 3-1.

**Table 3-1  
Employment Statistics of Residents in Monrovia (2000)**

Labor Force	Employed	Unemployed	Unemployment Rate
20,244	19,332	912	4.5%

Source: SCAG Economic Data 2000

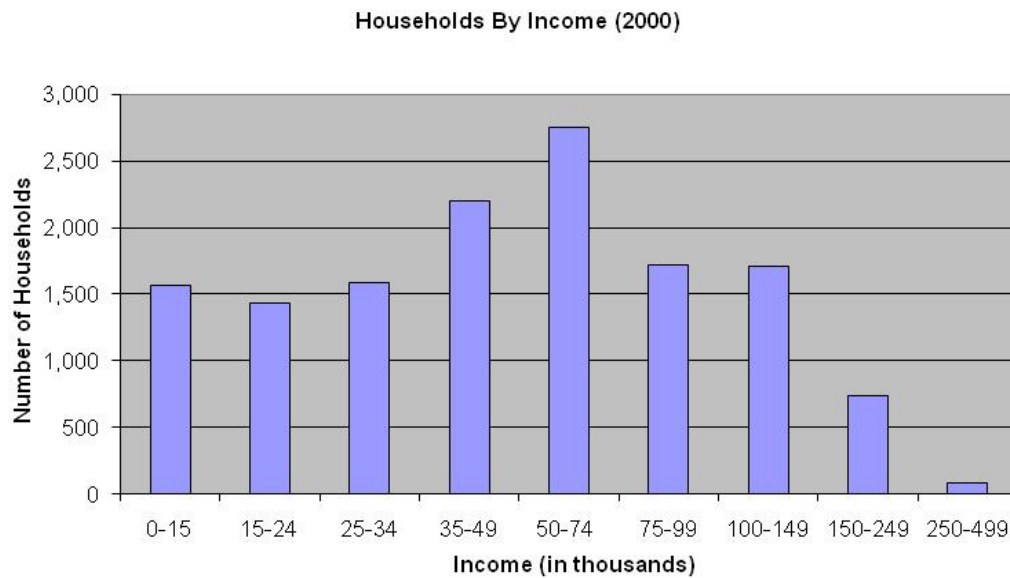
The age distribution in the City of Monrovia shows that the majority of residents are of working age or of school age, suggesting a community with high levels of commuters to work and school destinations. Figure IV-4 summarizes the age distribution for the City of Monrovia.



Source: US Census 2000

*Figure IV.4: Age Distribution of Residents in Monrovia*

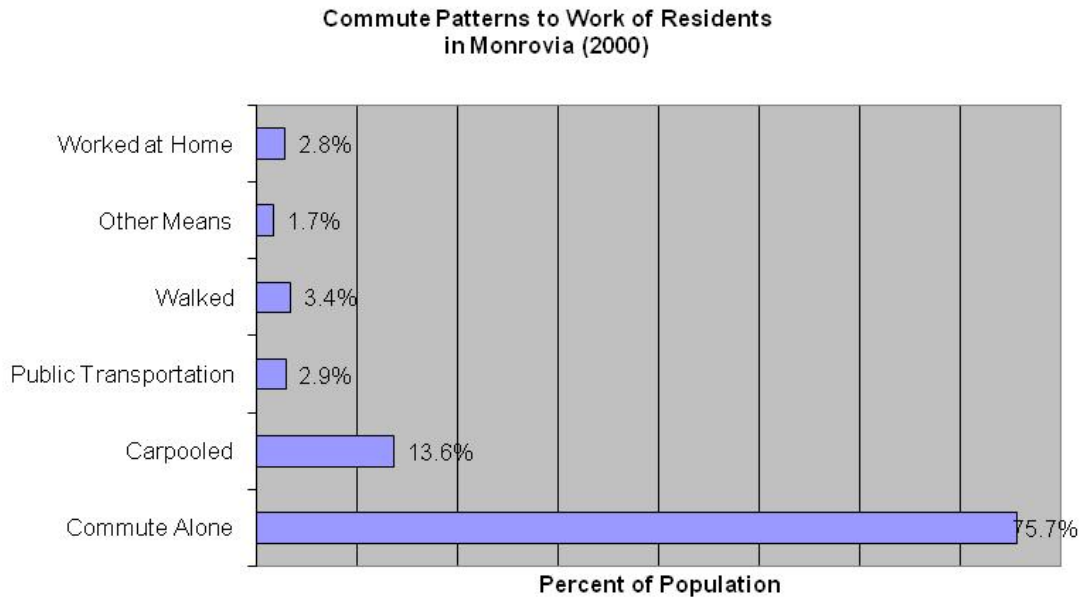
Figure IV.5 summarizes the city’s average income per household. Although the majority of household types in Monrovia are family households, a significant portion of household owners are living by themselves and are 65 years and over.



Source: US Census 2000

*Figure IV.5: Income Distribution of Households in Monrovia*

Figure IV.6 shows the distribution of commute patterns of Monrovia's currently employed labor force.



Source: US Census 2000

*Figure IV.6: Commute Patterns to Work*

### Demographic Findings

The City of Monrovia population and employment forecasts summarized in this market analysis demonstrate that the city is projected to continue to experience steady levels of population and employment growth during the upcoming five and ten year horizon time periods. The relative population growth could be more significant if future transit oriented development projects in the city proceed. The primary conclusions drawn from the population and employment forecasts are summarized below:

Emerging population demography will require enhanced transit services

Various transit services will need to accommodate the existing and future population of Monrovia. A large portion of the city is made up of adults who commute to work. As projected employment growth rises, congestion on roads leading to employment centers will also need to be addressed. The resulting traffic congestion that will accompany population and employment growth in this community will create a need for enhanced and expanded transit service when compared to the current service levels.

Employment growth will create a need for enhanced intra-city transit service

The projected increase in employment will add to the current traffic demands. Commuters traveling within the city to work will face more congestion due to more jobs forecasted to locate in the city's high-tech corridor. Intra-city transit services will be key to serving residents looking to avoid longer commute times or high gas prices. Coordination with transit services to increase the number of people who carpool or use public transportation to work would also be beneficial.

Development patterns of future transit projects will help in shaping the type of transit services provided

Currently, the number of jobs located in Monrovia exceeds the number of Monrovia residents listed as employed, suggesting that a significant amount of people commute from outside of the city already. The future Gold Line project along with redevelopment projects within the city will likely bring in an even more significant amount of workers commuting from outside of the city. Transit services will need to provide trips to and from the Gold Line station located on Myrtle Avenue and Duarte Road to the technology corridor on Huntington Drive. Monrovia's Old Town, entertainment and retail centers will also attract visitors coming in from the Gold Line station. Transit services should also accommodate trips to the downtown area further north on Myrtle Avenue and Colorado Boulevard.

Future housing patterns and income will affect commute patterns

The existing housing pattern in Monrovia is low or medium density single-family and multi-family residential. Several higher density mixed-use projects are currently planned in the city. Completion of these proposed projects might change the demographics of the city and as a result change the travel demands into and out of the downtown area. These proposed projects represent good markets for enhanced transit services.

## **IV.II Monrovia Corridors and Activity Centers**

The City of Monrovia's principle land use activity centers were established in the early 1970's as an effort to revitalize the downtown area. Three major activity centers exist today. These centers are located on Myrtle Avenue, East Huntington Drive and West Huntington Drive. Additionally, with the extension of the Gold Line Station, the City of Monrovia is looking to establish a mixed-use transit-oriented district around the station.

### OLD TOWN MONROVIA

As part of the City's redevelopment plan, the downtown area was consolidated from 21 blocks down to six. This action provided the downtown with a walkable feel and encouraged revitalization of the area. During the redevelopment process, the focal point and anchor of the downtown walking district was moved to the intersection of Foothill Boulevard and Myrtle Avenue. This focal point serves to attract passing motor traffic on Foothill Boulevard, as well as residents in the neighborhood north of Foothill. In addition, denser housing around the downtown contributes a critical mass of people to keep the shops and restaurants vibrant and economically secure.

An important addition to the South Myrtle Corridor is the planned Colorado Commons development. This two acre mixed-use development will provide 68 town homes, apartments, and live-work spaces. It will be important to connect transit services to the residents of this new community.

### WEST HUNTINGTON DRIVE

Huntington Drive in Monrovia is a major thoroughfare linking the city with its neighbors to the west and the east. West Huntington Drive formed the backbone of the redevelopment agency's efforts to improve employment opportunities in the city. Beginning in the early 1980's, the redevelopment agency began courting retail developers to the area. After some early successes such as establishing the Huntington Oaks shopping center and attracting a flagship Expo Design Center, the agency was able to attract further investment in the form of the Doubletree Hotel and Marriott.

EAST HUNTINGTON DRIVE CORRIDOR

The East Huntington Drive corridor has been developed as a high-tech corridor and the primary employment center in Monrovia. This employment center is home to several office complexes as well as Trader Joe's corporate headquarters. In addition to high tech companies another major attraction for the area is Mt Sierra College. The college provides both on-line and in person education in computer programming, video game design, and electrical engineering. The college has an enrollment of 600 students, and most of them commute to the campus.

STATION SQUARE TRANSIT-ORIENTED VILLAGE

The City of Monrovia is planning to develop a transit oriented district adjacent to the planned Gold Line station. This 80-acre transit-oriented village would include a mix of residential, commercial, professional office, hospitality, and park uses. Additionally, a 300 space parking lot will be located near the corner of Pomona Avenue and Myrtle Avenue. While this transit village would be served near the Gold Line, improved local transit services would be necessary to link the village to other activity centers in the city.

## V. COMPARATIVE TRANSIT SYSTEMS

The following information provides a short summary of other existing local transit systems that provide similar services to the transit service envisioned for Monrovia. These comparative systems are small cities with regional rail stations that are served by a local circulator bus service. An analysis of both transit systems provides examples of how a transit service could operate in the City of Monrovia.

### V.I SOUTH PASADENA GOLD LINK

The City of South Pasadena initiated their Gold Link city circulator service in 2003 with the arrival of the Mission Gold Line station. The city operates eighteen passenger circulator vans on these routes. The vans are operated by the neighboring City of Pasadena, which is later reimbursed for services. The buses run during commute hours from 6:20 am to 9:00 am and from 4:30 pm to 7:00 pm. The buses pick riders up at regular stops in the morning. However, during the evening hours the bus operates a flexible service that takes riders directly to their destination Gold Link stop. The city operates four Gold Link routes with headways of 30 minutes during the peak hours.

The Gold Link service is a local example of a small circulator bus route that is tailored to directly serving a light rail station. In the case of the Gold Link system, service is only provided during peak hours and the service is focused on transporting riders one-way to the station in the AM peak and from the station in the PM peak. Certain aspects of the Gold Link service could be applied to a new service in Monrovia. The flexible nature of the route in the PM peak allows for more tailored and attractive service that also assists in potentially reducing run times and operating costs. However, the status of Monrovia as a commuter origin and destination means that a service like the Gold Link, which is focused one-way travel during the peak hours, would not be the most appropriate. A different type of local transit service capable of serving bi-directional travel demand is necessary to serve the potential market of Gold Line riders in Monrovia.

### V.II BEACH CITIES TRANSIT

Beach Cities Transit operates small local routes that compliment regional and city-wide lines run by the MTA. Three fixed-routes provide convenient north/south service connecting the Beach Cities – Redondo Beach, Hermosa Beach, Manhattan Beach and El Segundo. Additionally, the service provides east/west connectivity to the City of Torrance.

Beach Cities Transit began running two lines in January, 2005 and added the third line in August, 2006. The system averages 900 riders per day.

Northern Route #102 operates between 6:00 am and 8:00 pm, on 20 to 45 minute headways, serving the Redondo Beach Pier, Civic Center, Redondo Union High School, Beach Cities Health District, South Bay Galleria, aerospace companies in North Redondo and the Marine Avenue Green Line station. Connects with Metro Marine Avenue Green Line trains to facilitate commuter trips using the County's rail system.

Southern Route #104 operates between 7:00 am and 6:00 pm, on 70 minute headways and will serve the Redondo Beach Pier, the Riviera Village business and residential communities, South Torrance High School, Metro and Torrance Transit connections, and the Del Amo Fashion Plaza and surrounding employment area. The route connects with Metro Aviation Green Line Station

Pacific Coaster Route #109 operates between 6:00 am and 10:00 pm, on 20 to 40 minute headways serving the Redondo Beach Riviera Village, Pier Avenue in Hermosa Beach, Downtown Manhattan Beach, Downtown El Segundo, the Metro Aviation Green line Station and the LAX City Bus Center. This

route links the Beach Cities - Redondo Beach, Hermosa Beach, Manhattan Beach and El Segundo to LAX

BCT fixed routes were designed to facilitate use of public transit for commuter work and school trips and provide an alternative to automobile travel for recreational trips. This type of service is more likely applicable to Monrovia because the service is designed to serve both the Metro light rail system, in this case the Metro Green Line, and activity centers located in the South Bay Cities. While the BCT serve covers larger population market and service each, components of this service could be applied on a smaller scale to Monrovia.

## VI. TRANSIT SYSTEM RECOMMENDATIONS

Three alternatives have been developed to provide service to the Monrovia Gold Line station and to link the station with activity centers in Monrovia north of the I-210 freeway. Alternative A starts with a focused, peak hour service that is designed to efficiently serve commuters traveling to and from the city. The subsequent alternatives expand on this baseline peak hour service and seek to serve additional transit markets by offering additional service hours. These new services could be designed to replace the existing trolley service and supplement the dial-a-ride service. The City of Monrovia could also choose to continue operating the trolley and have the trolley service interface with the selected alternative. Additionally, the expanded services proposed in Alternative B and Alternative C could potentially replace the general dial-a-ride service offered by the city, and allow the city to focus dial-a-ride services to seniors and the disabled. Estimates for span of service, headways, service hours, and operating costs are provided in this section for each alternative.

### VI.1 ALTERNATIVE A: PEAK HOUR COMMUTER SERVICE

Alternative A is focused on the peak hours of the week when traffic and commuter travel demand is at its highest. The proposed weekday peak hour route will assist passengers commuting from the Gold Line Station to Monrovia's high-tech business corridor along Huntington Drive. The objective of this route is to provide transit service during the peak rush hours between 6:00 am to 9:00 am and 4:00 pm to 7:00 pm

The proposed a.m. peak hour schedule will utilize six 18-passenger and two nine-passenger vehicles to transport commuters. The route will start from the Gold Line station on Duarte Road and Myrtle Avenue, traveling north on Myrtle Avenue and turning east on Huntington Drive. From Huntington Drive, it would then turn north on Mountain Avenue, west on Lemon Avenue, and then south on Myrtle Avenue, heading back to the Gold Line Station. The proposed p.m. peak hour schedule will follow the same route as the a.m. schedule, but in reverse, traveling north on Myrtle Avenue, east on Lemon Avenue, south on Mountain Avenue, and then West on Huntington Drive. The proposed route is shown in Figure VI.1 on the following page.

The route is designed to provide transportation to commuters coming in from outside of the city through the Gold Line Station and take them to their work along Huntington Drive. The service in Alternative A could also be expanded to add a second route that would serve residents of Monrovia during the peak hours, transporting residents to the Gold Line station in the AM peak and from the Gold Line station in the PM peak. This route would start north from Colorado Boulevard on 5<sup>th</sup> Avenue turning east on Foothill Boulevard, then south on Mayflower Avenue. From there it would then turn east on Colorado Boulevard and south on Myrtle Avenue towards the Gold Line Station. During the PM peak hours, the route would travel in reverse starting from the Gold Line Station. The route for Alternative A2 is also shown in Figure VI.1.

# MONROVIA STATION PLANNING AREA

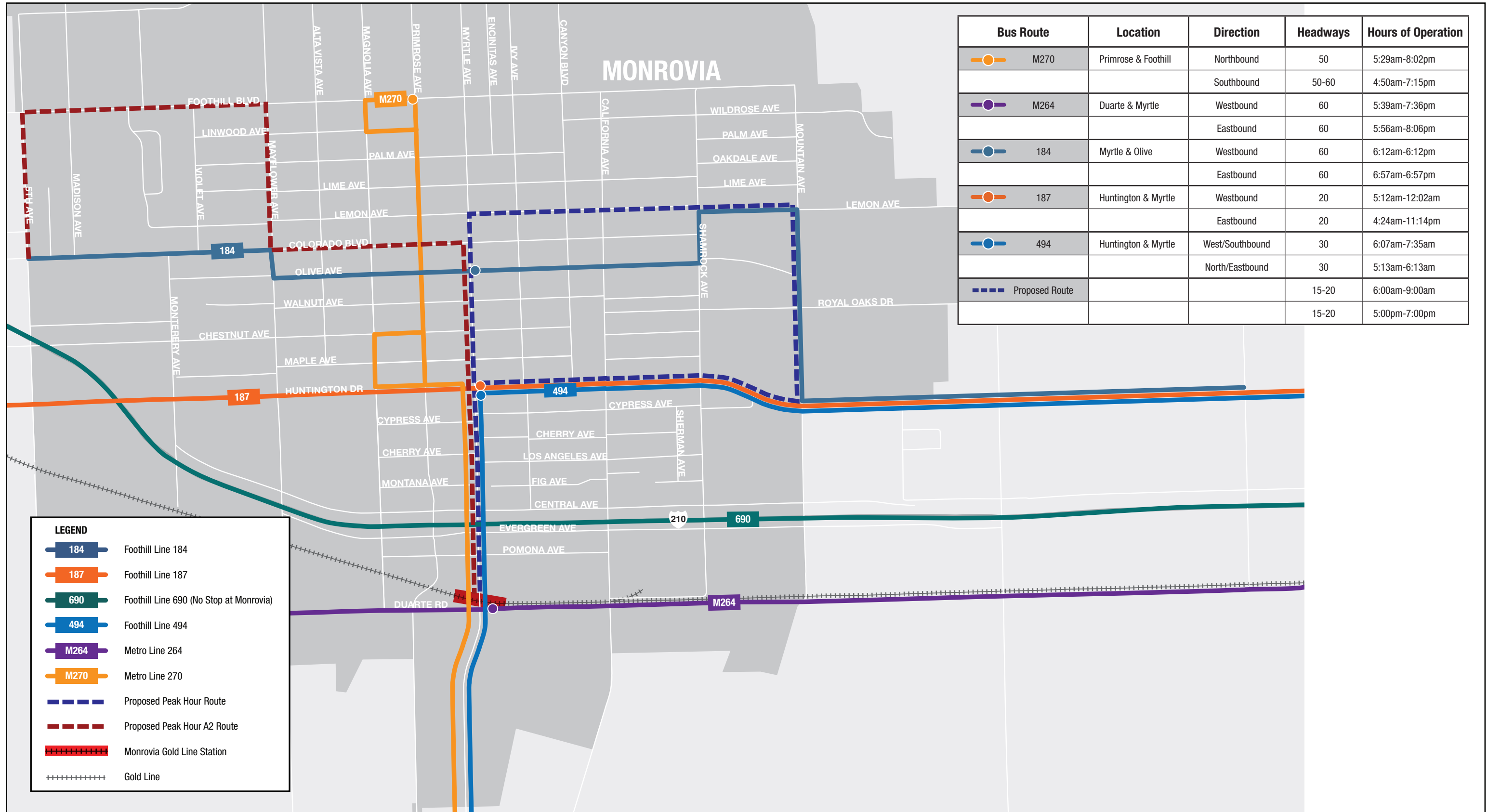


Figure VI.1 – Alternative A: Peak Hours Commuter Service

## VI.II ALTERNATIVE B: WEEKDAY SERVICE

Alternative B expands on the services proposed in Alternative A by extending the service hours to the full day between 6:00 am and 7:00 pm. This service includes a combination of fixed route and route deviation strategies designed to expand the potential service area that is connected to the Gold Line station. The fixed route portion of the service would start at the intersection of Myrtle Avenue and Huntington Drive, traveling east on Huntington Drive and looping around Mountain Avenue, Royal Oaks Drive, and Shamrock Avenue before heading back west on Huntington Drive. From there, it would then travel north on Myrtle Avenue and take passengers to the downtown area before looping back to travel west on Huntington Drive and take passengers to the retail district.

The other portion of this alternative is an On Demand Route Deviation Service that will provide transportation services that complement existing transit routes as well as areas of high residential density outside of existing transit routes. The objective of this service is to allow residents living outside of existing transit routes to be able to access public transportation and assist passengers from bus stops to station stops and vice versa. This particular On Demand Route Deviation Service area will complement Foothill Line 184 from 5<sup>th</sup> Avenue to Shamrock Avenue and Metro 270 from Foothill Boulevard to Colorado Boulevard. It will also serve the western portion of Monrovia roughly bounded by Foothill Boulevard, Alta Vista Avenue, Lemon Avenue, and Madison Avenue and the eastern portion roughly bounded by Foothill Boulevard, Mountain Avenue, Lemon Avenue, and Canyon Boulevard.

# MONROVIA STATION PLANNING AREA

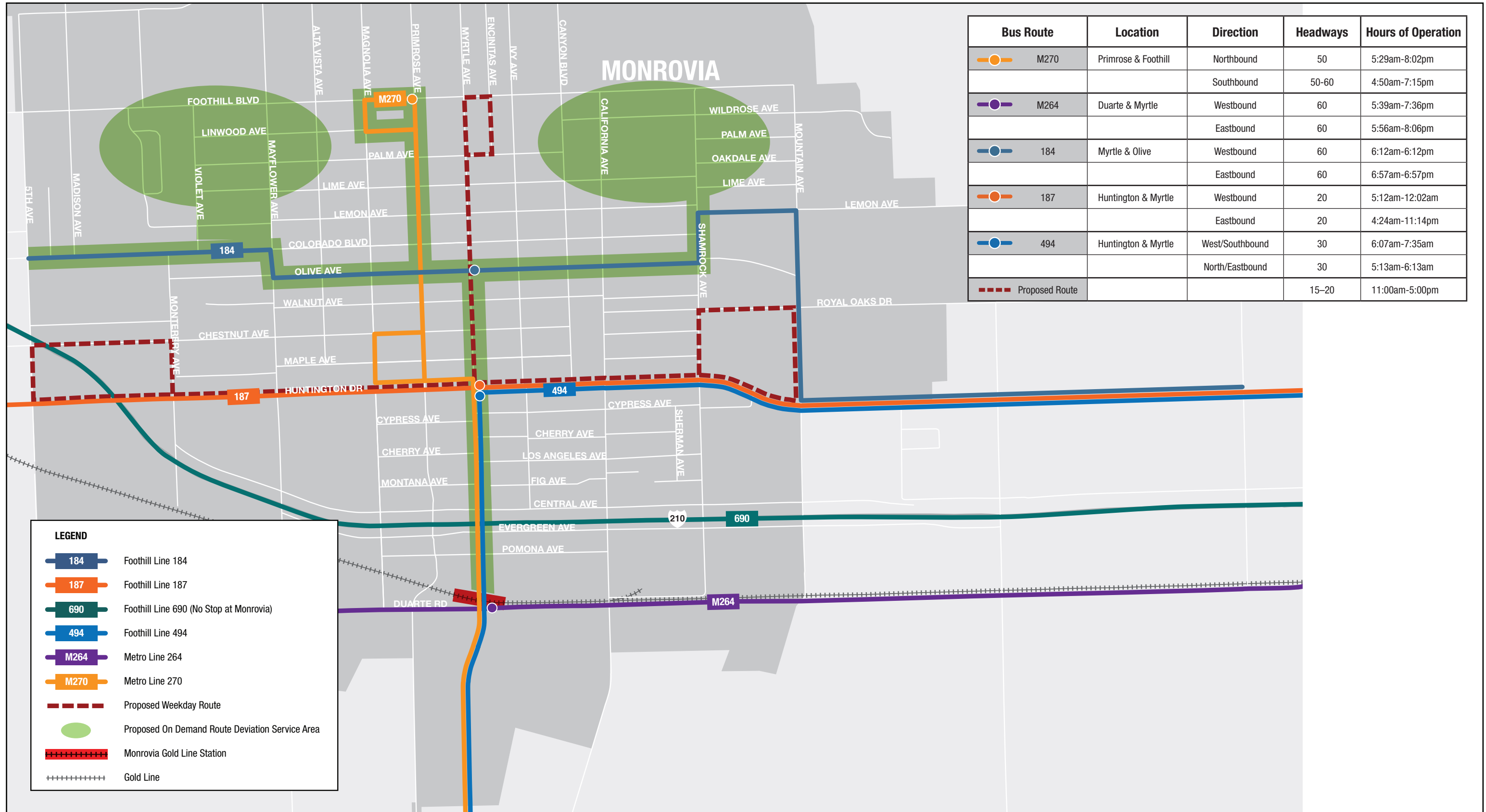


Figure VI.2 – Alternative B : Weekday Service

### VI.III ALTERNATIVE C: FULL SERVICE

Alternative C builds on both Alternative A and B to include weekend service. The proposed weekend transit routes will focus on helping passengers get to the city's downtown area on Myrtle Avenue and retail district along west Huntington Drive. It will also provide residents with transportation services to the Gold Line Station. Like Alternative B, the use of a fixed route and on demand route deviation with more vehicles will be utilized to make up for the fewer bus services on the weekends.

The proposed weekend fixed route will go north on Myrtle Avenue from the Gold Line Station up to Foothill Boulevard where it will then turn west all the way down to 5th Avenue. From 5th Avenue it will then go south and turn east on Huntington Drive and then back down south to Myrtle Avenue and the Gold Line Station. Six 18-passenger and two nine-passenger vehicles are proposed to cover this route from Saturday to Sunday, 8:00 am to 8:00 pm.

The On Demand Route Deviation proposed for the weekend includes three zones of service instead of two zones in Alternative B. The first zone is located in the north-western portion of the city bounded by Linwood Avenue, Magnolia Avenue, Walnut Avenue and Violet Avenue. The second zone is located in the southern portion of the city bounded by Cypress Avenue, Sherman Avenue, Central Avenue, and Magnolia Avenue. The third zone is located in the north-eastern portion of the city bounded by Foothill Boulevard, Mountain Avenue, Royal Oaks Drive, and Ivy Avenue. These three zones are residential areas not covered by existing transit routes on weekends.

# MONROVIA STATION PLANNING AREA

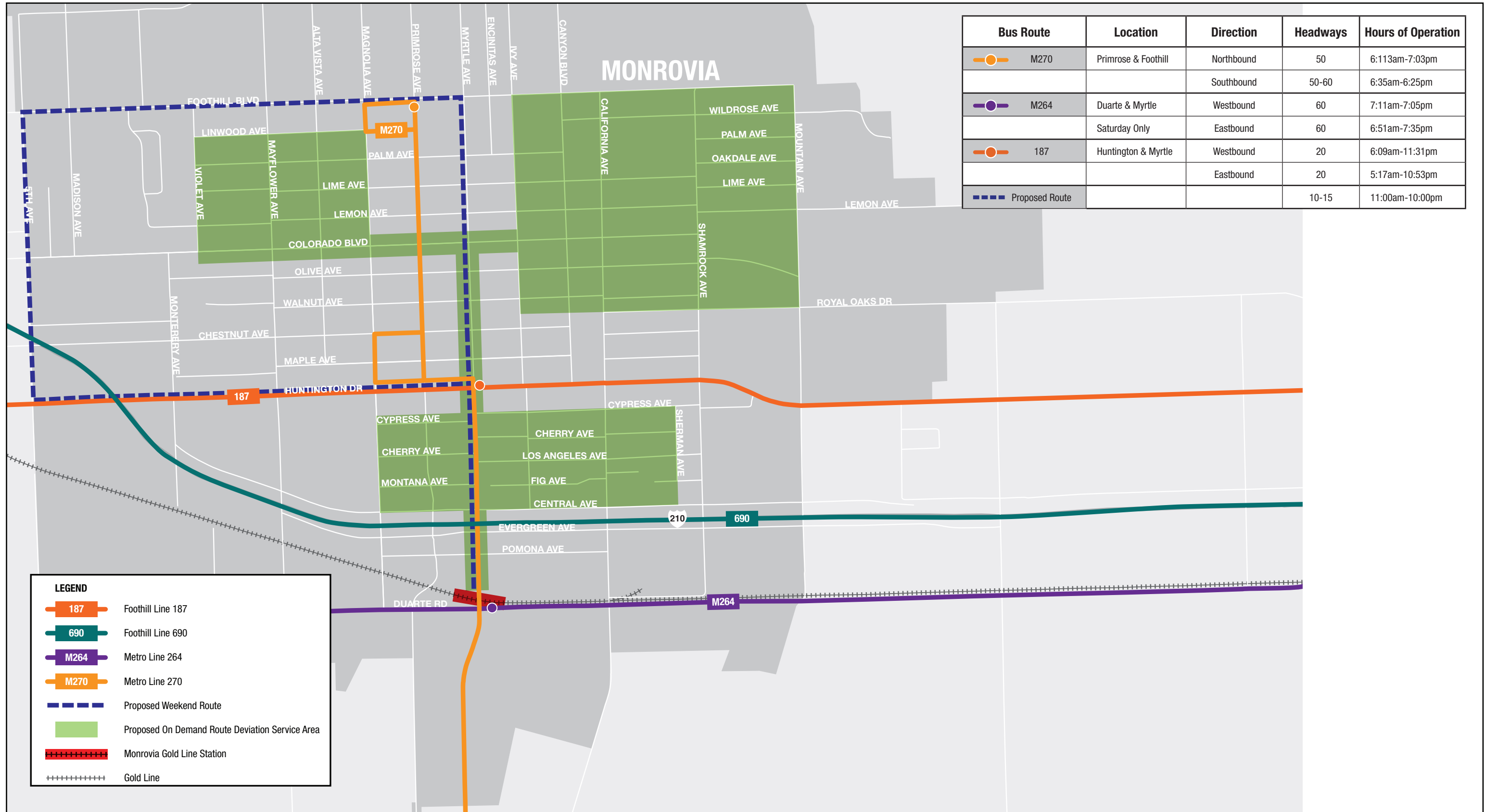


Figure VI.3 – Alternative C : Full Service

## VI.IV SUMMARY OF TRANSIT RECOMMENDATIONS

Service Characteristic/ Level of Service	Alternative A: Peak Hour Commuter Service	Alternative B: Weekday Service	Alternative C: Weekend Full Service
Area of Service	Fixed A Myrtle, Huntington, Mountain, & Lemon Fixed A2: 5 <sup>th</sup> , Foothill, Mayflower, Colorado, Myrtle	Fixed B: Huntington, Myrtle Route Deviation B: Zones 1 & 2	Fixed C: Foothill, Myrtle, Huntington, & 5 <sup>th</sup> Route Deviation C: Zones 1, 2, & 3
Span & Level of Service	Mon-Fri/6:00am-9:00am Mon-Fri/4:00pm-7:00pm	Mon-Fri/6:00am-7:00pm	Mon-Fri/6:00am-7:00pm and Sat-Sun/8:00am-8:00pm
Number of Vehicles	Six-18 Passenger Two-9 Passenger	Four-18 Passenger Two-9 Passenger	Six-18 Passenger Two-9 Passenger
Annual Revenue Hours	1,518 hours	4,807 hours	6,055 hours
Est. Annual Revenue Miles	17,600	60,620	71,560
Cost Per Revenue Hour	\$41.57	\$41.57	\$41.57
Est. Fuel Cost	\$14,500	\$50,100	\$59,100
Annual Cost	\$77,603	\$249,927	\$310,806
Fares	Fixed route – Free Fixed A2 – \$1.00	Fixed route – Free Route deviation – \$1.00	Fixed route – Free Route deviation – \$1.00

The table summarizes the three alternatives and includes each alternative's projected annual revenue hours, annual cost, and annual net operating cost. It also includes the proposed fares and number of vehicles for each route. Alternative A and C utilize more vehicles because the objective of Alternative A is to transport commuters quickly during weekday peak hours while Alternative C requires more vehicles to make up for bus services that do not run on the weekends. Alternative B and C are highest in annual cost and annual net operating cost because of the longer service hours. All three routes charge \$1.00 for the On Demand Route Deviation service and are free for fixed routes with the exception of Alternative A2 which would also charge \$1.00.

## VII. CONCLUSIONS

The objective of this report is to provide the City of Monrovia with recommendations for enhancing local transit services in the city and linking these services to the proposed Gold Line LRT station. The findings and recommendations of this report are summarized below:

- The current dial-a-ride and trolley services operated by the City of Monrovia perform efficiently and the operating costs for both services are within transit industry norms for comparable types of service. Existing dial-a-ride services operated by the city provide good service coverage to city residents in terms of response time, span of service, and population served.
- Given the existing performance of the dial-a-ride services, changes to the service plan in terms of span of service, service area, and service market, such as serving school-related trips, are not recommended at this time. These types of changes could impact the efficiency of the system and the quality of service provided.
- Position dial-a-ride as a transport mode of choice for commuters to access Gold Line rail services: More aggressive marketing of dial-a-ride services to choice, commuter riders to get curb-to-curb service/connectivity to the proposed Gold Line station site and proposed transit-oriented village. While this recommendation would require additional service and operational planning, consideration may also be given to other public policy considerations including fare policy. The latter may include a premium, peak hour fare for commuters.
- Explore opportunities for collaborative arrangements with key community stakeholders including the business and health care communities. Such collaborative arrangements may include the prospect of cost-sharing/private-public partnerships with the goal of financial contributions for services to key activity centers.
- Conduct additional research including outreach to gauge community acceptance to alternative Gold Line shuttle and dial-a-ride service delivery scenarios to better understand resident needs in terms of transit and potential ridership demand.
- Consider phasing out the existing trolley service in order to reallocate resources to providing local transit connections to the planned Metro Gold Line station. The local transit services proposed in this report would overlap the existing trolley route and add a connection to the proposed Gold Line station, enhancing the service levels currently offered by the trolley service.
- There is a need to address the mechanical reliability of the Trolley vehicles. Additional efforts are necessary to monitor and document the mechanical records of these 2002 model year E-Buses. Maintenance of the vehicles to this point has been the responsibility of the manufacturer. However, maintenance responsibilities may shift to the city in the future. The city has satisfied the original funding grant requirements for operating these vehicles, and should explore opportunities to replace the vehicles prior to accepting responsibility for the maintenance costs, which may be significant.
- Explore the use of vehicle locating capabilities for the dial-a-ride vehicles. Southland Transit currently uses automated vehicle locating (AVL) capabilities with a Trapeze software interface on Arcadia Transit vehicles. There are likely economies of scale to be realized by expanding this application to the Monrovia Transit vehicles.

- Three possible service plans are identified in this report to provide local transit connections to the proposed Gold Line station. These service plans include fixed-route and route deviation/on-demand components. The City of Monrovia should consider phasing in the route deviation/on-demand components of these services to the existing dial-a-ride service prior to the opening of Gold Line light rail station to introduce these service types to city residents.
- Additional evaluation and review of the service plans proposed in this report should be undertaken by the city prior to the implementation of the Gold Line light rail service in order to verify the destinations served in the city, appropriate headways, and spans of service for the shuttle routes.