



*Gardena Municipal
Bus Lines*

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Line-by-Line Analysis 2011



PREPARED BY:





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Notice:

The Gardena Municipal Bus Line-by-Line Analysis (LBL) seeks to analyze fixed-route and demand responsive transit service to better serve its current and future customers.

This edition: January 2011

Prepared by  **TMD**
TRANSPORTATION MANAGEMENT & DESIGN, INC.

for *Gardena Municipal Bus Lines*



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Executive Summary

Background


Gardena Municipal Bus Line (GMBL) was established by the City of Gardena in 1940 and operates bus transit service in Gardena and neighboring communities. The system currently provides five fixed bus routes, thirteen commuter tripper routes, and an on-demand Elderly & Handicapped paratransit service for qualified patrons. This analysis evaluates each of these service types.

Purpose

The 2011 GMBL Line-by-Line (LBL) Analysis is the first comprehensive examination of the existing transit service provided in the City of Gardena and neighboring communities. It reviews existing market conditions, evaluates current rider behavior and provides a detailed look at existing service performance and quality. The LBL Analysis is intended to allow GMBL to meet existing and future transit mobility needs while maintaining financial sustainability.

The project was scoped to complete the following tasks:

- **System Ridecheck:** 100% collection of weekday, Saturday, and Sunday ridership and schedule reliability
- **Transfer Analysis:** collection of weekday transfer slips from GMBL and neighboring operators
- **On-Board Survey:** approximately 1,250 passenger surveys were collected, about 10% of ridership
- **Mail-In Survey:** conducted for Elderly & Handicapped service patrons

- 
- **Findings:** analyze data collected in the preceding tasks to identify strengths and weaknesses of the existing transit network
 - **Recommendations:** provide a series of service recommendations necessary to improved service efficiency and effectiveness

Goals

The goals of the line-by-line are to recognize opportunities to improve the efficiency, effectiveness, and performance of the current GMBL services. The study aims to identify strengths and weaknesses of the existing network in order to develop strategies to better use existing resources to grow system ridership.


Market Assessment

The Market Assessment provides a market context for the performance of the existing Gardena Municipal Bus Lines (GMBL) transit network, as well as opportunities for GMBL to continue to grow its ridership. It will help identify where additional transit investment may be warranted in line with both existing opportunities to capture more ridership as well as partnering with future regional growth.

Key findings from the Market Assessment include:

- Very high population densities occur in Hawthorne; smaller pockets of high density occur in Gardena, Compton, and LA County.
- Employment is mostly low density, light industrial land use throughout the service area.
- Pockets of high density employment occur along major corridors.
- All market areas with significant density are currently served by GMBL network or neighboring operators.

The On-Board Passenger Survey was distributed in four languages on all GMBL fixed-route services. The objective of the survey was to examine travel behavior and demographic characteristics of current GMBL riders. The survey also collected customer service data and passengers' opinions of several elements of



GMBL service. Approximately 1,250 surveys were collected from fixed-route and commuter tripper passengers. The following key findings were compiled from the survey data:

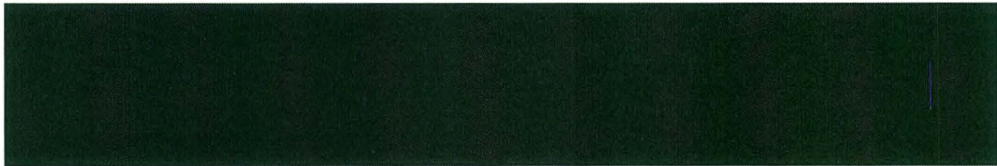
- Consistent with Census data, most GMBL passengers come from low-income, vehicle deficient households.
- About ¾ of respondents feel GMBL service is “Good” or better.
- Respondents indicated on-time performance needed the most improvement.
- More than 20 percent of respondents access service information by “word of mouth” suggesting the need to enhance service information sources and reliability.
- Approximately 42 percent of respondents board GMBL transit to/from other transit services making interagency network connections important.

A mail-in survey was also completed for Elderly & Handicapped (E & H) patrons. An overwhelming rate of survey return allowed the rider characteristics and service feedback to accurately represent the typical E & H rider. The following key findings were compiled from E & H survey data:

- Customers overwhelmingly rated service as “Very Good” and feel it is easy to schedule trips, safe and highly reliable.
- If E & H were no longer available, 80 percent of respondents would continue to make the trip on different modes of transportation.
- 70 percent of E & H riders are willing to make some trips on fixed-route transit service.

Service Evaluation

The Service Evaluation is intended to identify the strengths and weaknesses of the overall GMBL system. It will also help GMBL to recognize certain opportunities to better position itself for maximum ridership growth and increased efficiency from the available resources and funding. The fixed-route



service evaluation is presented in three main sections, including an analysis of Ridership and Transfers, Service Performance, and Service Quality. A separate analysis was conducted for the Commuter Tripper and Elderly & Handicapped services.

Ridership and Transfers: Key Findings

- GMBL's highest ridership is concentrated along the Vermont Avenue corridor, near downtown Gardena, and at Metro Rail stations.
- Route 2 is the strongest GMBL route, generating half of all weekday ridership.
- The top two GMBL routes combined (Routes 2 and 3) account for nearly 2/3 of total system ridership.
- Only 12 percent of all weekday GMBL boardings are transfers, most of which come from LA Metro service. This low transfer activity is likely a result of low frequencies and the high proportion of ridership along one route (Route 2).

Service Performance: Key Findings

- On average, GMBL carries 37 passengers per revenue hour (pph), which falls above the 30 pph service standard; Route 2 carries more than 150% the current system average.
- Weekend productivity suggests opportunities to better match Saturday and Sunday service levels to demand.
- Routes 2 and 3 are the most financially sustainable routes, operating with the highest operating ratios and lowest subsidies per passenger boarding.
- Routes 1 and 4 are the least financially sustainable services, a result of unwarranted service levels and lower ridership.



Service Quality: Key Findings


- On-time performance needs significant attention, with only 52 percent of weekday trips running on time.
- A significantly amount of trips run late rather than early, likely a result of insufficient scheduled layover/recovery time and vehicle leaving the GMBL facility late.
- Average stop spacing is not an issue with stops averaging 0.22 miles apart, which is in line with industry standards.
- Only one GMBL route, Route 2, experiences weekday trips which exceed the load standard; overcrowding is most common along the Vermont Corridor of Route 2.

Commuter Tripper Service: Key Findings

- Service has evolved from just supplemental school service to also provide some overcrowding relief for the fixed-route network.
- 95 percent of all Commuter Tripper passenger boardings occur within a ¼ mile of existing fixed-route network; 75 percent occurs along the current Route 2 alignment, while 20 percent occurs along the current Route 3 alignment.
- A total of 54 weekday passengers board outside a ½ mile walking distance of the fixed-route network, or less than 5 percent of total weekday boardings.
- Commuter Tripper service operates inconsistent service that is difficult to communicate and understand. The service is delivered with inefficient operator use and diminished reliability.

Elderly & Handicapped (E&H) Service: Key Findings

- Also known as “Special Transit”, the service is at the discretion of the City of Gardena, since the federal ADA paratransit provider for LA County is Access Service, Inc.

- 
- The service operates below the 3.5 passengers per hour standard, with an average of 2.8 pph – some trips carry fewer than 2 pph.
 - The average speed of 7.7 mph suggests inefficient vehicle scheduling and long wait times at scheduled pick-ups.
 - “Special Transit” service operates with maximum loads below current vehicle capacity.
 - The cost to ride the service is \$0.25 less than fixed-route service; 70 percent of riders expressed willingness to use fixed-route services.


Service Framework

Based on the analysis of existing transit service conditions, a series of recommendations have been developed to improve the system. The following guiding principles will assist in the development of service recommendations and shape the structure for a successful and sustainable GMBL transit system.

- Focus resources on most productive areas of the system by
- Refining service to meet demand
- Streamlining complex and difficult to understand service
- Improve overall system productivity
- Enhance the customer experience by
- Providing sufficient access to information
- Providing sufficient access to service
- Improve effective service reliability by
- Overhaul operating schedules to improve on-time performance
- Improve Field Service Management

Proposed Service Plan

These service recommendations are intended to enhance the efficiency and effectiveness of the GMBL network. Overall system characteristics and available alternative transit options from other providers have been paired with the preceding analysis to develop route and service level recommendations.



Route 1 will no longer provides service to downtown Los Angeles. The proposed alignment will provide connections to alternate service to LA at Artesia Transit Center via Vermont Avenue and 182nd Street.

Route 2 will be improved to all-day, weekday frequencies to accommodate existing overcrowding, school/commute demand, and Route 1 Vermont Avenue riders. In addition, improved frequency will attract new ridership and increase route productivity.


Route 3 will operate with improved weekday peak frequencies to better accommodate school/commute demand.

Route 4 is proposed for discontinuation due to low ridership and high subsidy per passenger boarding. Several alternative services are available for affected riders, including the GMBL Elderly & Handicapped service for riders boarding at the South Park senior housing on 170th Street. Passengers are also more likely to walk to higher frequency service (Route 2 is within a ½ mile of the majority of the current Route 4 alignment) rather than wait for service operating at very low frequencies.

Route 5 will no longer serve Nash Green Line Station. New alignment serves Aviation Green Line Station to provide more direct opportunities to connect with services to LAX, West LA, and beach cities. In addition, new weekend service is proposed.

Commuter Tripper Routes are proposed to be discontinued as a separate service type, but integrated into the improved fixed-route network. These resources will be more efficient and effective if used to improve fixed-route services. Proposed alignment changes for the fixed-route network will provide adequate service connections for existing Commuter Tripper riders affected by the elimination.

Elderly & Handicapped (E & H) service should focus on the following service recommendations to provide the highest level of dial-a-ride service to all of its current and future patrons:

- 
- Encourage increased use of fixed-route network
 - Provide rider training to fixed-route system. 70 percent of all patrons have expressed a willingness to use fixed-route service.
 - Rethink the E & H fare to position as a premium, curb-to-curb service. The service is currently 25% cheaper than the fixed-route adult cash fare and only 40¢ more expensive than the senior/disabled fixed-route fare.
 - Improve service productivity
 - Average revenue and deadhead speeds much increase. The low observed speeds suggest excessive wait times at pick-up locations.
 - Low average loads suggest service efficiency can be improved. Higher seat utilization through effect vehicle loading will increase service productivity.
 - Operate right-size vehicle fleet
 - GMBL can operate vehicles with less capacity for many trips, which will maximize seat utilization.
 - Fewer vehicles will be required if passenger loads are managed.

As an alternative to the existing E&H service, GMBL could consider providing a taxi voucher program for its current dial-a-ride patrons. While the cost to provide the program is cheaper for GMBL, a reduction in customer service may result. GMBL should consider conducting a detailed analysis of paratransit service methods that meets the needs of its patrons the most cost effective way possible.

1. Introduction

The 2011 Gardena Municipal Bus Lines (GMBL) Line-by-Line (LBL) Analysis is the first comprehensive examination of the existing transit service provided in the City of Gardena and neighboring communities. It reviews existing market conditions, evaluates current rider behavior and provides a detailed look at existing service performance and quality. The LBL Analysis is intended to allow GMBL to meet existing and future transit mobility needs while maintaining financial sustainability.

GMBL operates five fixed-route services, four of which operate seven days a week. Thirteen Commuter Tripper routes also operate on weekday during peak periods. In addition to fixed-route services, GMBL provides on-demand Elderly and Handicapped (E & H) paratransit services to qualified patrons. This analysis evaluates each of these service types in order to identify possible improvement measures.

As part of this LBL analysis, GMBL conducted a passenger count, on-board survey, and transfer analysis for all fixed-route and commuter services in October 2010. A separate survey was also distributed to all Elderly and Handicapped service riders. These elements have been used to identify how GMBL passengers utilize current services and where to improve certain aspects of the service. The following Line-by-Line Report consists of a market assessment and service evaluation, both of which review collected data to identify strengths and weaknesses of the system. The final section of the report suggests opportunities for improvement and growth throughout the network. Recommendations for service changes are provided for fixed-route, Commuter Tripper and Elderly and Handicapped services.



2. Market Assessment

The Market Assessment will provide a market context for the performance of the existing Gardena Municipal Bus Lines (GMBL) transit network, as well as opportunities for GMBL to continue to grow its ridership. It will help identify where additional transit investment may be warranted in line with both existing opportunities to capture more ridership as well as partnering with future regional growth.

This task is intended to answer important questions concerning:

- **Community Profile:** What are the community population, employment, and demographics of the GMBL service area? Where are these most favorable to supporting transit services?
- **Consumer Research:** Who rides GMBL and how do they use the system today?
- **Travel Patterns:** What are overall GMBL rider travel patterns? Are there new areas where GMBL might be successful in attracting demand from the major travel patterns?

The Market Assessment is a key component of the overall GMBL Line-by-Line Analysis, which also includes a review of all existing transit service.

2.1 Community Profile – GMBL Service Area

Higher population and employment densities are a key focus of this review, in addition to demographic characteristics more supportive of transit use. These include youth, disabled, economically disadvantaged, and zero-vehicle household populations. These underlying conditions are good indicators of where all-day fixed route transit service will most likely be successful and sustainable.

Key data for profiling cities within the Gardena Municipal Bus Lines service area is from the 2000 US Census, as well as projections for population and employment provided by the Southern California Association of Governments (SCAG).


2.1.1 Shape of the Service Area: Population and Employment Density

Population and Employment Density Year 2010

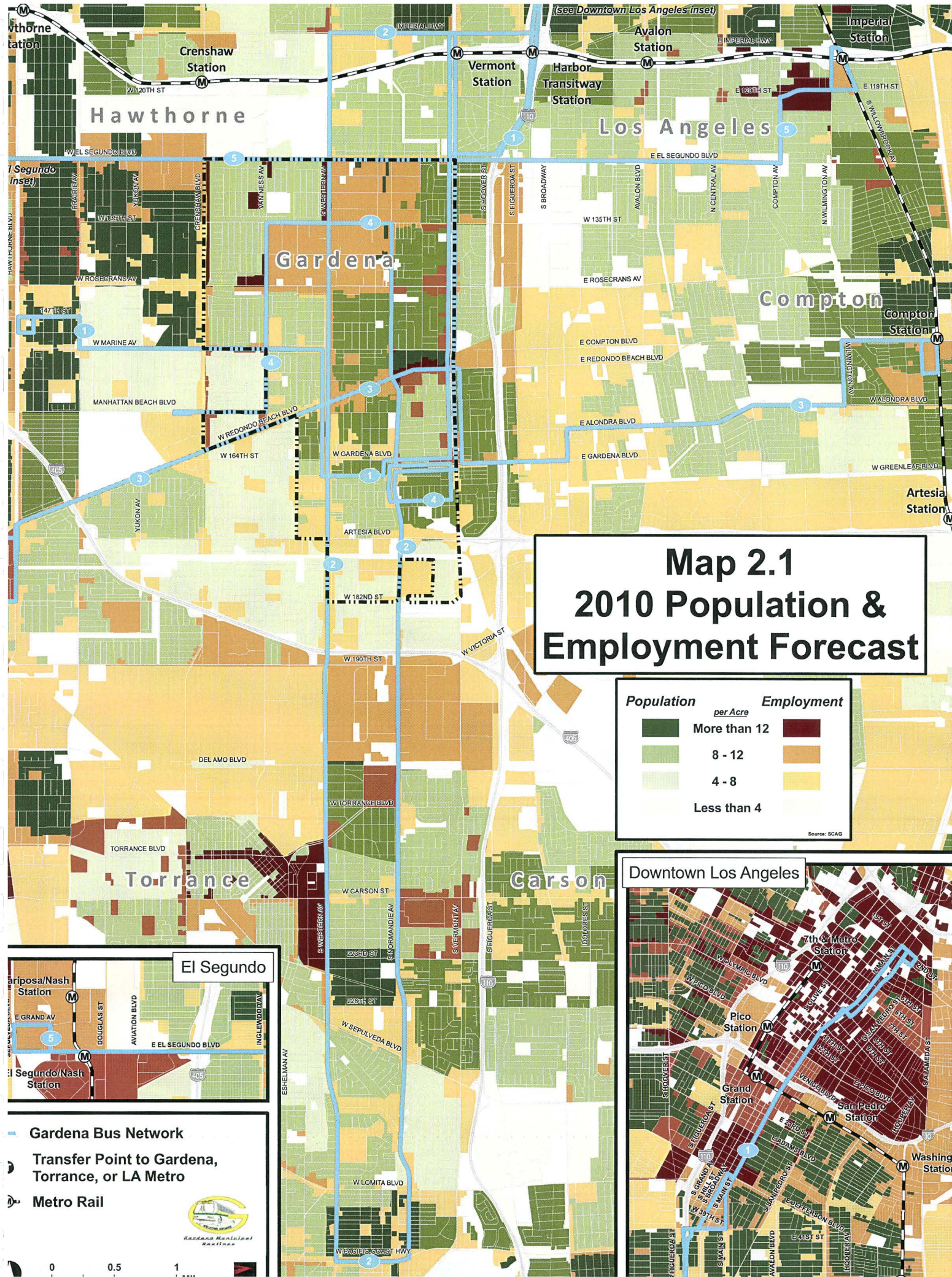
Population and employment densities are a key element in transit success. Higher density residential developments and major employment centers are important transit trip generators. Map 2.1 depicts the existing population and employment densities throughout the service area.

Within the GMBL service area, Hawthorne, just northwest of Gardena, has the most significant residential densities. This area is characterized by dense apartment buildings and small single-family homes. Smaller pockets of high residential densities appear throughout the service area in Compton, Gardena, and LA County. Overall, the City of Gardena has moderate levels of residential densities with a small pocket of high density near Memorial Hospital and along Redondo Beach Boulevard commercial areas.

Characterized by light industrial development, employment densities are at low or moderate levels throughout the service area. Gardena has several pockets of



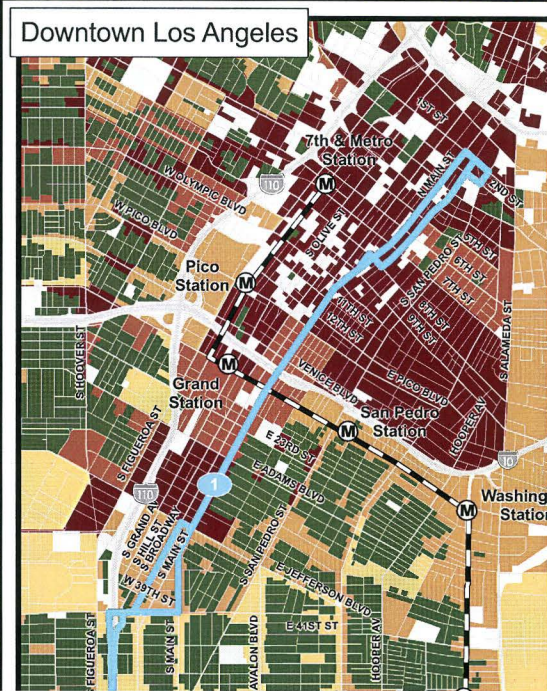
moderate and high density employment areas; light industrial uses exist at the north end of the city and commercial uses appear along major corridors such as Western and Vermont. Torrance, Los Angeles, and West Compton show small concentrations of moderate to high density employment.



Map 2.1 2010 Population & Employment Forecast

Population	per Acre	Employment
	More than 12	
	8 - 12	
	4 - 8	
	Less than 4	

Source: SCAG



Gardena Bus Network
 Transfer Point to Gardena, Torrance, or LA Metro
 Metro Rail

Gardena Municipal Rail Line

0 0.5 1



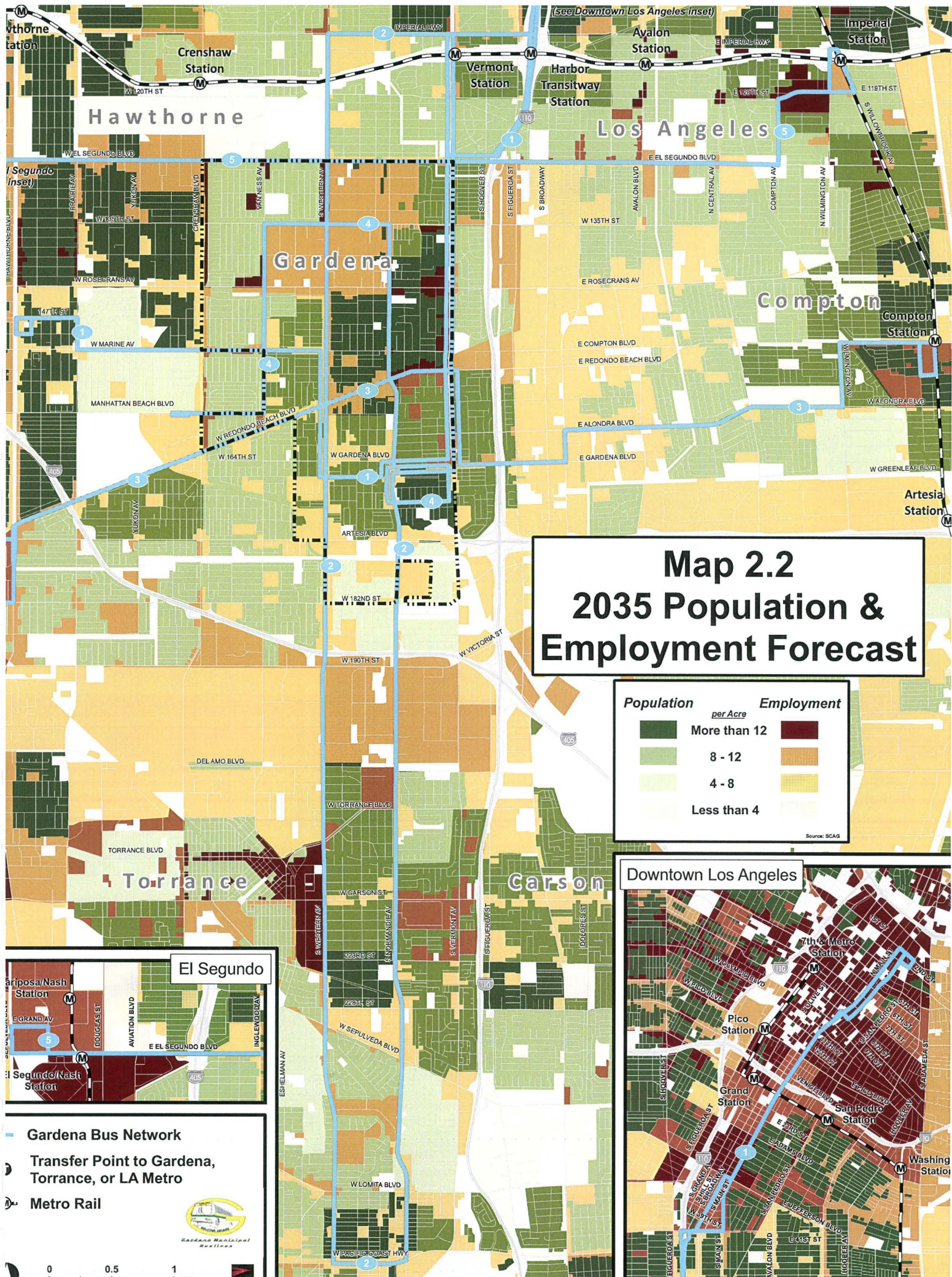
Population and Employment Density Year 2035

Map 2.2 depicts SCAG 2035 modeling projections for population and employment densities within the service area. These projections provide indications of emerging new markets and potential service opportunities for Gardena Municipal Bus Lines.

Based on the projections, Hawthorne and Gardena will be the largest high-density residential markets; increased residential densities are also expected in Carson, Compton and Torrance. SCAG projections show only slightly higher density employment concentrations in Compton and Gardena along major corridors. In general, low density light and heavy industrial uses are still the most prominent employment sources in the area.

Population and Employment Density Change (2010 – 2035)

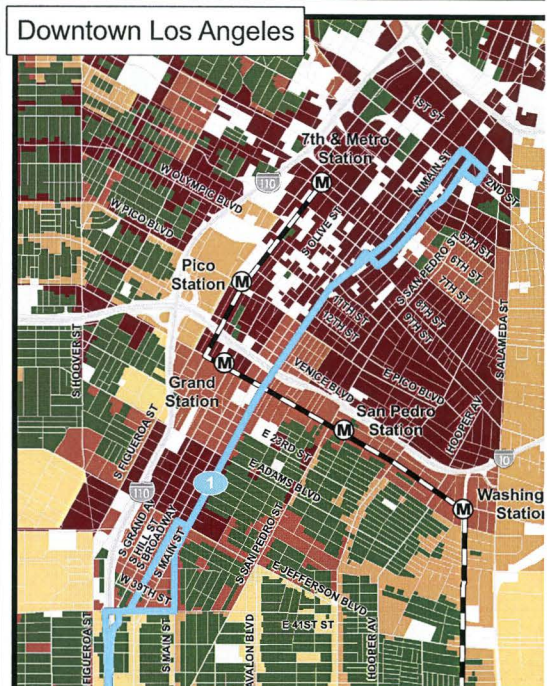
Map 2.3 depicts projected population and employment growth patterns from 2010 to 2035 based on SCAG data. Within the larger service area, the most significant change will be in residential densities, while little to no intensification of employment use is expected. The City of Gardena can expect more significant change than the overall service area, with moderate to low increases in both residential and employment densities. However, none of the forecast changes in population and employment will warrant significant changes in GMBL's current network of fixed route transit.




Map 2.2 2035 Population & Employment Forecast

Population per Acre		Employment	
	More than 12		
	8 - 12		
	4 - 8		
	Less than 4		

Source: SCAG

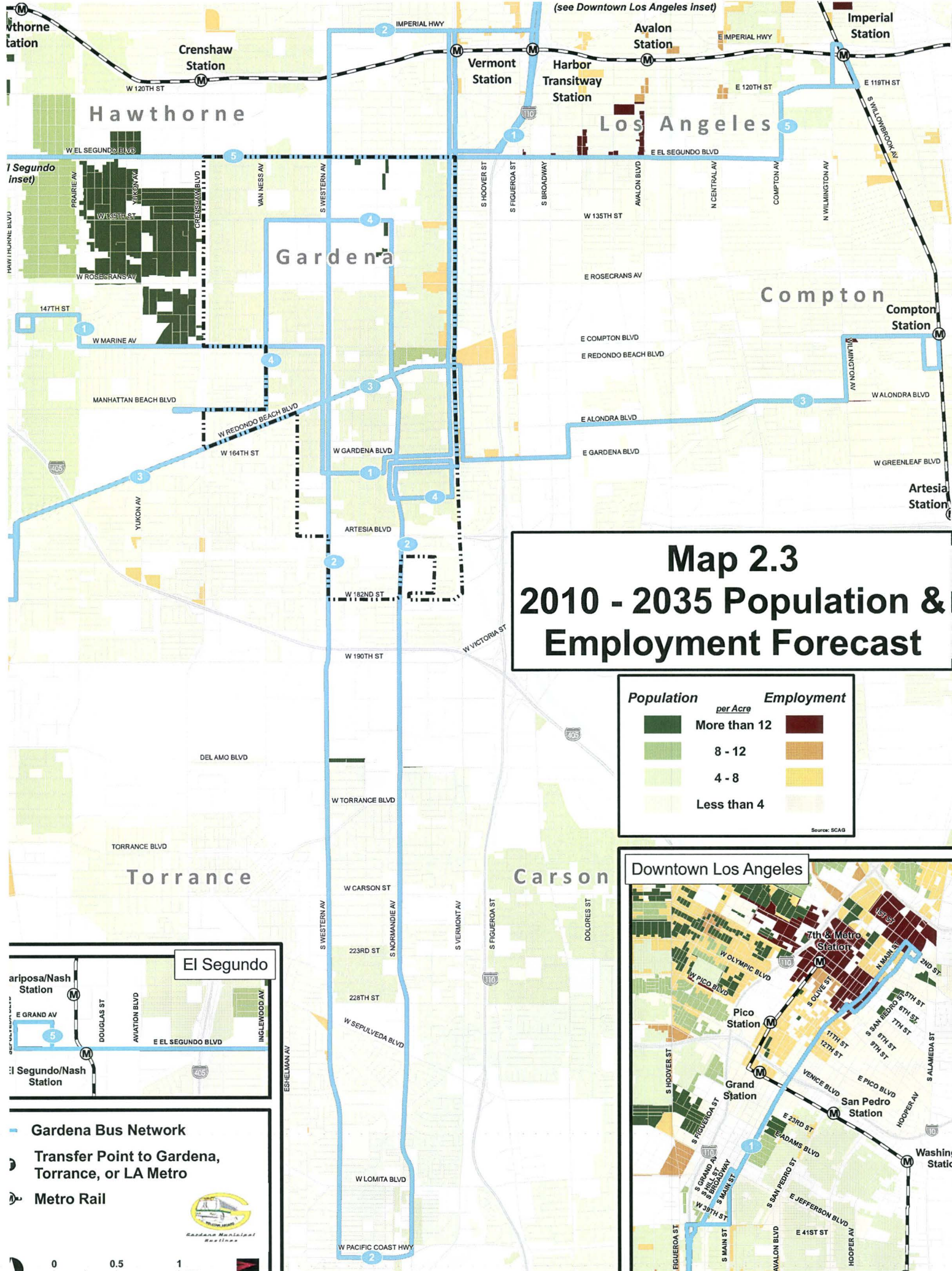


- Gardena Bus Network
- Transfer Point to Gardena, Torrance, or LA Metro
- Metro Rail



Redondo Municipal Authority

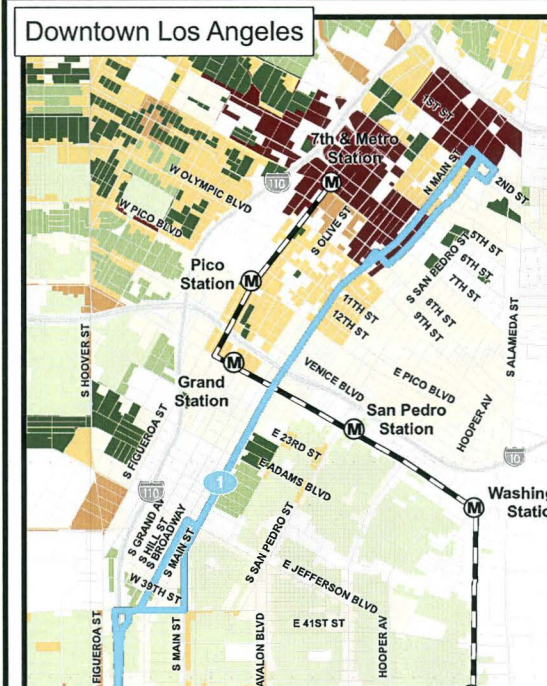
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Map 2.3 2010 - 2035 Population & Employment Forecast

Population	per Acre	Employment
	More than 12	
	8 - 12	
	4 - 8	
	Less than 4	

Source: SCAQ



- Gardena Bus Network
- Transfer Point to Gardena, Torrance, or LA Metro
- Metro Rail

0 0.5 1

2.1.2 Population Demographic Characteristics

A review of key US Census 2000 population characteristics helps identify densities of population segments more oriented towards transit use. These include:


- Youth
- College-Aged
- Senior
- Physically Disabled
- Financially Disadvantaged
- Zero-Vehicle Households

Youth (Map 2.4) for this study is defined as persons 12–17 years of age. Youth-aged residents are typically middle school and high school students able to independently utilize public transit for daily travel needs.

The service area shows a broad distribution of low density youth population, all within short walks of GMBL, LA Metro, or other municipal transit service. Small pockets of slightly higher youth populations appear in areas of high density residential development, particularly in Hawthorne and south Los Angeles. Gardena does not show any significant concentration of youth populations.

College-Aged (Map 2.5) for this study is defined as persons age 18–24. Students typically have lower income levels and are much less likely to own their own vehicle, making them more likely to seek alternative means for personal mobility such as transit.

Hawthorne has the most significant concentration of college-aged residents. This area reaches 10-15 college-aged residents per acre, the highest density in the service area. Small moderate density pockets of college-aged residents appear in LA County, south Los Angeles, and Gardena.



Senior (Map 2.6) as used in this study is defined as persons aged 62 and older. Seniors, while typically not working, may utilize public transit more often than the general population for shopping, medical, and other personal trips.


Similar to youth population distribution, there are very few pockets of senior populations that differ from the overall service area. Slightly higher density pockets of senior populations are located in Torrance and in Gardena near Memorial Hospital and downtown. Concentrations in Gardena are located near major corridors which have access to a variety of amenities and transit services.

Physically Disabled (Map 2.7) as used in this study is defined by the US Census as persons with a physical impairment that substantially limits one or more major life activities. Such populations are more likely to be transit dependent, either for fixed route transit or complementary Americans with Disabilities Act (ADA) transit services.

Overall, the only concentration of physically disabled residents in service area is found near Memorial Hospital and the commercial development along Redondo Beach Blvd.

Economically Disadvantaged (Map 2.8) is defined by the US Census as a household with a total family income less than or equal to its poverty threshold. This threshold is calculated based on the size of the family and how many children under the age of 18 live in the household. These families are more likely to use transit out of necessity, being less able to afford other forms of transport with some or all of the household using transit as their primary mobility mode.

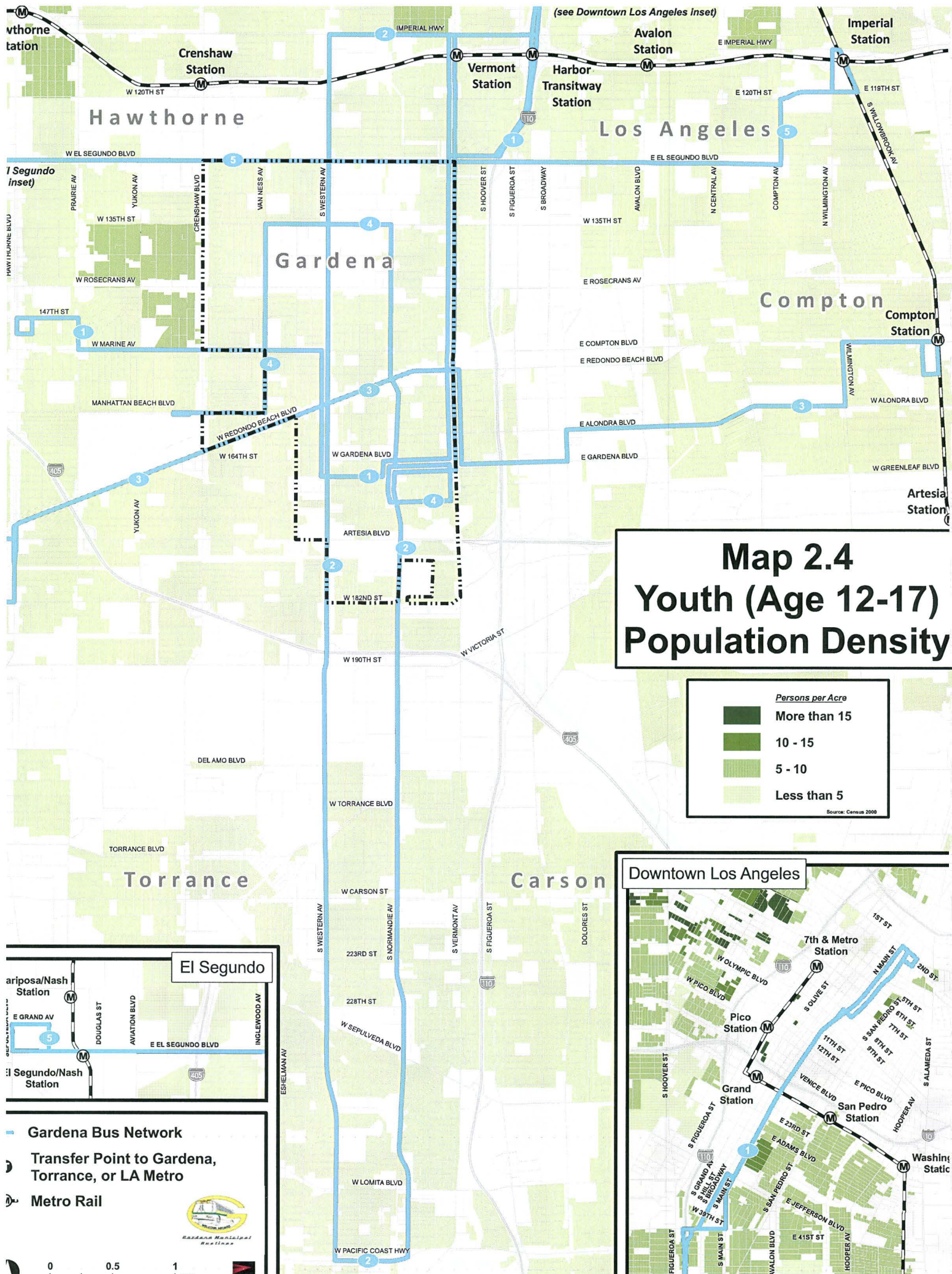
Low income households are distributed throughout the GMBL service area with many portions of the service area showing at least five low income households per acre. Areas not showing impoverished populations have industrial and/or low density employment. The most significant concentrations of high to moderate low income densities are located in Hawthorne and south Los Angeles



near Metro Rail stations. LA County and Gardena also have moderately dense pockets of low-income populations.

Zero Vehicle Households (Map 2.9) is defined as those households without access to a vehicle (shown as vehicle access deficiency). Typically, an area is seen to have a high vehicle access deficient population if there are one or more households per acre without access to a car.

Throughout the service area, there are only a few significant pockets of zero-vehicle households located in Hawthorne and south Los Angeles near Metro Rail stations. There are moderate densities of vehicle deficient households in Torrance, Compton and Gardena. These concentrations have good access to the regional and municipal bus and rail transit network.




Map 2.4 Youth (Age 12-17) Population Density

Persons per Acre	
	More than 15
	10 - 15
	5 - 10
	Less than 5

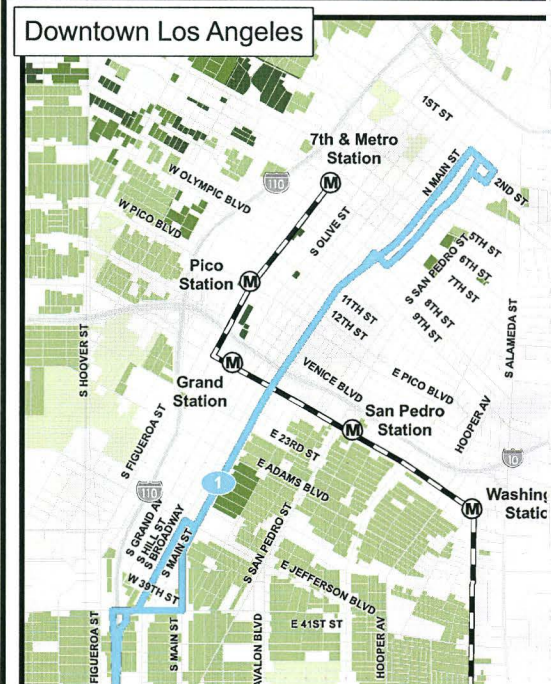
Source: Census 2000

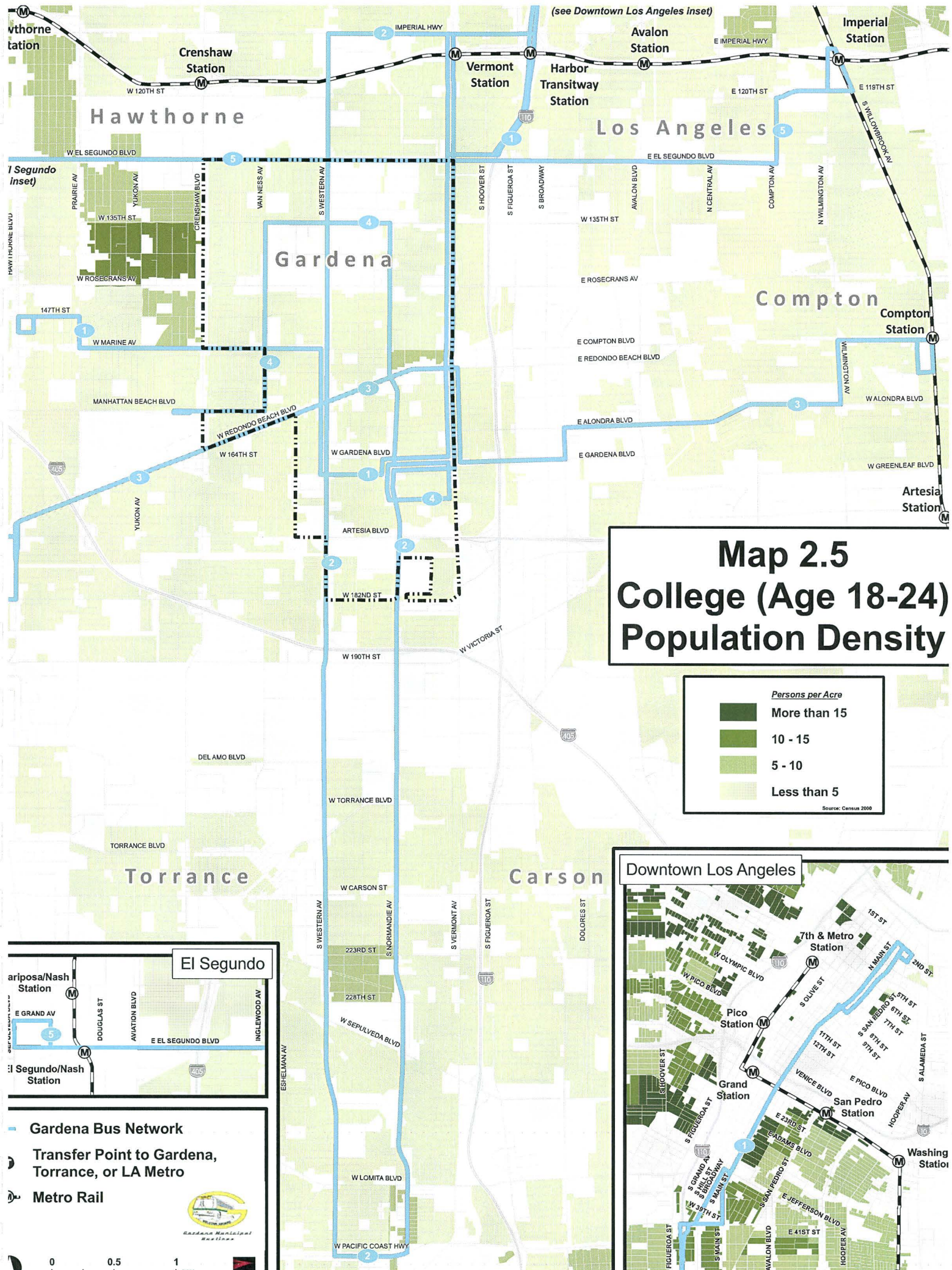


- Gardena Bus Network
- Transfer Point to Gardena, Torrance, or LA Metro
- Metro Rail



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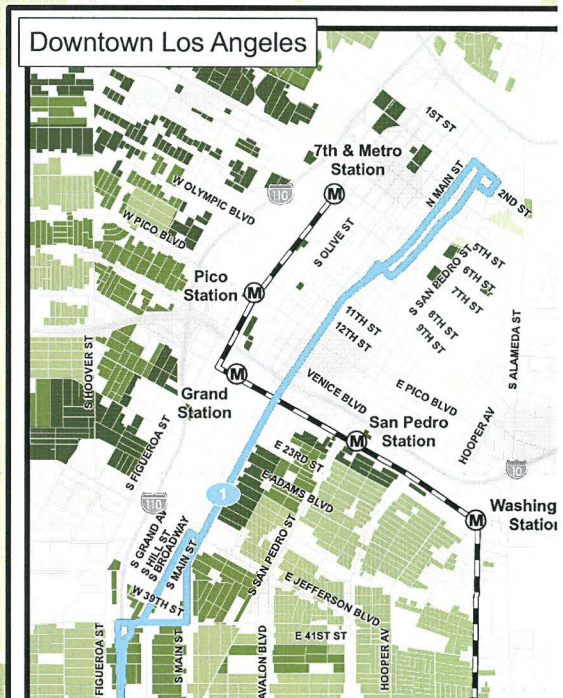




Map 2.5 College (Age 18-24) Population Density

Persons per Acre	
	More than 15
	10 - 15
	5 - 10
	Less than 5

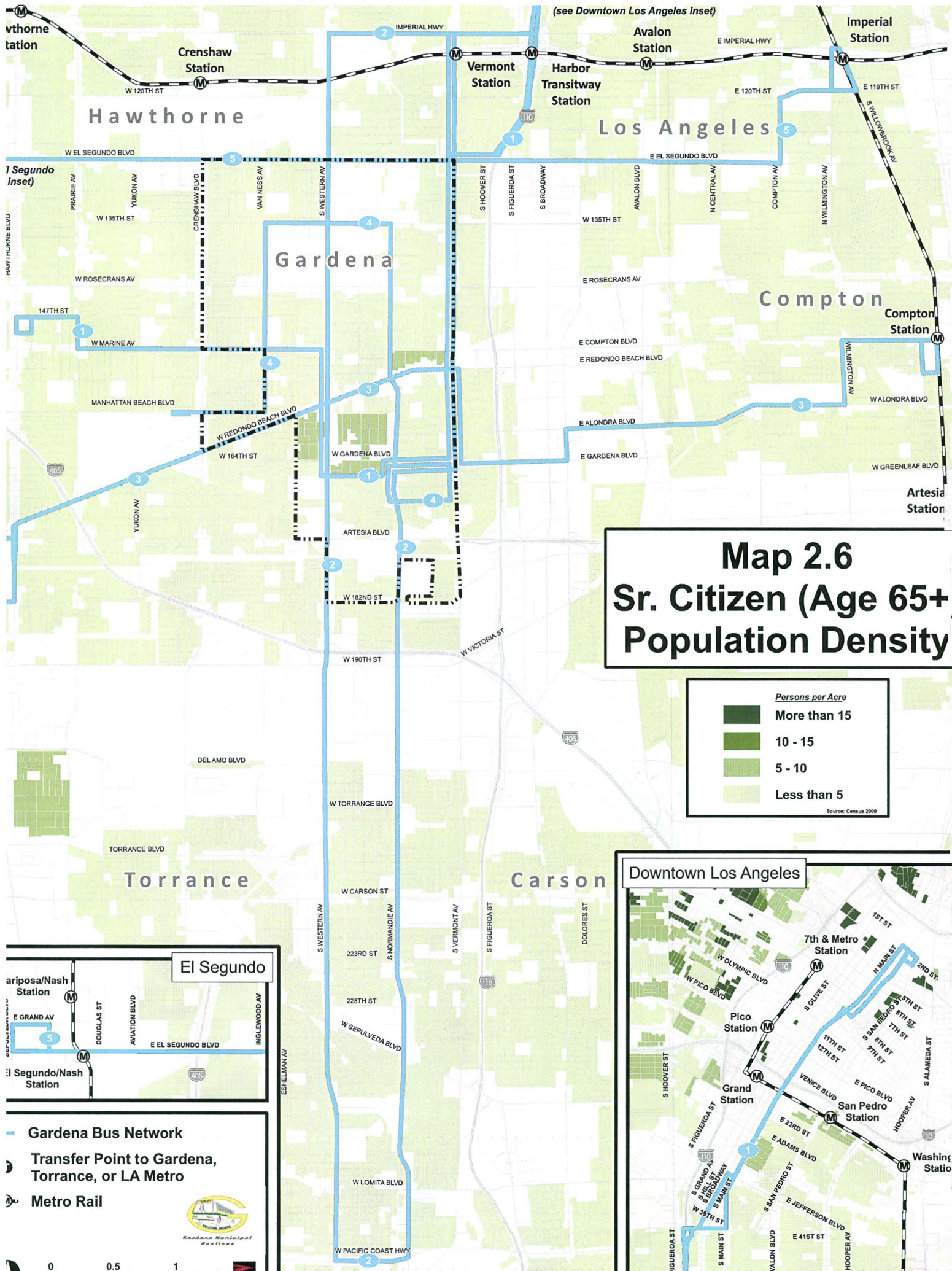
Source: Census 2000







- Gardena Bus Network
- T- Transfer Point to Gardena, Torrance, or LA Metro
- M- Metro Rail

Gardena Municipal
No. 111111

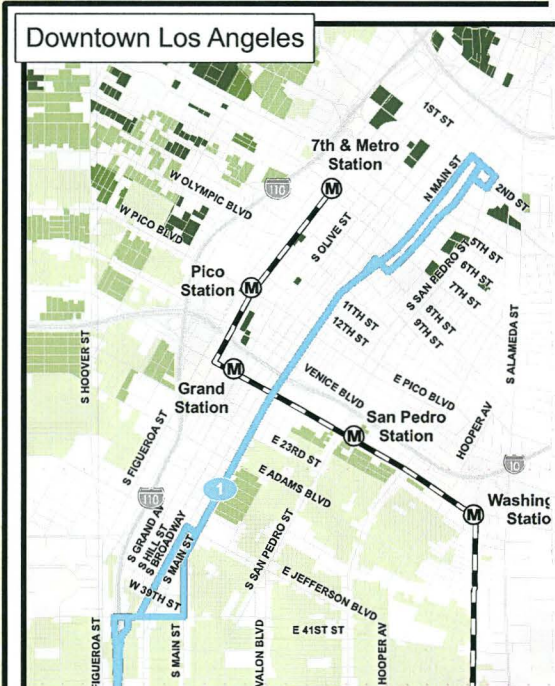








Map 2.6
Sr. Citizen (Age 65+)
Population Density

Persons per Acre	
	More than 15
	10 - 15
	5 - 10
	Less than 5

Source: Census 2000

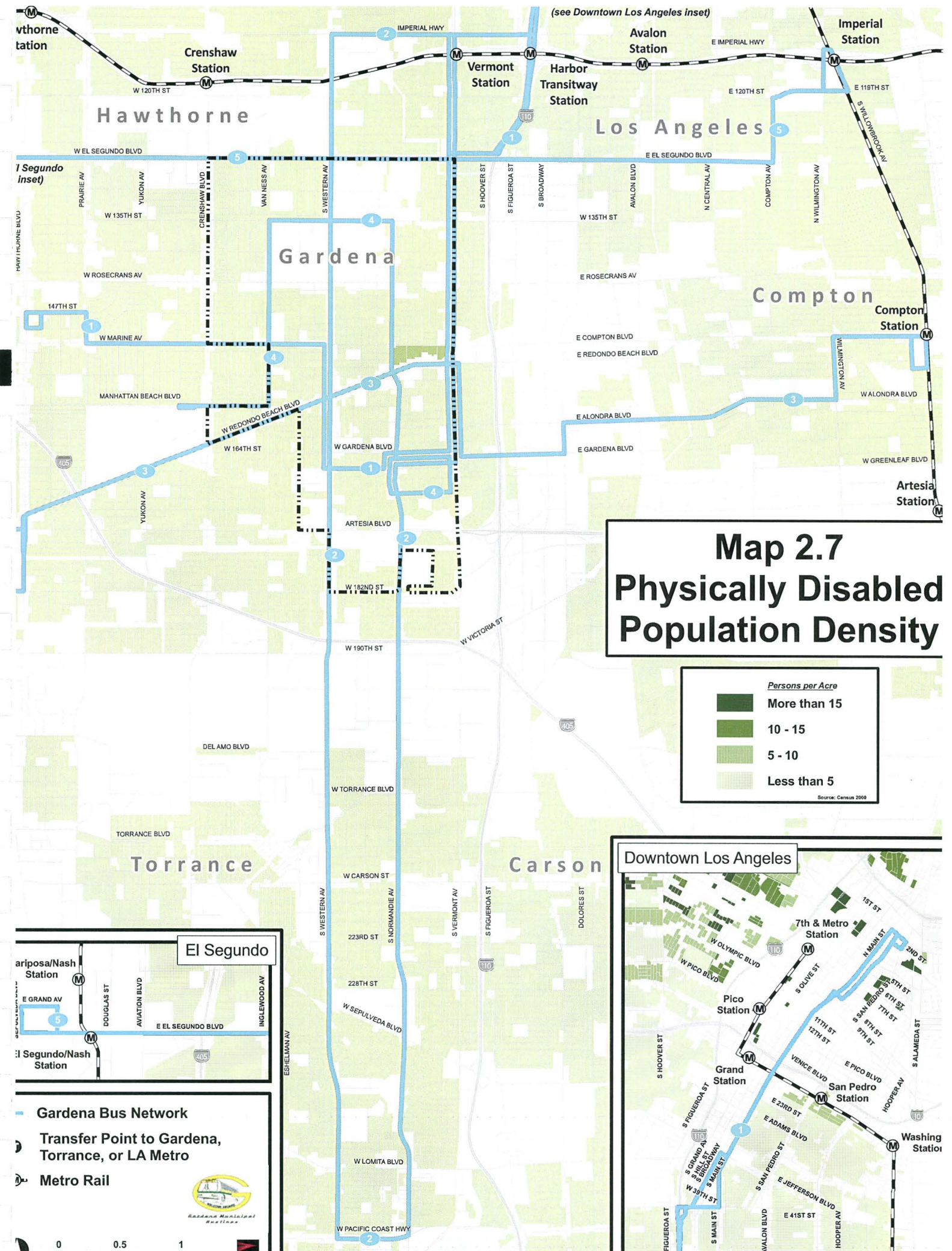


-  Gardena Bus Network
-  Transfer Point to Gardena, Torrance, or LA Metro
-  Metro Rail



Gardena Municipal

0 0.5 1



Map 2.7 Physically Disabled Population Density

Persons per Acre	
	More than 15
	10 - 15
	5 - 10
	Less than 5

Source: Census 2000

El Segundo

El Segundo/Nash Station

El Segundo/Nash Station

Downtown Los Angeles

7th & Metro Station

Pico Station

Grand Station

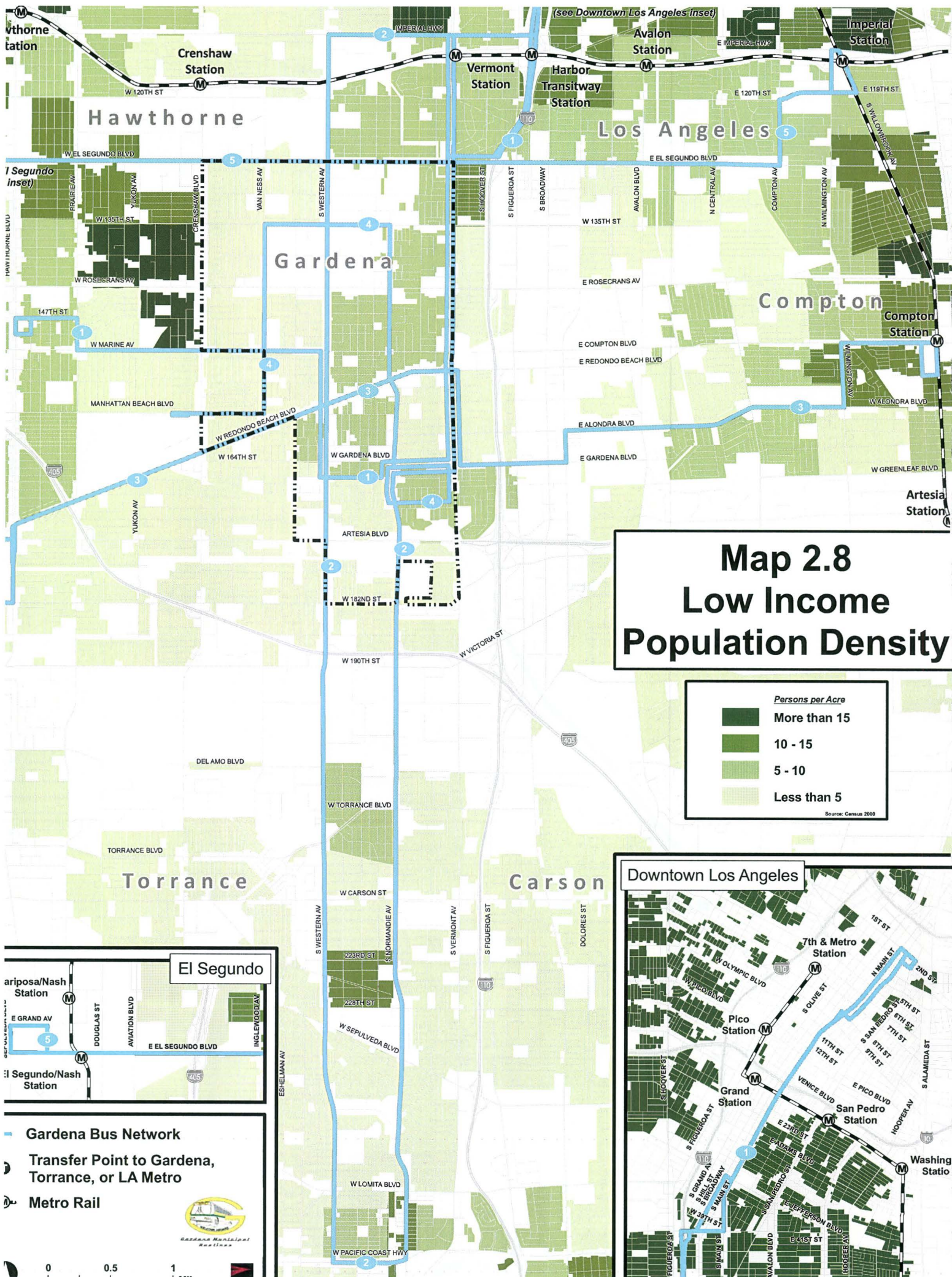
San Pedro Station

Washing Station





- Gardena Bus Network
- Transfer Point to Gardena, Torrance, or LA Metro
- Metro Rail

Gardena Municipal Seal

0 0.5 1



**Map 2.8
Low Income
Population Density**

Persons per Acre	
	More than 15
	10 - 15
	5 - 10
	Less than 5


Source: Census 2000



Gardena Bus Network

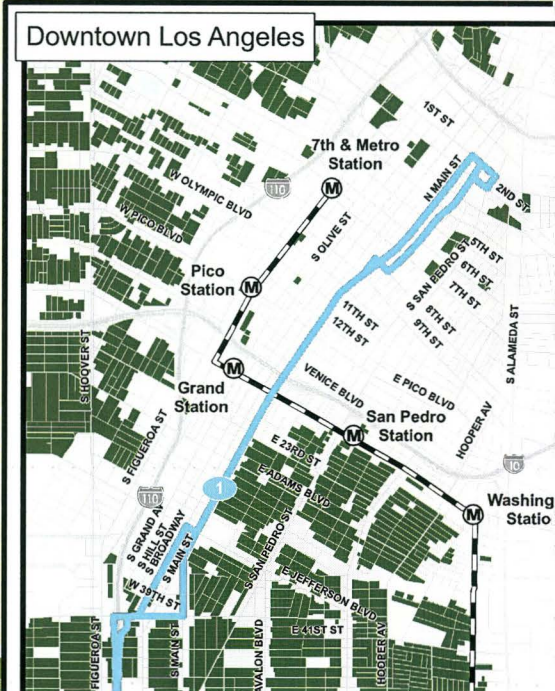
Transfer Point to Gardena, Torrance, or LA Metro

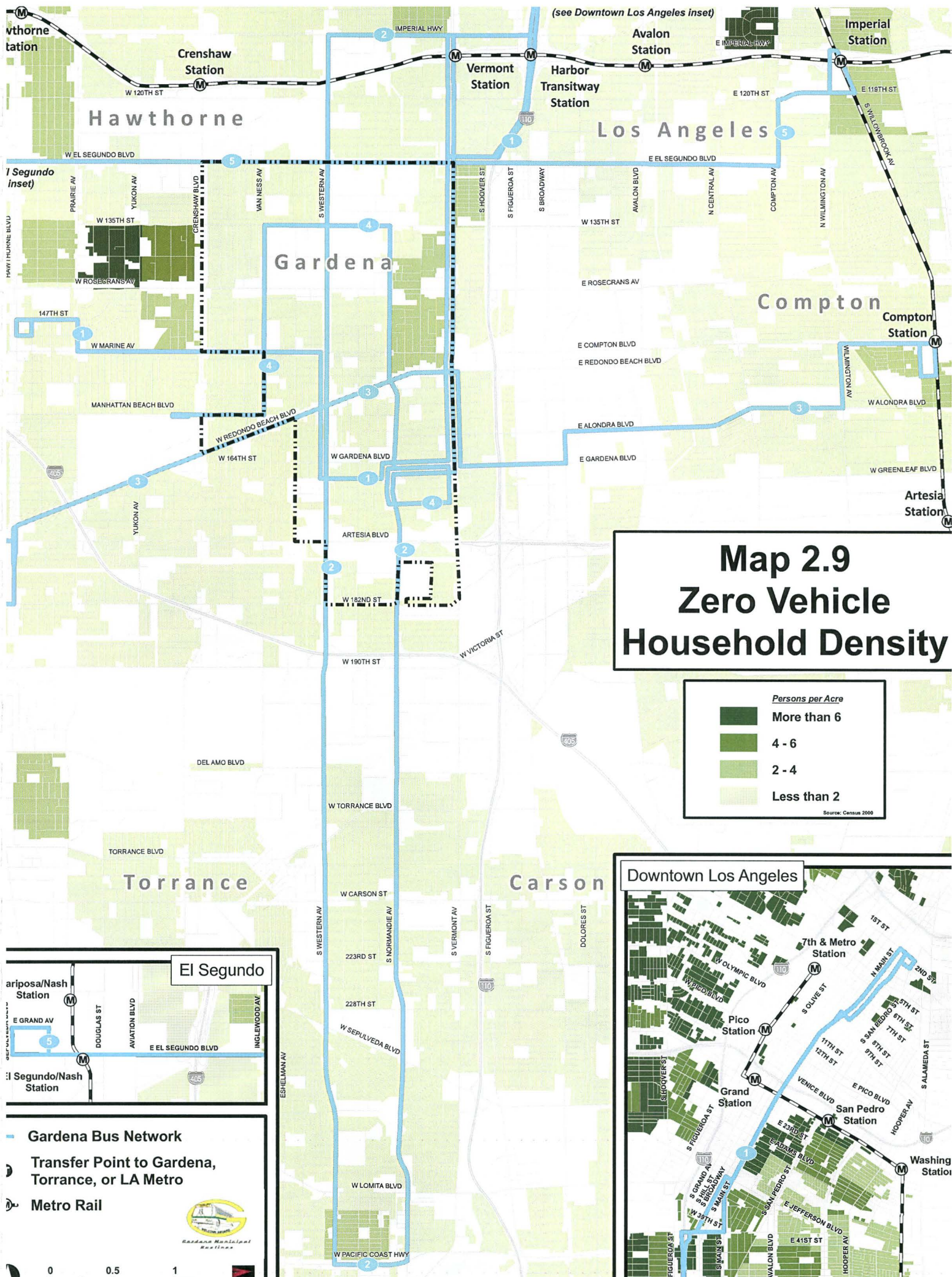
Metro Rail



Gardena Municipal Seal

0 0.5 1





Map 2.9 Zero Vehicle Household Density

Persons per Acre	
	More than 6
	4 - 6
	2 - 4
	Less than 2

Source: Census 2000

El Segundo

- Gardena Bus Network
- Transfer Point to Gardena, Torrance, or LA Metro
- Metro Rail

0 0.5 1

Downtown Los Angeles



2.1.3 Key Findings – Community Profile

- Current population and employment densities suggest several areas are sustaining transit service. Hawthorne, south Los Angeles, Compton, and Gardena have the highest population densities. Employment densities are highest in Torrance, although Gardena also shows moderately dense pockets of employment. These high density areas are currently served by Gardena Municipal Bus Lines or neighboring transit services.
- SCAG predicts little change in the service area between 2010 and 2035. Significant residential development is expected in only a small portion of the overall area in Hawthorne. Moderate residential increases will occur in Gardena as well. Little to no intensification of employment is expected, while light and heavy industrial areas are not expected to drastically change.
- Overall dispersal of transit dependent populations is broad, with few areas of high concentration. However, there are a few market segments that appear to be significant transit markets, including areas of LA County, Hawthorne, Gardena, Compton and south Los Angeles. Hawthorne and Gardena are potentially the strongest transit markets in the service area, showing relatively moderate concentrations of nearly all of the key demographics. Both communities are currently served by GMBL Routes 2, 3 and 5, as well as LA Metro and Torrance Transit routes.

2.2 Consumer Research: On-Board Passenger Survey

2.2.1 Background

Gardena Municipal Bus Lines conducted a system-wide on-board survey in October 2010, in conjunction with the passenger counting process. The objective of the survey was to examine travel behavior and demographic characteristics of current GMBL riders. The survey also collected customer service data and the passenger's opinion of several elements of GMBL service.

Ridecheck staff and supervisors already familiar with GMBL services and employees conducted the passenger survey. Surveyors were instructed to ride fixed-route and commuter services and encourage all passengers to complete the on-board survey. Each surveyor attempted to collect all surveys from passengers before leaving the bus. However, if time did not allow for completion, passengers were also encouraged to return the survey to the GMBL driver on their next trip. In addition to the English version of the on-board survey (Figure 2.1), surveys were distributed in Spanish, Korean and Japanese to accommodate most non-English speakers.

Approximately 1,256 surveys were collected from fixed-route and commuter tripper passengers, or about 10 percent of total fixed-route weekday ridership. 82 percent of surveys collected were completed in English, while another 17 percent were completed in Spanish. A total of 6 passengers used the Korean and Japanese translations.

GMBL mailed a separate passenger survey to all Elderly & Handicapped (E & H) customers which focused on the special paratransit service (Figure 2.2). Stamped and addressed return envelopes were provided with the survey to facilitate survey return. 88 E & H surveys were returned, nearly 60 percent of the total clientele.

Figure 2.1

GARDENA MUNICIPAL BUS LINES RIDER SURVEY

DEAR BUS RIDER: Please take a minute to help us improve your transit experience by completing the following survey. Place the survey in the collection box as you exit the bus, or hand it to the person who gave it to you. **If you have already filled out a survey, you do not need to fill out another one.** All replies are strictly confidential.

1. What Gardena Bus Route are you currently riding? _____

2. What is the main purpose of your trip today?

- 1 ___ Work
- 2 ___ Shopping
- 3 ___ School
- 4 ___ Medical/Dental
- 5 ___ Personal Business
- 6 ___ Visiting/Recreation
- 7 ___ Other

3. How did you get to the bus you are riding now?

- 1 ___ Transferred from LA Metro Route _____
- 2 ___ Transferred from Torrance Route _____
- 3 ___ Transferred from Green Line
- 4 ___ Transferred from Blue Line
- 5 ___ Transferred from other Bus Service:
_____ Route: _____
- 6 ___ Walked ___ Blocks
- 7 ___ Got a Ride
- 8 ___ Drove Myself
- 9 ___ Other _____ (please specify)

4. Where are you coming from before getting on the bus? Please provide the nearest street intersection or address and zip code, if you know it.

5. Where are you going to after getting off the bus? Please give the nearest street intersection or address and zip code, if you know it.

6. Which fare category are you in?

- 1 ___ basic local adult
- 2 ___ senior or disabled
- 3 ___ student (K-12)
- 4 ___ other (child, blind)

7. How did you pay for your fare on this bus?

- 1 ___ Cash
- 2 ___ Gardena Bus Tokens
- 3 ___ Transfer
- 4 ___ EZ Pass
- 5 ___ Employee Subsidy
- 6 ___ Other

8. How likely would you be willing to use the TAP Card, a plastic card you can reuse for bus fares by simply loading money onto it?

- 1 ___ very likely
- 2 ___ likely
- 3 ___ somewhat likely
- 4 ___ not likely

9. How many one-way trips will you be making today? (A one way trip is from your start point to your destination, even if it requires a transfer; the return trip is a second one way trip.)

- 1 ___ 1
- 2 ___ 2
- 3 ___ 3
- 4 ___ 4
- 5 ___ 5
- 6 ___ 6 or more

10. How often do you ride Gardena Bus?

- 1 ___ 4 or more days per week
- 2 ___ 2 or 3 days per week
- 3 ___ 1 day per week
- 4 ___ Less than one day per week

11. How would you make this trip if the bus were not available?

- 1 ___ Drive
- 2 ___ Ride with someone
- 3 ___ Bicycle
- 4 ___ Walk
- 5 ___ Taxi
- 6 ___ Wouldn't make trip

12. How long have you been riding on the Gardena Bus?

- 1 ___ Less than 6 months
- 2 ___ 6 months to 1 year
- 3 ___ 1 to 2 years
- 4 ___ 2 years or longer

13. How would you rate Gardena Municipal Bus Lines service?

- 1 ___ Excellent
- 2 ___ Good
- 3 ___ Adequate
- 4 ___ Poor
- 5 ___ Very Poor

14. Please rate each of the following features of the transit services. (5 = excellent, 1 = needs much improvement)

- o Bus Stop Features: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- o Bus Stop Locations: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- o System/Vehicle Safety: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- o Bus Cleanliness/Comfort: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- o On-Time Performance: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- o Driver Courtesy: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- o Cost of Riding: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___

15. If available on Gardena Municipal Bus Lines, would you use bike racks?

- 1 ___ Yes
- 4 ___ No

16. Your age is...

- 1 ___ 17 years or under
- 2 ___ 18 to 24 years
- 3 ___ 25 to 34 years
- 4 ___ 35 to 44 years
- 5 ___ 45 to 54 years
- 6 ___ 55 to 59 years
- 7 ___ 60 to 64 years
- 8 ___ 65 years or more

17. You are: 1 ___ Female 2 ___ Male

18. Your ethnic origin is...

- 1 ___ African American
- 2 ___ White
- 3 ___ Hispanic
- 4 ___ Korean
- 5 ___ Japanese
- 6 ___ Chinese
- 7 ___ Other: _____

19. How many working motor vehicles are available in your household?

- 1 ___ None
- 2 ___ One
- 3 ___ Two
- 4 ___ Three or more

20. Your total annual household income is:

- 1 ___ Less than \$10,000
- 2 ___ \$10,000 to \$14,999
- 3 ___ \$15,000 to \$19,999
- 4 ___ \$20,000 to \$24,999
- 5 ___ \$25,000 to \$29,999
- 6 ___ \$30,000 to \$39,999
- 7 ___ \$40,000 to \$49,999
- 8 ___ \$50,000 to \$59,999
- 9 ___ \$60,000 and up

21. Is there any need for direct service to/from a specific location? If so, where? _____

22. How do you get information about Gardena Municipal Bus Lines service/programs?

- 1 ___ Gardena Bus Website
- 2 ___ Printed Brochures
- 3 ___ Bus Stop Information
- 4 ___ Phone In
- 5 ___ Word of Mouth
- 6 ___ Other: _____

23. Any other comments/suggestions? _____

**THANK YOU FOR YOUR COOPERATION.
PLEASE RETURN TO COLLECTION BOX OR SURVEYOR.**

Figure 2.2

Gardena Special Transit Customer Service Survey

Dear Rider: Please take a minute to help us improve your transit experience by completing the following survey. Place the completed survey in the return envelope and place in the mailbox. All replies are strictly confidential and anonymous.

1. How often do you currently use the Gardena Special Transit?

- ¹ ___ 4 or more days per week ³ ___ At least once per month
² ___ 1 - 3 days per week ⁴ ___ Few times per year

2. How long have you been using Gardena Special Transit?

- ¹ ___ Less than 6 months ³ ___ 1 to 2 years
² ___ 6 months to 1 year ⁴ ___ 2 years or longer

3. What is the main purpose of your typical trip (choose as many that apply)?

- ¹ ___ Senior Center ⁴ ___ Work ⁷ ___ Church
² ___ Shopping ⁵ ___ Personal ⁸ ___ School
³ ___ Medical/Dental ⁶ ___ Visiting/Recreation ⁹ ___ Other: _____

4. How do you typically pay for your trip(s)?

- ¹ ___ Cash ³ ___ Free (legally blind)
² ___ S.S.I. tickets (Senior Citizens Bureau) ⁴ ___ Other: _____

5. What other transportation would you use if Gardena Special Transit service is not available? _____

6. Overall, how satisfied are you with the current Gardena Special Transit service?

- ¹ ___ Very Satisfied ³ ___ Neither satisfied nor dissatisfied ⁵ ___ Very dissatisfied
² ___ Somewhat satisfied ⁴ ___ Somewhat dissatisfied

Please explain why you chose your answer:

7. Please rate each of the following with respect to Gardena Special Transit service.

(5 = excellent, 1 = needs much improvement)

- Cost of service: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- Time needed to get to destination: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- Available service hours: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- Service area: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- Driver courtesy: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- Vehicle cleanliness: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- Vehicle comfort: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___
- Service safety: 5 ___ 4 ___ 3 ___ 2 ___ 1 ___

Figure 2.2

8. On your most recent trip, was the reservation process easy?

¹ ___ Yes ² ___ No

9. Were you able to get through to a dispatcher on your most recent phone call?

¹ ___ Yes ² ___ No

If yes, about how long did it take for the phone to be answered? _____

10. Was the dispatcher courteous to you during your most recent phone request to be picked up?

¹ ___ Yes ² ___ No

11. Were you able to schedule the pickup time that you requested?

¹ ___ Yes ² ___ No

12. On your most recent trip, did your vehicle arrive within 15 minutes of your scheduled pickup time?

¹ ___ Yes ² ___ No

If no, about how many minutes?: _____

13. On your most recent trip, did you get to your destination within 15 minutes of your scheduled time?

¹ ___ Yes ² ___ No

If no, about how many minutes?: _____

14. On your most recent trip, did the driver give you assistance in getting into/out of the vehicle?

¹ ___ Yes ² ___ No

15. Would you be willing to use fixed-route service for some of your trips??

¹ ___ Yes ² ___ No

If no, why not? _____

16. Any other comments or suggestions?

Thank you for your cooperation.

2.2.2 Fixed-Route Survey Results

Rider Profile

The following key demographics were identified for Gardena Municipal Bus Lines riders based on the on-board survey results:

Gender

The distribution of survey responses shows that slightly more women (55 percent) ride GMBL services than men (45 percent), which is usual for transit in general.

Age

34 percent of respondents are ages 17 or under, while more than half are under the age of 25. Seniors account for a very small portion of ridership; only 5 percent are ages 60 or higher (likely a result of the low-fare curb-to-curb special paratransit service available to seniors).

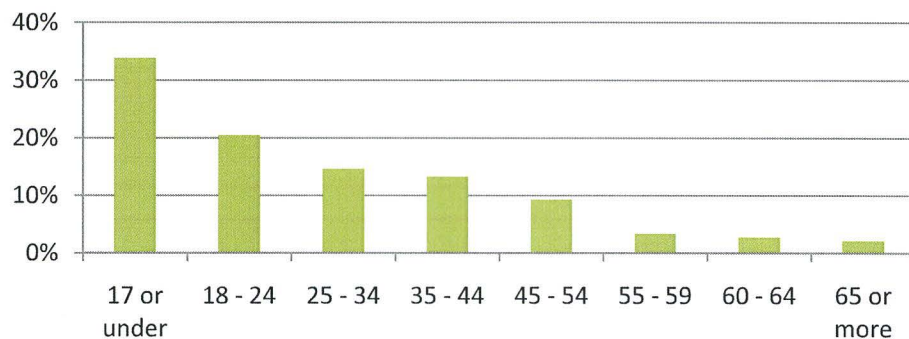


Figure 2.3 Age

Household Income

Nearly two-thirds of survey responses have indicated an annual household income of less than \$20,000. This may be influenced by the high number of young GMBL riders and current levels of low-income riders observed in the service area. Only 10 percent of respondents come from households earning \$50,000 per year or more.

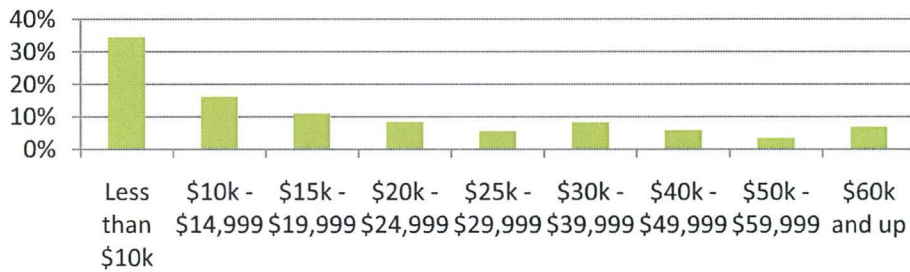


Figure 2.3 Annual Household Income

Vehicle Availability

Respondents were asked the number of vehicles available in their household. Nearly one-third of respondents reported no vehicles available in their household.

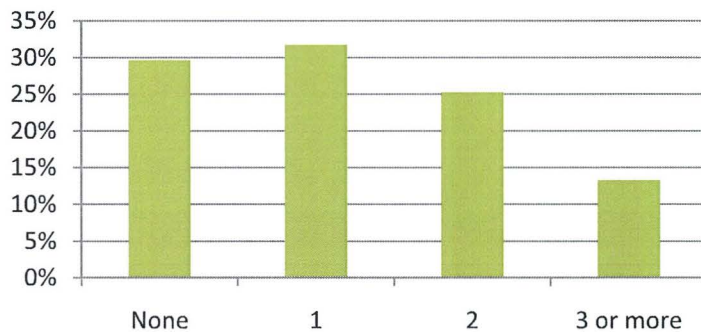


Figure 2.4 Vehicle Availability

Ethnicity

GMBL survey respondents are predominantly Hispanic and African American.

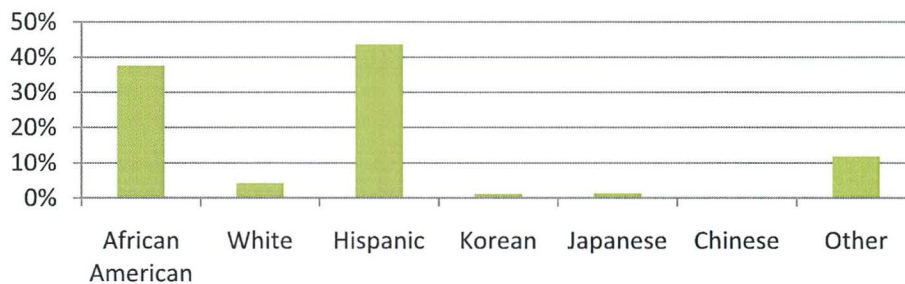


Figure 2.5 Ethnicity

Length of Patronage

50 percent of respondents have been riding GMBL for two years or longer, while more than two-thirds of passengers have been using GMBL for one year or longer. Approximately 1/3 are new riders, reflecting a fairly high turnover of ridership annually.

Length of Patronage	Percent
Less than 6 months	22%
6 months to 1 year	10%
1 to 2 years	18%
2 years or longer	50%

Figure 2.6 Length of GMBL Patronage

Trip Characteristics

Using GMBL Services

Nearly 75 percent of respondents use GMBL services four days a week or more. Only 6 percent use the service less than once a week. Current GMBL riders appear to be highly dependent throughout weekly travel.

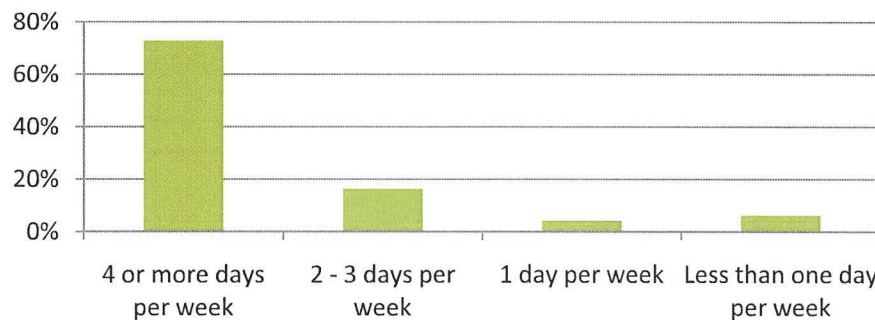


Figure 2.7 Weekly Use of GMBL Service

Of these responses, approximately 80 percent make 1–2 one-way trips per day. A one-way trip is a linked trip from start point to destination, even if it includes a transfer; the return trip is a second one-way trip. Five percent of respondents reported making five or more one-way trips per day.

Trip Purpose

Work and school are the two most common trip purposes among GMBL riders, representing over 70 percent of all transit use. This is consistent with the high youth ridership on the system.

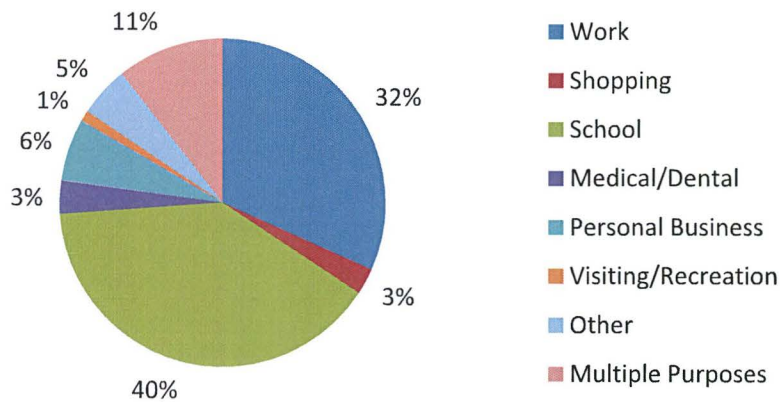


Figure 2.8 Trip Purpose

Alternate Transportation

Survey respondents were asked how they would make their trip if GMBL services were not available. Most respondents answered that they would get a ride with someone else or walk to their destination. However, over 20 percent indicated that they would not make the trip reflecting a fairly high level of transit dependency among current riders.

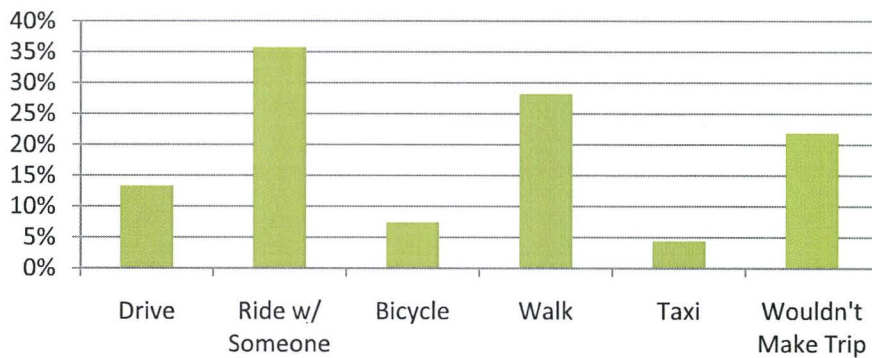


Figure 2.9 Alternate Modes of Transportation

Fares

Fare Category

The most common fare categories paid are adult and student fares, accounting for 91 percent of survey responses. This is consistent with age, income, and trip purpose characteristics of current GMBL riders.

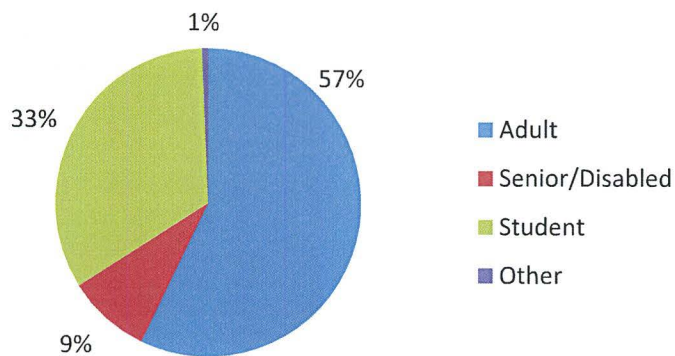


Figure 2.10 Fare Category

Fare Media

In addition to fare category, respondents were asked what type of media they used to pay the bus fare. An overwhelming majority of respondents paid with cash. Transfers and EZ passes were also used, however with much less frequency. Again, high use of cash for fare payment is another indication of a large economically disadvantaged ridership. In addition, the lack of other available fare media (day passes, weekly passes, etc.) or reduced priced media may result in the high use of cash fares.

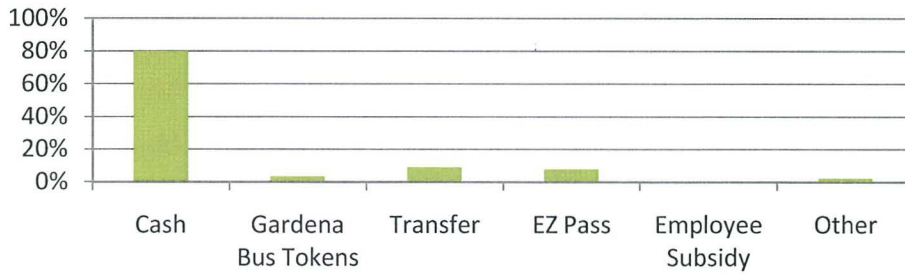


Figure 2.11 Fare Media

Respondents were also asked how likely they would be use a TAP Card if available. The reusable card is a convenient way to reload bus fares but does not offer any fare discount. Responses were highly divided, with only 51 percent saying they are likely or very likely to use a TAP Card. This response is somewhat expected due to the higher level of lower income riders, who are less willing or able to pay for the initial card cost. This percentage of those willing to use the TAP card would likely be higher if the initial cost of the card was deferred to the City. In addition, low income riders have less disposable income to load the TAP card with monthly pass fares, decreasing their likelihood to purchase or replenish the card.

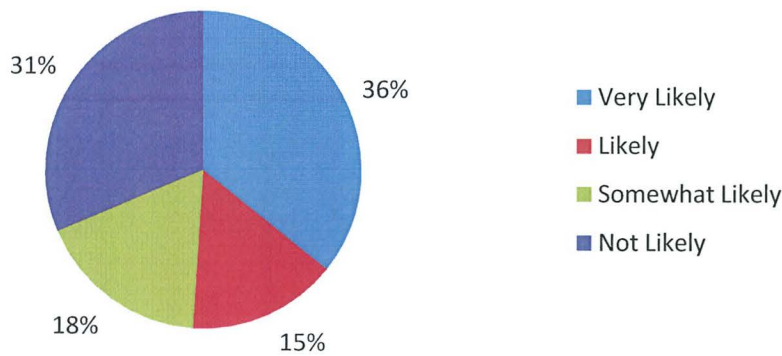


Figure 2.12 TAP Card Use

Accessing Information

It is important to determine how GMBL riders currently access network and service information. While printed informational materials are useful to many

transit riders, the Gardena Municipal Bus Lines website may be a more efficient and effective tool for communicating up-to-date route and schedule information (as has been the trend both regionally and nationally).

Currently, printed brochures are the most popular information source among GMBL riders who completed the survey. However, many respondents also utilize the current website to provide service information. These two means of information are critical in providing reliable service availability to current and future riders.

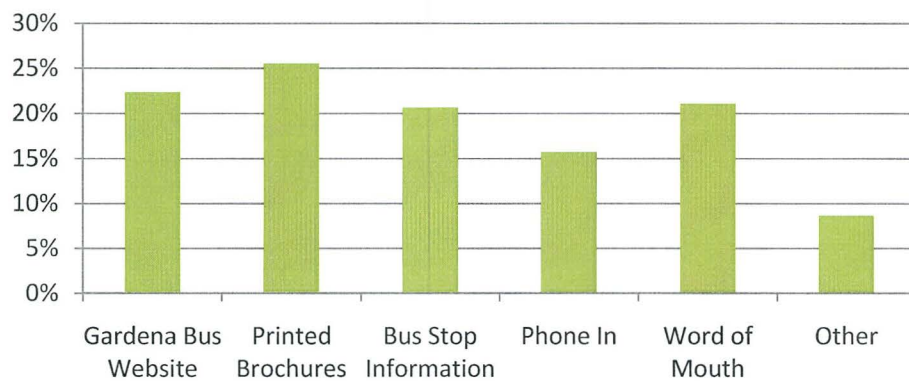


Figure 2.13 Accessing GMBL Network Information

Opinions of GMBL Service

Respondents were asked to review the overall quality of Gardena bus service and then to rate the quality of features of transit service. This will enable GMBL to prioritize investment and respond to customer needs.

Service Quality

Three-quarters of respondents rated GMBL services as good or better. Only 7 percent feel that GMBL services are less than adequate. This response reflects several different features, which are detailed below.

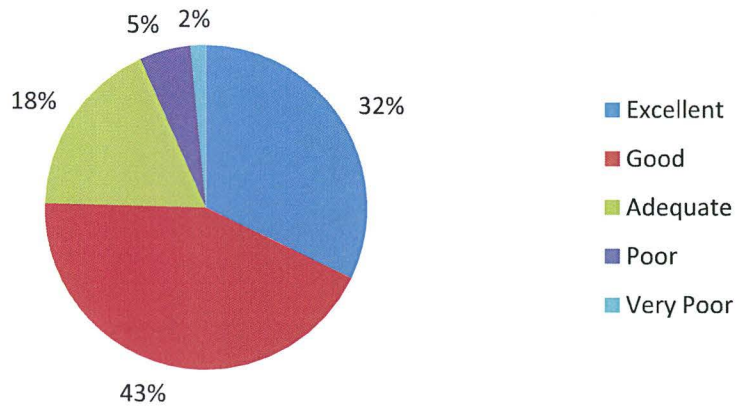


Figure 2.14 Service Quality Ratings

Transit Features

Each feature was rated on a 5 – 1 scale (5=excellent, 1=needs much improvement). Bus Stop Locations and Bus Cleanliness/Comfort were rated highest (average 4.1). On-Time performance received the lowest rating, with an average of 3.6. However, all ratings are close; no one service characteristic stands out among the rest as highly in need of improvement.

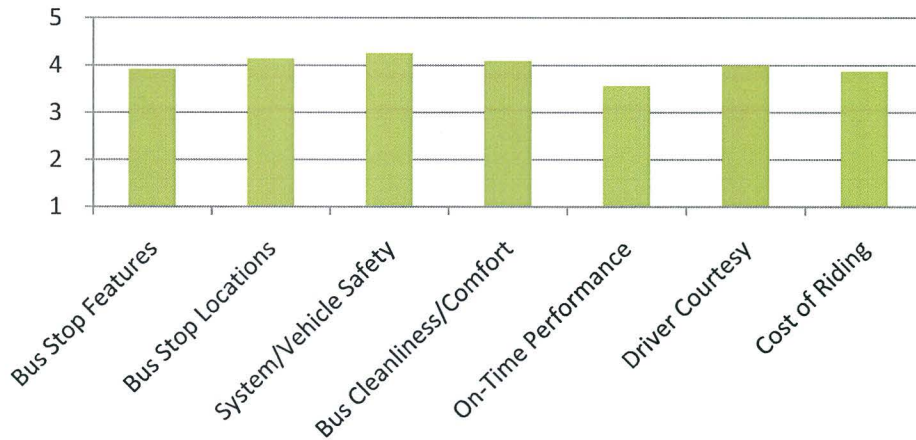


Figure 2.15 Improvement Needs for Transit Features

Bike Racks

The current fleet of GMBL buses is not equipped with bike racks. Passengers were asked if they would use bike racks if they were available on Gardena buses. Respondents are slightly in favor of having bike racks installed (55 percent), while 45 percent of those who completed the survey said they would not use bike racks. This is not inconsistent with surveys at other systems and indicates that bike racks would likely be well utilized if available.

Transfers

Completing the Journey

Many GMBL passengers use other modes of transportation to complete their journey. Respondents were allowed to select more than one mode of access/egress. When asked how they got to the bus they were currently riding, 42 percent of respondents said they transferred from another service provider, with most transferring from LA Metro service. The most common mode among GMBL riders is walking.

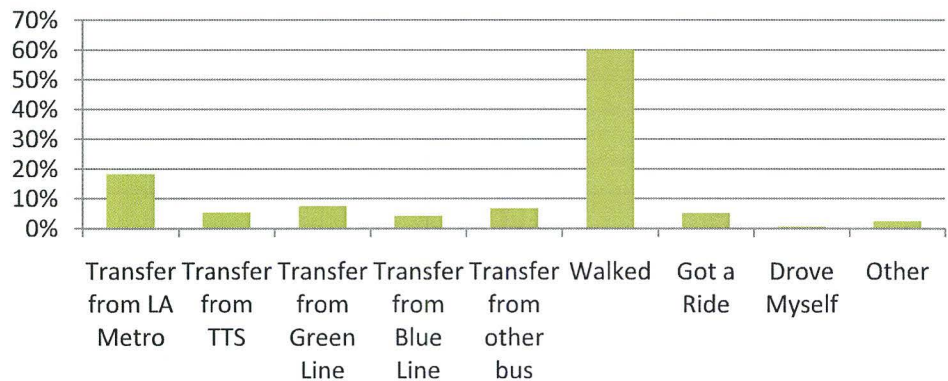


Figure 2.16 Completing the Journey

Additional transfer activity data was collected in the transfer analysis section of the report. GMBL drivers collected a total of 1,518 transfer slips for one weekday in order to determine passenger travel patterns and significant transfer connections within the GMBL network and with neighboring services. Please refer to the Service Analysis for further review of this data.

2.2.3 Elderly and Handicapped (E & H) Survey Results

The following rider characteristics and service feedback is based on survey responses from Elderly and Handicapped (E & H) service customers.¹ The overwhelming rate of return for completed surveys allows the following analysis to represent the typical E & H rider.

Rider Information

Frequency of Use

Most E & H riders use the service 1–3 days per week with 83 percent of riders using the service at least once a week. This suggests that most riders are not entirely dependent on the service for everyday use or make only occasional trips.

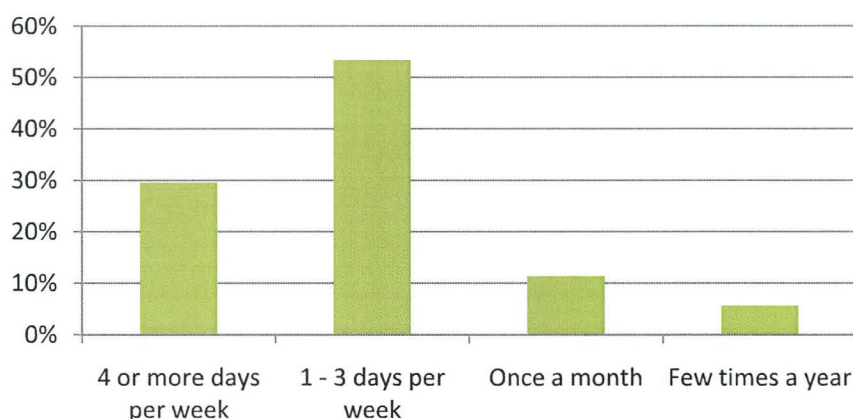


Figure 2.17 Frequency of Use

Length of Patronage

Two-thirds of all riders have used the service for 2 years or longer, while 85 percent of E & H riders have used the service for one year or longer reflecting a more stable ridership base than fixed-route.

¹ GMBL's E & H services are a supplemental curb-to-curb paratransit for both seniors and the disabled that are separate from the LA County Access Services, Inc., which provides complementary ADA paratransit service.

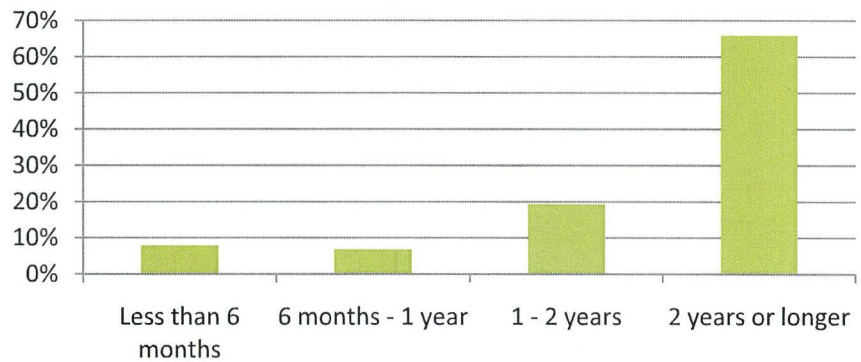
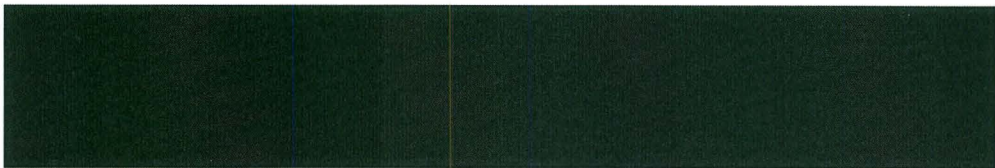


Figure 2.18 Length of Patronage

Using Elderly & Handicap Services

Trip Purpose

Riders were asked what purposes they typically use E & H services with multiple purposes allowed. More than half of respondents use the service for trips to the senior center and/or to medical/dental appointments with just under half using the E & H service for shopping.

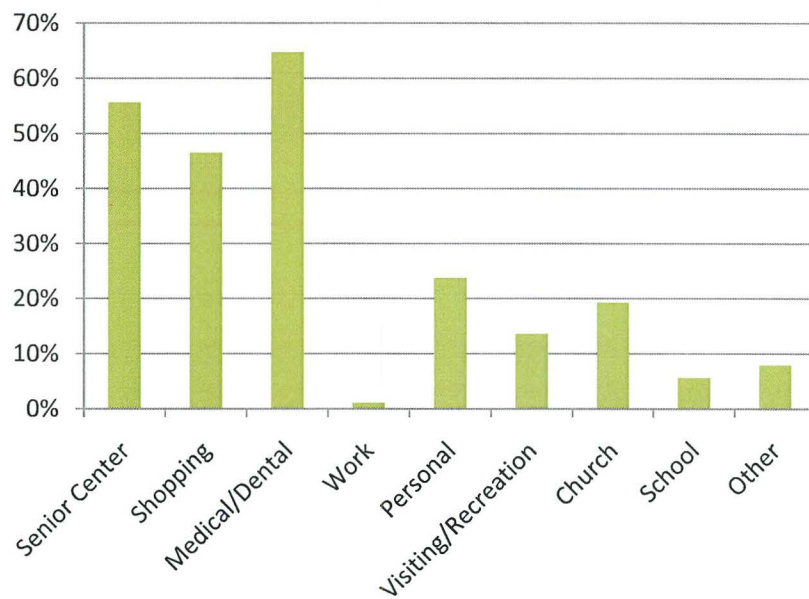


Figure 2.19 Trip Purpose

Fare Payment

More than two-thirds of respondents use cash to pay the E & H fare. 20 percent of respondents chose another form of fare payment, most specifying that they use tokens to pay for E & H services. The tokens are available for those E & H riders traveling in Hawthorne. A total of 3 passengers reported using S.S.I. tickets to board Special Transit service.

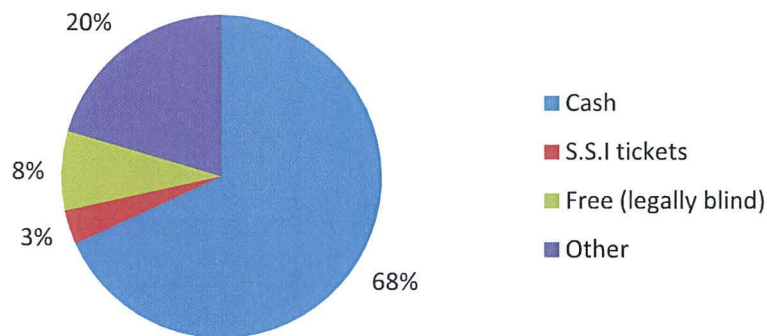


Figure 2.20 Fare Payment

Alternate Transportation

Riders were asked how they would complete their trips if Elderly and Handicapped services were not available. Most respondents would plan to ride with a friend or relative (28 percent), while some would either utilize the GMBL fixed-route bus network, LA County Metro Access (ADA), or would choose to not make the trip at all.

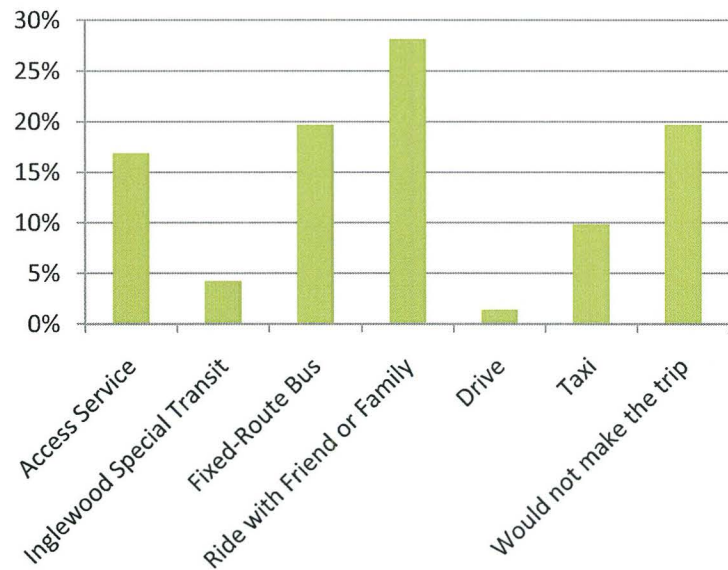
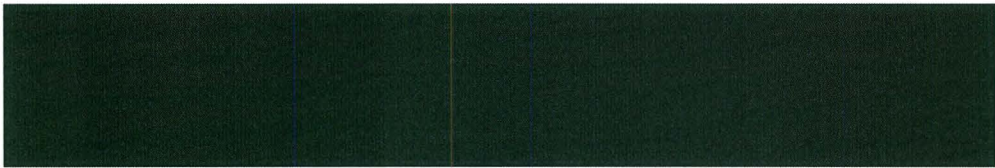


Figure 2.21 Alternate Modes of Transportation

Using Fixed Route Service

While only 20 percent of riders would use fixed-route bus service in the absence of E & H service, when asked specifically, 70 percent of passengers are willing to use fixed-route services for some of their trips. E & H services currently provide transportation direct to destinations not served by all fixed-route bus services.

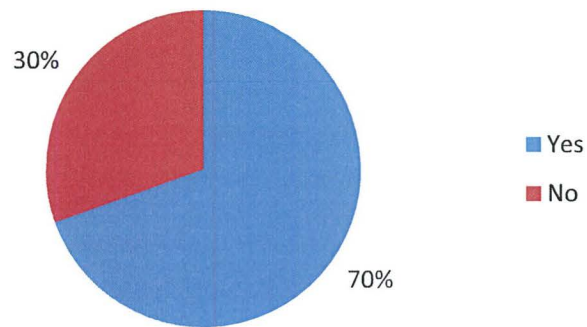


Figure 2.22 Using Fixed-Route Service

Customer Service

Customer Satisfaction

The majority of the E & H riders feel very satisfied with the service they receive. Not one respondent is very dissatisfied with the quality of service.

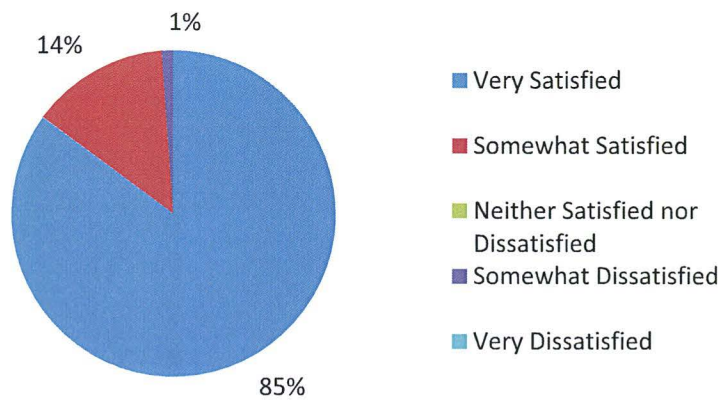


Figure 2.23 Customer Satisfaction

Service Features

Passengers were asked to rate the quality of several features of E & H service. Each feature was rated on a 5 – 1 scale (5=excellent, 1=needs much improvement). Driver courtesy was the highest rated feature, averaging 4.8. Also highly rated were the cost and safety of the service (average 4.7). Customers indicated a need to increase the service hours and to expand the service area.

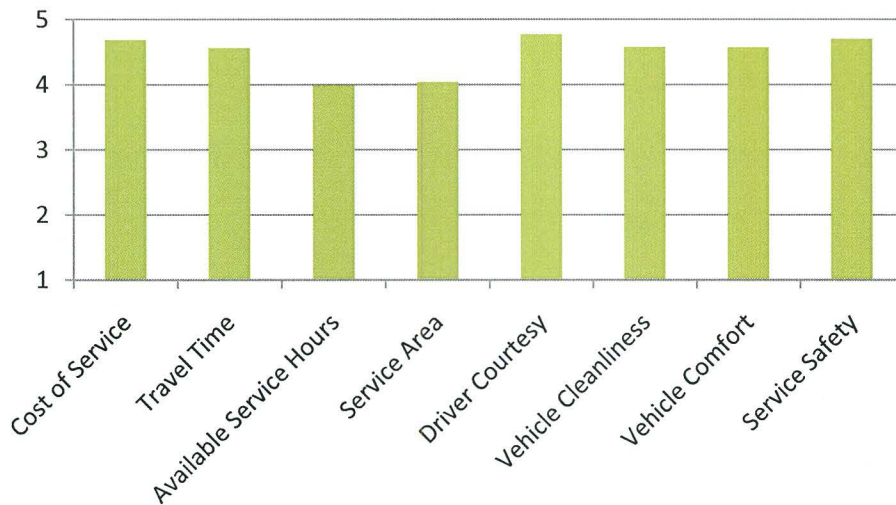
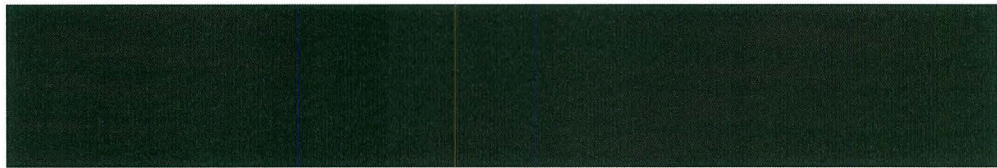


Figure 2.24 Service Features

Passenger Assistance

Nearly two-thirds of riders needed assistance getting into and out of the vehicle. Given the high rating of driver courtesy, GMBL is doing a good job of providing this assistance.

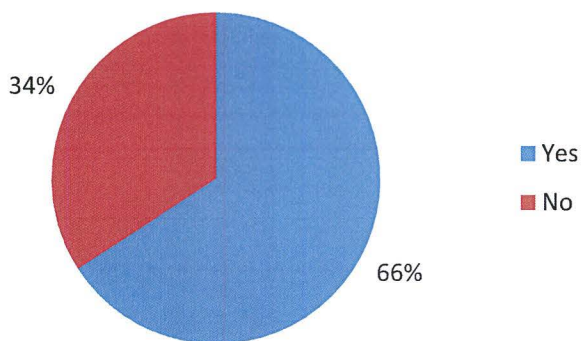


Figure 2.25 Passenger Assistance

Reservation Process

Placing a Reservation

96 percent of E & H passengers consider the reservation process easy to complete. 96 percent are also able to schedule their pick-ups at their desired time.

Working with the Dispatcher

95 percent of passengers are able to reach a dispatcher on their first try when calling to schedule service. Most riders feel the dispatchers are courteous to them over the phone, with only 2 percent reporting otherwise.

On-Time Performance

An arrival within 15 minutes of a scheduled arrival is considered to be on-time for E & H services.² More than 90 percent of E & H trips arrive on-time at scheduled pick-up and drop-off locations. Most trips that were not on-time were reported being about 10-15 minutes late.

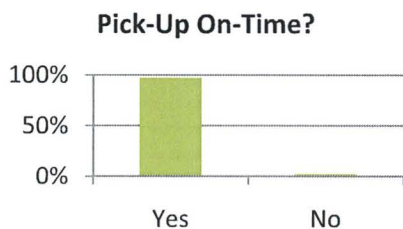


Figure 2.26 On-Time Pick-Ups

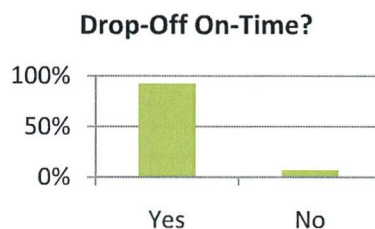


Figure 2.27 On-Time Drop-Offs

² GMBL's adopted performance standards call for a ± 10 minutes on-time window, which differs slightly from the current ± 15 minute policy.



2.2.4 Key Findings – Consumer Research

Fixed-Route Survey Findings

- Consistent with market demographic data (US Census 2000), survey responses indicate most GMBL passengers come from low-income, vehicle deficient households.
- Three-quarters of riders rated GMBL as excellent or good. All service attributes were rated as good except on-time performance, which received only a “fair” rating.
- About half of the respondents showed interest in using the TAP card if it is made available on GMBL service. This percentage would likely be higher if the initial cost of the card was deferred to the City.
- The majority of the respondents use the current website and brochures to access information regarding available fixed-route service.
- While most passengers walk to/from GMBL bus stops, 42 percent of respondents transfer to other transit services. This indicates that connections between services, specifically with LA Metro, should be considered in any proposed changes to the current GMBL fixed-route network.

Elderly and Handicapped Findings

- Customers are pleased with the service and feel that it is easy to schedule, safe, and highly reliable and has a good on-time performance.
- If E&H services were no longer available, 80 percent of respondents would continue to make the trip on different modes of transportation. At present, 70 percent of riders are willing to make some of their trips on fixed-route transit service.

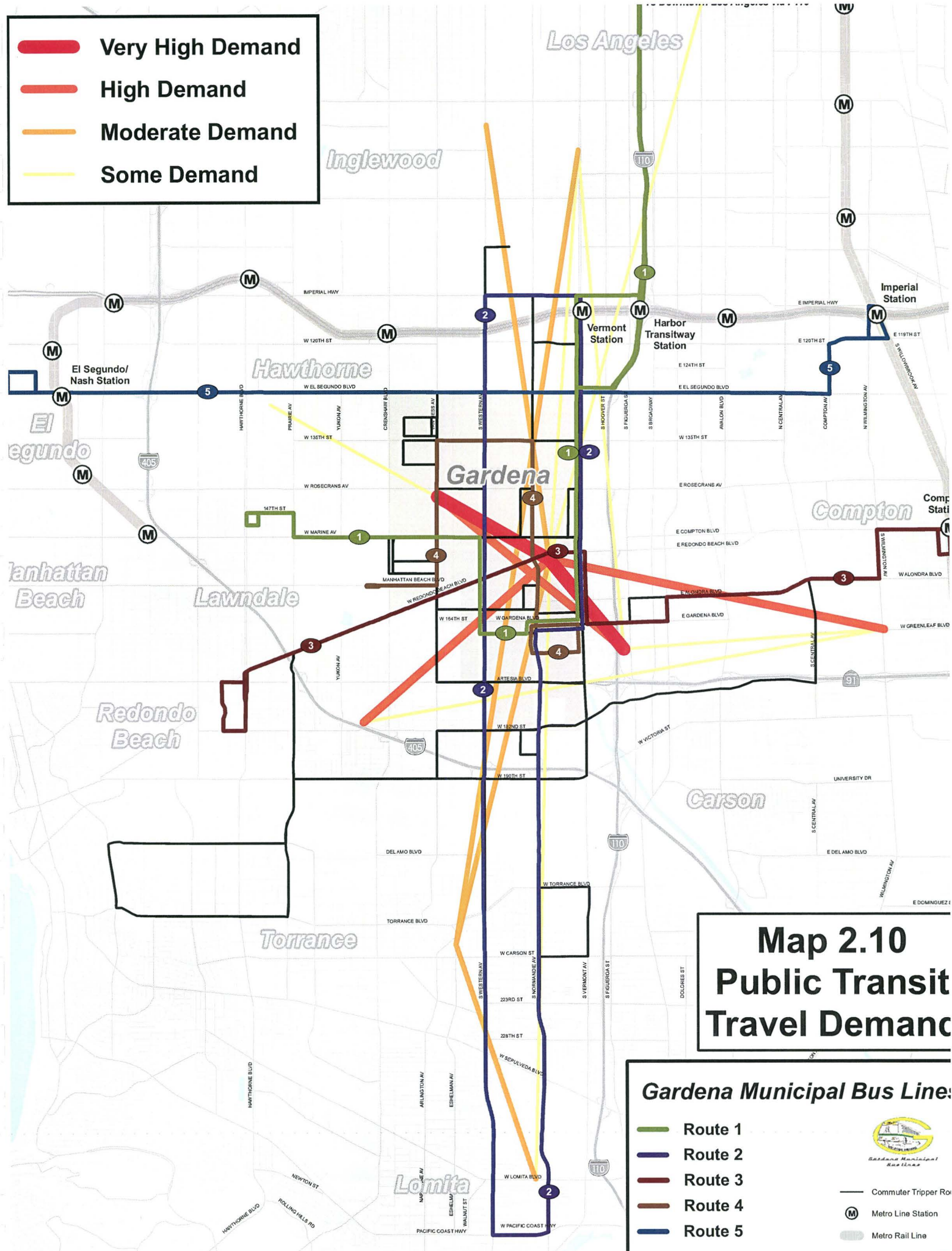
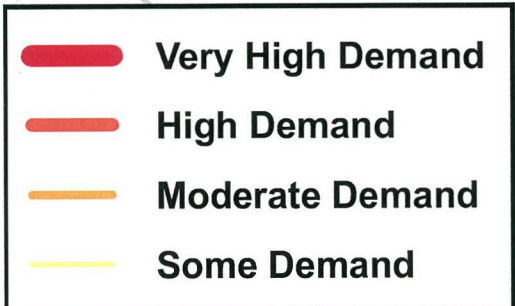


2.3 Travel Patterns

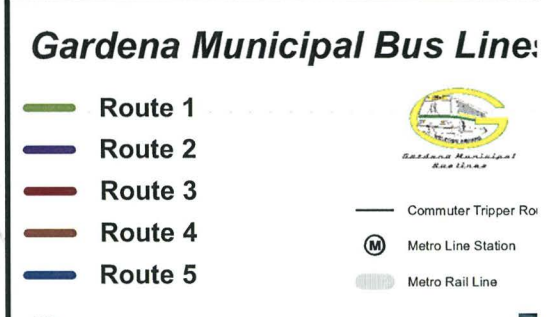
Origin-destination data provided by the on-board survey was used determine existing travel patterns within the GMBL service area. Such analysis may indicate areas of opportunity for transit to improve service to best match how patrons are using transit in the area.

2.3.1 Service Area Travel Patterns

Origin and destination data from the passenger survey was assigned to ZIP codes in order to summarize key travel patterns shown in Map 2.10. The highest volume of transit travel occurs near the center of Gardena. Patterns of high demand branch out from Gardena to neighboring, nearby areas. Moderate levels of demand extend in a north-south pattern along the network, following the Route 2 alignment.



**Map 2.10
 Public Transit
 Travel Demand**





2.3.2 Key Findings

- Transit travel demand is largely focused within the City of Gardena. The highest volume of transit travel is located between Gardena zip codes (depicted by “Very High Demand”). Demand patterns suggest GMBL patrons travel short distances on transit, and likely live and work within Gardena or nearby communities.

3. Service Evaluation

The Service Evaluation is a key component of Gardena Line-by-Line Analysis. The analysis is intended to identify the strengths and weaknesses of the overall GMBL system. It will also help GMBL to recognize certain opportunities to better position itself for maximum ridership growth and increased efficiency from the available resources and funding.

Areas of Analysis

The evaluation offers key findings both at a system and individual route level. It analyzes the fixed-route, Commuter Tripper, and Elderly & Handicap (E&H) paratransit services in separate subsections:

1. Fixed-Route Service

- a. Transit Network Overview: describes the GMBL system and the existing service levels.
- b. Ridership and Transfer Activity: details the current use of the GMBL system at the network and route level.
- c. Service Performance: evaluates service productivity and financial effectiveness.
- d. Service Quality: reviews reliability, operating speed, and trip loads.

2. **Commuter Tripper Service**: evaluates the service characteristics, current ridership levels, and comparison to the fixed-route network.

3. **Elderly & Handicapped Service**: briefly discusses current service policy, ridership, and performance.



Service Evaluation Goals

The service evaluation attempts to answer the following questions:

- What type of service is offered?
- How are people using the system?
- Where is service under- or over-utilized?
- Where can the system grow?
- Where does service quality need improvement?

The findings will contribute to a framework for development of recommendations for improvement for the GMBL network.



3.1 Methodology

In order to collect the necessary ridership and operating data for this analysis, a 100 percent ridecheck of all fixed-route and Commuter Tripper service was conducted during the month of October 2010. Approximately 30 temporary employees were trained to both perform passenger counts and distribute surveys to passengers. Checkers recorded passenger on/off counts at each stop and recorded arrival and departure times at each timepoint for each Gardena bus trip on weekdays, Saturdays, and Sundays. The data collected during the ridecheck is the basis of this analysis.

Following the ridecheck, the data was validated to ensure accuracy. All ridecheck data was processed to produce passenger activity, performance indicator, running time, schedule adherence, and trip load reports. The information within each report is used to analyze the system, identifying its strengths, weaknesses, and potential areas for growth.

One month of operating and passenger data for GMBL Elderly and Handicapped (E & H) was collected from staff for analysis purposes. This data represents a typical operating environment since patrons use the service on a regular basis.

3.2 Fixed-Route Service

Gardena Municipal Bus Lines, or GMBL, operates bus transit services in Gardena and adjacent communities. GMBL presently serves a 40 square mile area and a population of 287,500 people³. The system was established by the City of Gardena in 1940.

Presently, GMBL operates 43 fixed-route urban transit vehicles. GMBL operates approximately 115,000 annual fixed-route revenue hours, with 3.7 million unlinked passenger trips made in 2010⁴. This is down from 4.2 million passenger trips in 2009⁵ likely due to the present economy and the high gas prices.

3.2.1 Service Description

Figure 3.1 below illustrates GMBL fixed-routes that operate weekdays, Saturdays, and Sundays.

GMBL Route	Weekday	Saturday	Sunday
Route 1	x	x	x
Route 2	x	x	x
Route 3	x	x	x
Route 4	x	x	x
Route 5	x		

Figure 3.1 Service Description


The GMBL bus network provides service between Gardena and neighboring communities such as Torrance, Redondo Beach, Carson, City of Los Angeles, Hawthorne and unincorporated areas of Los Angeles County (Map 3.1). More than two-thirds of the GMBL service area lies outside the City of Gardena boundaries.

GMBL is one of four transit service providers in the South Bay subregion of Los Angeles County. Other transit operators, including LA Metro, Torrance Transit, and LADOT, provide regional connections within the GMBL service area (Map

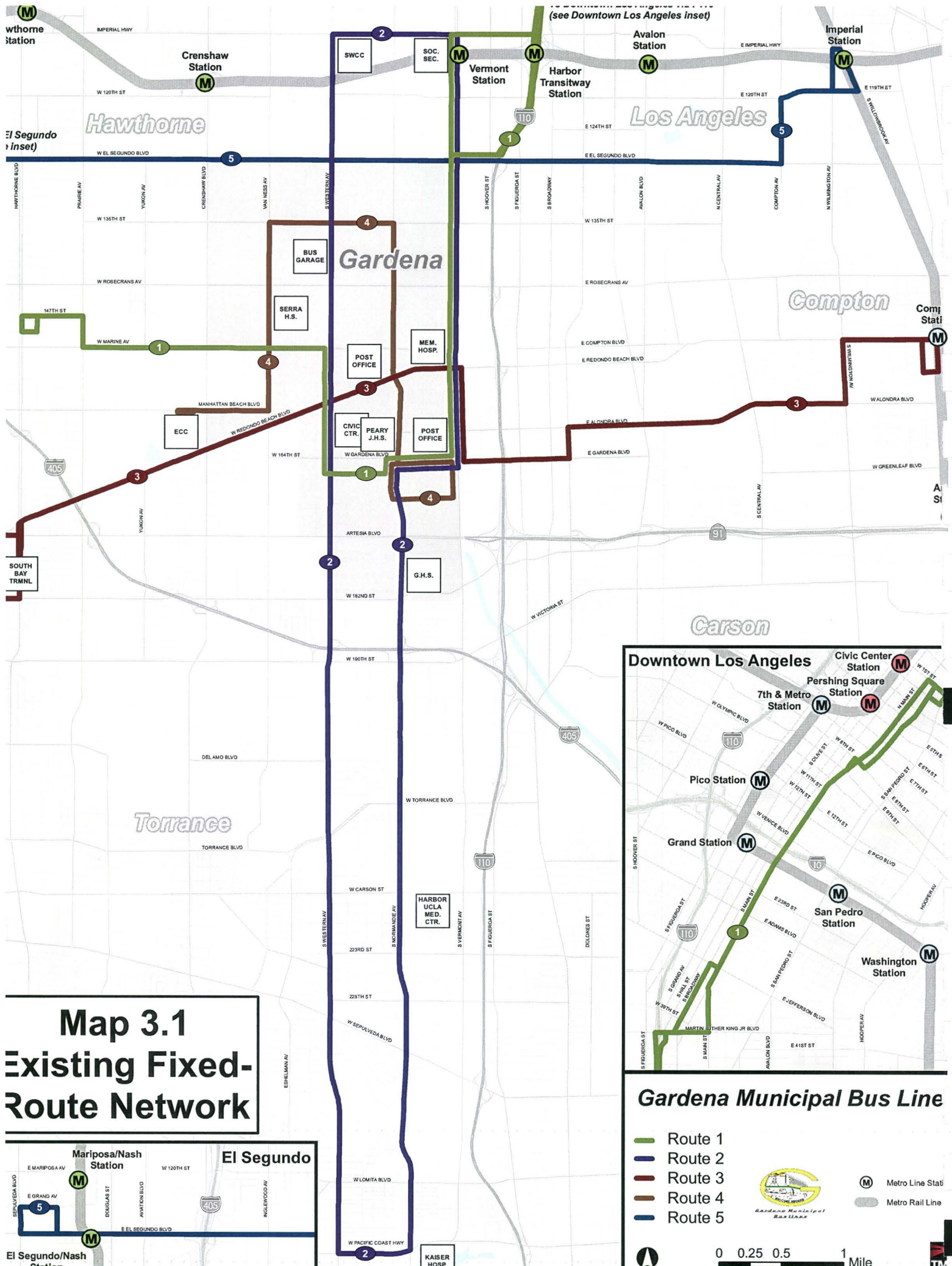
³ US Census, 2000

⁴ NTD, 2010

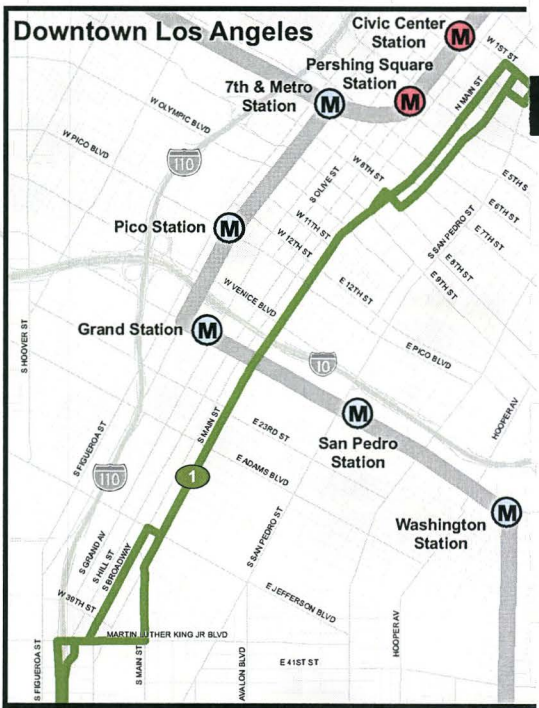
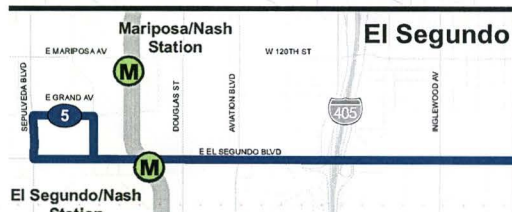
⁵ NTD, 2009



3.2). GMBL service is analyzed on a network and route level, but also within the larger context of the South Bay subregion. Service changes among other providers may affect differences in GMBL ridership.

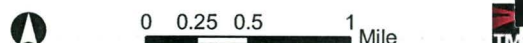


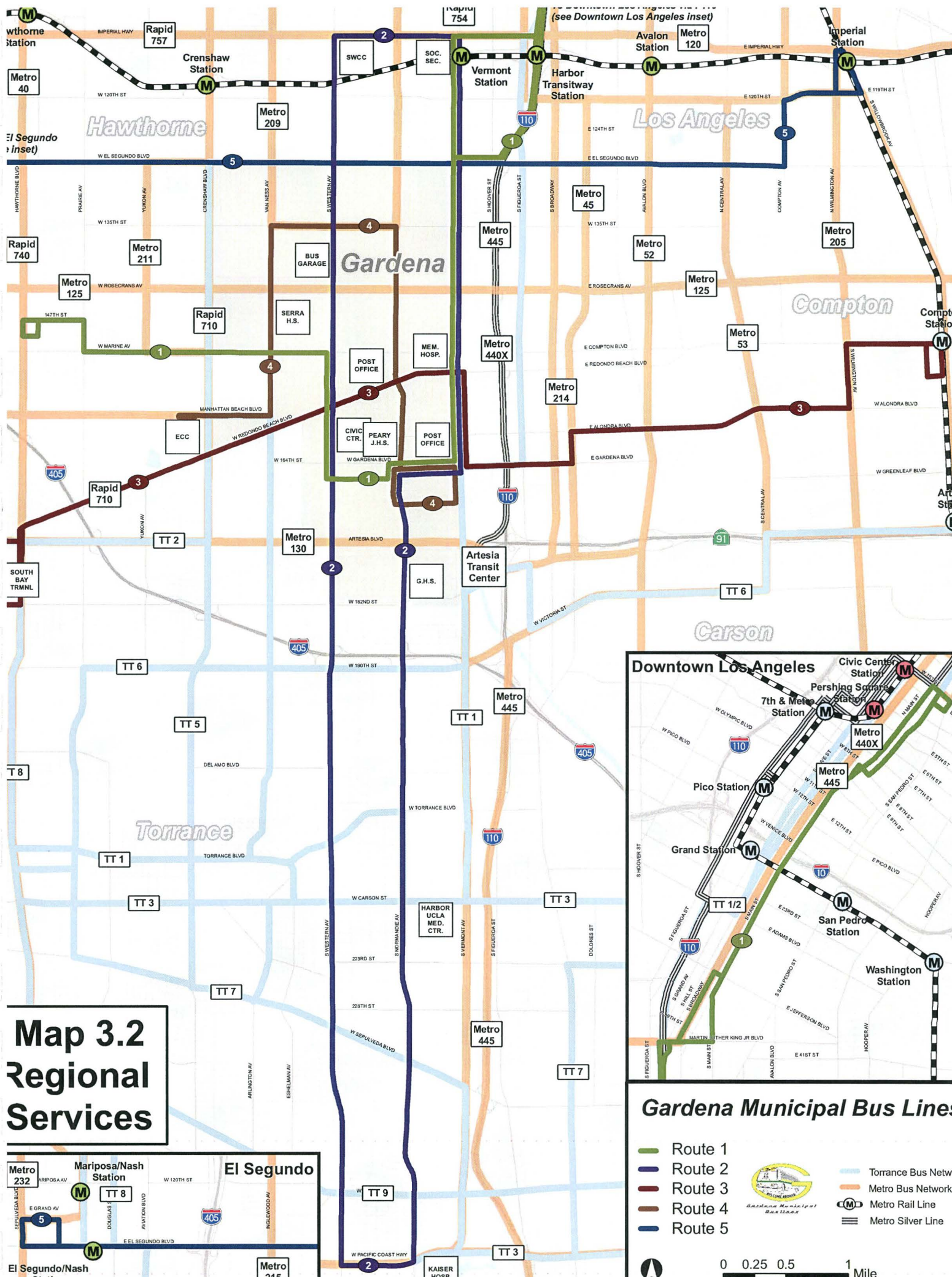
Map 3.1 Existing Fixed-Route Network



Gardena Municipal Bus Line

- Route 1
 - Route 2
 - Route 3
 - Route 4
 - Route 5
- Metro Line Station
 Metro Rail Line





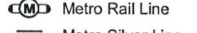
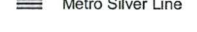


Map 3.2 Regional Services



Gardena Municipal Bus Lines

- Route 1
- Route 2
- Route 3
- Route 4
- Route 5

 Torrance Bus Netw
 Metro Bus Network
 Metro Rail Line
 Metro Silver Line

0 0.25 0.5 1 Mile

Span of Service and Service Levels

GMBL operates daily bus service from 4:25 am – 1:15 am. The majority of GMBL routes operate seven days a week. Route 5 does not operate on weekends.

GMBL Route	Daily Revenue Hours			Daily Revenue Miles		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Route 1	86.0	51.1	51.1	1,453.0	921.2	921.2
Route 2	93.0	80.2	80.2	1,386.2	1,198.3	1,198.3
Route 3	49.7	34.6	34.6	834.8	581.6	581.6
Route 4	20.3	8.3	8.3	306.2	118.8	118.8
Route 5	45.5	-	-	643.7	-	-
GMBL Total	294.4	174.1	174.1	4,623.9	2,819.9	2,819.9

Figure 3.2 Daily Revenue Hours and Revenue Miles (Fall 2010)

Service Frequencies

Most GMBL services operate 30 minute frequencies seven days a week, with reduced service in the early morning and evenings. Route 1 operates a reduced level of service on Saturday and Sunday. None of the five GMBL fixed-route services operate at a frequency high enough to encourage spontaneous transit use (less than or equal to 15 minutes).

3.3 Ridership and Transfer Activity

A key element of understanding how customers presently use the GMBL system is the distribution of ridership across the network by time of day and day of week.

3.3.1 System Ridership

Passengers

GMBL overall fixed-route system ridership in Fall 2010 was:

- 10,900 boardings on an average weekday
- 5,400 boardings on Saturday
- 3,900 boardings on Sunday

Weekend services generate significantly fewer passenger boardings than do weekday services. This is due to less work and school travel, more limited service hours and lower service frequencies, and the greater availability of vehicles for household trips.

Wheelchairs


Wheelchair boardings were also collected as part of the 100 percent ridecheck. A total of 41 wheelchairs boarded on an average weekday, 13 on Saturday, and 22 on Sunday. This low level of wheelchair activity is likely a result of ample elderly & handicapped service currently available for disabled patrons.

Ridership by Stop

Maps 3.3 – 3.5 show Fall 2010 system-wide average daily boardings by individual stop along the fixed-route network for weekdays, Saturdays, and Sundays. The circle sizes vary in proportion to the number of boardings, with larger circles representing higher boardings at a given stop.

Weekday

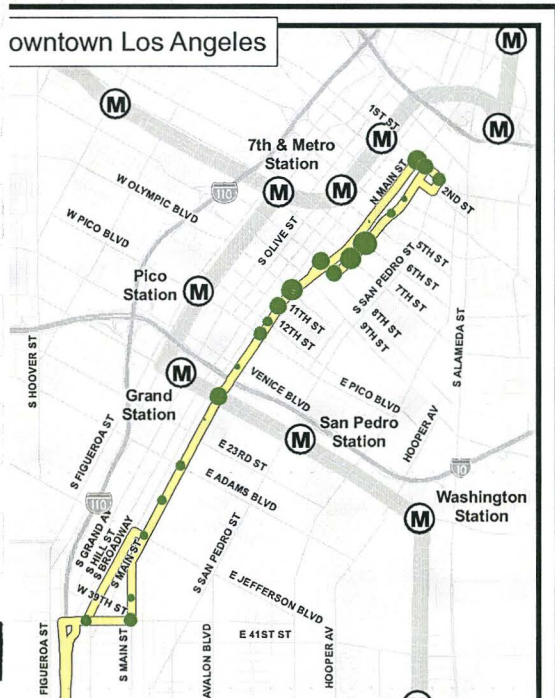
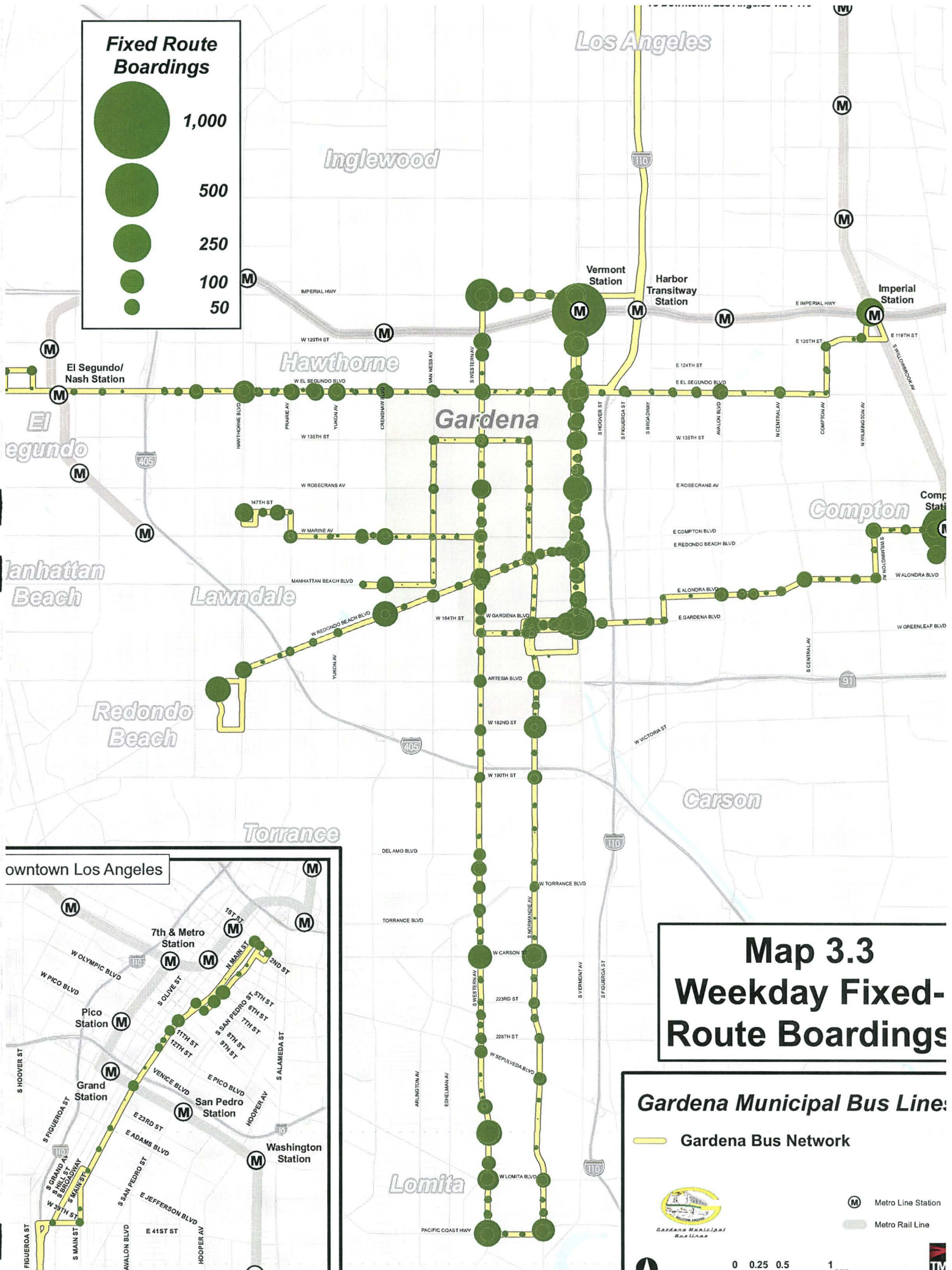
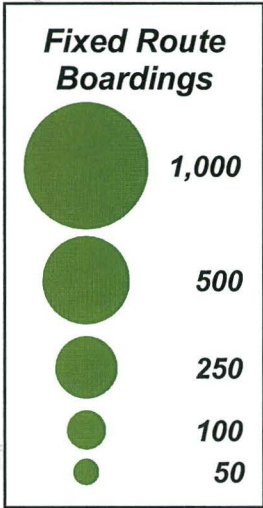
The Vermont Avenue corridor generates the most significant weekday ridership throughout the system. Relatively high ridership also occurs near downtown



Gardena and at Metro Green and Blue Line stations. As well, transfer locations show higher ridership activity including South Bay Galleria, connections with Metro Bus service on Hawthorne, Crenshaw, Western, Imperial, and Artesia and with Torrance Transit at Carson, Lomita, and PCH. More frequent GMBL service will enhance the transfer waits and reliability at these high ridership locations.

Weekend

Overall weekend ridership is lower when compared to weekday service (Route 5 does not operate on weekends), however trends are similar. Similar to weekday ridership, most passenger activity occurs along Vermont Avenue and at Metro Rail stations. In addition, South Bay Galleria Transit Center becomes a more prominent boarding location during weekend service.



Map 3.3 Weekday Fixed- Route Boardings

Gardena Municipal Bus Lines

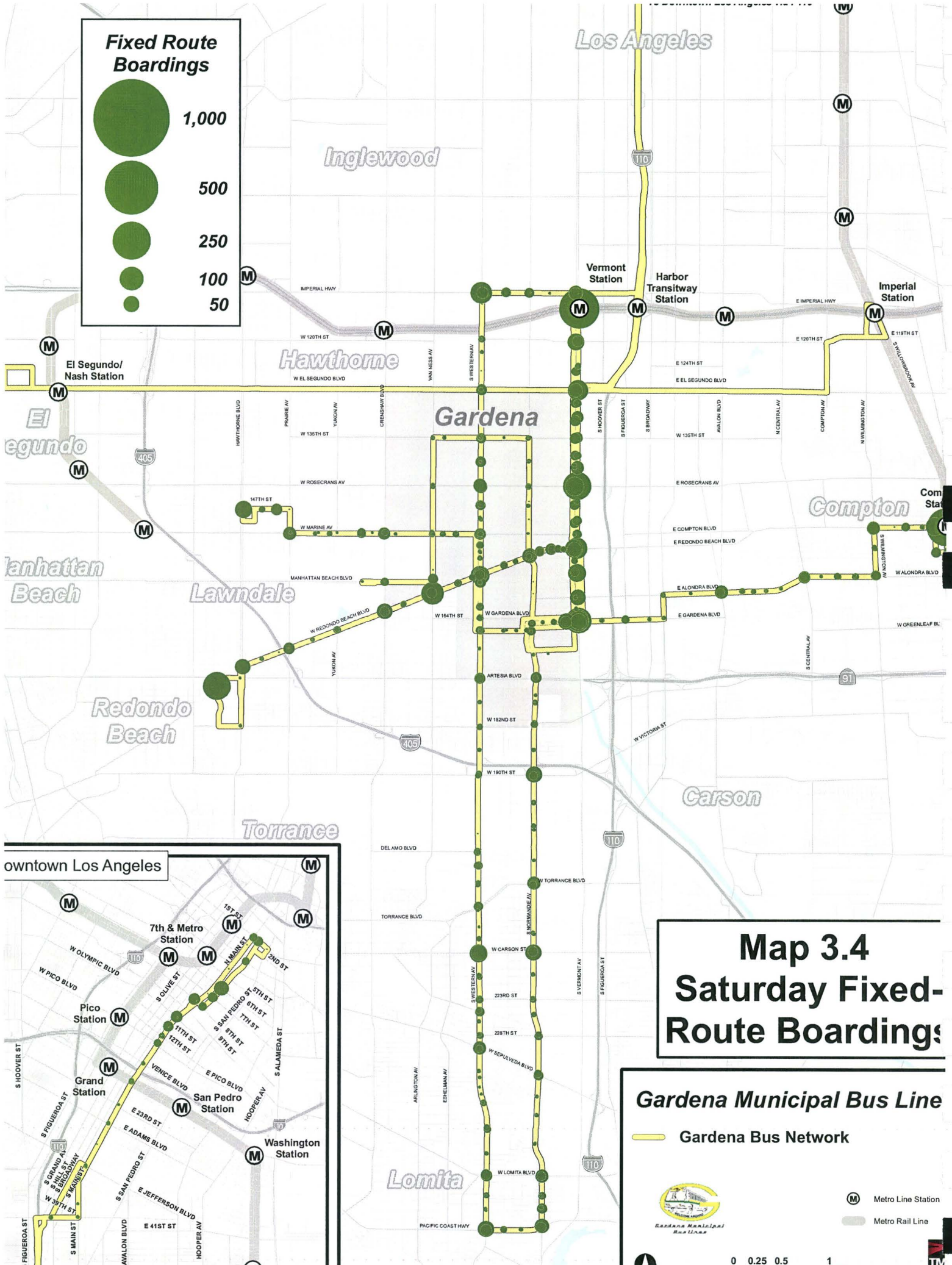
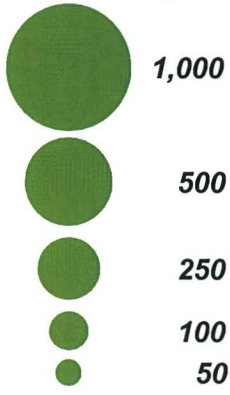
Gardena Bus Network

Metro Line Station

Metro Rail Line

0 0.25 0.5 1

Fixed Route Boardings



**Map 3.4
Saturday Fixed-
Route Boardings**

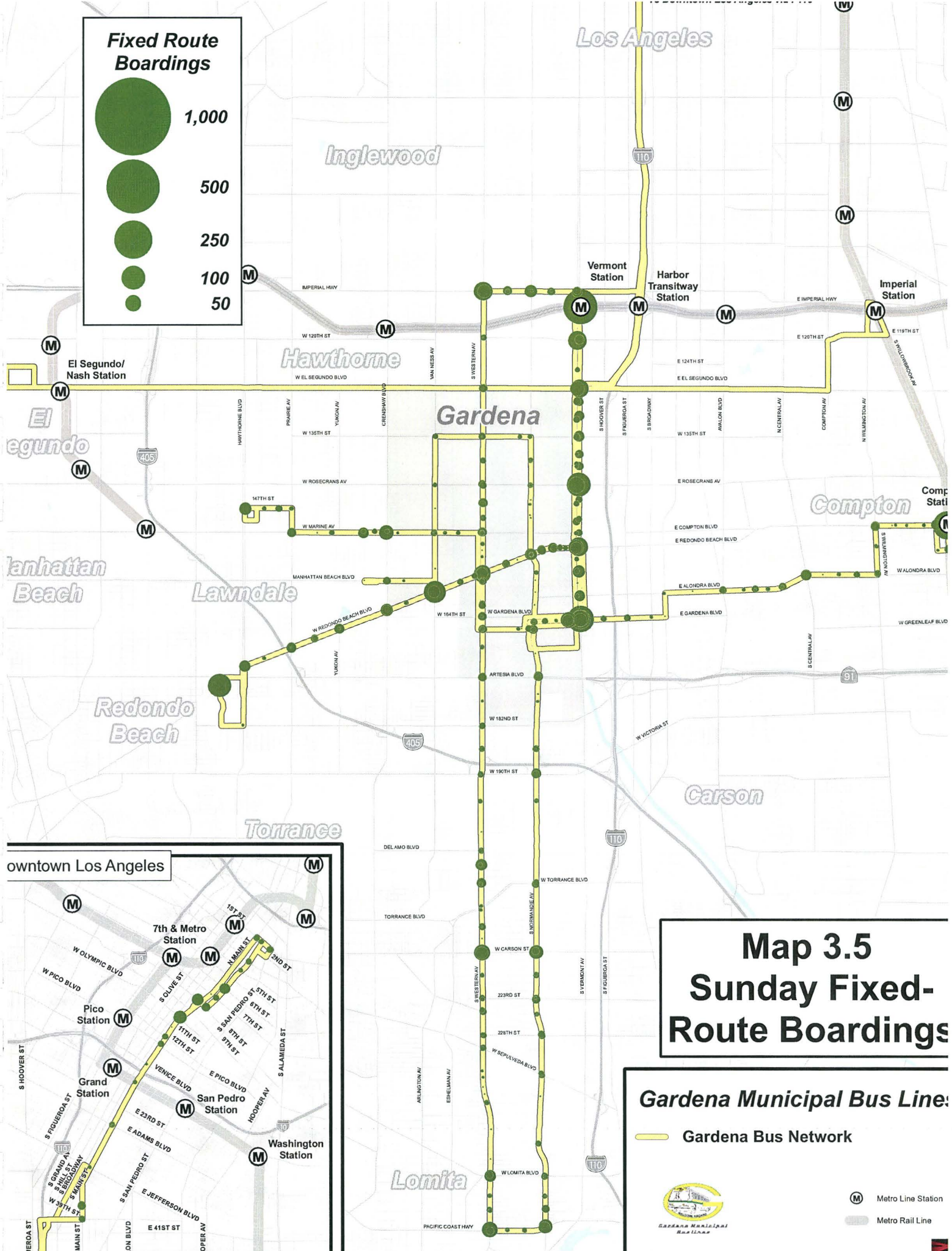
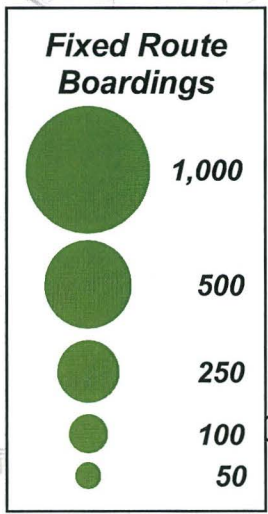
Gardena Municipal Bus Line

Gardena Bus Network



Metro Line Station
 Metro Rail Line





Map 3.5 Sunday Fixed- Route Boardings

Gardena Municipal Bus Lines

Gardena Bus Network

Metro Line Station

Metro Rail Line



0 0.25 0.5 1 ...

Ridership by Time Period

Ridership is consistent throughout the majority of day. Strong peak period ridership indicates school or work commute trips, while high midday ridership indicates a wider variety of trip purposes, different populations using GMBL services, and increased service hours. Strong peak and midday ridership suggests GMBL services effectively capture different rider markets and warrant consistent service levels throughout the day. The low level of ridership during the Early AM/Evening period suggests a lack of demand for service during these time periods, consistent with other LA County systems.

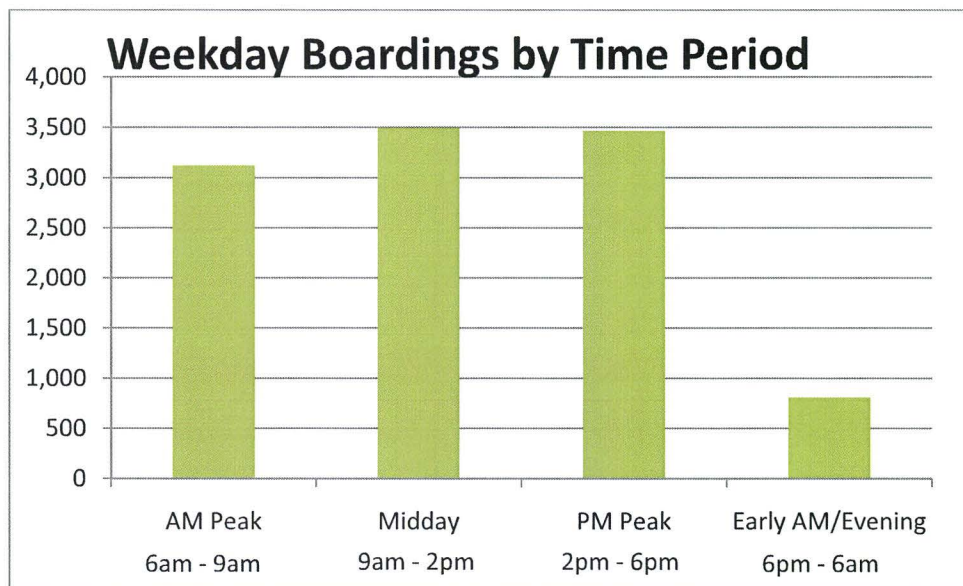


Figure 3.3 Weekday Boardings by Time Period

Ridership Trends

Overall, annual ridership trends⁶ for GMBL service show annual ridership decreasing over the last decade (Figure 3.4). FY 2011 data is an annualized representation of Fall 2010 ridecheck data (fixed-route plus commuter tripper service) and indicates a continued decrease in annual GMBL ridership over the last three years, which is shared by many other transit systems due to the

⁶ National Transit Database, 2000 - 2010

national, state, and regional economic downturn. The over 30 percent decline over the past decade is more troubling, given the trends at other systems.

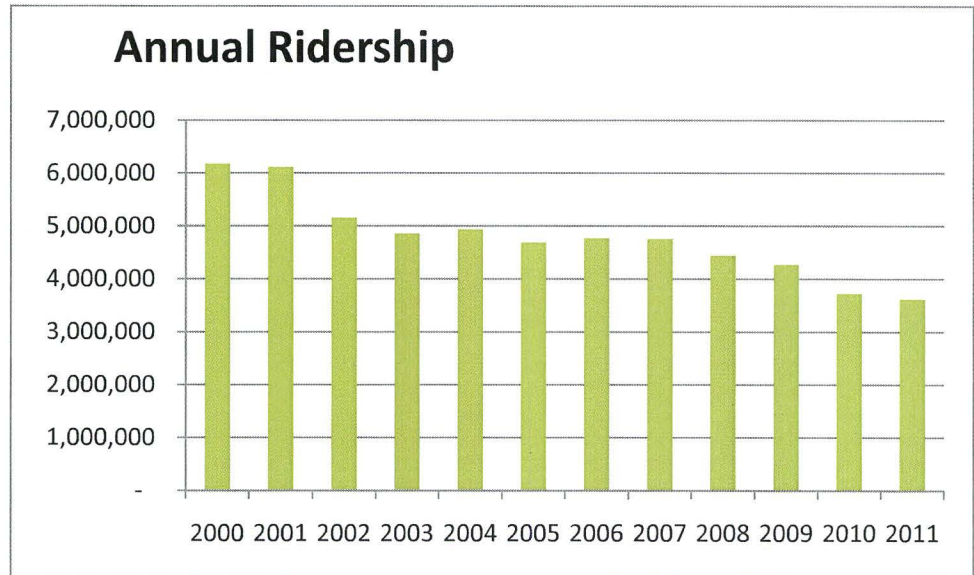


Figure 3.4 Annual Ridership Trends

Route Level Ridership

Figure 3.5 shows total daily boardings by route for weekday, Saturday and Sunday.

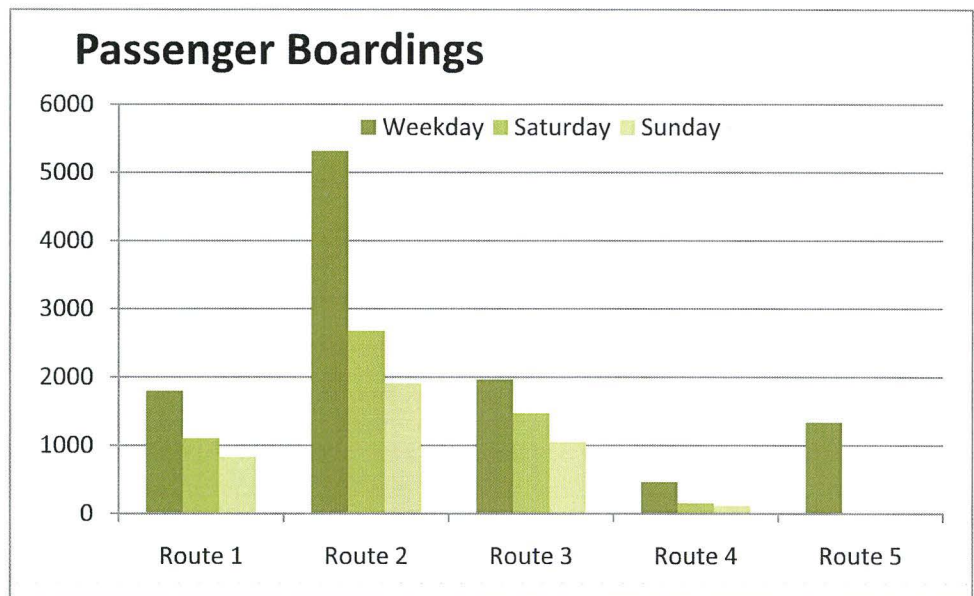


Figure 3.5 Ridecheck Passenger Boardings



Weekday

Route 2 experiences the most passenger activity with nearly ½ of total GMBL system boardings. Routes 1, 3 and 5 experience a moderate level of ridership (1,000 to 2,000 daily boardings), while Route 4 is the weakest GMBL route in terms of passenger boardings with just a few hundred daily boardings (4 percent of stem ridership).

Weekend

Route 2 collects the most passengers on weekends, again with nearly half of all system boardings on Saturday and Sunday. Similar to weekday performance, Route 4 generates the fewest weekend boardings, accounting for only 3 percent of weekend ridership – less than 100 boardings.

Average Passenger Trip Length

The GMBL system-wide average passenger trip length is 3.9 miles (Figure 3.6) for weekday service. The average passenger trip length on individual routes ranges from just over 2 miles for Route 4 to nearly 6 miles for Route 1. Route 1 has the longest average passenger trip length due to the freeway express service between Gardena and downtown Los Angeles. The other routes range in the 2-3 mile range typical for good local routes with strong seat turnover.

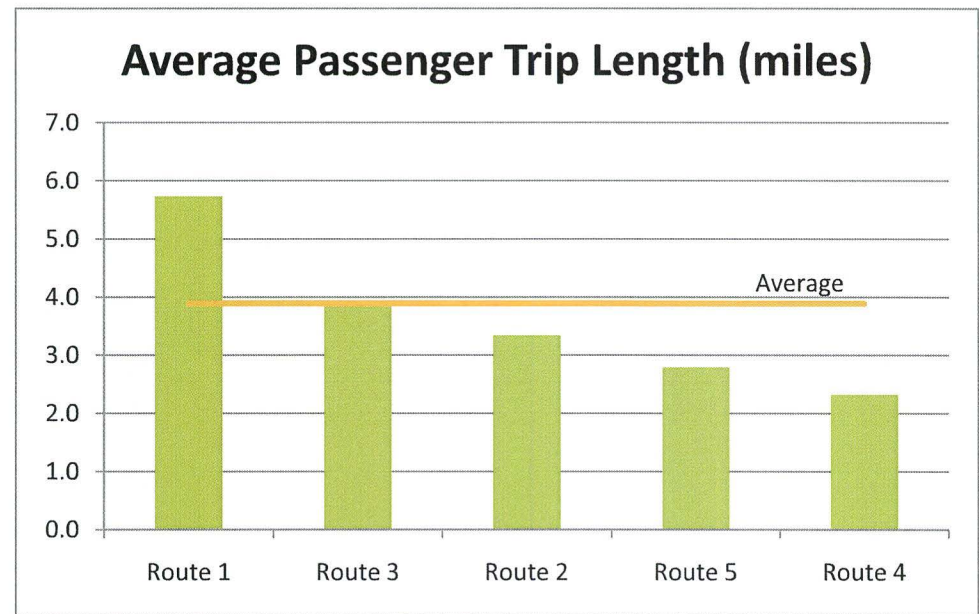


Figure 3.6 Weekday Average Passenger Trip Length

3.3.2 Transfer Analysis

During the system ridecheck, GMBL operators collected transfer slips from all passengers, including transfers from regional partners such as LA Metro, Torrance Transit, Long Beach Transit, LADOT, etc. Transfer slips were collected for each route and each direction for one weekday in order to provide information about passenger travel patterns and significant transfer connections within the GMBL network and with neighboring services. A total of 1,518 daily transfer slips were collected during one weekday.

Transfer information was also gathered in the on-board survey. Please refer to page 27 of this report for description and analysis of these findings.

Overall Transfer Activity

The majority of transfers occur between Metro Bus and GMBL Route 2. Metro services intersect with Route 2 at several locations including Pacific Coast Highway, Artesia, Rosecrans, 135th and Imperial Highway. The table below indicates the total amount of transfers generated by Gardena services and outside operators.

Transfer From	Transfer To						Total	Percent
	Route 1	Route 2	Route 3	Route 4	Route 5	Commuter		
Gardena	57	130	70	12	22	37	328	22%
Metro Bus	84	430	97	6	91	68	776	51%
Metro Rail - Green Line	12	53	0	0	6	5	76	5%
Metro Rail - Blue Line	1	2	24	0	15	5	47	3%
Torrance	7	101	14	3	6	28	159	10%
Other*	8	32	65	0	15	12	132	9%
Total	169	748	270	21	155	155	1,518	
Line Total Ridership	1,802	5,313	1,967	464	1,341	1,332	12,219	
% Ridership Transferring	9%	14%	14%	5%	12%	12%	12%	
% of Total Transfers	11%	49%	18%	1%	10%	10%		

* Includes Big Blue Bus, Culver City Bus, Long Beach Transit, LADOT, Montebello Bus Lines, and unknown agencies.

Figure 3.7 Overall Transfer Activity

Gardena Transfer Activity

The table below indicates transfers specifically between Gardena services, the percent of local transfers, within Gardena network, and the percent of overall transfers collected. Similar to overall results, internal transfers occur most often on Route 2. A total of 35 percent of internal transfers originate on Route 2, while 40 percent transfer to Route 2 service.



Transfer From	Transfer To ⁷										Total	Percent of Total	
	Route 1		Route 2		Route 3		Route 4		Route 5				Commuter
	NB	SB	CW	CCW	EB	WB	EB	WB	EB	WB			
Route 1			12	22	10	7		3	1	1	6	62	19%
Route 2	7	28	6	5	12	25		2	8	11	11	115	35%
Route 3	6	4	23	23		1	1	6			15	79	24%
Route 4		1	6	2	3	5					1	18	5%
Route 5		9	9	11							1	30	9%
Commuter	1		7			3			1		1	13	4%
Unknown	1		2	2	3	1					2	11	3%
Total	15	42	65	65	28	42	1	11	10	12	37	328	
Percent of Internal	5%	13%	20%	20%	9%	13%	0%	3%	3%	4%	11%	100%	
Percent of Total	1%	3%	4%	4%	2%	3%	0%	1%	1%	1%	2%	22%	

Figure 3.8 Internal Transfer Activity

Most Route 2 transfer activity occurs between Routes 1 and 3. Route 1 southbound and Route 3 westbound each receive 13 percent of total internal transfers. Routes 4 and 5 experience very little transfer activity. Figure 3.9 below shows the top transfer pairs between Gardena services.

Origin Route	Receiving Route
Route 2 →	Route 1 SB
Route 2 →	Route 3 WB
Route 3 →	Route 2 CW
Route 3 →	Route 2 CCW
Route 1 →	Route 2 CCW

Figure 3.9 Top Internal Transfer Pairs

⁷ NB: Northbound, SB: Southbound, EB: Eastbound, WB: Westbound, CW: Clockwise, CCW: Counterclockwise



3.3.2 Key Findings – Ridership and Transfer Activity

- High ridership occurs along the Vermont Avenue corridor, near downtown Gardena, at Metro Green and Blue Line stations, and major local and interagency transfer locations.
- Ridership is heavily concentrated during the peak and midday time periods.
- Route 2 is by far the strongest GMBL route, generating 49 percent of weekday ridership. Together the top two highest performing routes (Routes 2 and 3) account for nearly two-thirds of total ridership.
- 12 percent of all GMBL boardings are transfers, reiterating the importance of effective connections between services. Most transfers occur between Gardena routes and Metro bus services. Route 2 experiences the most internal and external transfer activity.

3.4 Service Performance

Service productivity measures route effectiveness in generating ridership using the following metric:

- Passengers per revenue hour – the number of unlinked passenger boardings (ridership) generated per revenue hour of service operated.

Financial effectiveness compares passenger farebox revenue (operating revenue) with operating cost using the following metrics:

- Operating ratio – ratio of operating revenue to operating costs. Subsidized services have operating ratios below 100 percent, while profitable services are over 100 percent. This measure is also referred to as the farebox recovery ratio and does not factor other funding sources into the equation.
- Net subsidy per passenger boarding – measures the average passenger fare less the operating cost per unlinked passenger boarding. This metric indicates the amount of public subsidy necessary to support each passenger trip.

3.4.1 Service Productivity

Passengers per Revenue Hour

Figure 3.10 shows daily passengers per revenue hour by route for weekday, Saturday and Sunday.

Passengers Per Revenue Hour

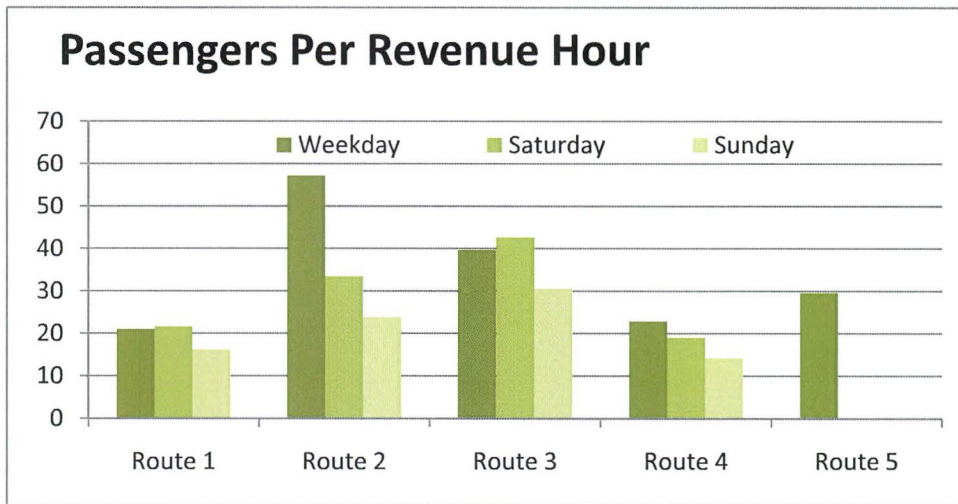


Figure 3.10 Passengers per Revenue Hour

Weekday

On an average weekday, GMBL bus services carry 37.0 passengers per revenue hour, which exceeds the 30 passenger per hour service standard. Routes 2 and 3 are the most productive GMBL services, exceeding the system average – Route 2 approaches 60 pph, over 150 percent of the system average. Route 4 generates the fewest passenger boardings but is not the least productive service. A shorter alignment and cycle time requires fewer resources and allows this route to carry more passengers per revenue hour consumed. Route 1 is the least productive route, carrying slightly more than 20 passengers per revenue hour, since it has less seat turnover and a much higher average passenger trip length due to the express operation to downtown LA. Good Route 5 productivity suggests potential for weekend service.

Weekend

On Saturday, GMBL services carry an average of 31.1 passengers per revenue hour, with an average of 22.5 passengers per revenue hour on Sunday. While ridership is lower, weekend productivity is often similar to that of weekday service, except for Route 2. This suggests weekend service levels are well matched to demand. In fact, productivity for Route 3 is highest on Saturday and Sunday.

3.4.2 Financial Effectiveness

Operating Ratio

Routes with higher operating ratios closely match those with high productivity on weekdays and weekends. On average, GMBL weekday services recovers 20.4 percent of operating cost, just above the established service standard. It should be noted that the operating ratios calculated here do not include local funding assistance, which raises the ratio to well above 20 percent. However, industry best practice includes just passenger fares and other direct operating revenue (e.g., advertising) in the operating ratio, as was done for the GMBL LBL.

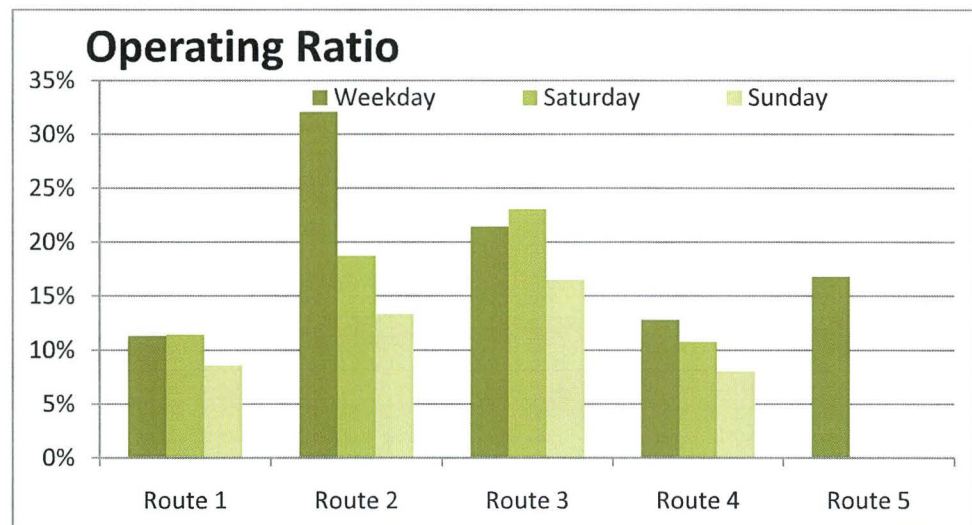


Figure 3.11 Operating Ratio

Subsidy per Passenger Boarding

Weekday

GMBL fixed routes require an average subsidy of \$2.76 per passenger boarding. Routes with the lowest subsidy per passenger are generally those with the highest productivity (Routes 2 and 3). The least productive weekday service, Route 1, also requires the highest subsidy per passenger due to the high level of service hour and miles it operates.

Weekend

For most GMBL routes, higher subsidies per passenger are required for weekend services. However, Routes 1 and 3 actually require a slightly lower subsidy for Saturday service than weekday service. The system-wide average subsidy per passenger for Saturday and Sunday service is \$3.46, and \$5.06, respectively.

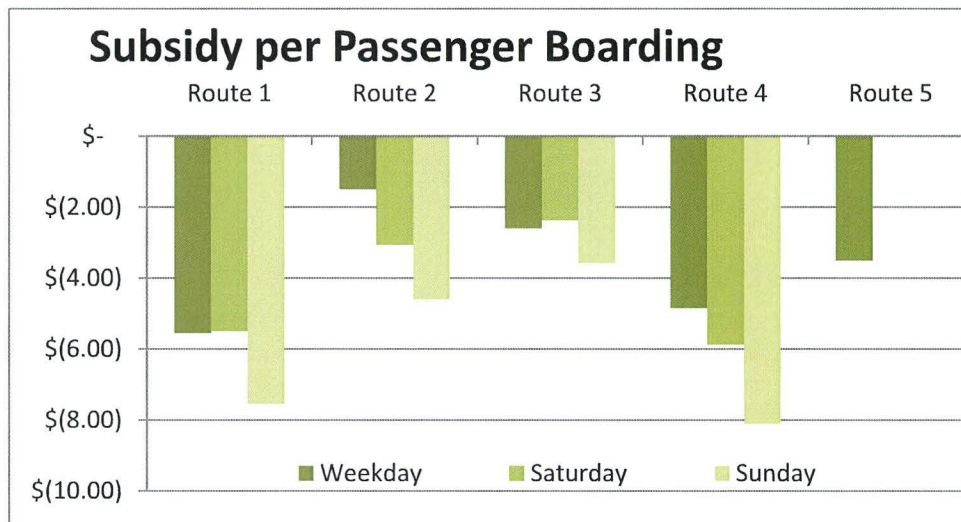


Figure 3.12 Subsidy per Passenger

3.4.3 Key Findings – Service Performance

- On average, GMBL weekday services carry 30.7 passengers per revenue hour. Route 2 is significantly more productive than the other GMBL routes.
- Weekend productivity matches, or in some cases, exceeds that of weekday service, suggesting that Saturday and Sunday service levels are well matched to weekend demand.
- Routes 2 and 3 are the most financially sustainable, with the highest operating ratios and lowest required subsidy per passenger. Conversely, Routes 1 and 4 are the least financially sustainable services, a result of unwarranted service levels and low ridership, respectively.

3.5 Service Quality

Understanding the quality of service is critical in providing the customer with a positive travel experience. Various metrics measure quality of service, including:

- **Service Reliability** – On-time performance (schedule adherence)
- **Travel Time** – Operating speed
- **Access to Service** – Stop spacing and coverage
- **Crowding** – Passenger loads

3.5.1 Service Reliability

On-Time Performance

Recorded arrival and departure times at each timepoint from the Fall 2010 manual ridecheck were compared to the published service schedule in order to measure schedule adherence. GMBL's system-wide on-time performance standard is as follows:

- On time: 0 minute early to 5 minutes after the scheduled timepoint
- Late: More than 5 minutes after the scheduled timepoint
- Early: Any time prior to the scheduled timepoint

GMBL bus services exhibit a system-wide on-time performance of 51.6 percent (Figure 3.13 below). Typically, the majority of GMBL trips run late rather than early. Routes 2 and 3 exhibit the poorest on-time performance; an overwhelming majority of their trips are running late. This is likely attributed to the fact that insufficient scheduled layover/recovery time is provided and most trips are leaving the first timepoint late. Despite half of all trips not on-time, surveyed customers gave GMBL a "fair" rating for schedule adherence, possibly reflecting lowered expectations.

On average, only 27.1 percent of GMBL trips begin exactly on time, within 0-59 seconds after scheduled time. The low level of on-time performance is likely a result of insufficient scheduled layover/recovery time and vehicle leaving the

GMBL facility late. Leaving the route origin exactly on-time is the most critical variable in ensuring that actual service operation follows the schedule. It is important to maintain proper supervision together with schedules that reflect actual service running conditions to ensure that drivers are beginning their scheduled runs on-time. Running times for each line by time of day need to be calibrated to reflect factors such as corridor traffic congestion, passenger activity, dwell times, and other road conditions with schedules allowing for adequate schedule recovery between trips.

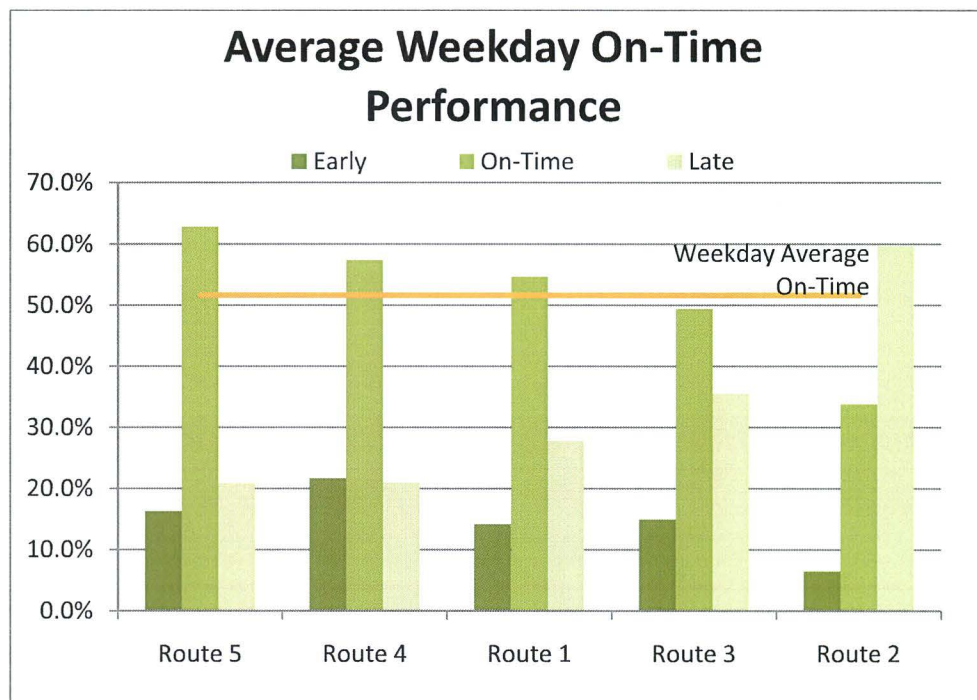


Figure 3.13 Average Weekday On-Time Performance

Several strategies may effectively resolve scheduling problems for each route. Each route requires a certain level of scheduled recovery time to account for any anomalous travel delays, which will enhance on-time performance. Running time needs to be adjusted throughout the day and redistributed between timepoints to improve on-time performance. Excess running time can also be reallocated to initial or terminal layover on service that is known to depart ahead of schedule, while additional running time between timepoints may be necessary for GMBL routes which observe a high rate of late departures. Additionally, operator behavior and supervision should be improved to enhance

schedule reliability through “zero-tolerance” terminal departures and proper route operation.

3.5.2 Travel Times

Operating Speed

Reviewing service travel times is useful to identify low operating speeds which contribute to passenger delay and increased cost. Safely improving operating speeds on all routes ensures a more attractive service to customers while potentially increasing service efficiency and effectiveness.

GMBL weekday services operate at an average speed of 14.1 mph during the PM peak, the most heavily congested time period. Average route speeds range from about 12 – 16 mph. Routes 1 (Harbor Transitway express operation) and 3 exceed the system-wide average PM peak speed. Route 2 has below average operating speeds – since Route 2 carried half of GMBL ridership, many customers experience these slower bus travel times.

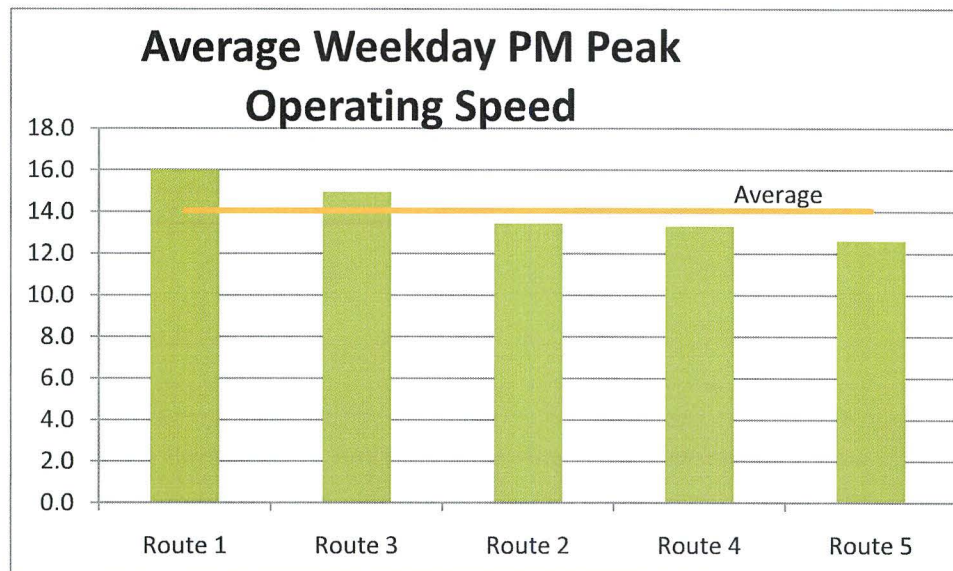


Figure 3.14 Average Weekday PM Peak Operating Speed

3.5.3 Access to Service

Average Stop Spacing

Stop spacing is a key factor in overall quality of service, affecting both service access and travel times. Closely-spaced stops may result in less walking time, but tend to lower quality of service for passengers on the bus because of the added delay. Stops spaced about 0.25 miles apart is a typical standard for local bus services across the industry. GMBL average stop spacing is between .25 and .19 miles (Figure 3.15), which shows most GMBL routes have average stop spacing closer than the ¼ mile standard.

Since this section identifies average stop spacing, actual spacing should be reviewed on certain portions of routes to ensure quality service is provided in the most effective way possible. Underutilized stops along routes can be possible candidates for elimination, as well as stops that are significantly closer than ¼ mile apart.

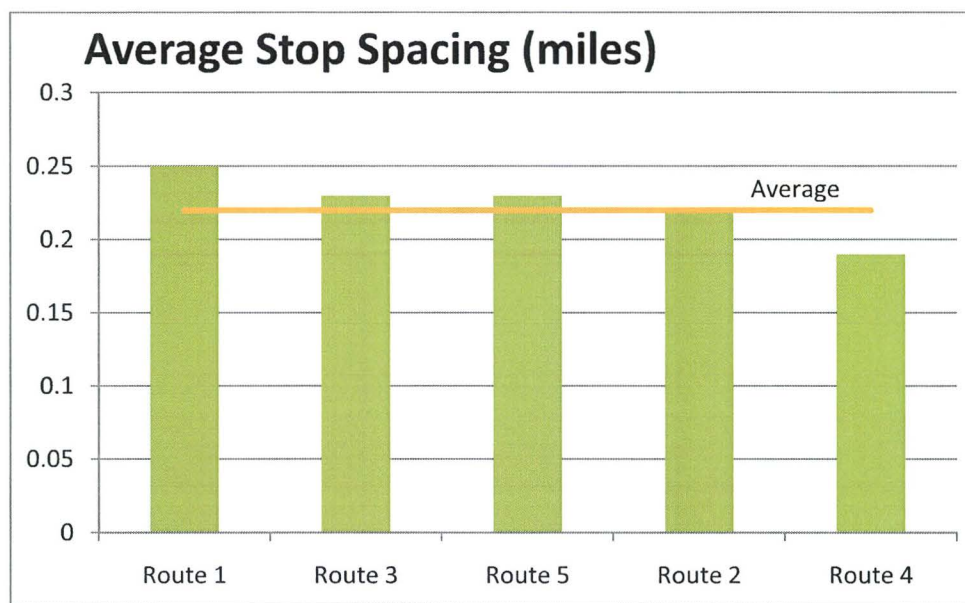


Figure 3.15 Stop Spacing (miles)

3.5.4 Crowding

Passenger Loads

GMBL measures passenger loads based on a seated capacity plus a certain number of standees (total capacity) in order to effectively evaluate service utilization. The load standard for GMBL local services is 120 percent of seated capacity. On a typical GMBL standard bus with 37 seats, this translates to about 44 passengers on the bus of which only seven (7) are standees. While the 120 percent standard was used by Metro as part of the Consent Decree mandate (previously it was 135% peak period to 145% peak hour), it is not typical in the industry where peak hour standards are much higher (e.g. Santa Monica has a standard of 150% for up to two miles). Especially for short distance school based heavy passenger loads, a higher standard would be appropriate, given the high cost for peak “tripper” service. A higher load standard is suggested, a minimum of 135%, in order to better utilize bus capacity.

Two GMBL routes experience trips over seated capacity on weekdays (Figure 3.16). Most standing loads occur during the daytime (AM peak, midday and PM peak trips). Only one standing load trip occurred on weekend service (Route 2). Only weekday Route 2 experiences trip loads which actually exceed the load standard (44 passengers). Nineteen (19) weekday Route 2 trips are over capacity for an average 10 percent of trip duration (less than 2 miles); one trip even exceeds the load standard for as much as 40 percent of the trip. It should be noted that many of the Commuter Tripper services duplicate parts of the fixed route network, ameliorating passenger load issues. Any changes in the fixed route or commuter tripper services should consider potential loading impacts. Consistently high passenger loads (and high sustained productivity) suggest Route 2 may benefit from increased frequency during weekday service.

GMBL Route	Trips Over Loading Standard		
	Weekday	Saturday	Sunday
Route 1	0	0	0
Route 2	19	0	0
Route 3	0	0	0
Route 4	0	0	0
Route 5	0	0	0

Figure 3.16 Trips Over Loading Standard (45 passengers)

3.5.5 Key Findings – Service Quality

- The system average on-time performance of just over 50 percent on weekdays needs immediate attention. Of those not on-time, many more Gardena trips run late than early. The availability of detailed running time data from the LBL makes it feasible to recalibrate running times for each route by service day, time of day, and between all timepoints as part of a comprehensive overhaul of operating schedules. The low level of on-time performance is likely a result of insufficient scheduled layover/recovery time and vehicle leaving the GMBL facility late.
- Average weekday speed is approximately 14 miles per hour, with Routes 1 and 3 showing the highest speeds.
- Average stop spacing among GMBL services is 0.22 miles, which is slightly closer than a desirable balance between access and travel times. Closely-spaced stops often contribute to delay and schedule adherence issues.
- Two GMBL routes carried standees during weekday service during some portion of the route, but only Route 2 experienced trips exceeding the loading standard. Overcrowding appears to be noticeable along the Vermont Avenue corridor.

3.6 Overall Fixed-Route Service Evaluation Findings

Ridership and Transfer Activity. The Gardena bus network contains several key activity centers including downtown Gardena, Metro Green and Blue Line stations, and South Bay Galleria. Vermont Avenue is the strongest passenger boarding corridor in the system.

Routes 2 and 3 have the highest daily ridership in the network and account for nearly two-thirds of total ridership. Route 2 alone generates 49 percent of weekday boardings.


Transfers occur most often between Gardena routes and Metro bus services. Route 2 experiences the highest transfer activity from internal routes and external agencies. Internal transfers are most common on Route 2 with Routes 1 and 3.

Service Performance. Routes 2 and 3 have the highest productivity, peaking at 57.2 passengers per revenue hour on Route 2 weekday service. Routes 1 and 4 are the least productive routes carrying fewer than 23 passengers per revenue hour.

Weekend productivity remains strong. In fact, Route 3 is most productive on Saturday and Sunday. This suggests reduced service levels effectively match weekend demand. Based on weekday performance, Route 5 should be considered for weekend operation.

Service Quality. Gardena bus services have an average weekday on-time performance of just 51.6 percent, with far more trips running late than early. Variability in on-time performance may stem from issues with scheduled running time/layover/recovery time, operator behavior and supervision, or traffic/other delay.

Average PM peak weekday operating speed is 14.1 mph, with two routes running 15 mph or faster. On average, GMBL stops are spaced .22 miles apart,



slightly closer than the industry standard. Increasing stop spacing by reducing closely spaced, unnecessary bus stops along some portions of routes may increase operating speeds.

Route 2 experienced overcrowding for many weekday trips, and for as much 40 percent of the duration of the trip. The Vermont Avenue corridor experience excessive loading issues during weekday service. Improved frequency will alleviate trip loads and improve service quality for passengers.

3.7 Commuter Tripper Service Evaluation

Beyond traditional fixed-route bus service, Gardena Municipal Bus Lines (GMBL) also operates weekday Commuter Tripper (CT) service to supplement the fixed-route network. This section describes the CT Service and its role in the GMBL network. Specific attention will be given to the operating characteristics, existing ridership activity on GMBL tripper network, and the comparison to the fixed-route network. The evaluation of the CT service will help to identify cost effective opportunities to integrate school and commuter service into the GMBL fixed-route network.


3.7.1 Network Overview

The CT routes were originally designed to serve middle and high schools within the GMBL fixed-route service area⁸. However, many of the trips have evolved to provide overcrowding relief along the fixed-route network. The majority of the routes operate in Gardena and Torrance, with select trips serving bordering communities.

A total of 13 peak hour CT routes operate during AM and PM peak periods, each operating 2 to 8 trips per weekday. Some of the trip schedules fluctuate depending on the bell schedules of particular schools they serve. The alignments of these trippers vary drastically based on the designated origin and destination. Many trips meander, deviate, and overlap each other throughout the structure of the network. However, many trips or portions of trips follow similar paths to those of the fixed-route network. In fact, an overwhelming majority of the trips travel along the existing GMBL Route 2 alignment at some point while in service.

The average total distance a tripper route travels each day is approximately 35 miles. However, spread among the several unique trips operated each day, the

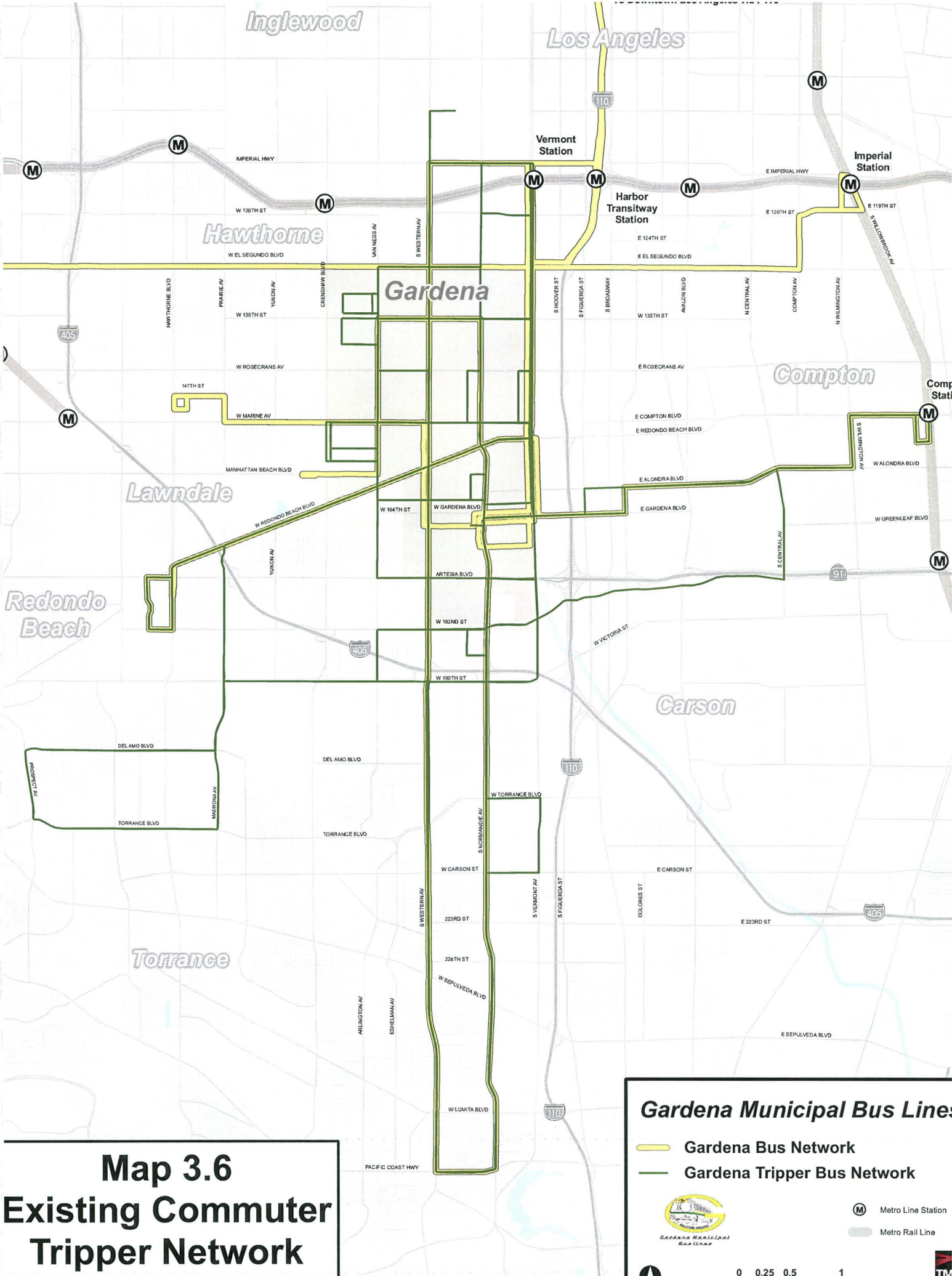
⁸ Operation of “school-oriented” transit is a continuing concern with the Federal Transit Administration (FTA). The rules and restrictions continue to evolve with FTA, but generally require that: a) transit service for schools must be part of the regular route network; b) be open to any and all customers; c) have the same fare structure; and d) information must be available as part of the regular information outlets.



average trip distance is approximately 9 miles. Several trips travel nearly 20 miles from start to finish.

Most CT routes operate fewer than 3 hours per day, with an average unique trip time of approximately 36 minutes one-way. This is likely a result of the faster speeds between few established stops.

CT service is largely peak oriented, especially in the AM Peak, with the higher costs commensurate with low operator and vehicle utilization (less than 3 hours per day).



Map 3.6
Existing Commuter
Tripper Network

Gardena Municipal Bus Lines

- Gardena Bus Network
- Gardena Tripper Bus Network



- M Metro Line Station
- Metro Rail Line

3.7.2 Service Ridership

Ridership was collected for the CT routes during the complete system ridecheck conducted in October 2010. The ridecheck data was aggregated at the route and system levels to understand overall performance and service quality. Due to inadequate schedules, on-time performance data was not able to be collected and therefore, was not analyzed.

GMBL Commuter Tripper overall ridership in Fall 2010 was 1,332 boardings on an average weekday. The CT service does not operate on weekends.

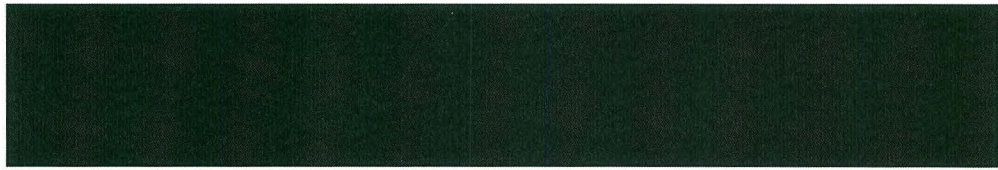
The table below shows the total average weekday boardings per route.

Tripper Route	Average Daily Ridership
5	37
6	181
7	89
8	65
9	88
10	68
11	151
12	149
13	136
14	83
15	45
16	118
17	122
Total	1,332
Average	102

Figure 3.17 Average Weekday Commuter Tripper Ridership

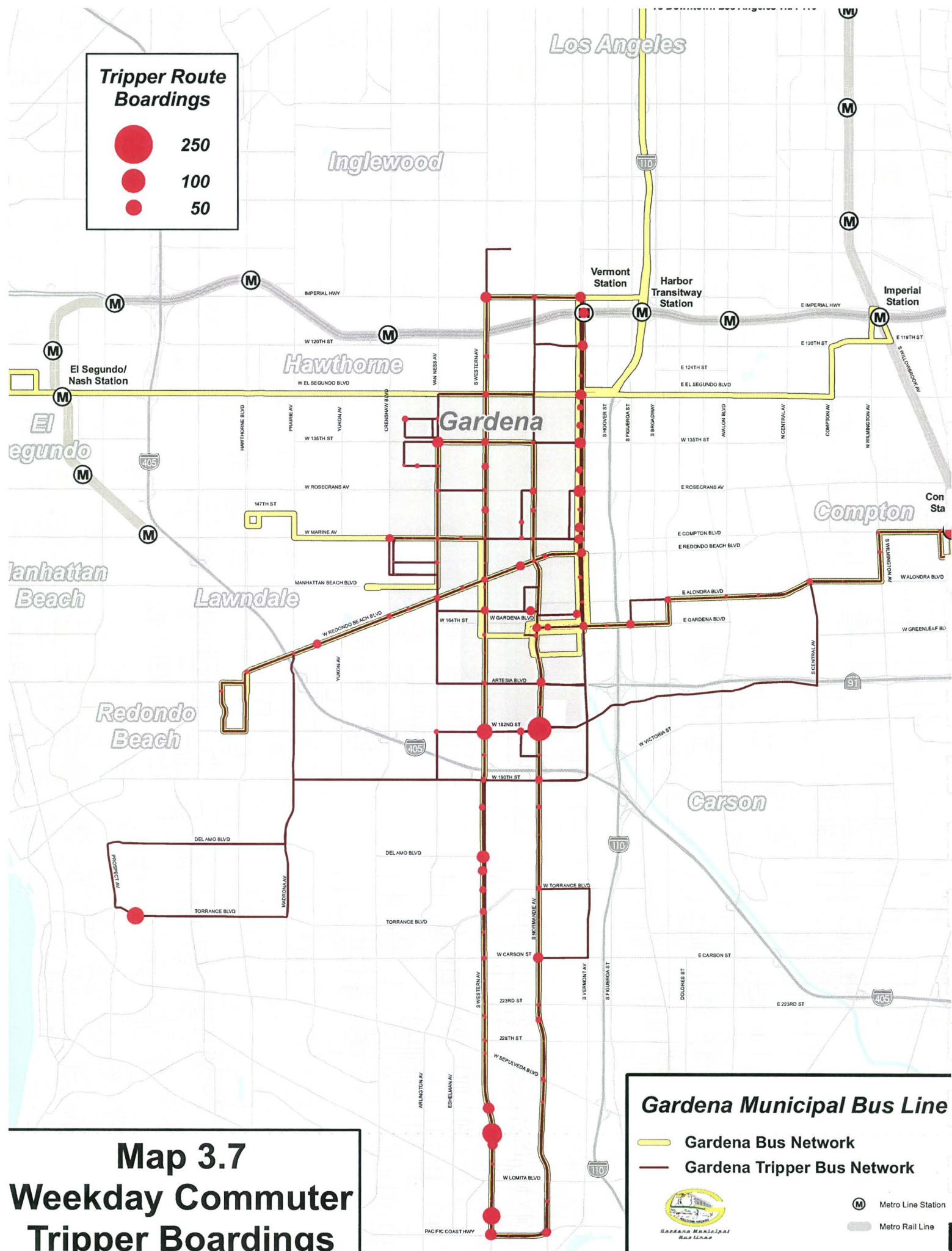
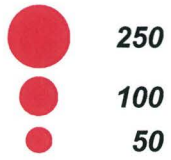
The top 5 boarding locations for the most productive CT routes occur along the GMBL fixed-route network. Most of these boardings occur along the GMBL Route 2 alignment.

Map 3.7 shows Fall 2010 system-wide average daily boardings by individual stop for weekday Commuter Tripper service. Similar to the fixed-route boarding



maps, the circle sizes vary in proportion to the number of boardings, with larger circles representing higher boardings at a given stop.

Tripper Route Boardings



**Map 3.7
Weekday Commuter
Tripper Boardings**

Gardena Municipal Bus Line


- Gardena Bus Network
- Gardena Tripper Bus Network



Gardena Municipal Bus Lines

- M Metro Line Station
- Metro Rail Line

0 0.25 0.5 1



Ridership is heavily concentrated along the fixed-route service alignments. Approximately 95 percent of the total weekday boardings occur within a ¼ mile of the existing fixed-route network. Moreover, ridership along the Route 2 alignment comprises nearly 75 percent of the total CT weekday ridership, with 19 percent of the total ridership along the Vermont Avenue corridor. CT Ridership along the Route 3 alignment is also notable, making up nearly 20 percent of the total weekday boardings.

An overwhelming majority of the existing CT weekday boardings occur within a short walking distance of the fixed-route network, with only 54 riders outside of a 1/2 mile walk.⁹ These routes not only act as overcrowding relief but they also absorb riders from the fixed-routes and therefore, diminish the overall productivity of the fixed-route network.


3.7.3 Service Performance and Quality

The average subsidy per passenger boarding for the CT service is approximately \$2.31, while the average operating ratio is nearly 25 percent. The particular routes that bring up these averages collect the majority of their passengers near or on the Route 2 alignment. While the CT performance may seem to be better than the fixed-route network, it is an anomaly of the financial cost allocation process.¹⁰

While the CT service is relatively productive, the quality of service provided is less than desirable. Each trip operates with very complex schedules and route structures. The schedules are designed to allow the operators to wait for passengers at certain stops for an undetermined amount of time. Not only is this an inefficient use of operator time and varies with each operator, but it also diminishes service reliability at other parts of the trip. Furthermore, many trips

⁹ All riders outside of the ½ mile walk from the fixed-route network board at Bishop Montgomery HS, a private parochial high school in western Torrance.

¹⁰ As noted earlier, the CT services are peak-oriented and use operators and vehicles much less efficiently than the regular fixed route network. As a result, the regular cost allocation process distributes fewer costs to the CT services than it should, making the performance artificially higher. A more detailed scheduling based costing analysis is necessary to completely allocate CT operating costs – this was not part of the LBL.



meander from street to street, while others do not follow the published schedules, adding to the inefficiency and confusion related to the service. The on-board passenger survey found a surprisingly high number of customers that received GMBL service information by “word of mouth,” likely a result of the lack of availability of information through the mainstream GMBL outlets (e.g., website, brochures).

3.7.4 Key Findings – Commuter Tripper Service Evaluation

- The Commuter Tripper service was originally designed to serve school commuters, but many have evolved to serve as overcrowding relief along the fixed route network.
- An overwhelming majority of the trips or portions of trips follow the GMBL Route 2 alignment.
- 95 percent of all CT boardings occur within ¼ mile of the existing fixed route network. 75 percent board at stops currently served by Route 2.
- The complex schedules and route structures result in deficient service reliability, inefficient operator use, and diminish the overall service quality.
- Resources used to operate the Commuter Tripper routes can be used much more effectively if incorporated into the fixed-route network.

3.8 Elderly & Handicapped Service Evaluation

GMBL provides an on-call, paratransit service for qualified elderly and disabled patrons. Known as “Special Transit”, this service operates seven days a week in Gardena, Hawthorne, and select areas of unincorporated Los Angeles County. The service is at the discretion of the City, since Metro provides the federally mandated ADA paratransit service in LA County (Access Service, Inc.).

As part of the Line-by-Line Analysis, a high-level review of the E & H Special Transit was undertaken. This section reviews the service policy, fare policy, and overall performance of the Special Transit Service. Service data from June 2010 and loading data from August 2010 have been used for this analysis.

3.8.1 Service Overview

GMBL’s Special Transit service operates Monday-Friday from 7:00 AM to 5:00 PM, Saturdays from 8:00 AM to 5:00 pm, and Sundays from 8:00 AM to 2:30 PM. Service is provided curb-to-curb in the Cities of Gardena and Hawthorne, and in the unincorporated County of Los Angeles communities of Alondra Park and Del Aire. The on-call dial-a-ride service allows any qualified senior citizen or physically disabled resident to travel from any origin to any destination within the established service area. GMBL operates seven Paratransit vehicles (with one spare), two of which are designated for the Hawthorne service area.

Patrons are asked to make reservations 24 hours prior to their schedule pick-up time. Otherwise, same day requests will only be provided depending on vehicle availability. Will-call requests are available for riders uncertain of the return trip pick-up time, ensuring a seat on a vehicle once the pick-up is scheduled. Patrons requiring service on a regular basis can request a standing time order for reoccurring pick-up times multiple days per week.

3.8.2 Service Policy

Based on the printed brochure, an established ± 10 minute time window is used for each pick up request, which differs slightly from the current maximum ± 15 minute time window allowance. Each vehicle is allowed only three minutes to wait at each pick-up location. However, additional waiting time can be authorized on a case-by-case basis by the dispatcher. Based on June 2010 service data, approximately 95 percent of trips arrived on-time. This exceptional on-time performance is reflected in the passenger rating of service in the E&H survey results.

If a standing time order passenger misses the pick-up time on two consecutive occasions (considered a “no load” trip), the service request will be suspended until further notice. Approximately 5 percent of June 2010 trips were considered “no load” trips. The requests made by these service patrons should be reviewed in order to increase service availability elsewhere.

3.8.3 Fare Policy

The cost to ride the GMBL Special Transit service is detailed below:

- \$0.75 base cash fare
- \$0.50 County of LA S.S.I. tickets
- Free for legally blind passengers and aides assisting handicapped passengers

Based on the E&H survey results, approximately 68 percent of riders pay the \$0.75 cash fare to board the Special Transit service. The \$0.75 base cash is 25¢ cheaper than the fixed-route adult base cash fare and just 40¢ higher than the fixed-route for seniors and disabled patrons. Special Transit riders are receiving a premium, curb-to-curb service at a discount from the fixed-route services and much more expensive to operate per passenger. The discounted cost is also a disincentive to ride fixed-route services.

Peer Agency Fare Review

Several agencies in Los Angeles County have been reviewed for current demand responsive fare policy. Most agencies provide some sort of discretionary program (dial-a-ride, taxi, etc.), while two systems rely on Access Services, Inc. for paratransit/demand responsive service.

Peer Agency	Existing Base Fare	
	Fixed-Route	Demand Responsive
Norwalk Transit	\$1.00	\$0.75
Torrance Transit	\$1.00	\$5 (senior)/ \$1(disabled)
Glendale Bee Line	\$0.25	\$1.00
Santa Clarita Transit	\$1.00	\$2.00
Montebello Bus	\$1.10	\$0.50
Culver CityBus	\$1.00	No Service
SM Big Blue Bus	\$1.25	No Service

Figure 3.18 Peer Demand Responsive Fare Review


3.8.4 Service Performance

Ridership

A total of 2,493 passengers utilized the Special Transit service during the month of June 2010 or an average of just 83 boardings per day (40 – 50 patrons per day). Of these passengers, 826 patrons per month (28 per day) were transported on the vehicles designated for the City of Hawthorne. This accounts for nearly 35 percent of the total Special Transit riders. A total of 124 passengers boarded during the June 2010 data period using County of LA S.S.I tickets, or approximately 5 percent of total monthly ridership. Data on the total wheelchair passenger boardings was not provided, however, a total of 296 handicapped riders boarded during June 2010.

Productivity

On average, the service carries approximately 2.8 passengers per hour, with several vehicles carrying fewer than 2 passengers per hour. The service is operating well below the 3.5 passengers per hour service standard.



The service averages approximately 9.3 passenger miles per revenue hour, suggesting very low seat utilization on most vehicles. The average trip length for all passengers is approximately 3.3 miles. Some of the vehicles that operate with low productivity show passenger trip lengths much higher than the system average, suggesting the need for additional resources required to transport very few passengers. In addition, the average operating speed of all Special Transit service is only 7.7 miles per hour, much lower than a typical dial-a-ride service. This is likely the result of excessive wait times at each stop, which increases the total operating hours required to meet demand.

Financial Effectiveness

The average operating subsidy for Special Transit Service is \$20.50 per passenger. However, GMBL receives funding from the City of Hawthorne and LA County for providing services in these areas. Factoring in these outside funds decreases the average subsidy per passenger required by GMBL to \$13.45. This average is lower because Gardena receives 100 percent of the operating cost for the Hawthorne designated vehicles from the City of Hawthorne and a portion of the operating cost from LA County.

Trip Loads

Based on August 2010 trip load data, an observed maximum load of 12 passengers traveled on any given day among the seven vehicles. In fact, only two of these vehicles showed peak loads of 10 passengers or greater. The remaining vehicles operated with loads no greater than 8 passengers. Passenger loading procedures should be reviewed to ensure efficient use of vehicles.

3.8.5 Key Findings – Elderly & Handicap Service Evaluation

- The GMBL Special Transit service operates with a 95 percent on-time performance rate.
- The cost to ride the service is \$0.25 less than fixed-route service, a 25 percent discount for premium curb-to-curb service from the adult fare fixed-route service cost and just 40¢ more than the fixed-route senior and disabled fare. Most systems in California and nationally have curb-to-curb fares (ADA and other supplemental services like Special Transit) that are twice (2X) the adult base fare to provide both an incentive for those who can use the more cost effective fixed-route network to do so and reduce the net cost of providing special transit.
- Service operates with just 2.8 average passengers per revenue hour, with some trips carrying fewer than 2 passengers per hour.
- The 7.7 mph average speed of the service suggests long wait times at each scheduled stop.
- The average operating subsidy per passenger (\$20.50) is much higher without factoring funding from the City of Hawthorne and LA County into the equation. GMBL receives 100 percent of the operating cost for the Hawthorne designated vehicles from the City of Hawthorne and a portion from LA County, decreasing the overall subsidy per passenger to \$13.45.
- The Special Transit service operates with a max load of 12 passengers among all in-service vehicles; five vehicles operate with a load of no more than 8 passengers.



4. Service Recommendations

4.1 Service Framework


Based on the above analysis of existing market and transit service conditions, a series of recommendations have been developed to improve the network. In order to develop the service recommendations, a service framework has been developed to provide a structure for proposed modifications. Three guiding principles will help shape the structure for a successful and sustainable GMBL transit system:

1. Focus Resources on Most Productive Areas of the System

- Refine Service to Meet Demand – Opportunities for expansion and reduction of service exist to reflect the travel demands and priorities of current and future riders.
- Streamline Complex Service – Creating simple and consistent service will increase efficiency and enhance service quality.
- Improve Overall System Productivity – increased ridership and revenue generation will help GMBL achieve financial sustainability.

2. Enhance the Customer Experience

- Provide Improved Access to Information – Accurate brochures, maps, schedules, and on-line information are necessary to meet the needs of existing riders and attract new riders.
- Provide Improved Access to Service – Improve wait facilities for customers through a range of enhancements to amenities and existing



infrastructure. Examples include bus stop improvements, safety enhancement, and new/improved sidewalks.

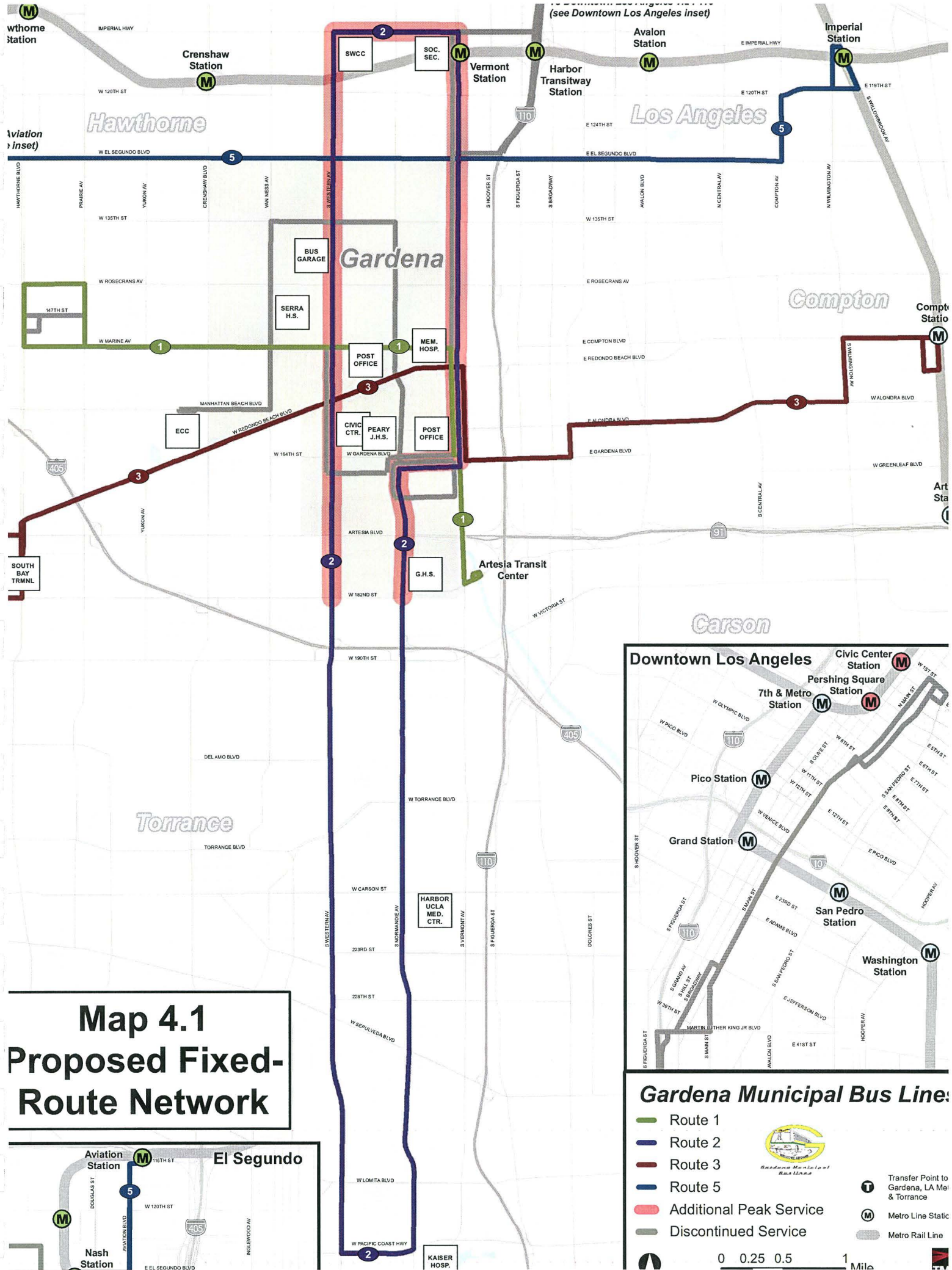
3. Improve Service Reliability

- Overhaul Operating Schedules – Develop schedules with accurate running times, sufficient layover/recovery, and effective operator/vehicle use to ensure reliable transit service.
- Improve Field Service Management – Enhance street supervision and dispatching, operator training, and operator mentoring to consistently delivery high quality, reliable service every day.

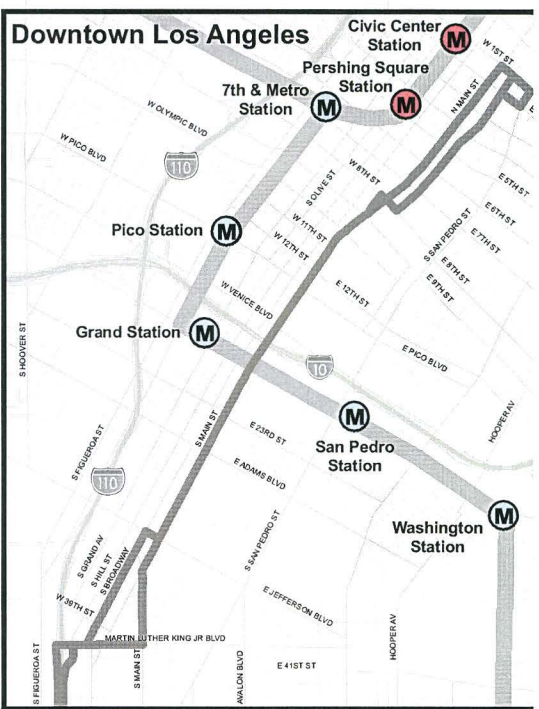


4.2 Proposed Service Recommendations

The service recommendations are intended to enhance efficiency and effectiveness for each service type with respect to industry best practices. Overall system characteristics and available alternative transit services from other providers have been paired with the preceding analysis to develop route and service level recommendations. The adjustments of each route and service detailed in this section are preliminary and will be finalized through a collaborative review process. Map 4.1 indicates the proposed route alignment changes.




Map 4.1 Proposed Fixed-Route Network



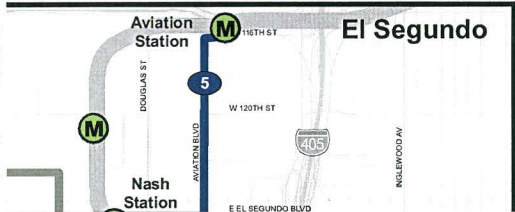
Gardena Municipal Bus Lines

- Route 1
- Route 2
- Route 3
- Route 5
- Additional Peak Service
- Discontinued Service



- T Transfer Point to Gardena, LA Met & Torrance
- M Metro Line Station
- M Metro Rail Line

0 0.25 0.5 1 Miles



4.2.1 Fixed-Route Recommendations

Route 1

Currently, Route 1 operates 15-35 minute service through Gardena and into downtown Los Angeles. Passenger activity data suggests the local portion of the route is highly productive and warrants more investment, while express service to Los Angeles is less productive and more expensive to operate, especially in terms of subsidy per passenger boarding. In addition, other service providers (including LA Metro, Torrance Transit, LADOT, etc) operate frequent service from the GMBL service area into downtown Los Angeles. Each of these factors was considered in the Route 1 recommendation.

Service Span: Route 1 service after 9:00pm is not well utilized and should be discontinued. Less than 6 percent of daily ridership occurs during these late night trips, too few to warrant regular fixed-route service. Route 1 is the only GMBL Route to operate service after 8:30pm and requires that the operating division be kept open later. For these customers there are alternative express services available from other providers operating on the Harbor Transitway with Gardena station access. Torrance Transit (TTS Route 3) offers alternative service from downtown LA into Gardena until 11 pm on weekdays; the LA Metro Silver Line offer late night service to the Artesia Transit Center until 2 am all week; LA Metro Route 210 also offers service until 2 am on weekdays along Crenshaw, just outside the Gardena City limits.

Alignment Change: The proposed Route 1 alignment is designed to provide a faster connection to freeway services into downtown Los Angeles for Gardena customers. GMBL Route 1 will provide connections to express services to downtown Los Angeles at the Artesia Transit Center, including LA Metro Silver Line, 445, 450x, and 550, LADOT CE 448, and Torrance Transit 1. From the Artesia Transit Center, buses have direct access to the HOV lane, enabling a more seamless transition into express service along the I-110 to downtown Los Angeles than the current GMBL Line 1 routing. There are no significant differences with the downtown routing of these services compared to existing Route 1.

In addition, the proposed west-end terminus will turn around via Marine to Prairie, Rosecrans, and Hawthorne then eastbound on Marine to allow for better connections to LA Metro and local schools. Route 1 service will continue on Marine to Vermont, then south through downtown Gardena to 182nd and into the Artesia Transit Center. The proposed alignment will allow existing Route 1 passengers boarding on Vermont access to the Artesia Transit Center for trip to downtown LA; passengers currently boarding north of Marine can transfer via improved Route 2 service on Vermont. The proposed route alignment ends at the Artesia Transit Center, where passengers travelling to LA can transfer to alternate local and express services. Elimination of the freeway portion should significantly improve service reliability.

Frequency: Proposed Route 1 service will operate with increased peak service to meet school and commute demand and allow better connections to service into downtown LA. The new round trip cycle times to Artesia Transit Center will allow for an efficient, customer-friendly 30-minute frequency to be provided on Saturday.

Frequencies	Existing	Proposed
Weekday Peak	30-15	15
Weekday Off-Peak	30	30
Saturday	35	30
Sunday	35	30

Figure 4.1 Route 1 Frequencies

LA Metro Harbor Transitway Congestion Reduction Demonstration Program (CRDP): It is our understanding that outside funding may be available for additional Route 1 service to downtown Los Angeles. GMBL is expecting approximately one year of funding from LA Metro under the program to operate service along the I-110 freeway into downtown Los Angeles. GMBL should utilize funding to operate peak-only Route 1 service to LA via the Artesia Transit Center. When outside funding is no longer available, service into downtown LA should be discontinued. At this time, Route 1 alignment can return to the original concept, ending the line at Artesia Transit Center.

It is our understanding that Harbor Transitway CRDP funding will support two vehicles operating peak service from Marine Avenue and Hawthorne Boulevard to Artesia Transit Center via proposed Route 1 alignment, and continuing to downtown Los Angeles via I-110. However, service headways should be finalized once the amount of annual operating funding is identified.

Route 2

Alignment Change: No changes are proposed to Route 2's existing alignment.

Frequency Change: Significant overcrowding on weekday peak and midday services suggests Route 2 can sustain increased service frequencies all day. In addition, Route 1 will no longer provide overcrowding relief along the Vermont Corridor. Increased Route 2 service will help to accommodate this high demand and provide increase opportunities to utilize the Green Line with connections at Harbor Transitway Station into downtown LA. Figure 4.2 indicates proposed frequency changes for Route 2 service.

Frequencies	Existing	Proposed
Weekday Peak	30	15
Weekday Off-Peak	30	15
Saturday	30	30
Sunday	30	30

Figure 4.2 Route 2 Frequencies

Route 2 Weekday Peak Tripper Service

Route 2 experiences particularly high loads north of 182nd Street during peak periods; this includes the Vermont Avenue corridor, the most concentrated ridership corridor in the network. Additional service will likely continue to be warranted to accommodate peak school and commute trips.

Alignment: A proposed peak-hour tripper service will provide additional capacity for school activity and high demand travelling to/from Vermont Green Line station. This service follows Route 2 alignment in both directions until 182nd Street, where it continues out of service to the opposite direction of Route 2 travel.

Frequency: The proposed tripper service will operate overlay service during weekday peak periods only. Figure 4.3 below indicates the proposed frequencies for the tripper, Route 2 and the resulting combined frequency on Vermont Avenue and Western Avenue north of 182nd Street.

Frequencies	Proposed Peak Tripper	Proposed Route 2	Proposed Combined Frequency
Weekday Peak	30	15	7.5/15
Weekday Off-Peak	-	15	15
Saturday	-	30	30
Sunday	-	30	30

Figure 4.3 Route 2 Peak Tripper Frequency

Route 3

Alignment Change: Route 3 will continue to operate from South Bay Galleria to Compton Blue Line Station along the existing alignment. GMBL should provide service directly to new transit center at the Compton Blue Line Station upon completion to provide efficient transfer connections and avoid making customers cross the street and walk to the station.

Frequency Change: Passenger loads suggest Route 3 has sufficient demand to sustain increased weekday peak frequencies. Figure 4.4 indicates proposed frequency changes for Route 3 service.

Frequencies	Existing	Proposed
Weekday Peak	30	15
Weekday Off-Peak	30	30
Saturday	30	30
Sunday	30	30

Figure 4.4 Route 3 Frequencies

Route 4

Due to low ridership and productivity during weekday, Saturday, and Sunday service, this route is proposed for discontinuation. Route 4 riders travelling to El Camino College can still complete the trip on GMBL Route 3 via Redondo Beach Blvd. In addition, the majority of Route 4 service is within a half-mile walk of the

proposed GMBL network as well as existing LA Metro service (Line 125). Passengers are more likely to walk to higher frequency service (Route 2) rather than wait for service operating at very low frequencies as evident with existing Route 4.

Senior housing located at the southern terminus of Route 4 (along 170th St.) may not be within a reasonable walk distance to proposed fixed-route service, but are eligible to use GMBL's existing Elderly & Handicapped service, which can provide mobility for these patrons at much lower cost than continued operation of Route 4.

Route 5

Alignment Change: Route 5 will continue to operate along El Segundo to Imperial Station via the existing alignment. A change is proposed in the western alignment to serve the Aviation Green Line Station instead of the Nash Green Line Station. Aviation Station provides more direct opportunities to connect with services to LAX, West Los Angeles, and beach cities (BBB Rapid/Local 3-Lincoln, Culver CityBus Rapid/Local 6-Sepulveda, and potential future Green Line extension north). Existing travel behavior suggests weekend travel to West Los Angeles is very strong. Therefore, weekend service to Aviation Station is especially important to facilitate important transfer connections.

Frequency Change: Route 5 weekday service levels are sufficient for existing demand patterns. A new link to connecting services at Aviation Station suggests weekend demand will support minimum service levels, which are recommended. If demand patterns are strong, weekend frequencies can be increased to match weekday service. Figure 4.5 indicates proposed frequency changes for Route 5 service.

Frequencies	Existing	Proposed
Weekday Peak	30	30
Weekday Off-Peak	30	30
Saturday	-	60
Sunday	-	60

Figure 4.5 Route 5 Frequencies

4.2.2 Commuter Tripper Recommendations

Commuter Trippers (CT) services provide peak period service to accommodate additional school and commute riders. However, these trips operate complex alignments and inaccurate service schedules, which are difficult for GMBL customers to understand and challenging for GMBL to operate. Furthermore, the CT services have evolved to provide overcrowding relief on existing GMBL fixed routes. The high concentration of CT passenger activity along fixed-route alignments suggests unique alignments for these routes are unnecessary. While there is a need to supplement low peak frequencies on fixed-route services, CT resources may be best utilized if invested into more frequent fixed-route services (i.e. GMBL Routes 1, 2, and 3). All Commuter Tripper services are recommended for discontinuation, but the available resources will be integrated into the improved fixed-route network.

Proposed alignment changes for the fixed-route network will provide adequate service connections for existing Commuter Tripper riders affected by the elimination. 91 percent of CT ridership occurs within ¼ mile of the proposed fixed route network (without Route 4). Most CT riders outside of the fixed-route network are traveling to locations outside of the City of Gardena and have access to LA Metro or Torrance Transit services. In addition, proposed fixed-route frequency increases will account for additional passenger demand currently served by CT routes.

4.2.3 Fixed-Route Vehicle Savings

The proposed alignment and frequency changes on fixed-route and Commuter Tripper services will affect the number of peak vehicles required to operate fixed-route service. Figure 4.6 below indicates the change in peak vehicles required to operate proposed weekday, Saturday, and Sunday service. The Route 2 weekday vehicle count includes peak hour tripper service.

Route	Weekday Peak Vehicle Count			Saturday Peak Vehicle Count			Sunday Peak Vehicle Count		
	Existing	Proposed	Net	Existing	Proposed	Net	Existing	Proposed	Net
1	9	4	(5)	4	2	(2)	4	2	(2)
2	9	18	9	6	8	2	6	8	2
3	6	7	1	3	4	1	3	4	1
4	2	0	(2)	1	0	(1)	1	0	(1)
5	4	4	0	0	2	2	0	2	2
CT	13	0	(12)	0	0	0	0	0	0
Total	43	33	(9)	14	16	2	14	16	2

Figure 4.6 Peak Vehicle Count Savings

The recommended changes will require fewer peak vehicles than existing Weekday service. Weekday vehicle reductions are largely due to the integration of CT services into regular route operations. After the reinvestment of needed CT resources into fixed-route improvements, a total of 9 peak vehicles are saved.

Saturday and Sunday proposed services will require additional vehicles, largely the result of changes in weekend service on Route 5. Routes 2 and 3 will also require additional vehicles due to the incorporation of layover time into the schedule. The cancellation of Route 4 provides additional resources to be used on Saturday and Sunday, resulting in the net requirement of two additional vehicles overall.

Change in Revenue Miles, Hours

In addition to the change in peak vehicle requirements, the recommended service changes will impact the number of revenue hours and miles. Figure 4.7 below indicates the approximate change in revenue hours and revenue miles. Route 2 includes miles and hours for weekday peak hour tripper service.

Overall, the proposed plan calls for GMBL to operate 5,870 additional revenue hours and 88,700 fewer revenue miles each year. This equates to an estimated \$130,000 additional operating cost per year.

Route	Weekday Difference		Saturday Difference		Sunday Difference	
	Miles	Hours	Miles	Hours	Miles	Hours
1	(870)	(65)	(615)	(40)	(615)	(40)
2	1,500	135	65	30	65	30
3	45	15	0	15	0	15
4	(350)	(30)	(120)	(10)	(120)	(10)
5	0	0	340	35	340	35
CT	(530)	(45)	0	0	0	0
Total	(205)	10	(330)	30	(330)	30


Figure 4.7 Change in Daily Revenue Miles, Hours

As noted, the proposed recommendations will result in fewer miles and more hours than existing service levels, since faster service is proposed to be eliminated (Route 1 service to downtown, Commuter Tripper service). The 13 commuter trippers each operate long distances with few stops at relatively high speeds, resulting in few hours and high miles. Incorporating school and commute service into more efficient, fixed-route network will require more total weekday hours since service will operate at lower speeds due to increased ridership and seat turnover on more congested arterials.

The proposed increases in Route 2 midday service and Route 5 weekend service result in increased annual service hours. Increased Route 2 frequency is expected to attract more discretionary riders and more riders overall, generating additional farebox revenue and offsetting any additional operating cost.

4.2.4 Additional Plan Support Actions

- Stop Spacing and Layover Locations: The service modifications discussed above are intended to enhance overall service quality and system productivity. Further analysis of layover locations should be conducted prior to implementation. Furthermore, stop spacing should be reviewed on portions of routes with tightly located stops to promote increased speeds and overall efficiency.
- Customer Information: Providing comprehensive, easy-to-understand service information will eliminate a barrier to increased riding by



existing customers and riding by new patrons. Clear and accurate service brochures (timetables and maps), a comprehensive website, and effective branding are key elements in an enhanced Customer Communication Program.


- Scheduling Assistance: A complete regeneration of operating schedules is recommended to address ongoing on-time performance issues. The comprehensive actual running time data collected as part of the Line-by-Line Analysis present GMBL with a unique opportunity to improve service reliability. As part of developing new operating schedules, GMBL would be well advised to take advantage of the opportunity to re-optimize vehicle schedules (blocks) and crew rosters (runcut), which will likely result in improved service efficiency (fewer resources needed to operate the same service).
- Performance Monitoring: GMBL should evaluate key system, mode, and route performance indicators (KPIs) at least quarterly to ensure existing and proposed services are meeting productivity, reliability, and quality standards. A review of the established service standards would be beneficial in assuring that all critical performance areas are addressed on a regular basis and that useful targets are identified.
- Fare Policy: GMBL recently increased the base cash fare from \$0.75 to \$1.00. However, periodic fixed-route fare increases should be considered and implemented as part of an ongoing program of financial sustainability. This will provide an opportunity to regularly rebalance operating revenue (fares, etc.), available subsidy, and service levels with operating costs.

4.3 Elderly & Handicapped Service Recommendations

A review of the GMBL Elderly & Handicapped (“Special Transit”) Service identified opportunities to recognize and address current service inefficiencies. The following service recommendations will allow GMBL to provide the highest level of dial-a-ride service to its patrons more efficiently.

Service Recommendations

- Encourage increased use of fixed-route network
- The E & H survey found that 70 percent of patrons are willing to use fixed-route service on some trips. Training and encouraging existing Special Transit riders to use the fixed-route network will not only give passengers access to more services at a discount (for senior citizens), but it will also improve fixed-route productivity.
- Rethink E & H fare to position Special Transit as a premium, curb-to-curb service. The current 75¢ cash fare for GMBL Special Transit is just 40¢ more expensive than using the fixed-route network. GMBL should consider increasing the Special Transit fare both to reflect the premium nature of the service and to create an incentive to use the fixed route service whenever possible – *something that 70 percent of the current patrons indicated a willingness to do*. A fare of double the adult fixed-route fare (\$2.00) would reflect the objectives, while still being less expensive than the LA County ADA paratransit service provided by Access Service, Inc.
- Improve Service Productivity
- Average revenue and deadhead speeds must increase. Based on the observed average speed of less than 8 mph, excessive wait times at pick-up locations and possible dead time in the schedules must be addressed. Reducing wait times will allow vehicles to serve more passengers per revenue hour of service. Monitoring dispatch exceptions



to service policy (like wait time limits) will enhance service delivery and increase overall productivity.


- Average loads of just 2-3 riders in a compact area service suggest service efficiency can be improved. Maintaining high seat utilization by more effective vehicle loading will increase service productivity. Identifying common travel patterns will allow GMBL to group passenger trips accordingly. Furthermore, pick-up times can be negotiated to accommodate multiple passenger pick-ups per trip.
- Review recurring “no-load” trip patrons to enhance fleet efficiency. Identifying certain patrons who repeatedly miss their scheduled time may allow for better use of current vehicle fleet.
- Operate right-size vehicle fleet
- Loading data suggests GMBL can operate vehicles with less capacity for many “Special Transit” trips. Fewer vehicles can also be operated once current loading procedures are reviewed in order to maximize seat utilization.
- GMBL should operate no more than three (3) 15-passenger vehicles and no more five (5) 7-passenger vehicles based on current loading observations. However, fewer vehicles will be required if passenger loads are managed by increasing vehicle utilization.

GMBL should conduct a comprehensive operations review of the current Special Transit service to enhance service efficiency and provide continued high quality service to all its patrons.

Service Alternatives

As an alternative to the existing E&H service, GMBL should also consider developing a taxi voucher¹¹ program in lieu of its current dial-a-ride service.

¹¹ LADOT, Montebello MBL, and OCTA currently provide taxi voucher programs. The first two are not the federal ADA provider and provide service that augments ADA for the disabled and provides service to seniors, as is the case for Gardena. LADOT actually provide both a “Special Transit” paratransit service and taxi vouchers. OCTA has initiated use of taxis to meet part of their mandated ADA paratransit requirements during lower demand periods (evenings and weekends). OCTA to date has had a



While the cost to provide the program is cheaper for GMBL, the program may result in a reduction in the customer service. Taxi service may not be as readily available nor will GMBL have direct control over maintaining service reliability. GMBL should consider conducting a detailed analysis of paratransit service options that meet the needs of its patrons in the most cost effective way possible.

positive experience with use of taxis based on both financial performance and customer survey feedback.

