CITY OF PASADENA

Traffic Reduction Strategies Study

Appendix C: Existing Conditions

Nelson\Nygaard Consulting Associates
785 Market Street, Suite 1300
San Francisco, CA 94103

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Chapter 1. Introduction

The central goal of the Pasadena Traffic Reduction Strategies Study is to develop and analyze the strategies that could achieve: (a) a 10% reduction in PM peak period vehicle traffic (in the first scenario), and (b) a 25% reduction in PM peak period vehicle traffic (in the second scenario). This memorandum is a first pass at the work to be undertaken. It provides a draft analysis framework to assist in reviewing and analyzing the strategies that could potentially be used to reduce traffic in Pasadena. The second portion of this memo provides a brief description of existing transportation conditions in Pasadena, in order to help the consultant team get up to speed on the considerable efforts that Pasadena has already made to reduce traffic. Throughout the existing conditions section, we have attempted to note areas about which we are unclear and questions that may require further research.

This memorandum is intended primarily as an internal document for the consultant team and City staff, to assist us in addressing several questions:

- Which traffic reduction strategies are applicable in Pasadena?
- In which cities, considering examples from throughout the world, have these traffic reduction strategies been implemented – and which ones would be useful case studies for Pasadena?
- To what extent are these strategies already being applied in Pasadena?
- Which strategies are already set to be implemented in Pasadena?
- Which of these strategies have previously been attempted in Pasadena, what impact did they have, and why did they succeed or fail?

Which questions should we be asking about these strategies, as we attempt to determine both their potential for reducing traffic in Pasadena, and their potential effects on other community goals, such as maintaining the city's economic vitality and citizens' ability to travel?

One of the primary reasons to develop this toolbox is the recent adoption of the Mobility Element of the 2004 General Plan. The purpose of the Mobility Element is to provide a multi-modal plan for the movement of goods and services around and through the City. The General Plan promotes the priority of non-auto trips and sets the tone for the Mobility Element with the Guiding Principle, “Pasadena will be a city where people can circulate without cars.” Although the Mobility Element has a long list of goals and strategies, it does not specify which strategies will actually reduce the demand for vehicle ownership in the City, and the likely impact of these goals and strategies. This project will help the City determine which measures will have the greatest effect on trip reduction, taking social, economic and legal implications into consideration. The focus on a “city where people can circulate without cars” also raises the question “Who is currently moving in and through Pasadena and what can be done to the way that they move around?” Figure 1-1 briefly describes this.

Figure 1-1 Movements Within and To/From Pasadena

		Trip Destination	
		Within Pasadena	**Outside Pasadena**
Trip Origin	**Within Pasadena**	Micro-level trips of all types, including walking, bicycling to school, shopping etc. Affected by land use, transportation, and parking policies. City-wide trips. Affected by transit, shuttle, bicycle, and walking alternatives via land use and transportation policy.	Primarily work trips, as well as social/ recreational/shopping trips. The primary local strategy is to improve transit and transit-oriented land use. Affected by residential parking policy, land use policy, transit service.
	Outside Pasadena	Primarily work and shopping trips. Affected by workplace policies – TDM, parking supply and pricing, retail parking strategies, transit accessibility.	Through trips of all types, e.g., Altadena to downtown LA. Most factors affecting travel mode are outside of City's influence, except through road pricing or road use restrictions.

Chapter 2. Summary of Potential Strategies

Figure 2-1 lists traffic reduction strategies that may be considered for Pasadena. Some of the strategies are already in place in the city or in certain parts of the city (for more information, see the "Usage in Pasadena" column). The 27 strategies are divided into six categories:

- Bicycle/Pedestrian Improvements and Traffic Calming
- Transit Strategies
- Parking Strategies
- Transportation Demand Management
- Intelligent Transportation Systems
- Regulatory Reforms

For more information about each traffic reduction strategy, see Appendix B. This appendix includes a detailed description of each strategy and information about leading cities, effectiveness, (social, economy and/or legal) implications and resources.

Figure 2-1 Potential Traffic Reduction Strategies

Potential Strategy	Usage in Pasadena	Examples of Leading Cities	Comments
Bicycle and Pedestrian Improvements, Traffic Calming			
Pedestrian Improvements	Some; Pasadena residents walk to work at rates of double the national average.	Pasadena, CA; Miami Beach, FL; Santa Monica, CA	Earlier this year, Pasadena completed a set of guidelines with recommended funding for pedestrian facilities. Old Pasadena should also be mentioned for its investments in the pedestrian environment.
Safe Routes to School	Some	Marin County, CA	Educating and working with children, parents and teachers about pedestrian and bicycle access to school.
Bicycle Improvements	Some; Pasadena residents bicycle to work at rates of double the national average.	Palo Alto & Berkeley, CA	Consider strategies which include bicycle friendly facilities that encourage cycling at Gold Line Stations
Traffic Calming	Some	Seattle, WA	In some cases, traffic calming may reduce diversion of traffic and result in lower speeds and safer conditions for biking walking.
Transit			

Potential Strategy	Usage in Pasadena	Examples of Leading Cities	Comments
Expanded Transit Service and Bus Rapid Transit (BRT)	Some: Both local and regional services have been improved.	Boston, MA; Los Angeles, CA	E.g. improved transit speed, frequency, reliability, coverage, span of service, passenger comfort, ITS, bus only lanes etc.
Universal Transit Passes	Yes, but only on Metro.	Seattle, WA; Boulder, CO; Santa Clara, CA; Bellevue, WA; Ann Arbor, MI	Also known as Eco Passes. In most cities, the annual pass program provides deep discount group passes for employers, residents and/or students.
Fare Free Zones	Yes. ARTS buses were free for the first 12 years. Today there is a 50 cent regular fare.	Portland, OR; Pittsburg, PA; Asheville, NC;	All users in Downtown Portland. Increases walkability of a downtown and encourages people to "park once." May turn walkers/bikers into transit riders, reducing the effectiveness of this measure.
Parking Strategies			
On-Street Parking Pricing	Yes, in three districts.	Redwood City, CA	Pasadena implemented on-street parking pricing and developed off-street parking structures to encourage economic vitality in Old Pasadena. Program has expanded to include three districts.
Parking Benefit District	Yes, Old Pasadena.	Austin, TX (pilot program)	Pasadena is the predecessor. Often improves streetscape and hence also the pedestrian environment.
Transportation Improvement District	No	Boulder, CO	The difference between Boulder and Pasadena is that Boulder invests revenue in transit and TDM programs whereas Pasadena focuses more on streetscape improvements.
Employee Parking Pricing	Some: e.g., all City employees pay a "Clean Air" fee for a parking space.		In many cities, this type of pricing can be part of Conditions of Approval for newer developments, or as part of new trip reduction ordinances. Parking charge is viable when linked to mode choice and the alternative modes are available.
Parking Cash-Out	No	Santa Monica, CA	Mandated by state law in California, but only for companies over a certain size, which lease parking spaces separately from office space. Santa Monica is one of the few cities -- perhaps the only city -- to actually enforce this law.

Potential Strategy	Usage in Pasadena	Examples of Leading Cities	Comments
Unbundling Parking Costs	Some	San Francisco, Los Angeles, CA	In many cities, unbundling can be part of Conditions of Approval for newer developments, or as part of new trip reduction ordinances. Parking pricing is effective when linked to mode choice and alternative modes are available.
Reduced Minimum Parking Requirements	In TOD zones.	Downtown San Francisco, CA; Milwaukee, WI; Seattle, WA	As part of Conditions of Approval for newer developments, or as part of new trip reduction ordinance.
Removed Minimum Parking Requirements	No	Los Angeles, CA; Portland, OR; San Diego, CA; San Francisco, CA; Seattle, WA;	Typically adopted in zoning ordinance for downtown and/or TOD development.
Maximum Parking Requirements	In TOD zones.	Cambridge, MA; Portland OR; San Francisco, CA	Typically adopted in zoning ordinance for downtown and/or TOD development.
Modified Residential (Preferential) Permit Parking	7 PPP Districts	Boulder, CO; Santa Cruz, CA	The two cities have converted regular PPP districts to Parking Benefit Districts.
Transportation Demand Management			
TDM & Trip Reduction Ordinances	Yes, under revision.	South San Francisco, CA; Cambridge, MA	Affects trip generation at new development.
Car-Sharing	No	San Francisco, CA; Berkeley, CA; Philadelphia, PA	Provides individuals with access to a fleet of shared vehicles, allowing them to avoid owning a car. Recently attempted in Pasadena. However, the provider decided to focus on downtown Los Angeles instead and terminated the Pasadena program.
Transportation Management Association (TMA)	Yes, Pasadena TMA	Lloyd District TMA, Portland, OR	Organized group applying selected approaches to facilitate movement of people and goods within an area.
Alternative Work Schedules	Limited	Specific organizations, not entire cities	A Pasadena survey conducted in the 1980's concerning the arrival and departure time of employees at large companies indicated that over 90%

Potential Strategy	Usage in Pasadena	Examples of Leading Cities	Comments
			arrived between 7:30 and 8:30 am and departed between 4:00 and 5:00 pm.
Toll Zones	No	London, Stockholm, Oslo, Singapore.	Congestion pricing to enter, drive in and/or exit a toll zone with reinvestment in alternative transportation can be a highly successful strategy. San Francisco has received federal funds to examine the potential of a toll zone.
High Occupancy Vehicle (HOV) Lanes/ High Occupancy Toll (HOT) Lanes	Yes: 210 FWY HOV Lanes No: HOT Lanes	San Diego, CA; Orange County, CA; Houston, TX; Minneapolis, MN	HOV lanes give priority to High Occupancy Vehicles, including transit, vanpools and carpools. HOT lanes are designated lanes which motorists driving alone can use if they pay a toll, allowing them to avoid traffic delays in the adjacent regular lanes.
Intelligent Transportation Systems			
ITS	Yes	Los Angeles, Anaheim; CA	Pasadena has an extensive ITS integration involving traffic signal system, changeable message signs and TMC.
Regulatory Reforms			
Transportation Impact Review Practices	Yes	Most cities, with focus on LOS	Most cities have adopted Transportation Impact Review practices, to guide new development in regards to traffic generation.
Transportation Impact Fees	Recently adopted in Pasadena. Ordinance to be adopted fall 2006.	Palo Alto, Santa Cruz, Redwood City, CA.	Transportation impact fees can fund infrastructure for alternative transportation. Funding can otherwise be a major obstacle for physical improvement.
Street Typology & Performance Measures	Yes, focus on multimodal corridors + LOS	Seattle, WA; Minneapolis, MN (in progress); Portland, OR; Trenton, NJ	Can help a city evaluate the existing system and estimate necessary improvements. However, the existing LOS only measures vehicle congestion. It does not include measures regarding transportation efficiency, volumes, speeds, etc.

Chapter 3. Current Travel Characteristics

Pasadena's current travel characteristics give important background information about the existing baseline. These numbers can easily be used as performance measures at least as often as new census data is presented, which is usually every ten years. Mode split and vehicle occupancy are two of the measures presented here, and compared to the whole of Los Angeles County and the United States. In addition, the existing motor vehicle work trip generation is compared to projected number of work trips in 2015, and how much this number needs to be reduced meet a 25% reduction in trips. Trip generation and trip purposes are also discussed in this chapter.

Mode Split

Pasadena is a highly urbanized area with a population of approximately 144,000 in 2005 (134,000 in Census 2000). According to Census 2000, roughly 70% of Pasadena's employed residents drive alone to work with another 13% choosing to carpool. Public transportation, biking and walking account for roughly 11% of commute trips, see Figure 3-1 and Figure 3-2 on the following page.

Data indicate that there are several differences in transportation mode choice between Pasadena's residents and employees, and the average American, see tables and figures on the following pages. The most striking contrast is in the number of workers carpooling. Whereas only 8.7% of Americans carpool to work, 13.3% and 15% of Pasadena residents and employees carpool respectively – over a 60% increase. Furthermore, Pasadena residents bicycle and walk to work at rates of double the national average. This high number of pedestrians and cyclists is perhaps reflected in a shorter average commute time for residents (25.9 minutes) compared to workers commuting to Pasadena (28.4 minutes).

The effects of carpooling and non-motor vehicle commutes reduce total Pasadena single occupancy vehicle trips from the national average of 79.4% to 70.5% for residents and 73.1% for employees. The decreased reliance on the automobile is also reflected in vehicle ownership rates. Pasadena's mean number of household vehicles is 10% lower than the average national household (1.52 compared to 1.69), ranging from 1 vehicle per household to 2.2 vehicles per household in different census tracts, see Figure 3-16.

When compared to Los Angeles County, Pasadena has roughly the same mode split in terms of carpooling and drive alone rates, but the two greatly differ in non-vehicular travel. Figures show that Pasadena residents commute by walking and biking at nearly double the rate of Los Angeles County residents (6.7% to 3.5%). This dependence on cars by county residents can be observed in their average number of household vehicles (1.71) and average commute time (29.4 minutes), both of which are approximately 13% higher than those of Pasadena residents.

In Pasadena, to reach a goal of reducing existing traffic levels by 25%, techniques for reducing drive alone rates would need to be applied in a way that not only results in all new development taking place without any increase in traffic, but also in reducing traffic to and from existing development by 25%. In other words, to reduce existing traffic on Pasadena streets by 25%,

drive alone rates need to fall by more than 25% -- unless, that is, Pasadena has no increase in residents, no increase in jobs and no increase in cut through traffic .

Figure 3-17 shows the projected increase in population and traffic in Pasadena by the year 2015 under current policies, and also illustrates the overall decline in the percentage of trips made by driving alone that would be needed to reduce the existing level of Pasadena traffic by 25%.

Figure 3-1 Mode Split for Pasadena Residents Commuting to Work

	Residents	% Mode Usage
Workers 16 years and over	61,891	100.0%
Car, truck, or van -- drove alone	43,650	70.5%
Car, truck, or van – carpooled	8,210	13.3%
Public transportation	2,795	4.5%
Biked	880	1.4%
Walked	3,280	5.3%
Other means (e.g. taxi/motorcycle)	710	1.1%
Worked at home	2,370	3.8%
Mean travel time to work (minutes)	25.9	

Source: Census, 2000

Figure 3-2 Mode Split for Pasadena Residents Commuting to Work

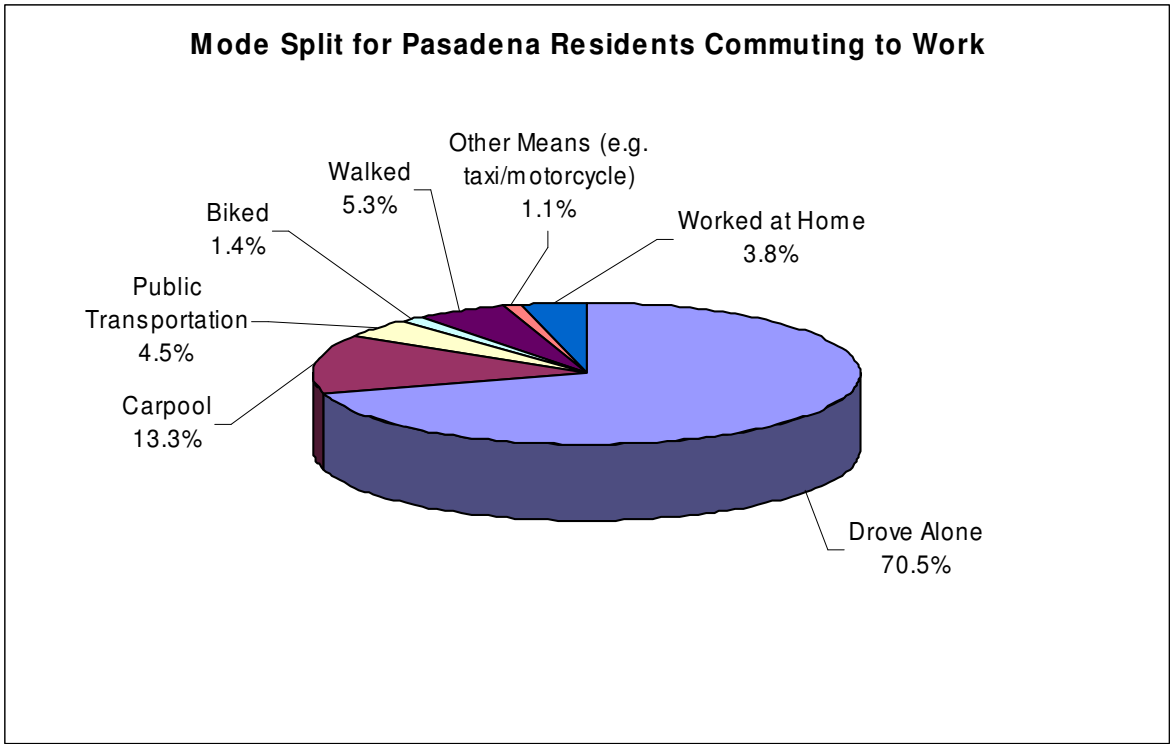


Figure 3-3 Mode Split for Employees Commuting to Pasadena

	Employees	% Mode Usage
Workers 16 years and over	101,444	100.0%
Car, truck, or van -- drove alone	74,165	73.1%
Car, truck, or van -- carpooled	15,265	15.0%
Public transportation	4,474	4.4%
Biked	945	0.9%
Walked	3,525	3.5%
Other means (e.g. taxi/motorcycle)	700	0.7%
Worked at home	2,370	2.3%
Mean travel time to work (minutes)	28.4	

Source: Census, 2000

Figure 3-4 Mode Split for Employees Commuting to Pasadena

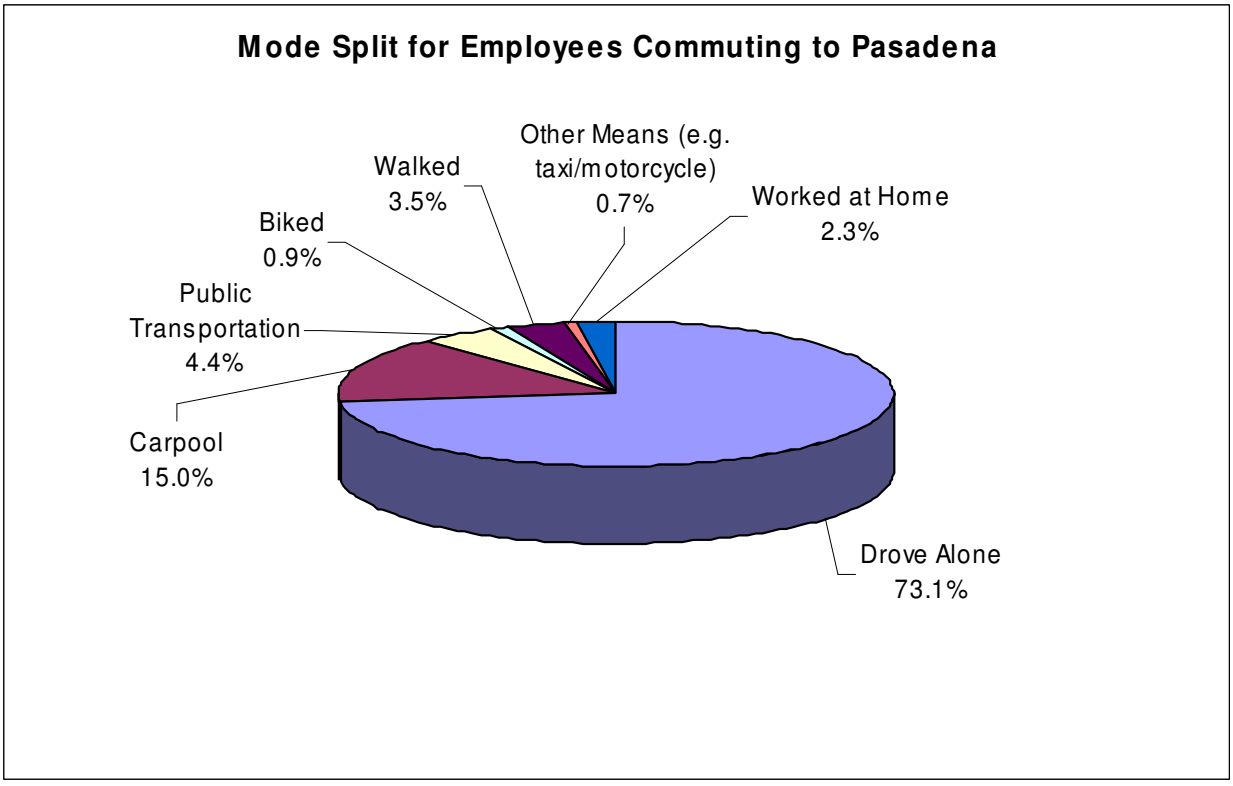


Figure 3-5 Mode Split for Los Angeles County Residents Commuting to Work

	Employees (in thousands)	% Mode Usage
Workers 16 years and over	3,858,750	100.0%
Car, truck, or van -- drove alone	2,714,945	70.4%
Car, truck, or van -- carpooled	582,020	15.1%
Public transportation	250,770	6.5%
Biked	24,015	0.6%
Walked	113,005	2.9%
Other means (e.g. taxi/motorcycle)	39,290	1.0%
Worked at home	134,645	3.5%
Mean travel time to work (minutes)	29.4	

Source: Census, 2000

Figure 3-6 Mode Split for Los Angeles County Residents Commuting to Work

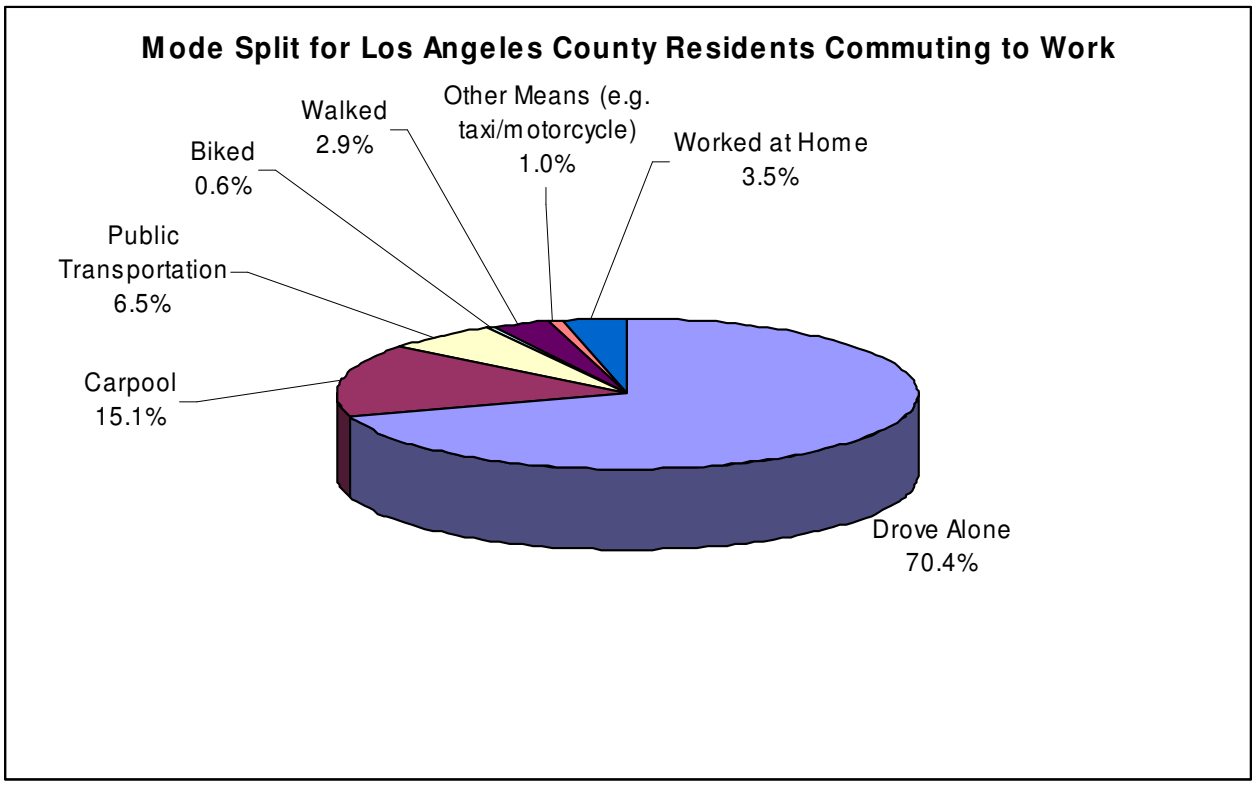


Figure 3-7 Mode Split for National Commuting to Work

Household Vehicle Ownership in Los Angeles County	Employees (in thousands)	% Mode Usage
Workers 16 years and over	115,343	100.0%
Car, truck, or van -- drove alone	91,607	79.4%
Car, truck, or van -- carpooled	10,057	8.7%
Public transportation	5,081	4.4%
Biked or Motorcycled	691	0.6%
Walked	3,171	2.7%
Other means (e.g. taxi)	1,200	1.0%
Worked at home	3,536	3.1%
Mean travel time to work (minutes)	25.5	

Source: Census, 2000

Figure 3-8 Mode Split for National Commuting to Work

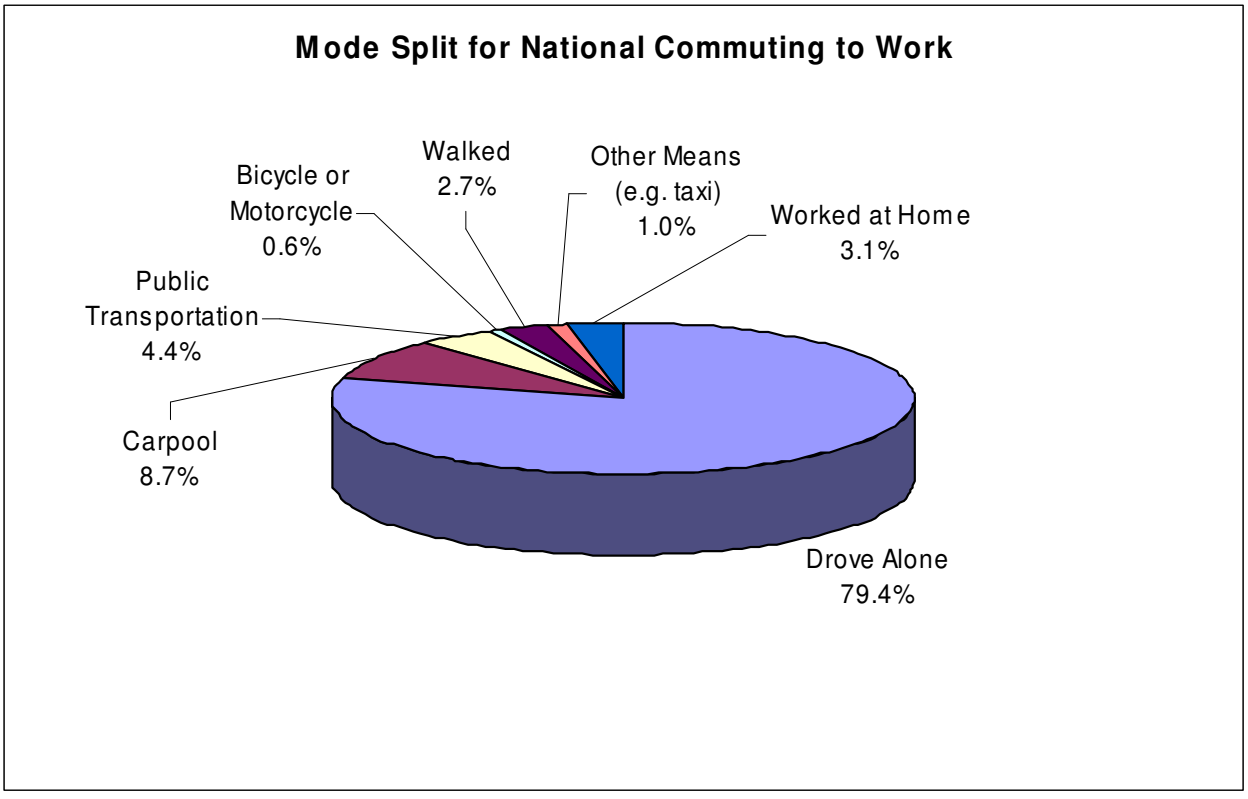


Figure 3-9 Household Vehicle Ownership in Pasadena

Number of Vehicles per Household	Households	% Ownership
Total	51,805	100.0%
0 Vehicles	6,110	11.8%
1 Vehicle	21,420	41.3%
2 Vehicles	17,870	34.5%
3 Vehicles	4,620	8.9%
4+ Vehicles	1,785	3.4%
Mean number of household vehicles	1.52	

Source: Census, 2000

Figure 3-10 Household Vehicle Ownership in Pasadena

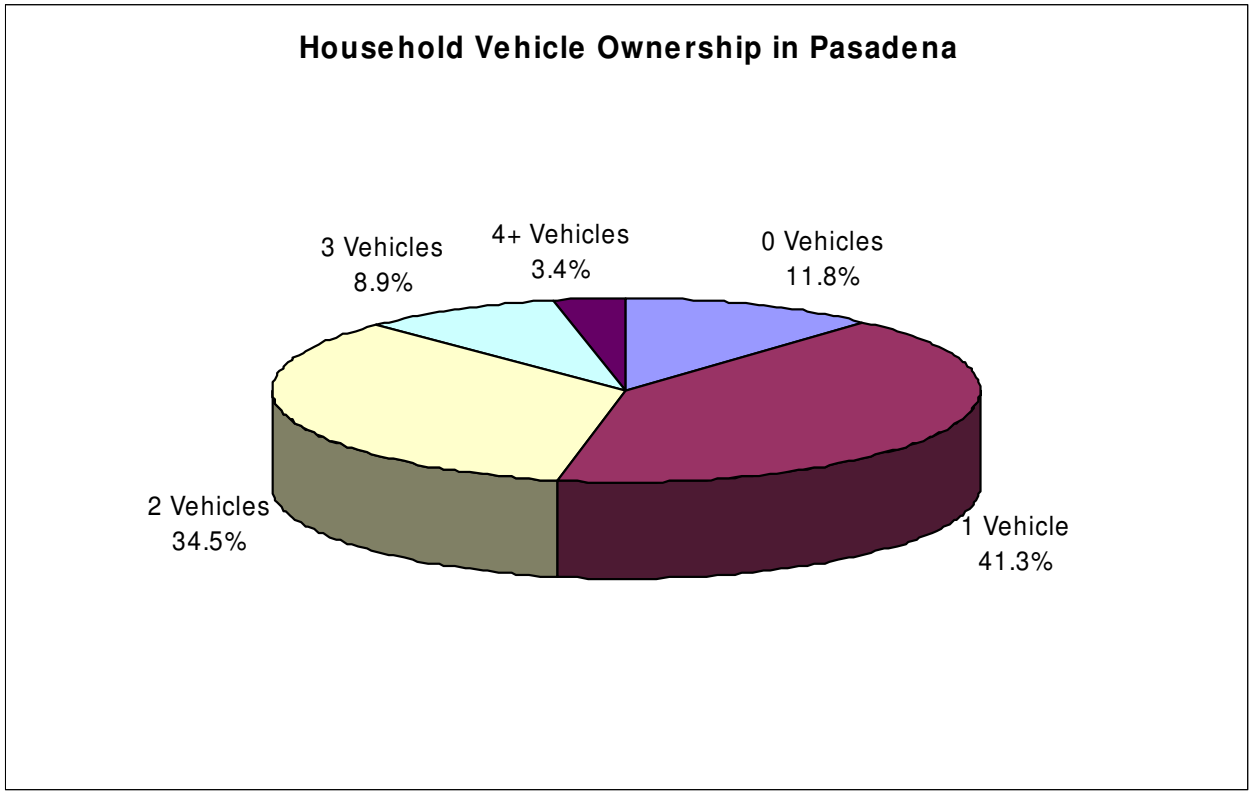


Figure 3-11 Household Vehicle Ownership in Los Angeles County

Number of Vehicles per Household	Households	% Ownership
Total	3,136,280	100.0%
0 Vehicles	391,135	12.5%
1 Vehicle	1,154,740	36.8%
2 Vehicles	1,084,325	34.6%
3 Vehicles	355,510	11.3%
4+ Vehicles	150,570	4.8%
Mean number of household vehicles	1.71	

Source: Census, 2000

Figure 3-12 Household Vehicle Ownership in Los Angeles County

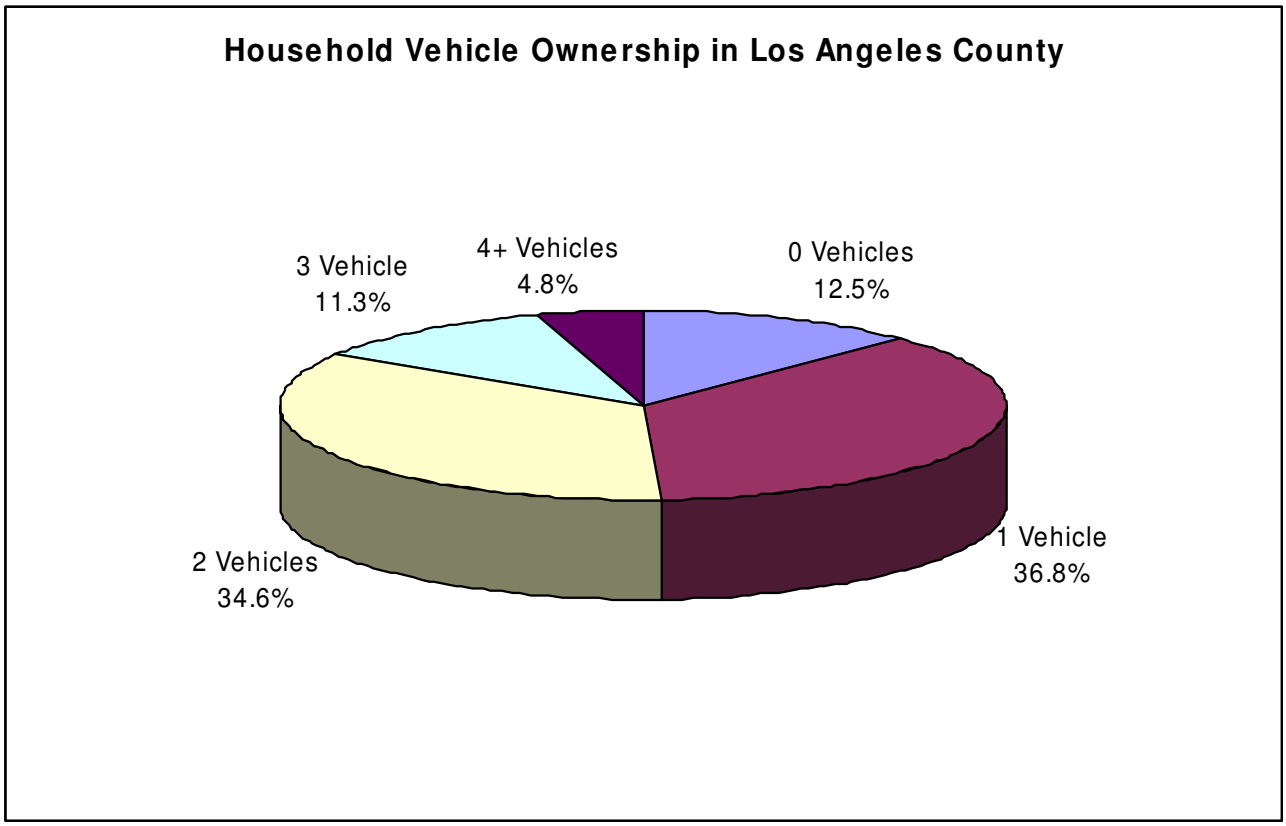


Figure 3-13 Household Vehicle Ownership Nationwide

Number of Vehicles per Household	Households	% Ownership
Total	105,539,125	100.0%
0 Vehicles	10,747,270	10.2%
1 Vehicle	36,031,905	34.1%
2 Vehicles	40,641,730	38.5%
3 Vehicles	13,205,170	12.5%
4+ Vehicles	4,913,050	4.7%
Mean number of household vehicles	1.69	

Source: Census, 2000

Figure 3-14 Household Vehicle Ownership Nationwide

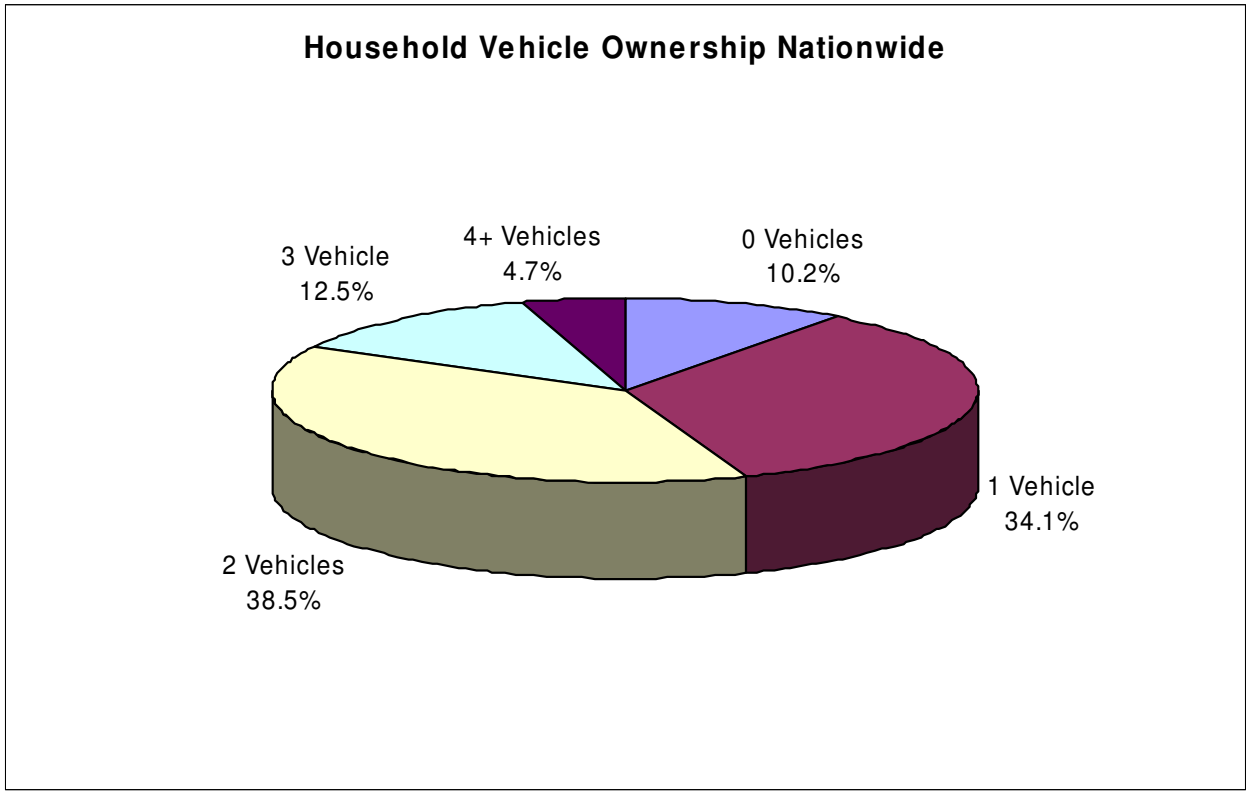


Figure 3-15 Pasadena Population Density

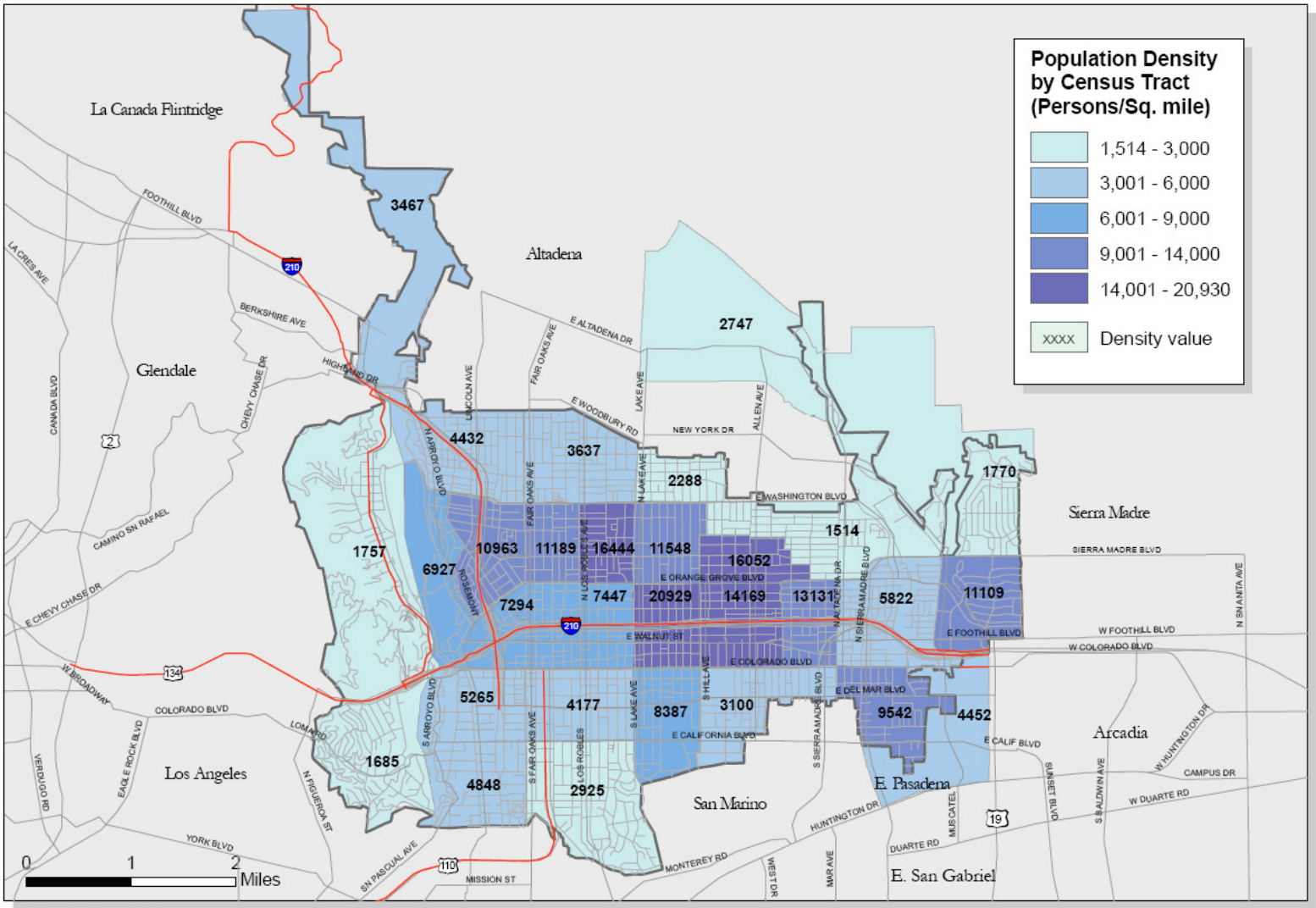
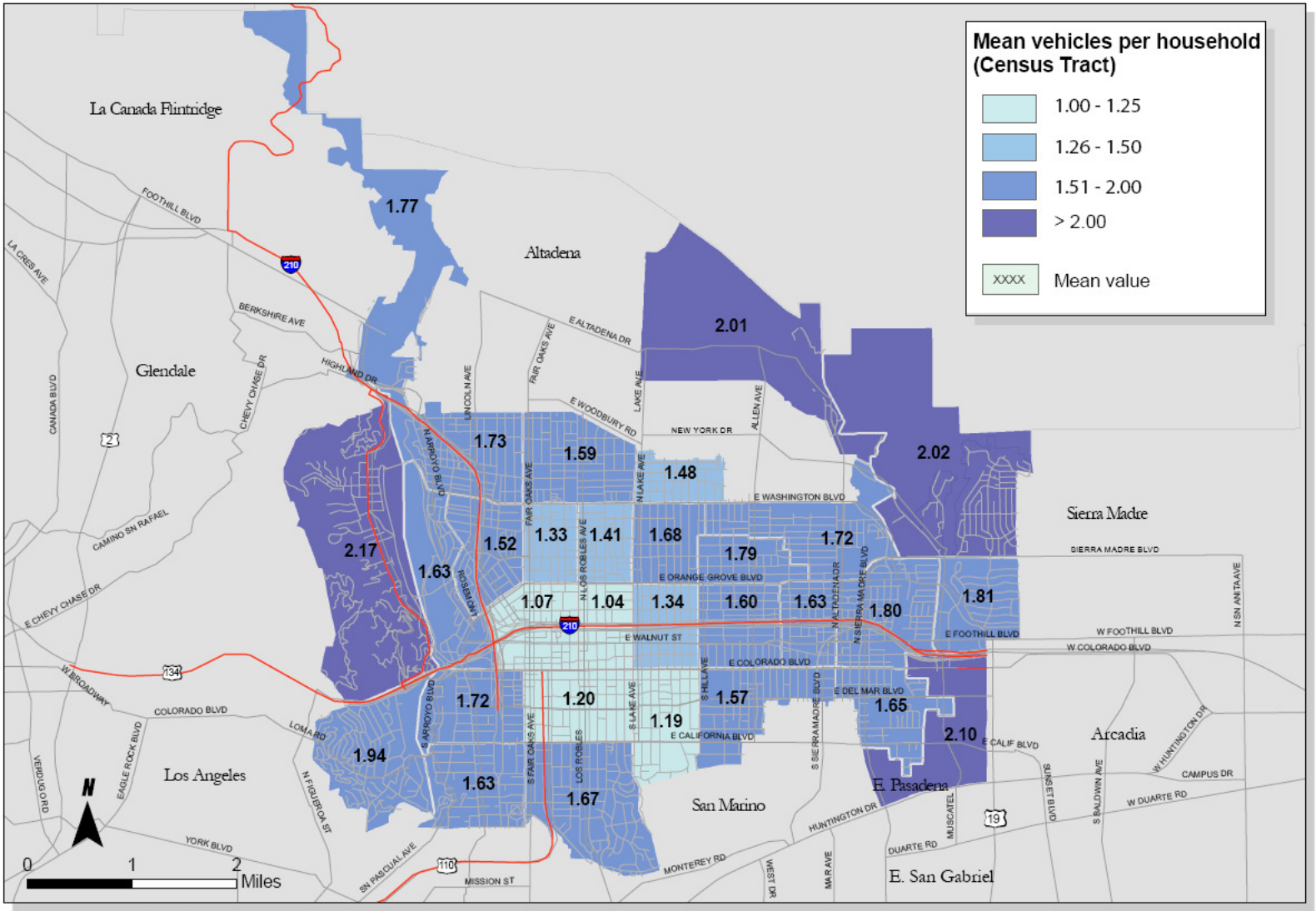


Figure 3-16 Pasadena Household Vehicle Ownership



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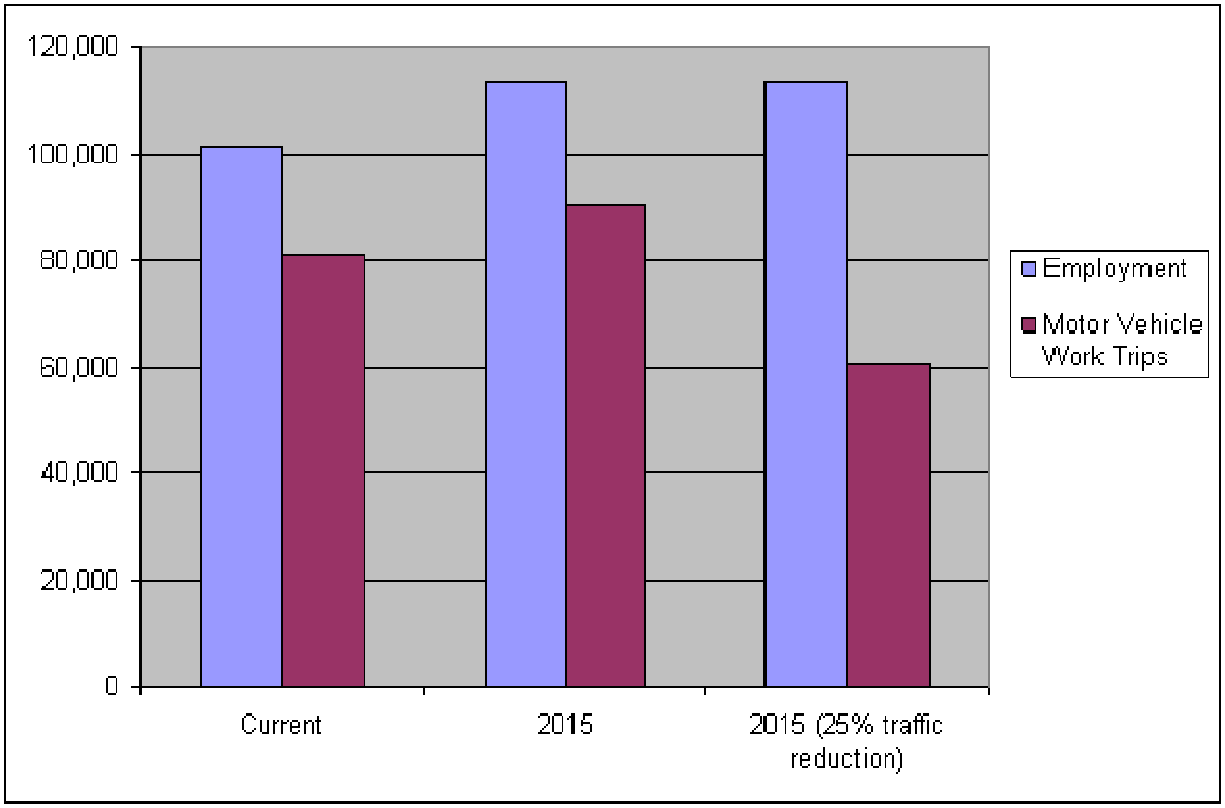
GIS Data Source: Census 2000
Location: Pasadena, CA

Figure 3-17 Motor Vehicle Work Trips Compared to Future Employment



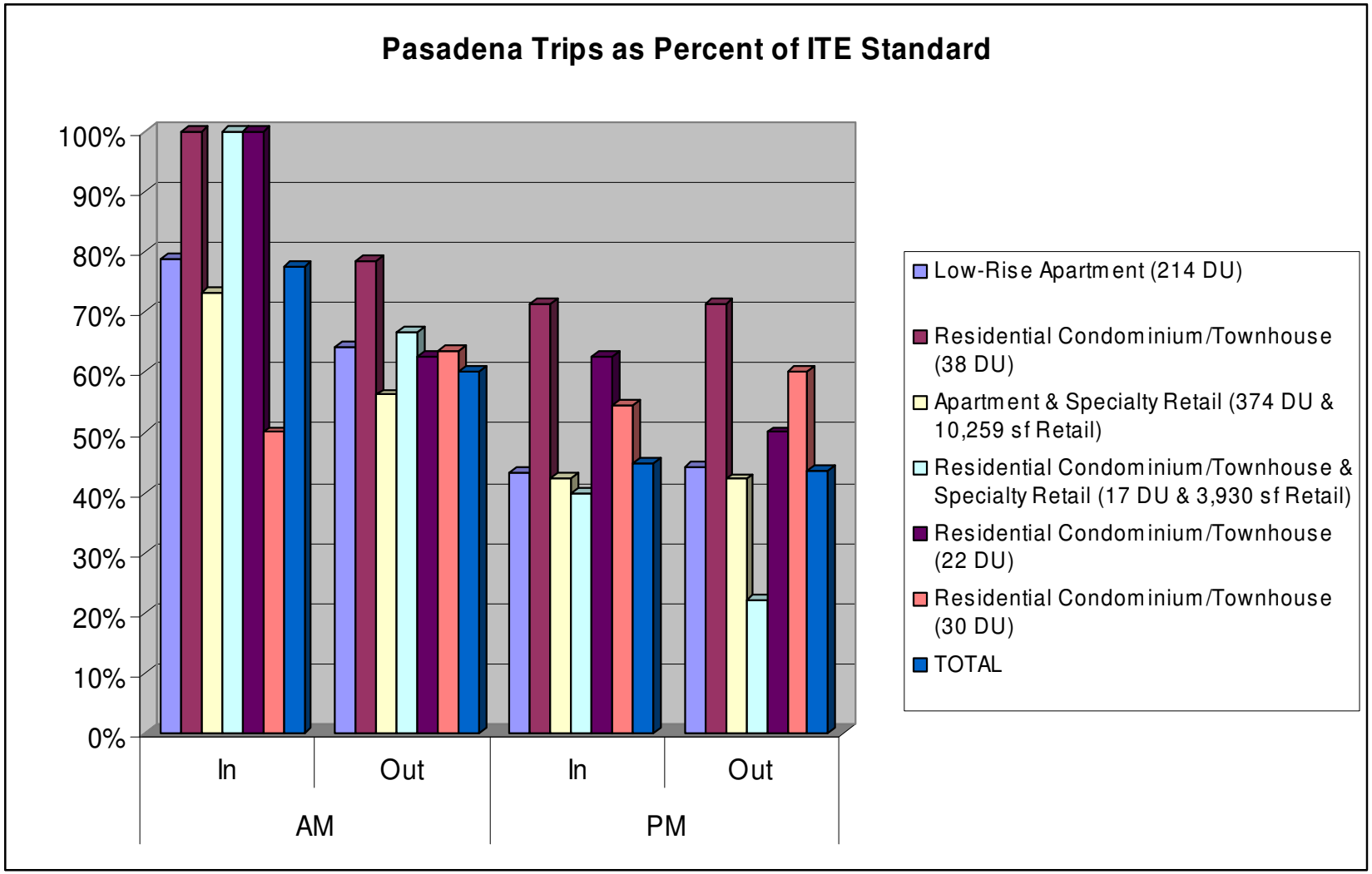
Trip Generation

By 2015, there will be roughly one million daily trips throughout Pasadena with 350,000 of those being "through" trips. About 47% of the growth in traffic levels between 2000 and 2015 is attributable to "through" trips (Pasadena Traffic Growth Fact Sheet).

Pasadena residents recently raised concerns during the Ambassador Campus development scoping period as to the accuracy of the Institute of Traffic Engineers' (ITE) trip generation rates. They believed the rates were potentially too low and a traffic count survey was conducted to compare the results to the ITE baseline numbers for similar land uses. Ingress and egress counts of various sites during both AM and PM peak hours revealed that the actual number of trips were considerably lower than ITE standards. Although AM ingress trips were roughly equivalent to those of ITE, AM egress and PM trips proved to be approximately half the anticipated count, see Figure 3-18. In total, the actual number of Pasadena trips were only 52% those of ITE standards.

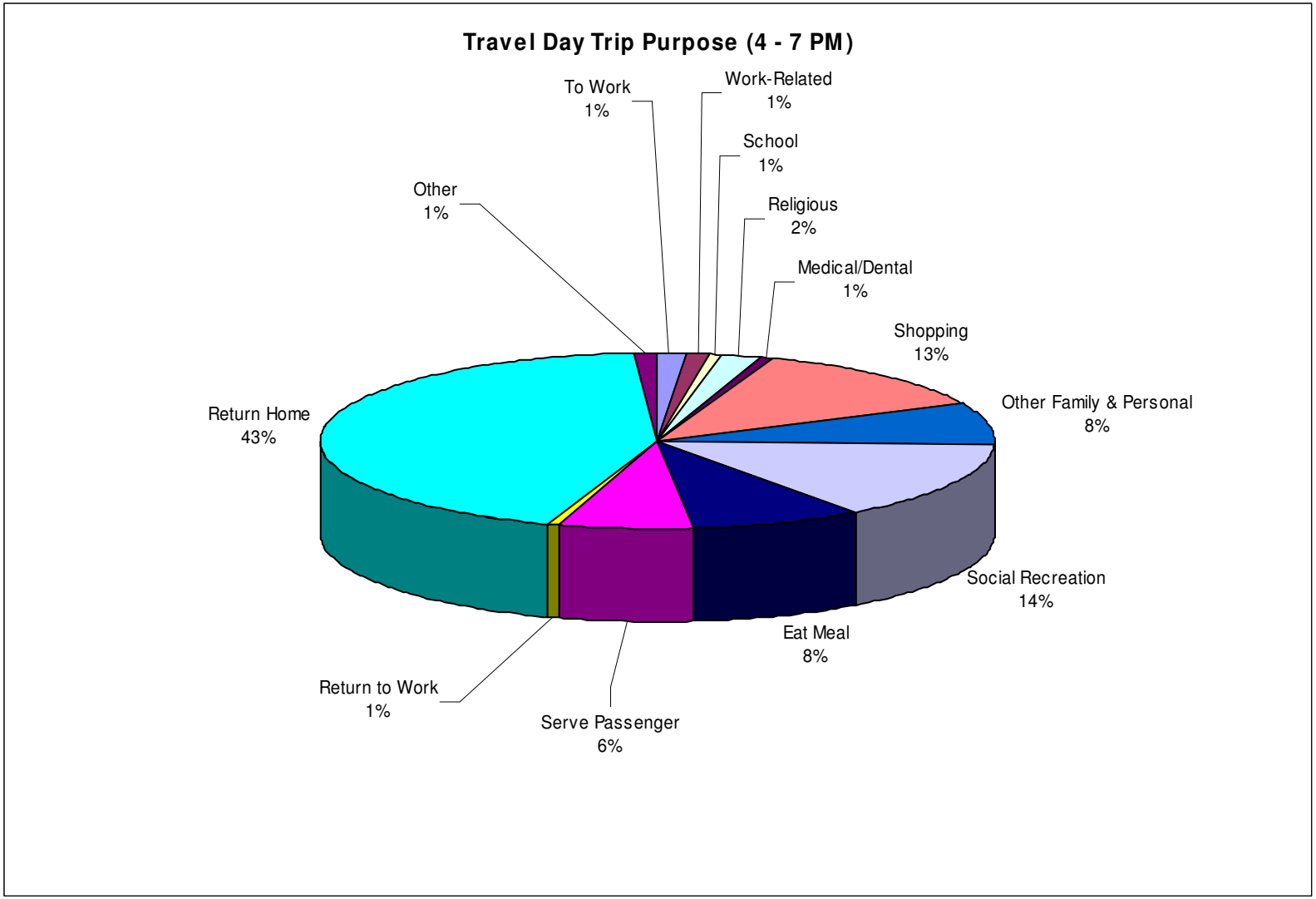
Although the afternoon rush hour (4 – 7 PM) is the time of day with the greatest amount of employees traveling home, the number of workers is only one part of the total trips being made. Figure 3-19 below shows that during the PM rush hour, only 43% of trips are for people returning home. Approximately half of rush hour trips are for non-work purposes, which means that TDM programs targeting employees, however effective, are not affecting half of the afternoon commute. Furthermore, Figure 3-20 reveals that 57% of motor vehicle trips are not returning home from work or other destinations, so in attempting to coax motorists off the roads during the PM rush hour, it is necessary to address non-commuters. Only transit riders show a high rate of returning home in the afternoon with a rate of nearly two-thirds.

Figure 3-18 Trip Generation in Pasadena Vs. ITE Standard Rates



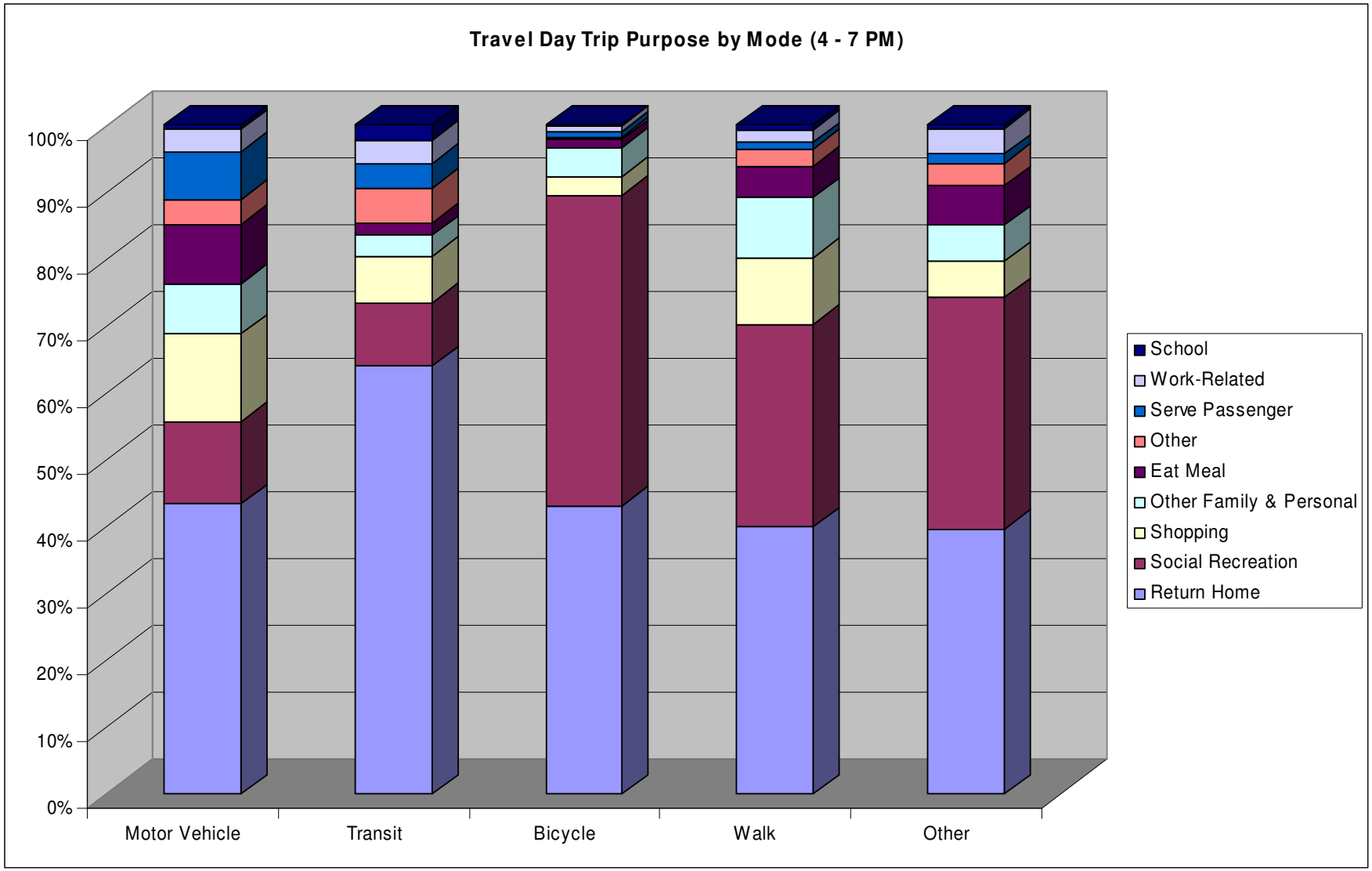
Source: City of Pasadena Department of Transportation (2005) Pasadena Developments Trip Generation Case Study.

Figure 3-19 Trip Purpose in PM Peak Period



Source: 2001 National Household Travel Survey (https://nhts.ornl.gov/2001/index.shtml)

Figure 3-20 Trip Purpose by Mode in PM Peak Period



Source: 2001 National Household Travel Survey (https://nhts.ornl.gov/2001/index.shtm

Chapter 4. Current Practices in Pasadena

The following section describes Pasadena's current transportation systems, traffic reduction strategies, the level of implementation, impacts of these efforts on travel behavior (where available), and several current projects and plans for future improvements.

Pedestrian Programs

According to Census 2000 data, Pasadena residents walk to work at rates of double the national average. Several pedestrian improvement projects have already been carried out in Pasadena. Old Pasadena has gone through major improvements over the last decade, where parking meter revenue has been reinvested into better streetscape and other amenities. This has led to other similar projects. In 2006, the Business District Pedestrian Improvement Project will be constructed using $917,400 in MTA Grant funds. In addition, Pasadena's recently adopted *Pedestrian Plan* states that the City has plans to invest $91 million in pedestrian improvements. However, funding has not been approved yet.

Phase 1 of the Playhouse Streetscapes project has been completed, along with public art and green street lighting, although some tree replacement and painting is still to be done. Phase II has yet to be initiated, as the MTA (TEA-21) has deferred the grant money until 2007.

The City has also received an MTA Grant for $2.8 million with a $1 million contribution from the PCDC for a Civic Center/Mid-Town Project. The project envisions improvements similar to the Playhouse project with additional amenities in Centennial Square (the City Hall area). This project is dependent on the same deferred grant funding from the MTA (TEA-21).

Expansion of Safe Routes to School Program

According to the Mobility Element, safe bicycling and walking for school-aged children is a key issue. While the Pasadena Unified School District (PUSD) has the most direct contact with parents and students, the City works with PUSD as well as with private schools to ensure that students are provided with information for suggested safe routes to and from schools. The City conducts an annual inventory of signage and striping around every public school to ensure that these control devices are in good condition. The City, in cooperation with the MTA and PUSD, is also expanding current education efforts to provide safety information about light-rail transit services.

In FY 2005, a "Suggested Safe Routes to School" program was created and fully funded. For FY 2006-2010, this program has been allocated $125,000 to create route maps for the fourteen elementary schools in Pasadena.

Another program, "Safe Strides and Rides" provides funding for educational and engineering treatments. Two projects for FY 2006-2010 are in-roadway lighting systems at two crosswalks (location TBD) and a video on safe walking and bicycling, for distribution to schools and youth-oriented organizations.

Bicycling

Pasadena has made bicycling a fundamental part of their transportation plan. According to Census 2000 data, Pasadena residents bike to work at rates of double the national average. Projects for bicycle routes, parking, signage and public information are guided by a Bicycle Master Plan, adopted and certified by the City Council of Pasadena in November 2000. Bicycling is also strongly supported in the 2004 Mobility Element of the General Plan, which calls for an extended and maintained network of bike routes, bike parking at large events, and bike access to transit facilities. Recently, Pasadena expanded the bikeway network with 50 miles of additional bike lanes, enhanced bike routes, and standard bike routes. Bike parking has been increased throughout the City with the installation of 200 new bike racks.

As part of its zoning code, Pasadena requires bicycle parking for any new structure or altered existing structure. The amount of bicycle parking required is currently coupled to vehicle parking. For instance, a non-residential development of 15,000 sq. ft. or more is required by the zoning code to provide a number of bicycle parking spaces that is equivalent to 5% of the required motor vehicle parking (but not less than four spaces).

County Efforts

To better integrate bicycles and transit, Los Angeles Metro has created a Bike-Transit Center Implementation Plan to insure these two modes of transit are safely and effectively integrated. Working with Pasadena staff, the project team identified key factors such as land ownership and connectivity for each station, and then proposed priorities and a sample site plan for a Gold Line station in Pasadena.

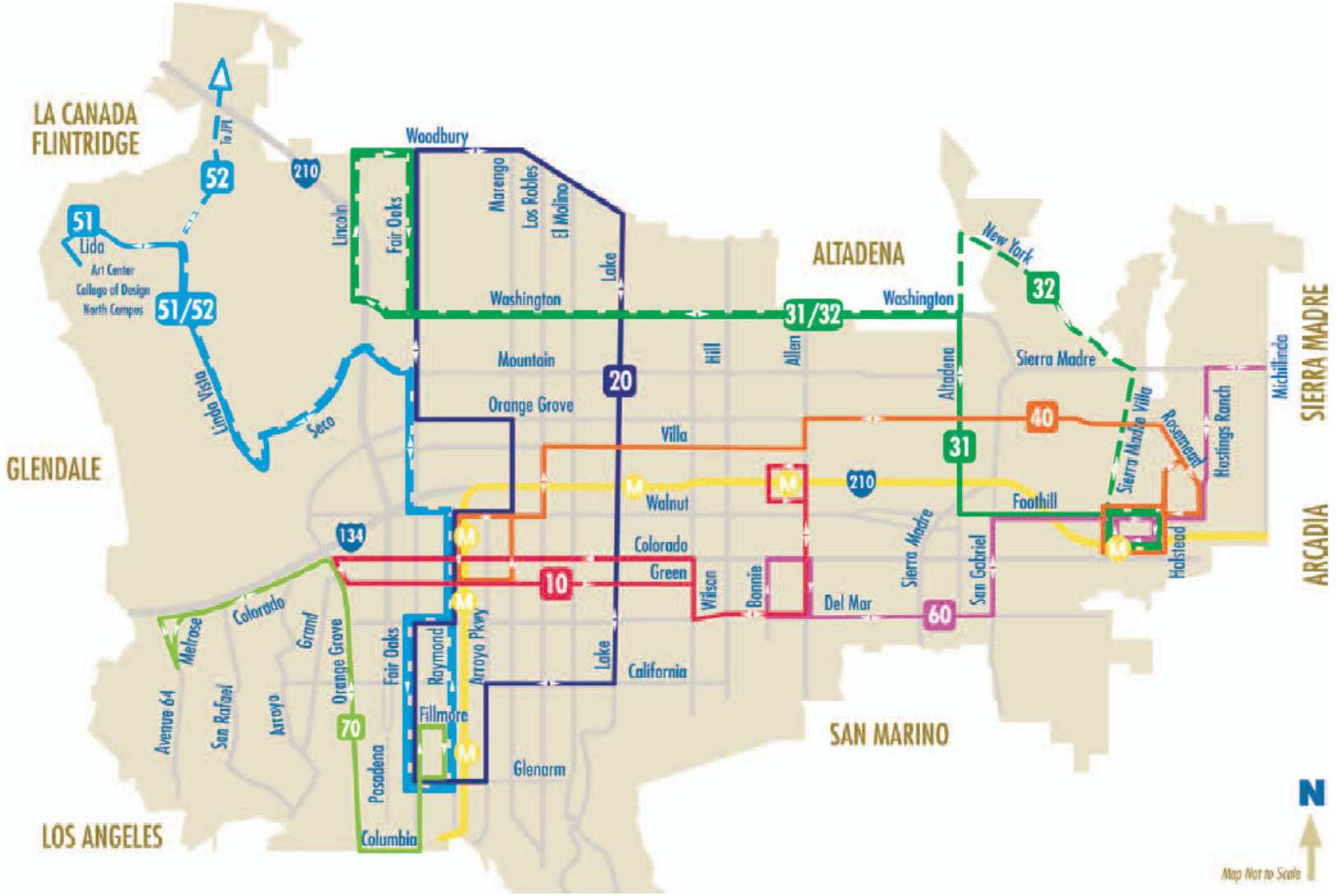
Transit

Pasadena has made transit a centerpiece of their approach to reducing auto use. The expansion of transit is strongly supported in the Mobility Element of the General plan.

The local circulator, Pasadena Area Rapid Transit System (ARTS) has seven primary routes designed to provide convenient transportation between many of the City's residential neighborhoods and retail, business and entertainment centers. Two of the routes, Routes 30 and 50, split into route segments 31/32 and 51/52, respectively. See Figure 4-1 for coverage of the ARTS service and Figure 4-2 for the current annual ridership. Pasadena ARTS had a total of 1.4 million riders in Fiscal Year 2006, up 7.5% from FY 2005. On an average weekday, there were roughly 5,000 riders in FY 2006, reaching roughly 6,000 riders per weekday by the end of FY 2006.

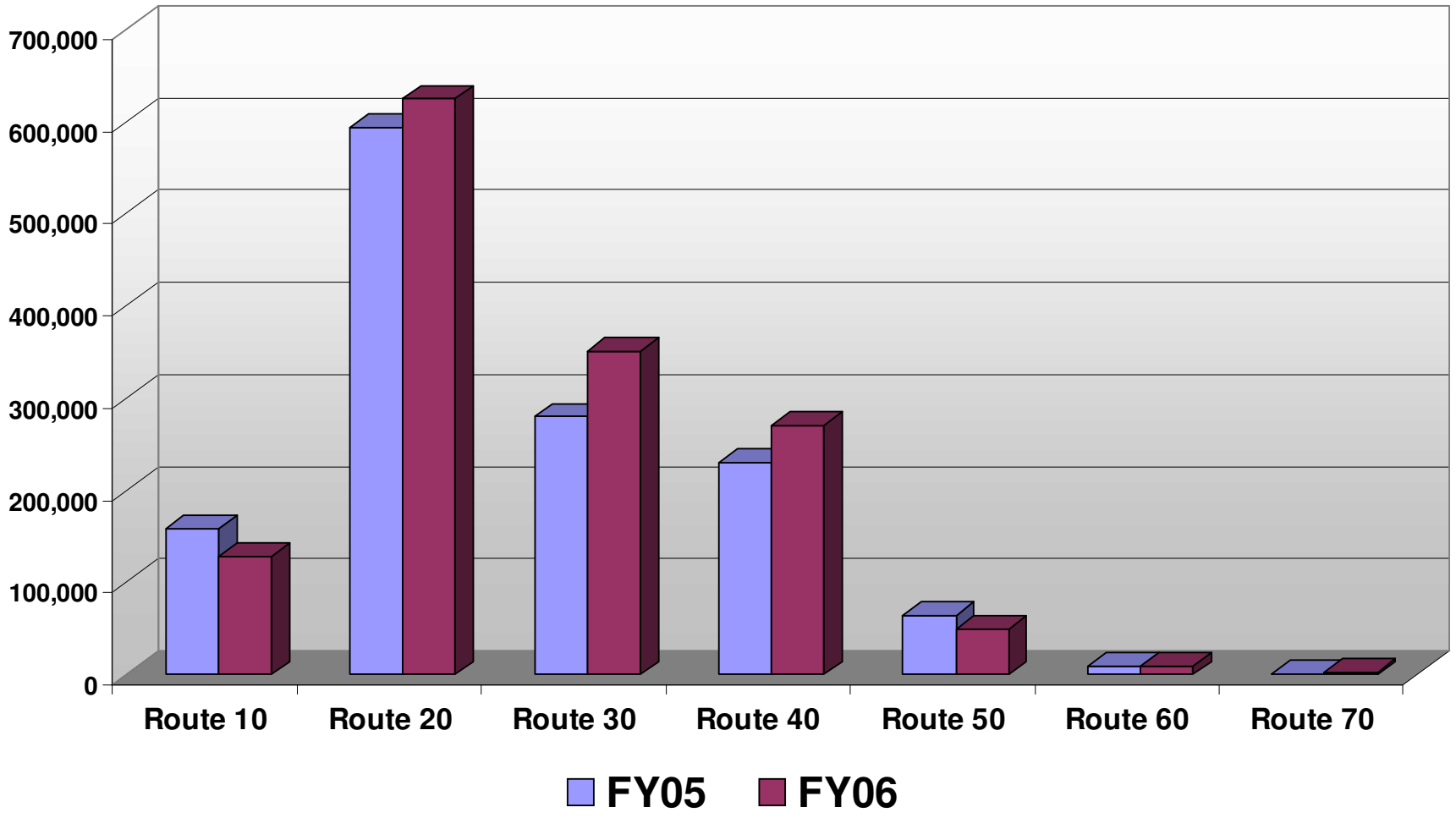
The ARTS program was introduced in June 1994 with the Downtown Route. At that time service was free of charge. An Uptown Route was added in July 1996. In March 2002 the service was restructured into four routes – 10, 20, 31/32 and 40 – and hours of operation were extended. This resulted in a 50% increase in ridership, see Figure 4-3 and Figure 4-4. Concurrent with the opening of the Gold Line in July 2003, a fare of $0.50 was introduced. Although service was added (Route 50 and 60) and restructured, ridership dropped by 40%. Today, ridership is still down 35% compared to before the fare introduction.

Figure 4-1 Pasadena ARTS



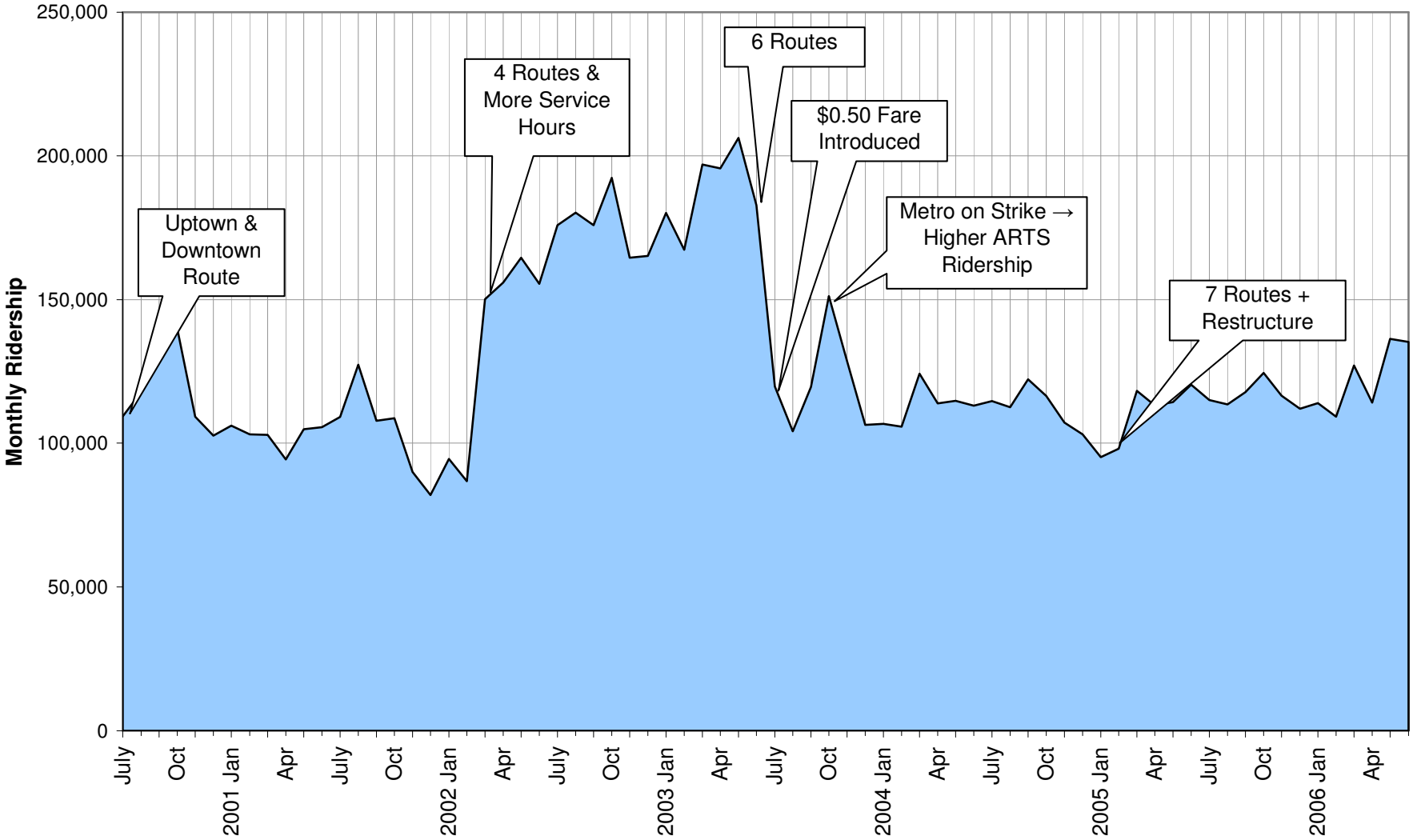
Source: Pasadena Area Rapid Transit System (ARTS) (http://www.ci.pasadena.ca.us/trans/transit/trans_arts.asp).

Figure 4-2 Pasadena ARTS – Ridership by Route



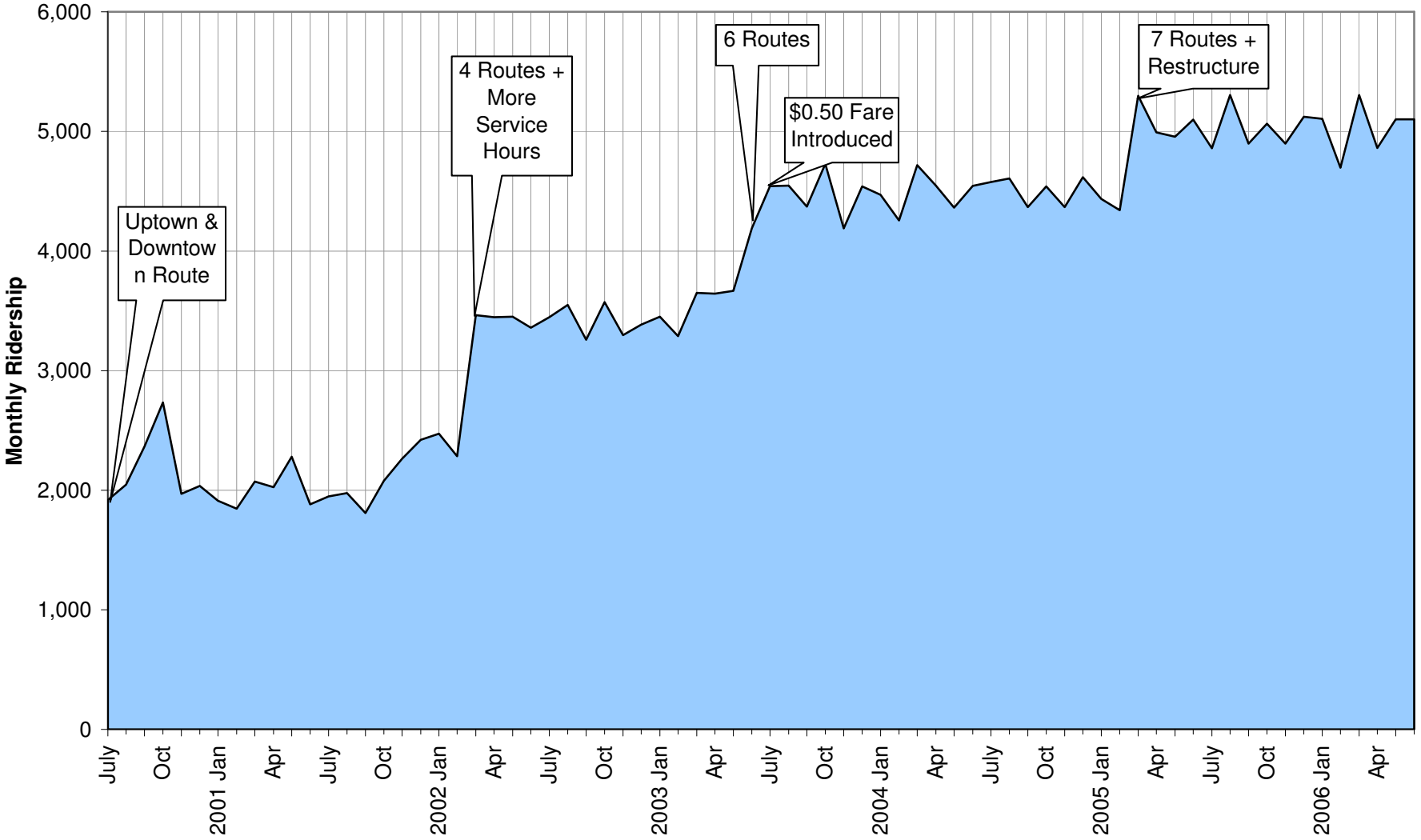
Source: Pasadena DOT (2006)

Figure 4-3 ARTS Ridership between Fiscal Year 2001 and 2006.



Source: Pasadena DOT (2006)

Figure 4-4 ARTS Revenue Hours Fiscal Years 2001 to 2006.



Source: Pasadena DOT (2006)

Los Angeles County Metropolitan Transportation Authority (Metro) is a major transit provider to Pasadena. The agency serves as transportation planner and coordinator, designer, builder and transit operator for one of the country's largest counties and has a 1,433-square-mile service area, see Figure 4-5. It is responsible for providing transit service across Los Angeles County and connecting with adjacent counties. It operates a bus fleet of over 2,200 vehicles, a subway/heavy rail system of over 17 miles, and a light rail system of 42 miles. Metro currently runs one Metro Rapid line to Pasadena, Route 780. The route operates Monday to Friday with a frequency of less than 10 minutes during peak hours and 15 minutes during off-peak. On a typical weekday, Route 780 carries roughly 6,000 passengers. Some 1,400 passengers board and 2,400 alight within the City of Pasadena on that same typical weekday.

The Gold Line Light Rail is part of the larger LA-area Metro system. It includes 13 stations - 6 within Pasadena, 1 in South Pasadena and 6 in Los Angeles. The light rail spans 13.7 miles linking Union Station in downtown Los Angeles and Sierra Madre Villa in East Pasadena via Chinatown, Highland Park, South Pasadena and Pasadena. Four of the six stations have park-and-ride facilities accommodating approximately 1,780 cars. The Gold Line currently operates eighteen hours of daily service, 365 days a year with 10 minute headways during peak periods, 15 minute headways off peak and 20 minute headways during the night/weekend period.

The Gold Line is well-connected to the other regional transit providers in Pasadena; passengers can connect to the rest of the Metro system at Union Station, and Pasadena ARTS and Metro bus routes have been added to take bus riders directly to all six Pasadena Gold Line stations, see Figure 4-6. A 6-mile extension of the Gold Line to East LA is under construction and scheduled to be completed in late 2009. A 24-mile extension of the Gold Line from Pasadena to Montclair is in the planning stages and scheduled to begin construction in 2007 and work to be completed to Azusa/Glendora in 2010 and Montclair in 2014.

According to MTA, ridership on the Gold Line route turned out to be lower than expected. Much of the trouble Pasadena faces in terms of Gold Line ridership can be attributed to land use policies. Arlington County's Rosslyn-Ballston Corridor, as noted in the case study, has a drive alone rate 60% that of Pasadena largely due to its transportation policies that greatly reduce parking minimums and encourage maximum limits. Some additional reasons may be that many trip origins in Pasadena have destinations other than downtown Los Angeles; congestion is not as bad as in other parts of the region, which makes Gold Line's travel times less competitive; connectivity issues to the final destination in downtown Los Angeles may prevent usage; and lower income populations find that buses go more places. Nevertheless, according to a recent article in Los Angeles Times[1], "Ridership on the Pasadena line hit a high of 20,000 weekday boardings in July (2006), according to the MTA. Weekend ridership, however, has dropped significantly over the last year."

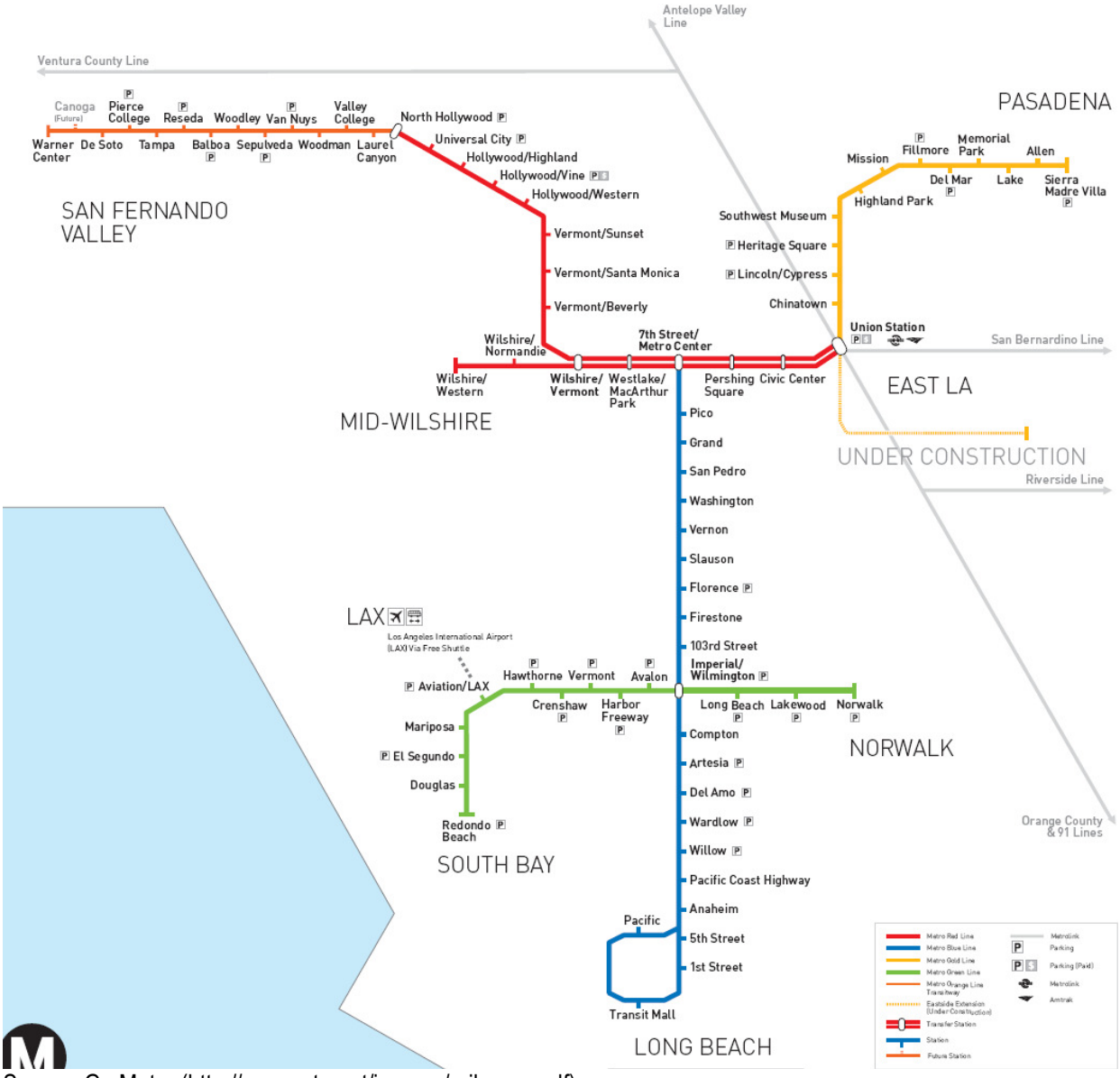
Foothill Transit, a joint powers authority of 21-member cities in the San Gabriel and Pomona Valleys, operates 35 fixed-route local, express and rail-feeder lines. Bus lines 187 and 690 link Pasadena to Pomona and Claremont via Arcadia, Asuza, Duarte, and Glendora.

The City of Los Angeles Department of Transportation's (LADOT) transit fleet is the second largest fleet in the Los Angeles County and provides DASH service and Commuter Express Service in Los Angeles County. The only LADOT service to Pasadena is route 549 between Encino and Pasadena via Glendale and Burbank. See Figure 4-7 for the LADOT service area.

[1] Guccione, J. (2006) *Which Way for the Next Light-Rail Line in L.A. County?* Los Angeles times, September 3, 2006. Accessed on September 7, 2006 at http://www.latimes.com/news/local/la-me-mta3sep03,0,5968399,full.story?coll=la-home-local.

In addition to the fixed-route systems, a Dial-a-Ride paratransit service for the elderly and disabled serves Pasadena, San Marino, Altadena, and the other unincorporated Los Angeles County areas.

Figure 4-5 Metro Rail System Map



Source: Go Metro (http://www.mta.net/images/rail_map.pdf)

Figure 4-6 Connecting Bus Service and Parking at Pasadena's Gold Line Stations

	Parking Spaces	Parking Fee per Month	Connecting Bus Service
Fillmore Station	131	Free parking, except $29 in priority parking. 0% daily usage on paid parking, all free spaces used.	Metro 260, 361, 686 ARTS 20, 50
Del Mar Station	600	No priority parking, paid parking (privately operated)	Metro 177, 256, 260, 361, 686 ARTS 20, 50
Memorial Park Station	0	Available parking in nearby downtown garages, see Figure 4-11 on off-street public parking facilities.	Metro 260, 267, 361, 687, 780 Foothill 187 ARTS 20, 40, 50
Lake Station	100	$28, all spaces	Metro 180, 380, 485 ARTS 20
Allen Station	0	Not available	Metro 177, 256, 686 ARTS 40
Sierra Madre Villa Station	950	Free parking except $29 in priority parking	Metro 177, 181, 264, 266, 267, 268, 487 Foothill 187, 690 Montebello 20 City of Sierra Madre – City Shuttle City of Arcadia Shuttle ARTS 31, 32, 40, 60

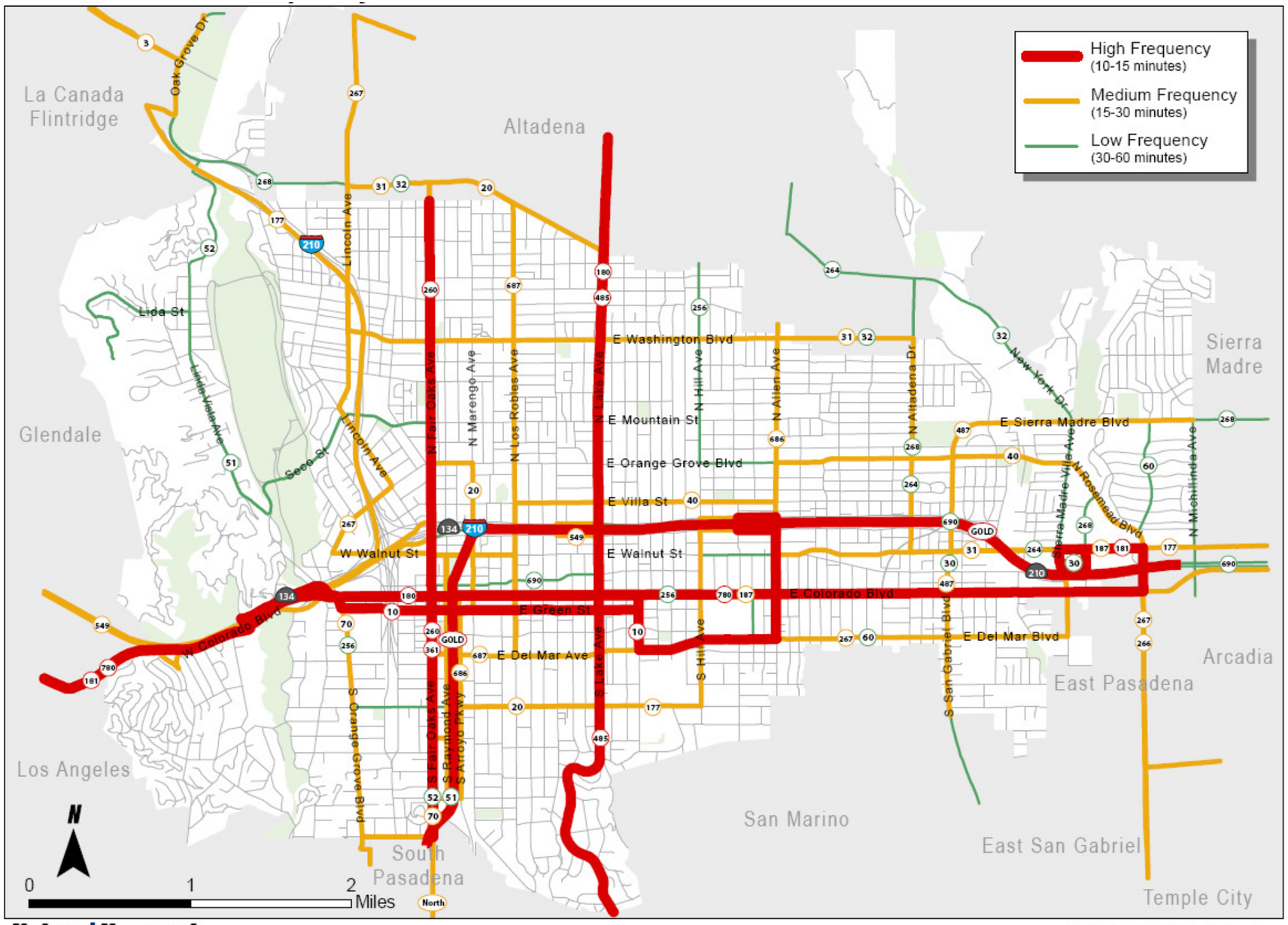
Source: Metro Gold Line (http://www.mta.net/riding_metro/metro_rail/gold_line.htm)

Figure 4-7 LADOT's Commuter Express Service

Source: LADOT's Commuter Express System Map (http://www.ladottransit.com/map/cemap.html)

Figure 4-8 and Figure 4-9 illustrate where the major transit corridors run in Pasadena. The first of the two maps shows the highest-frequency route on each street in Pasadena, while the second map shows all existing routes. The maps illustrate that the major corridors run along Gold Line, Colorado Blvd, Fair Oaks Ave and Lake Ave.

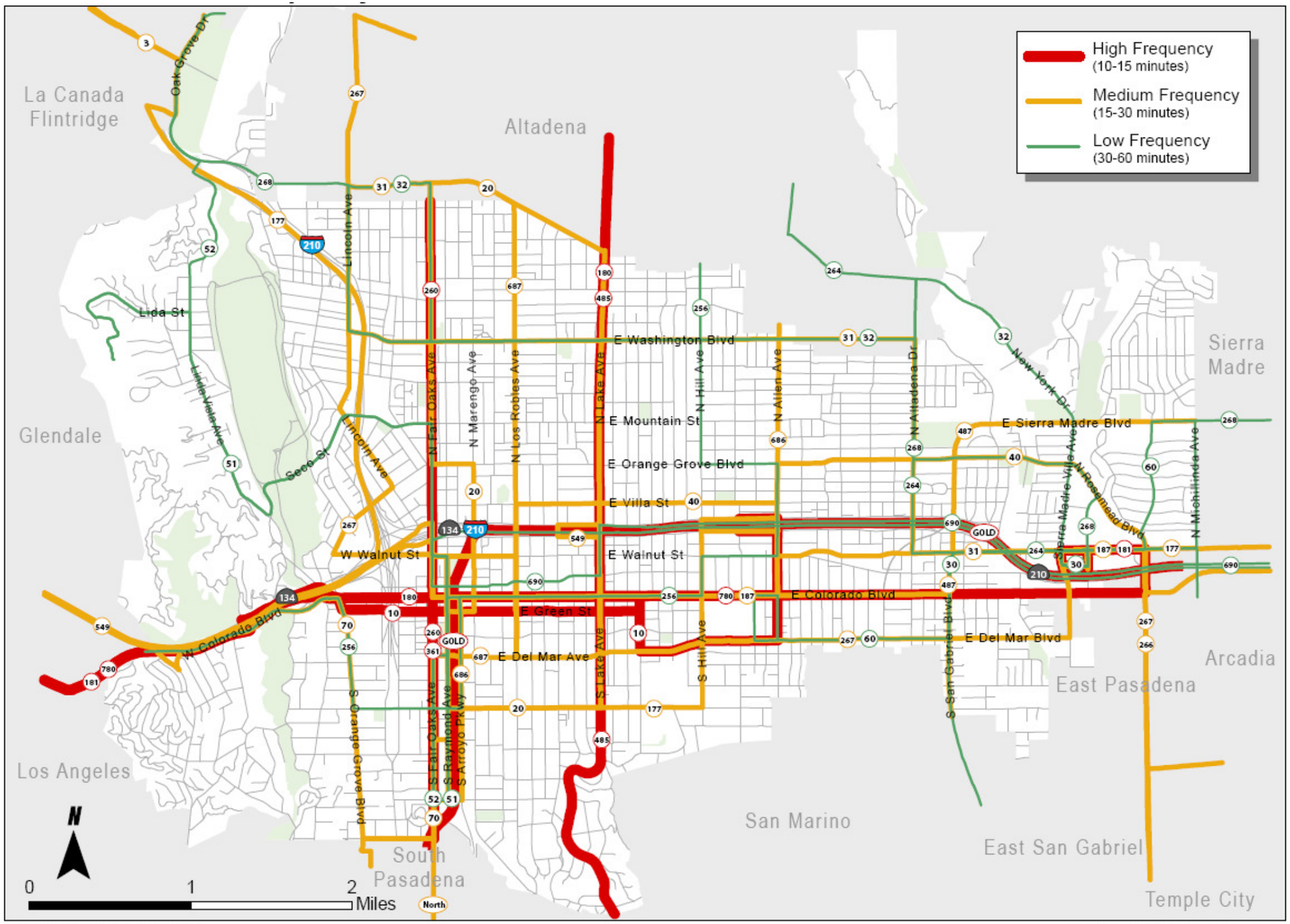
Figure 4-8 Pasadena Transit Frequency, Focus on Major Corridors



Nelson|Nygaard consulting associates

GIS Data: ©2006 City of Pasadena

Figure 4-9 Pasadena Transit Frequency, All Existing Routes



Nelson|Nygaard consulting associates

GIS Data: ©2006 City of Pasadena

Parking Strategies

Old Pasadena has come far in its implementation of a successful parking management system compared to many other Californian downtowns. Old Pasadena is the first district in the United States to create a parking benefit district, where parking meter revenue is reinvested in the same blocks where the revenue is collected (for more information, see further down).

Parking Pricing

Over 1,200 parking meters have been installed in three areas within the City: Old Pasadena, Civic Center, and West Gateway, see Figure 4-10. Rates are either $0.75 or $1.25 per hour. Hours of operation vary among various locations.

Figure 4-10 Parking Meter Districts in Pasadena

	Supply	Hourly Rates	Mon - Thurs	Fri - Sat	Sunday
Old Pasadena	750[1]	$1.25/hr core, $.75/hr outlying	11am to 8pm	11am - midnight	11am to 8pm
Civic Center	450[1]	$1.25/hr	7 or 9am – 5 or 6pm	7 or 9am – 5 or 6pm	Not operating
West Gateway	52	$1.25/hr core, $.75/hr outlying	6am to 2am	6am to 2am	6am to 2am

[1] This is an approximate number.

Additionally, several off-street parking facilities provide 6,500 parking spaces, see Figure 4-11. For most of these facilities, the first 90 minutes are free, followed by an hourly fee of $2 and a maximum daily rate of $6.

Figure 4-11 Off-Street Parking Facilities in Pasadena

Facility	Supply	Hours of Operation	Hourly Rates	Monthly Rate
Schoolhouse Block Parking Structure	901 spaces	24 hours a day, 7 days a week	First 90 minutes free $2/hour $6 maximum $5 flat (10PM-5AM)	$55
De Lacey Parking Structure	516 spaces	24 hours a day, 7 days a week	90 minutes free $2/hour $6 maximum $5 flat (midnight-5AM)	$65
Marriott Parking Structure	147 spaces	24 hours a day, 7 days a week	First 90 minutes free $2/hour $6 maximum $5 flat (midnight-5AM)	$65 (5 days), $75 (7 days)
Holly Street Parking Structure	540 spaces	Mo-Thu 7AM-11:30PM Fri 7AM-1AM	$2/hour $6 maximum	$70

		Sat 5PM-1AM Sunday Closed	$5 flat (after 4PM)	
Paseo Colorado Parking Structures	3049 spaces	Los Robles: 8AM-midnight Marengo: 6AM-2AM Subterranean: 24 hours	First 90 minutes free 2-hour Validation $2/hour $6 maximum	$80
Plaza Las Fuentes Parking Structure	850 spaces	24 hours a day, 7 days a week	$1 per 15 min, $11 max Valet Rates: $3 first 15 min, $1 per 15 min, $13 max	$80 unreserved, $110 reserved
Playhouse Parking Lot	102 spaces	24 hours a day, 7 days a week	$1/hour $5/day	$60
Union/El Molino Parking Lot	101 spaces	24 hours a day, 7 days a week	$1/hour $5/day	$60
South Lake Parking Lots	764 spaces	24 hours a day, 7 days a week	2 hours free	$70 (employees only)

Until a recent amendment, the City had prohibited overnight parking on streets since 1921. The restriction is intended to promote street sweeping, make it easier to identify abandoned cars and prevent long-term on street parking. Residents can buy both yearly and monthly permits, at $63 and $21 respectively, and are also entitled to five overnight permits per vehicle in a six month period.

The City of Pasadena has recently decided to charge $3 for overnight parking permits, and sell the permits at five machines to be located at the Pasadena Police Department and at four fire stations around Pasadena. Currently about 150,000 overnight parking permits are issued per year.

Parking Benefit Districts

A Parking Benefit District (PBD) institutes a system where fees collected for parking are used to the benefit of the business or residential district in which the parking is located. A governing body from the district decides how the collected fees are spent; most often these funds are used for street furniture and cleaning, plantings, bus shelters, and other amenities which enhance the area. PBDs reduce traffic by increasing parking fees. Sometimes these fees can be used to increase transit service, thereby further reducing traffic by providing a wider range of transit choices for employees and visitors in the district. In this case it is sometimes referred to as a "Transit Benefit District".

Old Pasadena is a well-known example of a parking benefit district, often cited in studies as an example of how such a district can make a significant difference in the livability of a community.

Parking Preferential Permits (PPP) Program

In response to complaints about neighborhood spill-over parking, Pasadena has established a process in which a neighborhood can have permit-only parking. Seven PPP Districts have been instituted in centrally located residential areas and around Metro stations. Vehicles parked without permits during certain hours (which vary by district) are towed.

Employee Parking Pricing

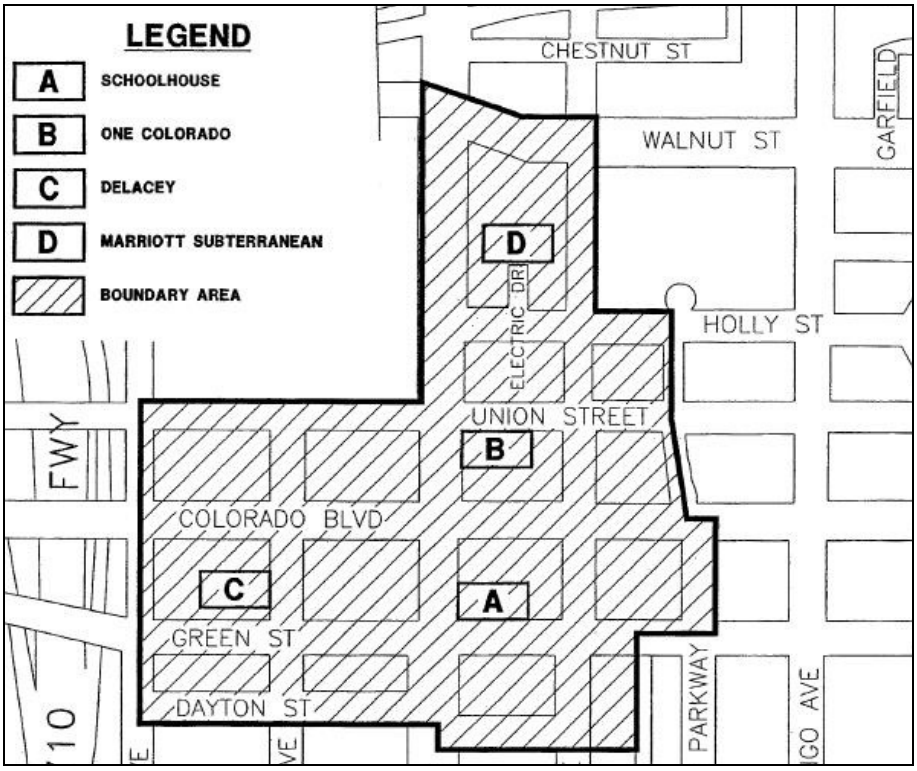
The South Coast Air Quality Management District's (SCAQMD) collects information on parking pricing and parking subsidies. However, this information is not readily available in the SCAQMD's Rule 2202 Database, which applies to businesses who employ 250 or more employees on a full or part-time basis at a worksite for a consecutive six-month period. Typically, most employers do not charge for parking. Those who charge for parking tend to offer very significant parking subsidies and do not charge the fill price of parking. Often, parking is bundled into the lease as "free parking" or the parking is owned on-site. Parts of Pasadena such as Old Pasadena, Playhouse District and South Lake are more likely to charge for parking. For example, the City of Pasadena charges employees (single occupant vehicles) $35 per month as part of its PrideShare program. However, most employers in Pasadena still do not charge employees for parking.

Pasadena is home to a variety of learning institutions. Many offer information about alternative modes and transportation options. While many schools still offer free parking for students, faculty or staff, some charge for parking. For example at Cal Tech, students pay for commuter and residential parking ($35 per month). Pasadena City College also charges for parking. Students can pay on a semester basis ($64) or on a daily basis ($1). Typically, the parking is near capacity.

Reduced / Removed Minimum Parking Requirements

One measure taken by Pasadena is the establishment of a Zoning Parking Credit program. This allows owners of a property within the Old Pasadena Fund boundary to meet parking requirements of the zoning code when the owner or tenant is proposing to rehabilitate the property, and there is no on-site parking available. It entitles them to apply parking spaces in one of three publicly available parking garages in Old Pasadena to their parking requirement. The owner/tenant pays an annual fee per space; as of April 1 2006, this fee is $134.67 per space per year. The fee has been kept reasonably low through the efforts of the Business Association in Old Pasadena. This program helps preserve the historical character of Old Pasadena by allowing an alternative to creating parking lots in this section of Pasadena. See Figure 4-12 for a map of the Parking Development Fund boundary.

Figure 4-12 Parking Development Fund Boundary



Maximum Parking Requirements

Pasadena's Zoning Code (Chapter 17.50.340) specifies that new development projects located within 1,320 feet (1/4 mile) of a light-rail station platform are subject to parking maximums.

Pasadena has adopted maximum parking requirements for all new development located within 1,320 feet (1/4 mile) of a light-rail station platform or within the Central District Transit-Oriented Area. Within the Central District, these standards apply to the area identified in Figure 4-13. Parking requirements in new TOD developments are as follows:

- In multi-family residential and mixed-use development projects proposing at least 48 dwelling units per acre, parking should be provided as follows:
  - A minimum of 1 space for each unit with 550 square feet or less to a maximum of 1.25 spaces per unit; and
  - A minimum of 1.5 spaces for each unit with over 550 square feet to a maximum of 1.75 spaces per unit.
- For offices the minimum amount of required off-street parking (3 spaces per 1,000 sq. ft.) is reduced by 25 percent to 2.7 spaces per 1,000 sq. ft. This ratio is also the maximum allowed quantity of parking spaces.
- For all other nonresidential uses the minimum amount of required off-street parking is reduced by 10 percent, and this ratio is also the maximum allowed quantity of parking spaces.

Nelson\Nygaard has compared Pasadena's TOD maximum parking requirements to actual parking occupancy observed in North America in the Institute of Transportation (ITE) *Parking*

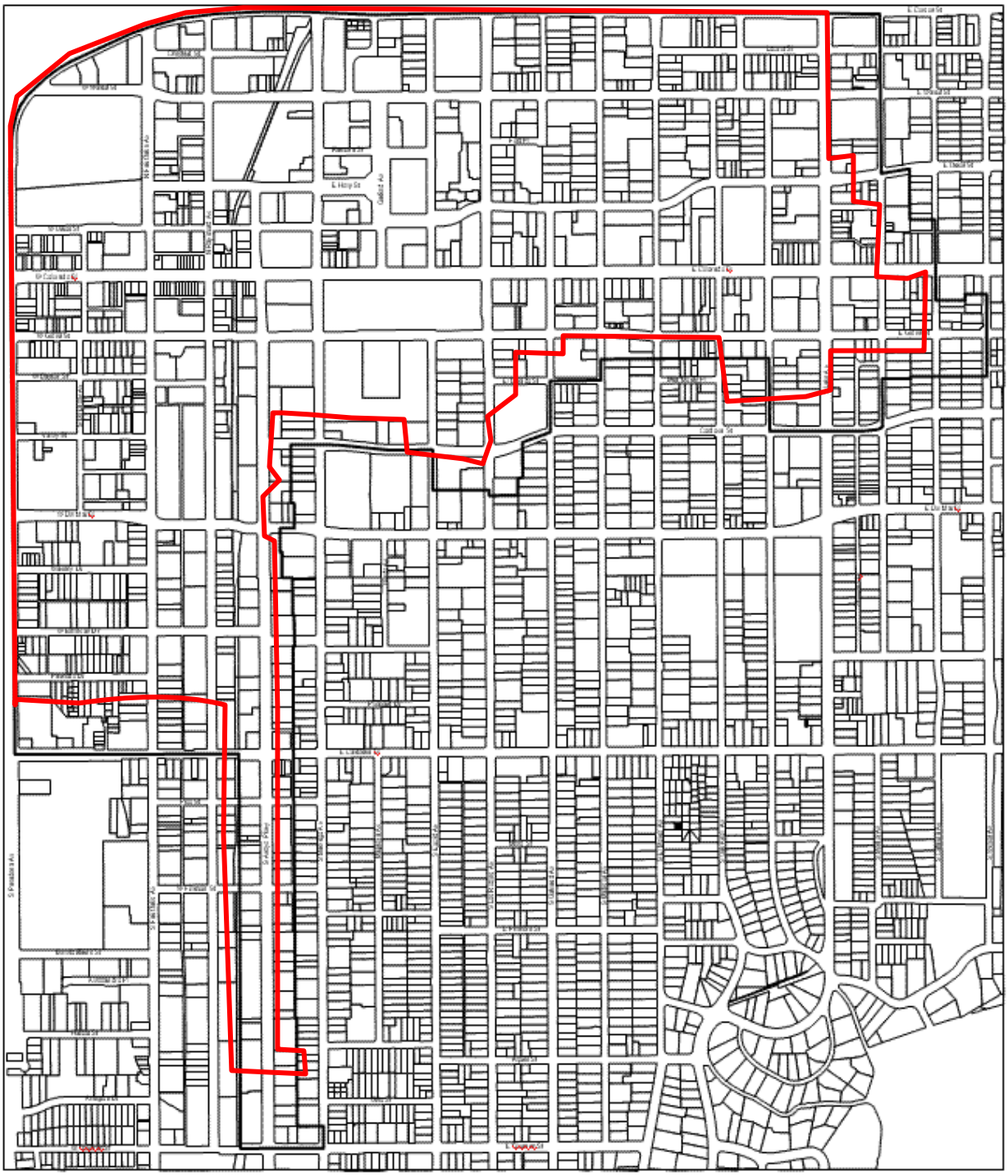
Generation, 3rd Edition. This comparison reveals whether the parking maximums in Pasadena are low enough to actually have an impact on parking demand. In other words, if the maximums are set higher than the average parking occupancy observed in the ITE studies, it is likely that the requirements do not have an impact on parking demand in Pasadena.

In addition, it should be noted that the *Parking Generation* manual is careful to advise the reader that, "Most of the data currently available [and presented in the manual] are from suburban sites with isolated single land uses with free parking. More parking data are needed in order to understand the complex nature of parking demand. As future studies are submitted, the findings will provide a basis to assess factors such as the type of the area, parking pricing, transit availability and quality, transportation demand management plans, mixing of land uses, pedestrian friendly design, land use density, trip chaining/multi-stop trip activity, the split between employee and visitor parking, the split between long-term and short-term parking and other issues in our detail."

A comparison between Pasadena's maximum parking requirements and ITE's observed demand is shown in Figure 4-14. The chart illustrates that the maximum requirement is very similar to the ITE average parking demand for many land uses. For instance, offices and banks in a Pasadena TOD zone are not permitted to provide more than 2.7 parking spaces per 1,000 sq. ft. This can be compared to an observed average peak parking demand of 2.8 parking spaces per 1,000 sq. ft. in various locations in the United States.

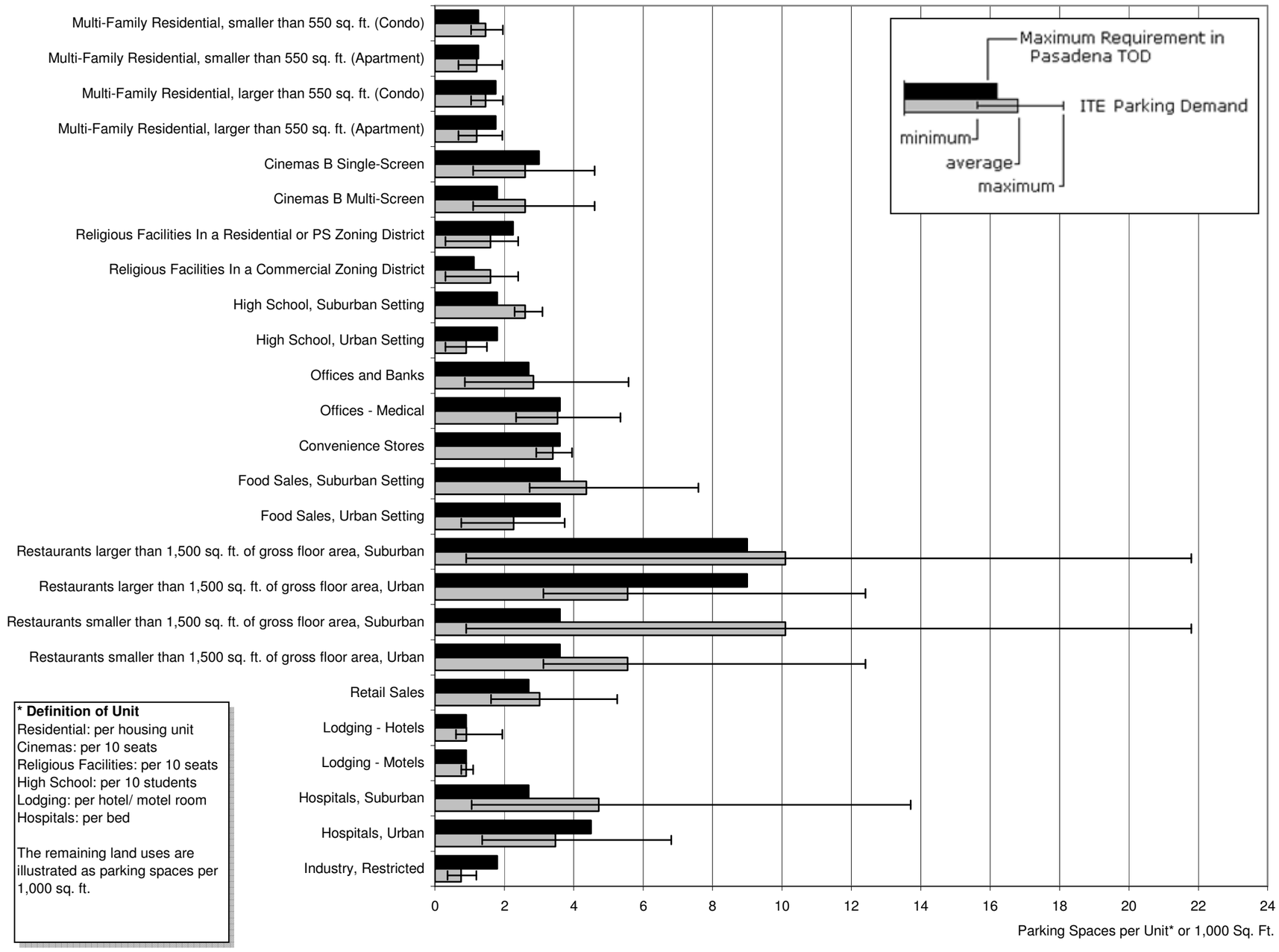
Furthermore, multi-family housing units larger than 500 sq. ft. in a Pasadena TOD may not have more than 1.75 parking spaces per unit. This can be compared to an observed average peak parking demand of 1.2 parking spaces for low/mid-rise apartments and 1.5 spaces for condos/townhouses in the United States.

Figure 4-13 Central District Transit-Oriented Area



Source: Pasadena On-Line Zoning Code. Article 3 – Specific Plan Standards.

Figure 4-14 Pasadena Maximum Parking Requirements in TOD Developments Compared to ITE's Observed Parking Demand



*** Definition of Unit**
Residential: per housing unit
Cinemas: per 10 seats
Religious Facilities: per 10 seats
High School: per 10 students
Lodging: per hotel/ motel room
Hospitals: per bed

The remaining land uses are illustrated as parking spaces per 1,000 sq. ft.

Transportation Demand Management

Trip Reduction Ordinance & Monitoring

Pasadena has enacted a Trip Reduction Ordinance (Zoning Code 17.46.290) which requires developers of non-residential projects over 25,000 square feet to provide parking for carpools and vanpools, bicycle parking, and a display of information on transit to the project. For projects over 100,000 square feet, the developer must also provide a carpool/vanpool unloading area, sidewalks to each structure, and bus stop improvements (including bus pads, bus pullouts, and right-of-way for bus shelters).

Additional requirements for large non-residential projects are listed in the Municipal Code for Pasadena.

"Non-Residential Development above 99,999 Square Feet: In addition to the conditions already mentioned, major development projects **must satisfy the requirements** listed above as well as additional requirements to reduce trips, such as providing employees with discounted transit passes, parking pricing measures, etc. The trip reduction measures must be included in a plan that must be submitted to and approved by the City. Transportation Systems Management (TSM) Programs involve a commitment by the owner to an ongoing program. The City will continue to explore additional trip reduction measures and update the Trip Reduction Ordinance as needed to reduce congestion."

In addition, the City of Pasadena is currently in the process of updating the existing trip reduction ordinance.

South Coast Air Quality Management District's Rule 2202

In Pasadena, there are 30 employers who are required to submit plans as part of the South Coast Air Quality Management District's (SCAQMD) Rule 2202. According to the SCAQMD's Rule 2202 On-Road Motor Vehicle Mitigation Options, Rule 2202 applies to employers who employ 250 or more employees on a full or part-time basis at a worksite for a consecutive six-month period. The Rule provides employers with a menu of options to reduce mobile source emissions that result from employee commutes. Currently Rule 2202 covers 32,100 employees in the City of Pasadena, which is roughly a third of Pasadena's employee population.

The employees of these companies have an average vehicle ridership of 1.35 (55,091 weekly employee trips and 40,884 weekly employee vehicle trips) and an alternative mode share of 27%, see Figure 4-15. This is exactly the same total alternative mode share Pasadena employees had in the Census 2000 data, see Figure 3-3. However, the employees covered under Rule 2202 walk and bike to a much larger extent than the average Pasadena citizen does. The goal of Rule 2202 is to increase the average vehicle ridership by using a variety of alternative modes.

Figure 4-15 City of Pasadena Rule 2202 Employers Employee Commute Reduction Programs

Alternative Mode	Percentage of Employees
Carpooling	12%
Bus or Train	2.3%
Walking	8.7%
Bicycling	2.8%
Telecommuting	1%

Source: SCAQMD Rule 2202 Data Base June 27, 2006.

Employers support the use of alternative modes by implementing a variety of transportation demand management and parking management strategies. In Pasadena, Rule 2202 employers (SCAQMD, 2006) use strategies such as:

- Auto Services: 3%
- Bicycle Programs: 40%
- Compressed Work Weeks: 6%
- Discounts for Meals: 10%
- Financial Awards: 20%
- Flex Time: 6%
- Guaranteed Ride Home: 36%
- Commuter Assistance: 36%
- Preferential Parking Program: 23%
- Ridematching: 40%
- Transit Passes: 20%

Car-Sharing

Car Sharing allows residents and employees access to a car for occasional use, without the need to own one. Car Share programs help reduce traffic because people are more likely to use transit most of the time and not purchase a car when they know they have access to one when needed.

Pasadena may be well suited to car sharing, having high residential density and fairly abundant transportation alternatives. The car sharing provider Flexcar has previously had 3 vehicles in the Holly Street Garage. The City provided these parking spaces for free to Flexcar. In addition, one vehicle was available at a private parking lot at the corner of Walnut St. and Fair Oaks Avenue (Parson's). However, a couple of years a go Flexcar decided to focus its attention on downtown Los Angeles and terminated the program in Pasadena. There is currently discussion whether it is time for Flexcar to reenter the Pasadena market.

Transportation Management Association (TMA)

The Pasadena Transportation Management Association (TMA) was established in 1989 in response to the South Coast Air Quality Management District's (AQMD) Regulation XV. This regulation required employers with more than 100 employees to reduce vehicle emissions through carpooling, transit use, or other modes of travel that do not rely upon single-occupancy vehicles. The TMA is a voluntary non-profit member-controlled organization which serves as a networking and information organization that has three primary objectives:

- Reducing single-occupancy vehicle commuter trips
- Improving air quality
- Reducing congestion in the City.

There are approximately 40 employers in Pasadena who participate in the TMA. The TMA works with its members to exchange information and strategies to create and implement ridesharing programs. It also includes updates on regulatory requirements from the City, county (Metro) and regional (SCAQMD) agencies. The TMA hosts speakers on a variety of related subjects such as parking management programs, emergency preparedness, and carsharing programs. Several of the members are large employers that are covered under Rule 2202. In addition, some members are property management companies for large office buildings within the City. Some of these properties must file annual reports on their transportation demand management programs.

Intelligent Transportation Systems

The existing Intelligent Transportation System (ITS) in Pasadena was planned and implemented in 1989. The original ATSAC (Automated Traffic Surveillance and Control) system included 140 intersections on east-west and north-south major arterials. The initial deployment also included a Traffic Management Control (TMC) system.

Currently the City of Pasadena is upgrading and expanding the system to approximately 170 intersections. According to information from the City of Los Angeles (1992 & 1994) and PATH (2002), ATSAC can result in a 16% increase in average speed, 32-44% reduction in delays, a 30-41% reduction in stops, resulting in a 14-26% reduction in air emissions.

Several agencies in Los Angeles are currently investing heavily in various ITS systems. The City of Pasadena has recently received federal funding for transportation improvements that will mitigate, on an interim basis, the traffic impact of the 710 Freeway gap on City streets. A significant amount of the funding will be used to deploy ITS measures in the City, with focus on the Traffic Control and Monitoring System.

Regulatory Reforms

Transportation Impact Review Practices

Pasadena's *Transportation Impact Review: Current Practice & Guidelines* (2005) begins, "The following guidelines support Pasadena's vision of creating 'a community where people can circulate without cars'." The vision relies upon an integrated and multimodal transportation system that provides choices and accessibility for everyone living and working in the City. Key strategies to achieve this

vision promote non-auto travel including public transit services, parking strategies, bicycle facilities, and pedestrian components that are well coordinated and connected with a larger regional transportation system."

Trip and parking generation for any new development are two critical inputs in a traffic impact analysis. According to the guidelines, trip generation for new development should primarily be determined by the Institute of Transportation Engineers (ITE) *Trip Generation*, current edition. Other trip production rates can be used if approved by the Department of Transportation. In addition, trip credits can be given to certain uses located on major corridors and/or within the Transit Oriented District (TOD). These trip discounts are determined on a case by case basis and must be consistent with the City's current practice. Any adjustments to standard rates, such as for special uses, mixed uses, high transit use, or pass-by trips must be approved by the City Traffic Engineer.

Parking demand estimates are based on the ITE *Parking Generation*, current edition, and/or parking demand analyses for similar uses in the community. A shared parking analysis should be included if applicable to the development. Bicycle parking demand must also be analyzed for almost all new development, except single-family developments.

Developments must mitigate the increase in traffic caused by their development. Mitigation measures are required when level of service at any study intersection or on any street segment exceeds thresholds contained in the guidelines. If mitigation reflects trip reductions predicted as a result of implementing required Transportation Demand Management (TDM) measures, an approved report must be submitted substantiating such mitigation.

The *Guidelines for Transportation Review of Projects* from 2004 have been inserted as a separate section in the 2005 guidelines. The 2004 guidelines includes a comprehensive list of project review considerations that relate to parking management, bicycle and pedestrian improvements, neighborhood protection (spillover problems), transit and multimodal corridors. In addition, suitable traffic mitigation measures are included related to each one of the considerations listed above.

Development Impact Fees

City of Pasadena's City Council adopted in July 2006 the Traffic Reduction and Transportation Improvement Fee, a new development fee that will fairly and accurately charge for new transportation infrastructure and facilities required to accommodate new development. The Fee has been structured to implement the Four Major Mobility Element Objectives:

- Promote a livable and economically strong community
- Encourage non-auto travel
- Protect neighborhoods
- Manage multimodal corridors

About half of the revenues from the Fee will be used to fund seven key intersection improvements and two street extensions identified in the Mobility Element as well as improvements to manage traffic on designated multimodal corridors as specified in the Mobility Element.

The remaining half of the funds collected through the Fee will be used to improve the local transit service, ARTS, thereby further encouraging non-auto travel throughout the City. The funds will be distributed between higher annual operating costs over the coming 9 years, 10 new buses, 5 new Dial-

A-Ride vans, bus stop improvements, transit ITS, and the construction of a new transit maintenance facility/bus yard.

The Fee replaces the existing New Development Impact Fee, which was a single fee of $3.22 per square foot of net new industrial, office and retail development to a fee of:

- $3.10 per net new square foot of industrial use
- $3.72 per net new square foot of office use
- $8.62 per net new square foot of retail use
- $2,480 per net new residential unit

There is also an incentive for developers to construct for sale or for rent affordable housing units by offering a 50% discount on the Fee. Affordable housing units built on-site, per Title 17.42 of the Municipal Code, will receive a 75% discount on the Fee. Workforce housing units are offered a 50% Fee discount when at least 15% of the development is within the price range of 121-150% of the Average Median income for Los Angeles County; and 35% Fee discount when at least 15% of the development is within 151-180% of the Average Median income for Los Angeles County.

According to the Agenda Report provided to the City Council on the topic, the residential Fee is fixed rather than variable depending on size of the unit or the number of bedrooms.[2] The reason for this is that it is calculated based upon the PM Peak Hour trips generated by growth within the city forecast through 2015 as adopted in the Mobility Element. That forecast includes a mix of sizes of new residential units, and new multi-family projects usually include a mix of unit sizes. In addition, since nearly 50% of the fees will be reinvested in transit improvements, the City considers it fare that everyone, including denser and more mixed-use new development, pays the same fee.

Transportation Performance Measures

The Pasadena Mobility Element is based on approaches that address the needs of multimodal corridors and streets as well as community neighborhoods that are affected by traffic. These guidelines have been developed to ensure that transportation system improvements necessary to support new development while maintaining quality of life within the community are identified prior to project approval and funded prior to construction.

However, the Mobility Element adopts automobile Level of Service (LOS) as the primary quantitative measure with which to judge the performance of the street system. While useful for estimating the effects of congestion on motorists, Auto LOS and Volume-to-Capacity (V/C) ratios do not offer the full picture of a transportation network in a place as complex as Pasadena. Relying on this measure alone to gauge transportation performance results in several shortcomings:

- Auto LOS and V/C ratios do little to measure progress toward Pasadena's four objectives and policies, on themes such as promoting a livable and economically strong community, encouraging non-auto travel, protecting neighborhoods and managing multimodal corridors.

- By focusing on spot locations, Auto LOS and V/C ratios say nothing about the ability of the overall transportation network to carry traffic. For example, they do not allow planners to estimate actual

[2] City of Pasadena (2006) *Public Hearing: Amendment to the Schedule of Taxes, Fees and Charges to Revise the New Development Impact Fee and to Establish the Traffic Reduction and Transportation Improvement Fee*. Agenda Report from City Manager to City Council on July 17, 2006.

average travel time among various destinations. This constitutes a significant gap in the planning process, as travel time (along with travel costs) is the most important factor for travelers. The City of Pasadena Department of Transportation published in 2006 the *Annual Transportation Report Card – Reporting Period: 2005*, which is the first in a series of annual report cards on Pasadena's transportation system. The report card consists of three sections: traffic counts, measurement of travel time along 15 corridors, and transit ridership. Although only 15 corridors are measured, this is an excellent way of exploring a street network's quality of service.

- These measures estimate delay only in relation to vehicles, not people. A bus with 50 passengers on board is counted the same as an automobile with one passenger. In order to improve Auto LOS at a given intersection, for example, traffic engineers may feel obliged to remove transit priorities in order to give more accommodation for cars. This may result in the intersection handling more vehicles but fewer people. Furthermore, as the city grows over a long period, managing the transportation system with an exclusive focus on auto congestion paradoxically results in more auto congestion than an approach that considers all modes.

- A street system that is optimized for cars is never optimized for transit. Due to their fundamental need to stop to board passengers, buses and streetcars travel a certain fraction slower than other vehicles under free-flow conditions on a given street. Synchronization of traffic lights, which may significantly speed up auto flow, may actually worsen transit speeds, as buses and streetcars fall behind "platoons" of cars and hit every red light.

The 2004 Mobility Element of the Pasadena General Plan describes expansion of all non-auto modes of transportation, including transit and other modes such as bicycles and carpools, with fairly detailed objectives, funding, and timeframes, in sections 3.2.2 and 5.5.2 "Encourage Non-Auto Travel". However, none of these objectives appear to have specific performance measures associated with them. The goals now being measured are traffic counts, travel time measurements and transit ridership in the annual report card.

Distribution of Transportation Related Costs in Pasadena

Government, agencies, developers and individuals all spend money on transportation, whether it is related to mobility, parking or transit. However, it is often unclear what the investments are actually spent on. The following analysis indicates the current distribution on money spent on various programs and strategies for a typical developer and a typical commuter.

From a Developer's Perspective

As mentioned elsewhere in this report, the City of Pasadena recently adopted the Traffic Reduction and Transportation Improvement Fee. This Fee will replace the existing New Development Impact Fee in the fall of 2006 after a revised ordinance has been adopted. The following analysis explores a majority of the transportation-related expenses a developer typically bears, both using the old fee (Figure 4-16 and Figure 4-18) and the recently approved fee (Figure 4-17 and Figure 4-19). The transportation categories used are:

- Intelligent Transportation System (ITS) improvements
- Roadway improvements (and existing Commercial Development Fee)

- Traffic calming, bicycle/pedestrian improvements and monitoring – all beneficiary to pedestrians and bicyclists
- Transit improvements
- Parking costs, which are calculated based on the estimated cost to comply with the minimum parking requirements in a Pasadena Central or Transit-Oriented District3

When totaling up the cost of transportation-related mitigations and parking requirements, the percentage on spending in each category was as shown in Figure 4-18 and Figure 4-19. As the charts on the left illustrate, parking accounted on average for more than 96% of the costs under old practice and of 94% of the costs in the recently adopted fee schedule. Consequently, this is a significant cost to any commercial or multi-family development.

If we ignore parking and only look at the fee-related costs (in Figure 4-18 and Figure 4-19, charts on the right), the old practice allocated almost 60% to roadway improvements (assuming the existing commercial development fee falls under this category). Another 30% was allocated to ITS and only 10% to transit and walking/biking.

With the recently approved fee, roadway improvements will become a less significant part (48%), and a much larger share (34%) will be invested in transit. ITS improvements will increase mobility throughout the entire street network, and will thus have a positive impact on transit speed and reliability as well.

[3] According to development proposals, all projects will have sub-terranean parking (with an average capital cost of $26,000 per space) except the Medical office, which will have a parking structure (with an average capital cost of $22,000 per space).

Figure 4-16 Estimated Costs for Transportation-Related Mitigation Measures for Recently Approved Pasadena Projects, Using Old Fee Schedule

Type	Project Scope	Current Practice & Fee Schedule						
			Roadway Capacity					
		ITS	Roadway Improvements	Commercial Development Fee	Traffic Calming, Bike/Ped, Monitoring	Transit	Parking (Using min. req's in TOD)	Total
Mixed Use	54 Single-family Condominium & 7,000 s.f. commercial (demolishing 6,876 s.f. commercial)	$30,000	Signal Modification: $46,000	$399	-	-	$2,588,844	$2,665,243
Medical Office	130,000 s.f. medical office	CCTV: $25,000 Wireless Cameras: $75,000. ITS Fiber: $120,000	-	$419,900	Monitoring: $20,000 Speed Sign: $10,000	Bus Purchase: $25,000	$14,011,920	$14,706,820
Residential	17 condos (net new 16)	-	Signal Upgrade: $10,000	-	Monitoring: $5,000	-	$660,816	$675,816
Retail	76,205 s.f. supermarket	ITS Fiber: $80,000	New Signal: $140,000	$0 (No net new sq added)		New Transit Stop: $6,000	$5,331,968	$5,557,968
Mixed Use	Retain existing retail and construct 16 condos	-	-	$0 (No net new sq added)	Monitoring: $5,000	Bus Purchase: $25,000. Bus stop upgrade: $4,000	$621,944	$655,944
Total Cost		**$330,000**	**$196,000**	**$420,299**	**$40,000**	**$60,000**	**$23,215,492**	**$24,261,791**
% of Total Cost		**1.4%**	**0.8%**	**1.7%**	**0.2%**	**0.2%**		**100%**

Source: Pasadena DOT (2006) Estimated Costs for Transportation-Related Mitigation Measures Based on Recently Approved Projects/Developments in Pasadena (Working Draft).
Note: The list does not necessarily represent 100% of the transportation-related costs for a developer. For instance, a developer may also need to construct a new sidewalk or plant street trees in front of a project as a Condition of Approval.

Figure 4-17 Estimated Costs for Transportation-Related Mitigation Measures for Recently Approved Pasadena Projects, Using New Fee Schedule (July, 2006)

Type	Project Scope	Under New Transportation Impact Fee Schedule					
		ITS	Roadway Capacity	Traffic Calming, Bike/Ped, Monitoring	Transit	Parking (Using min. req's in TOD)	Total
Mixed Use	54 Single-family Condominium & 7,000 s.f. commercial (demolishing 6,876 s.f. commercial)	Impact Fee: $17,381	Impact Fee: $56,035 Signal Modification: $46,000	Impact Fee: $6,390	Impact Fee: $55,184	$2,588,844	$2,769,834
Medical Office	130,000 s.f. medical office	Impact Fee: $62,267	Impact Fee: $200,745	Impact Fee: $22,892 NTMP: $30,000	Impact Fee: $197,697	$14,011,920	$14,525,521
Residential	17 condos (net new 16)	Impact Fee: $5,109	Impact Fee: $16,471	Impact Fee: $1,878 NTMP: $5,000	Impact Fee: $16,221	$660,816	$705,495
Retail	76,205 s.f. supermarket	Impact Fee: $54,162	Impact Fee: $174,614 New Signal: $140,000	Impact Fee: $19,912	Impact Fee: $171,963	$5,331,968	$5,892,619
Mixed Use	Retain existing retail and construct 16 condos	Impact Fee: $5,109	Impact Fee: $16,471	Impact Fee: $1,878 NTMP: $5,000	Impact Fee: $16,221	$621,944	$666,623
Total Cost		**$144,027**	**$650,336**	**$92,951**	**$457,286**	**$23,215,492**	**$24,560,093**
% of Total Cost		**0.6%**	**2.6%**	**0.4%**	**1.9%**	**94.5%**	**100.0%**

Source: Pasadena DOT (2006) Estimated Costs for Transportation-Related Mitigation Measures Based on Recently Approved Projects/Developments in Pasadena (Working Draft).
Note: Impact fee distribution between the following categories: 13% ITS; 42% Roadway Capacity; 5% Traffic Calming; 41% Transit. Based on assumptions from *Pasadena Transportation Improvement and Traffic Reduction Fee – Transportation Improvement Included in the Fee Calculation* (Pasadena DOT, 2006).

Figure 4-18 Estimated Costs Using Old Fee Schedule, Including Parking Expenses (Left) and Excluding Parking Expenses (Right)

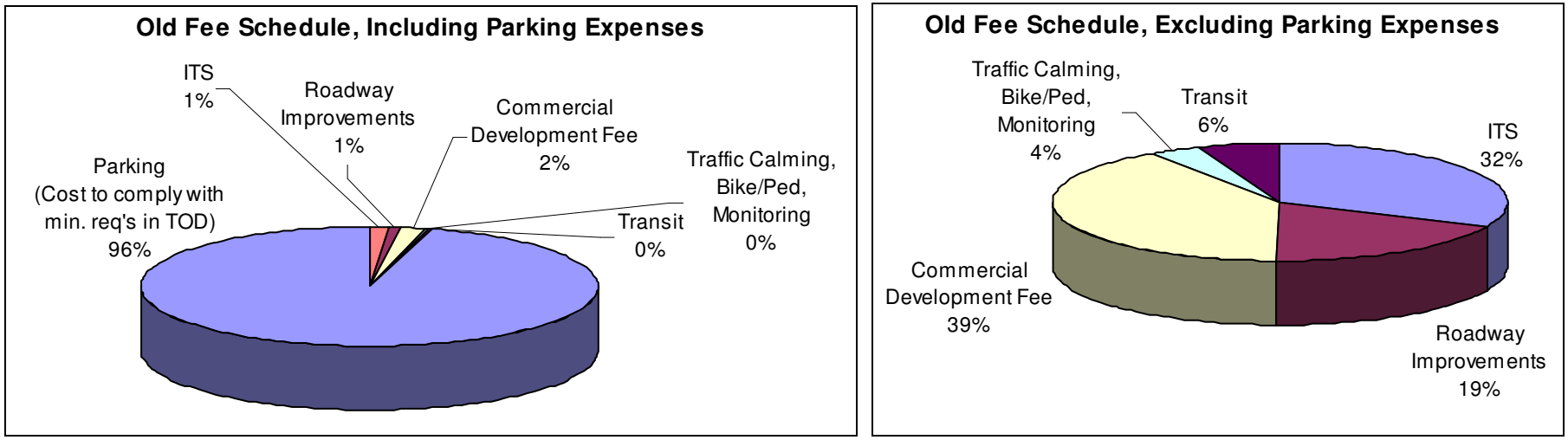
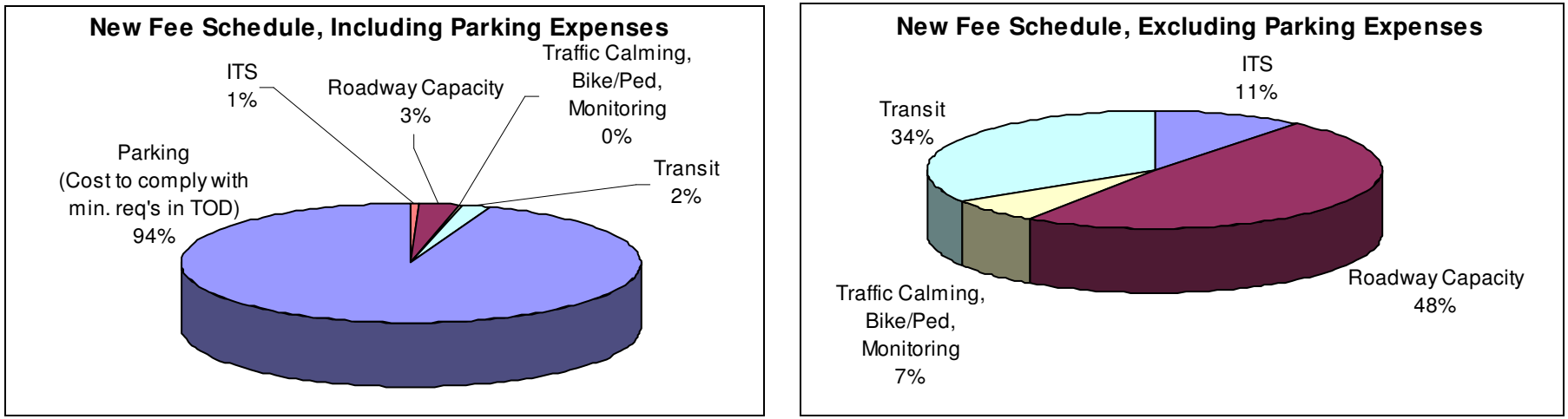


Figure 4-19 Estimated Costs Using New Fee Schedule, Including Parking Expenses (Left) and Excluding Parking Expenses (Right)



From a Commuter's Perspective

The City of Pasadena currently funds and collects revenue for several parking facilities and the local transit service, ARTS, in Pasadena. The City also invests in street improvements as well as improved sidewalks and bicycle network. The following limited analysis focuses solely on the marginal costs and revenues collected per local transit commuter and commuter who parks a vehicle in a public parking facility in Pasadena, and does not take actual road and streetscape improvement into account. Furthermore, we have only investigated the transit costs and revenues for ARTS riders, and not commuters using Metro, Foothill or other transit services. The marginal cost represents the cost to add one new transit rider or parking space to the system.

As shown in Figure 4-20, an ARTS commuter currently pays $1 per day for a roundtrip ticket. In Fiscal Year 2004 the average cost per roundtrip was $5.40. The City therefore subsidizes a local transit commuter with $4.40 per day. Funding is provided by Proposition A (Transportation) and C (Transit) Sales Taxes, Air Quality Improvement Funds an other programs.

Maximum daily parking fees in Pasadena's parking facilities typically vary from $5 to $6. The marginal cost to park a new driver in a subterranean parking facility, similar to Paseo Colorado, is more than $8 per day. This includes both capital and operational expenses. The City subsidy is therefore a little more than $2 per net new space.

The existing public surface lots, such as the Playhouse parking lot, have been in City possession for a long period and might therefore no longer be associated with a capital cost. However, undeveloped land in the center of Pasadena is a hot commodity today, with land values averaging more than $200 per square foot. A parking space typically requires 350 square feet of land, including circulation; hence the land value alone is more than $70,000 per space. In addition to land value, there are construction and operational expenses. This is why the marginal cost to park a driver in a surface lot is more than $31, which would equal a $12.50 subsidy per parker from the City.

A parking structure uses land much more efficiently than a surface lot, but has also much higher construction costs than the lot. Nevertheless, the marginal cost for a structured space is around $9 per day, resulting in a $3.50 subsidy from the City. The reason a parking structure is actually more expensive than an underground structure in Pasadena is because of the high land value. When building underground parking a new building is typically located on top of the parking, hence there is no land value associated with the parking facility. Above ground parking structures, however, are usually cheaper to construct, but in this case a high land value makes it more expensive.

Figure 4-20 Transit and Parking Fees and Costs per Commuter per Day

	Fee per Commuter per Day	Cost per Commuter per Day	Subsidy per Commuter per Day
ARTS (1 Roundtrip/Day)	$1.00	$5.40	$4.40
Below Grade Parking, Similar to Paseo Colorado	$6.00	$8.30	$2.30
Surface Lot, Similar to the Playhouse Parking Lot	$5.00	$31.40	$26.40
Parking Structure, Similar to the Holly Street Garage	$6.00	$9.40	$3.40

In conclusion, the City of Pasadena is already giving quite a large subsidy to transit commuters, compared to many other cities with higher farebox recovery. One more lesson to learn is that the opportunity cost of not converting existing public parking lots is exceptionally large.

Figure 4-21 lists fees and marginal costs per commuter per month. All public parking facilities provide monthly parking permits at a rate between $55 (Schoolhouse Block) and $110 (reserved parking in the Plaza Las Fuentes Parking Structure). Commuters who drive to work in central Pasadena normally buy these permits instead of having to go through the hassle of buying daily tickets. The subsidy per commuter buying a monthly permit is therefore much higher compared to when the commuter buys daily permits. This results in transit riders being the group of commuters who receive the lowest amount of subsidy per person.

Figure 4-21 Transit and Parking Fees and Marginal Costs per Commuter per Month

	Fee per Commuter per Month	Marginal Cost per Commuter per Month	Subsidy per Commuter per Month
ARTS (1 Roundtrip/Day)	$22	$117	$96
Below Grade Parking, Similar to Paseo Colorado	$80	$180	$100
Surface Lot, Similar to the Playhouse Parking Lot	$60	$681	$621
Parking Structure, Similar to the Holly Street Garage	$70	$203	$133

Chapter 5. Conclusions

This description of Pasadena's current transportation system and future plans show that the City is accomplishing significantly more than most other cities in reducing obstacles to in-fill and transit-oriented development, as well as promoting alternative modes and a healthier transportation system. Pasadena effectively uses parking demand and pricing strategies to revitalize Old Pasadena and is in the process of using these strategies in other locations.

Based on the findings in this memorandum, and future tasks, we will identify additional relevant traffic reduction strategies for Pasadena. One issue to be addressed is that most local solutions only affect residents and/or commuters, but do not affect roughly 1/3 of the traffic that is estimated to be through-traffic on some of the arterial and major streets. In other words, if we reduce traffic internally by various programs, will we alleviate the local system if Pasadena's streets are consumed by an increase in through-traffic? An interim strategy to consider is to examine successful pricing schemes currently used in the City of Pasadena and to determine if these strategies have broader applications in other locations (for example, reduction of parking requirements, bonuses, trip reduction pricing strategies, transit pricing, unbundling and parking pricing). Perhaps toll roads may be used as part of new transportation infrastructure project (e.g. the 710 tunnel proposal). Another longer-term strategy to consider is a congestion pricing scheme, similar to the London and Stockholm congestion charging zones, which would most likely have the largest impact on traffic and mobility in Pasadena. What would it take to actually implement this strategy in Pasadena and what would the effects be on surrounding cities? Furthermore, what are the legal, social and economic implications of such a scheme? The remainder of this project will focus on these questions and similar issues.

Chapter 6. References

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