

City of Palo Alto



Downtown Development Cap Evaluation Background Report: Development Trends, Parking, and Traffic

May 20, 2014

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I Overview

I.1 Project Background and Objectives

The purpose of this Downtown Cap Evaluation is to understand and analyze existing and projected parking, traffic, and land use conditions in Downtown Palo Alto, in order to inform future policy direction.

Due to growing traffic and parking concerns in the 1980s, the City conducted a Downtown Study in 1984. As a result of that study, the City implemented a series of new regulations for the Downtown district in 1986. The City rezoned the Downtown district with a new designation, Commercial Downtown (CD). In the CD district, the City implemented more restrictive development regulations, limits to project size, and special development regulations for sites adjacent to residential zones. Additionally, the Downtown Parking Assessment District parking regulations were adjusted.

As part of these new regulations, the City also implemented a Development Cap in 1986 to limit future non-residential development in the CD district to a total of 350,000 square feet beyond what existed or was approved in May 1986. The Development Cap regulations stipulated that this growth limit be

re-evaluated once the City approved 235,000 square feet of new development in the Downtown. This milestone has been recently reached, prompting this study.

This report serves as the first step in the process of re-evaluating the Development Cap and implications of current regulations. It aims to evaluate the existing and projected traffic, parking, and land use conditions of the Downtown. This report will inform development of future policy options, which will be established in collaboration with the community and decision-makers in a subsequent second phase.

The City anticipates a two-phase process for evaluation and planning:

- **Phase 1** (this process) consists of research and analysis of the development, parking, and traffic conditions in Downtown Palo Alto.
- **Phase 2**, which would be initiated following completion of Phase 1, will consist of planning and transportation policy recommendations using the Phase 1 findings, additional economic analysis, and additional community input.

In addition to this existing conditions report, major Phase 1 tasks include:

- A street intercept survey of the travel and parking behavior of Downtown residents, workers, and visitors (completed);
- A survey of Downtown businesses to determine current employment density;

- Market and development feasibility analysis of future Downtown development; and
- A projected growth impact analysis, with five- and ten-year scenarios of potential ranges of development, as well as projected traffic and parking conditions.

The findings from each of these work efforts will be reviewed with stakeholders, decision-makers, and the general public.

1.2 Downtown Palo Alto Setting

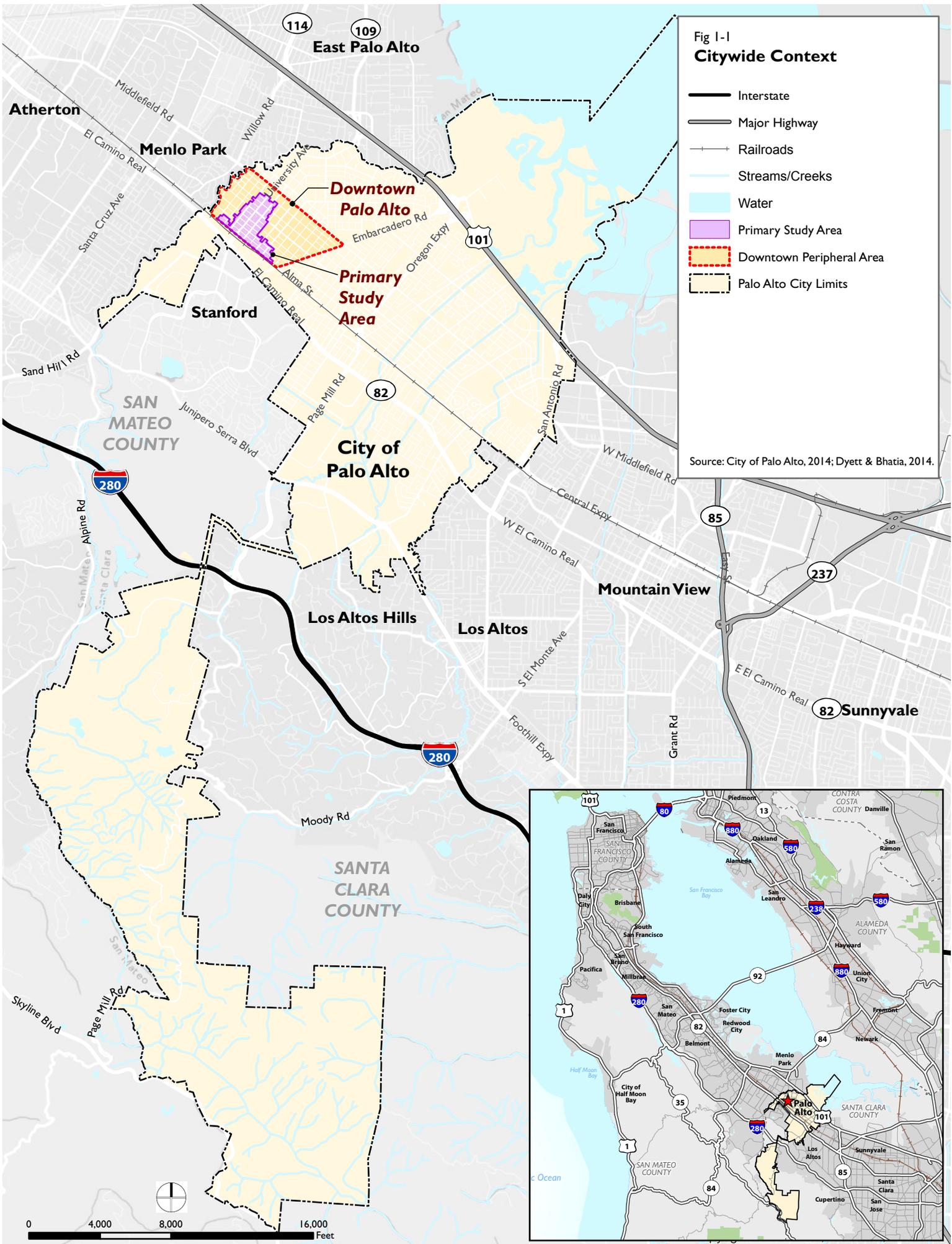
Since the City of Palo Alto was founded in 1894, the Downtown has been the symbolic center of the City. As the City’s central business district, the Downtown is a thriving commercial and retail hub, serving not only the City, but also the wider Silicon Valley. Despite substantial development pressure, the Downtown has retained its pedestrian-scale ambiance and many of its historic buildings. The Downtown is shown in the context of the city as a whole in Figure 1-1.

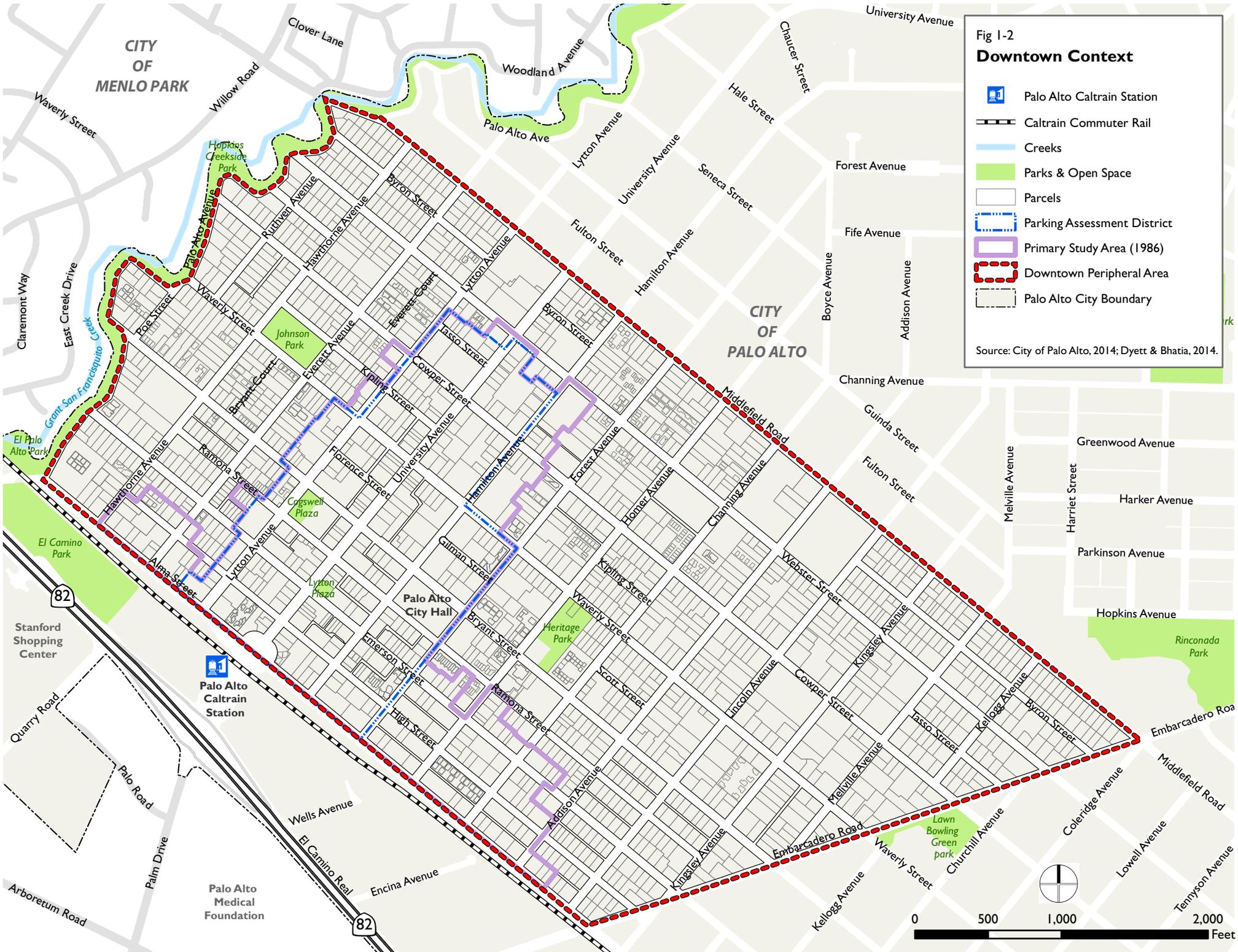
The Primary Downtown Study Area (Primary Study Area) is the area under study for this report, and is congruent with the area included in the 1986 Downtown Development Cap. The Primary Study Area is shown in Figure 1-2. The figure also shows the broader Peripheral Downtown Study Area (Peripheral Study Area); the latter includes surrounding neighborhoods, and is bounded by Middlefield Road to the northeast, Embarcadero Road to the southeast, Alma Street to the southwest, and Palo Alto Avenue to the northwest. A detailed map of the Primary Study Area is shown in Figure 1-3. In general, University Avenue is the literal and figurative center of the Primary Study Area,

which is bounded by Alma Street to the southwest and Webster Street to the northeast.

1.3 Role and Contents of This Report

This report evaluates the existing traffic, parking, and land use conditions in the Downtown. First, it provides a policy context, covering the Comprehensive Plan, the Zoning Ordinance, and previous and current studies and reports. Then, the report analyzes Downtown development trends since 1986, followed by a discussion of the Downtown’s existing transportation and travel trends, parking conditions, and the state of traffic. Finally, the report ends with a conclusion and a discussion of the next steps to be taken.





**Fig 1-2
Downtown Context**

- Palo Alto Caltrain Station
- Caltrain Commuter Rail
- Creeks
- Parks & Open Space
- Parcels
- Parking Assessment District
- Primary Study Area (1986)
- Downtown Peripheral Area
- Palo Alto City Boundary

Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.



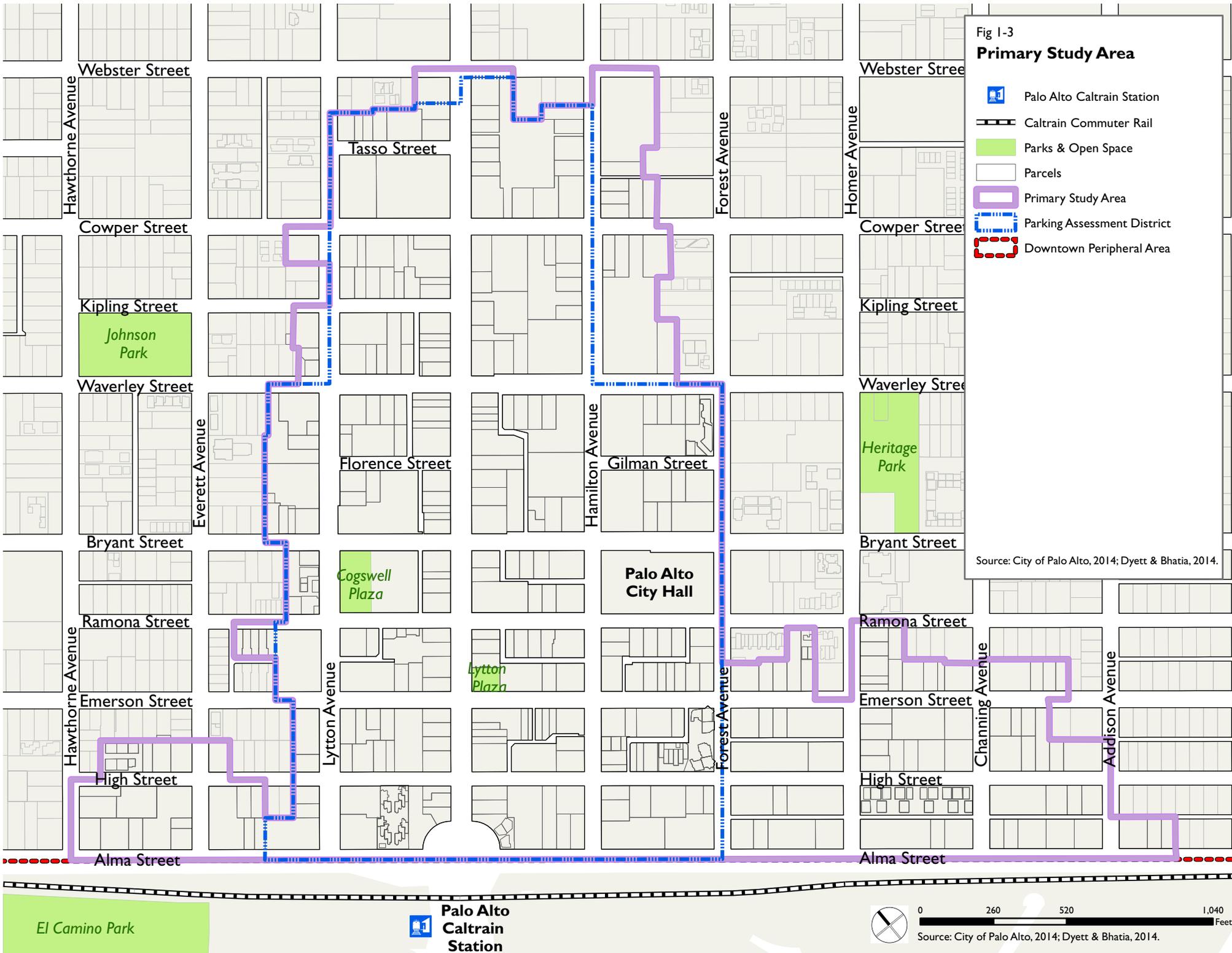


Fig I-3
Primary Study Area

-  Palo Alto Caltrain Station
-  Caltrain Commuter Rail
-  Parks & Open Space
-  Parcels
-  Primary Study Area
-  Parking Assessment District
-  Downtown Peripheral Area

Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

 **Palo Alto
 Caltrain
 Station**



Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

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2 Policy Context

2.1 Development Cap

1986 DOWNTOWN STUDY AND DEVELOPMENT CAP

After a period of rapid growth in the early 1980s in Downtown Palo Alto, the City initiated a Downtown Study to examine traffic, land use, and parking in 1984, as traffic conditions were notably worsening in the area. The City adopted a number of ordinances and parallel Comprehensive Plan amendments in 1986 to implement the Downtown Study recommendations and control Downtown growth and mitigate its impacts in the area.

These measures included a new Commercial Downtown zoning district (CD) with more restrictive FARs, limits to project sizes and to the overall amount of future development, and special development regulations for sites adjacent to residential areas. A new Ground Floor (GF) Combining District was created in the Municipal Code to restrict the amount of ground floor area for uses other than retail, personal services, or eating and drinking in the CD district.

A Development Cap was also created in 1986 to restrict future non-residential development in the CD district to a total of

350,000 square feet, beyond what existed or was approved as of May 1986. This Development Cap was to be reevaluated when new development reached 235,000 square feet. Residential development was excluded from the development cap to encourage growth of residential uses in close proximity to employment uses in the Downtown. The Development Cap reserved 100,000 square feet of the 350,000 square foot growth limit to be used for projects demonstrating special public benefits; in addition, it designated 75,000 square feet of the 350,000 square foot cap for projects that qualified for seismic, historic, or minor expansion exemptions, in order to encourage these upgrades.

New parking regulations established at the time included most of the requirements still in place today: the requirement for non-residential uses to provide one parking space for every 250 square feet of floor area; the allowance for off-site parking and fees in lieu of on-site parking in certain circumstances; and exemptions for historic structure upgrades, seismic rehabilitations, provision of required handicapped access, or one-time additions of 200 square feet or less. New traffic policies were adopted at various intersections in the Downtown area to improve congestion. Performance measures were adopted to ensure that new development in the Downtown did not increase the total parking deficit beyond that expected from development that was existing or approved through May 1986; the parking exemption regulations were to be re-evaluated when the unmet parking demand reached one half of the minimum (450) parking spaces deemed necessary for construction of a new public parking structure.

To evaluate the effectiveness of these policies and regulations, the Downtown Study required that City staff monitor and submit

annual reports to the City Council regarding development activity, vacancy rates, parking deficit level, sales tax revenues, and commercial lease rates in the Downtown area.

1989 CITYWIDE LAND USE AND TRANSPORTATION STUDY

The 1989 Citywide Land Use and Transportation Study looked at three growth scenarios and analyzed the impacts of Comprehensive Plan and Zoning Ordinance changes, including the establishment of growth controls across the city. The study responded to community concerns about current and future congestion, and it aimed to set “appropriate limits” on citywide commercial and industrial development to minimize traffic impacts.

The study called for simple and substantial downzoning of the city’s commercial and industrial areas. It created a growth limit of just over 3.25 million square feet of new non-residential development across nine specific planning areas in the city, including the Downtown, which was also regulated by the Development Cap from 1986. It also called for capacity increases at numerous intersections across the city, while prioritizing a more limited number of critical intersections. It advocated for development of a Transportation Demand Management Ordinance to reduce the number of trips and promote alternative modes of transport. The study also recommended Comprehensive Plan and zoning changes for particular parcels, to change them from commercial to residential uses. Finally, the study also called for minor modifications to the development review process to facilitate Planning Commission and City Council review of more controversial projects, such as mixed-use developments and projects in environmentally sensitive areas.

2.2 Comprehensive Plan

1998-2010 COMPREHENSIVE PLAN

Land Use and Community Design Element

The Comprehensive Plan is a policy document for the long-range development of the City of Palo Alto. It provides the direction for the future growth of the City and articulates a vision of what Palo Alto aspires to be. The City’s Comprehensive Plan was last comprehensively updated in 1998. Prior to 1988, the Comprehensive Plan had separate Urban Design and Land Use elements, which were combined into one element—the Land Use and Community Design Element in 1988, recognizing the integral relationship between the two topics. This element maintains a citywide structure of residential neighborhoods, regional centers, and employment districts; the Downtown area is recognized as a regional center in the city. As the central business district of the City, Downtown is home to a thriving regional hub of commercial enterprises, retail activity, and employment, and as such, has been the focus of development pressure. Designated uses in the Downtown area include transit-oriented residential, regional/community commercial, and service commercial.

The Land Use and Community Design Element includes a number of policies and programs that apply to Downtown and support its role as an important regional hub and employment center for Palo Alto and the surrounding area. To control the amount of commercial growth and traffic in the city, Policy L-8 in the Land Use and Community Design Element places a limit on the amount of new non-residential development allowed in nine planning areas around the city. The Citywide 1989 Land

Use and Transportation Study (described below) determined the amount of growth to be allowed; the square footage limit was implemented largely through commercial downzoning in the late 1980s. To support Policy L-8, Program L-8 limited new non-residential development in the Downtown area to 350,000 square feet, or 10 percent above the amount of development existing or approved as of May 1986. The program also called for the reevaluation of this limit when non-residential development approvals reach 235,000 square feet of floor area. Also supporting Policy L-8, Program L-9 called for the continued monitoring of Downtown development, including the effectiveness of the ground floor retail requirement.

Policy L-23 in the Land Use and Community Design Element specifically calls for maintaining and enhancing the Downtown as the city's central business district, as well as promoting quality design that recognizes the regional historical importance of the area and reinforces its pedestrian character. To support this policy, Program L-19 supports the implementation of the Downtown Urban Design Guide and Program L-20 supports reuse of existing buildings. In Policy L-24, the Comprehensive Plan seeks to ensure that Downtown is inviting to pedestrians and is bicycle-friendly. It is supported by Program L-21, which strives to improve the area by adding landscaping, bicycle parking, and public art.

Lastly, the Land Use and Community Design Element supports historic resources in the City, especially those in Downtown. Program L-55 calls for reassessing the Historic Preservation Ordinance to ensure its effectiveness in the maintenance and preservation of historic resources, particularly in the Downtown area. Policy L-56 promotes the preservation of historic buildings to reinforce the scale and character of Downtown. It is supported

by Program L-59, which allows parking exceptions for historic buildings to encourage rehabilitation; in addition, Program L-60 continues the Transfer of Development Rights Ordinance to transfer development rights from designated buildings of historic significance in the Commercial Downtown zone to non-historic receiver sites in the same zone.

Transportation Element

The Transportation Element of the Comprehensive Plan includes several policies and programs pertaining to traffic and parking in Downtown Palo Alto. The Plan singles out Downtown Palo Alto as the primary area of the city with major parking issues. The Transportation Element identifies the primary challenge for the future as managing the existing parking supply, while reducing parking demand by providing alternatives to driving. The element's "13-Point Parking Program" is a detailed, comprehensive program with parking supply and demand management strategies, which has been approved by the City Council and implemented in the Downtown area.

The Transportation Element also includes a number of policies and programs that support Goal T-8: Attractive, Convenient Public and Private Parking Facilities. Policy T-45 supports the provision of sufficient parking in the Downtown area to address long-range needs. Supported by Programs T-49, T-50, and T-51, the Plan states that most new development is to provide its own parking, because the existing demand for parking exceeds supply. However, it also allows in-lieu fees to be paid instead of providing parking spaces under certain circumstances, which support construction of public parking lots or garages in the future. Policy T-46 calls for minimizing the need for all-day employee parking facilities in Downtown and supporting short-

term customer parking, while Policy T-47 protects residential areas from the parking impacts of nearby business districts. Programs T-52 and T-53 support these policies, by ensuring that parking structures in Downtown are used to their maximum potential and that parking facilities don't intrude into adjacent residential neighborhoods.

COMPREHENSIVE PLAN AMENDMENT PROCESS

The City is currently updating the Comprehensive Plan for the horizon year 2030, and it has released drafts of the various elements in the Plan. The Downtown Cap Study will provide necessary information and analysis to inform the process of updating the Comprehensive Plan.

2.3 Zoning Ordinance (Downtown Area)

DISTRICTS

The City's Zoning Ordinance is Title 18 of the Municipal Code, and the zoning districts are shown in Figure 2-1.

There are three main zoning designations that apply in the Downtown area to the Primary Study Area:

CD - Downtown Commercial District: The CD district is intended to be a comprehensive zoning district for the downtown business area, accommodating a wide range of commercial uses serving citywide and regional business and service needs, as well as providing for residential uses and neighborhood services. Chapter 18.18 of the Palo Alto Municipal Code details the regulations for the CD district, which was specifically created to promote the following objectives in Palo Alto's Downtown:

- Control the rate and size of commercial development;
- Preserve and promote ground-floor retail uses;
- Enhance pedestrian activity;
- Create harmonious transitions from the commercial areas to adjacent residential areas; and
- Where applied in conjunction with [Chapter 16.49](#) of the Palo Alto Municipal Code, preserve historic buildings.

Within the CD district, there are subdistricts, including CD-C (Community), CD-S (Service), and CD-N (Neighborhood), as

well as site development areas. Residential uses are permitted as part of mixed-use projects; exclusively residential uses are generally prohibited throughout the CD district and subdistricts, unless a site is designated as a Housing Opportunity Site in the Housing Element of the Comprehensive Plan.

PF – Public Facilities District: The PF district is intended to accommodate governmental, public utility, educational, and community service or recreational facilities. Chapter 18.28 of the Palo Alto Municipal Code details the regulations that apply in the PF district.

PC – Planned Community: The PC district is intended for unified, comprehensively planned developments that provide substantial public benefits and conform with and enhance the policies and programs of the City’s Comprehensive Plan. It accommodates developments with a variety of uses, including residential, commercial, professional, research, industrial, administrative, or other activities. Each planned community must apply for the PC district designation, which must be approved by the Planning Commission and the City Council.

In addition, there are two combining districts that are designated in the Downtown area, which are detailed in Chapter 18.30 of the Palo Alto Municipal Code:

P - Pedestrian Shopping Combining District: The pedestrian shopping combining district is intended to modify the regulations of the commercial districts. It applies in locations in the CD district in Downtown where it is deemed essential to foster the continuity of retail stores and display windows and to avoid a monotonous pedestrian environment in order to

establish and maintain an economically healthy and pedestrian-oriented retail district.

GF - Ground Floor Combining District: The ground floor combining district is intended to modify the uses allowed in the CD district and subdistricts to allow only retail, eating and drinking and other service-oriented commercial development uses on the ground floor. Where the ground floor combining district is combined with the CD district, the regulations established in the GF district apply in lieu of the uses normally allowed in the CD district, and all other regulations shall be those of the applicable underlying CD district.

Select parcels in the Primary Study Area are designated Multiple Family Residential (RM), including RM-30 and RM-40, which are medium and high density multiple family residence districts. These zones contain only residential uses, so they are not discussed extensively in this study of the Downtown Development Cap.

The South of Forest Area Coordinated Area Plan (SOFA CAP) is an area plan that applies to the parcels in the southeastern portion of the Primary Study Area. The SOFA CAP provides the zoning regulations for the area, which includes one primary district:

RT – Residential Transition District: The RT district is the primary district for SOFA 2, and it is divided into RT-35 and RT-50 districts, which each have different development standards. The RT-35 and RT-50 districts are intended to promote the continuation of a mixed use, walkable area with a wealth of older buildings.

2009 AND 2013 REZONING – GROUND FLOOR COMBINING DISTRICT

As part of the original 1986 language of the Ground Floor (GF) combining district, a “Use Exception” provision was triggered when the vacancy rate for ground floor properties within the zone was 5 percent or greater. Between 1986 and 2009, if an applicant could then show that the location was vacant and available for at least six months, the Director could issue a Use Exception.

In 2009, the Downtown vacancy rate was above 5 percent for an extended period, prompting the City Council to change the Zoning Code. It was modified to remove the Use Exception provision in the GF zone language. This change had the effect of preventing any further conversion of retail and service uses to office uses in the Downtown, regardless of the vacancy rate in the area. In addition to removing the “Use Exception” clause, the changes in 2009 also included rezoning portions of the Downtown area, which added and removed the GF combining district on the Zoning Map. Three properties in the Downtown were rezoned to be included in the GF combining district, while 13 properties were removed from the GF combining district. The CD district outside of the GF zone was also amended to allow greater flexibility for landlords to experiment with retail in former office space and to alternate between office and retail uses; the changes also modified the development standards to ensure ground floor space is designed, but not required, to accommodate retail use.

In 2013, the vacancy rate in the Downtown had fallen again to nearly 2 percent, compared with 9 percent in 2009. City Council amended the Zoning Map again to rezone properties on the 600

block of Emerson Street, to add the GF combining district back to the properties (after they had been removed from the GF combining district in 2009). The change ensures that retail remains on the 600 block of Emerson Street, even as demand for office space in the Downtown continues to rise. The rezoning “grandfathers in” current uses, but following a vacancy of 12 months, the properties will revert to ground floor retail permanently.

PARKING

In 2003, the City updated its Zoning Ordinance to implement the goals established by the updated 1998 Comprehensive Plan. The Zoning Ordinance Update Parking Memo established parking standards for new land use classifications in the Comprehensive Plan, including Village Residential, Mixed-Use, and Transit-Oriented Development. It also evaluated the parking standards for all types of development, including the number of spaces required, the size of spaces, and the design of parking lots. In addition, it also consolidated and simplified zoning provisions related to parking (which were previously in various sections of the Zoning Ordinance). Lastly, the Zoning Ordinance Update parking memo addressed the goals, policies, and programs of the Comprehensive Plan that were both directly applicable and indirectly applicable to the parking standards and regulations.

Basic Requirements

As described in Chapter 18.52 of the Palo Alto Municipal Code, off-street parking, loading, and bicycle facilities are required for any new building constructed, for any new use established, for any addition or enlargement of an existing building or use, and for any change in the occupancy of any building or the manner

in which any use is conducted that would result in additional parking spaces being required.

The CD district is part of the Downtown Parking Assessment Area, which was first formed in 1978. The Downtown Parking Assessment Area has an across-the-board requirement of one parking space per 250 gross square feet of floor area for all uses except residential. Table 2-1 lists the vehicle and bicycle parking requirements for each district in the Downtown.

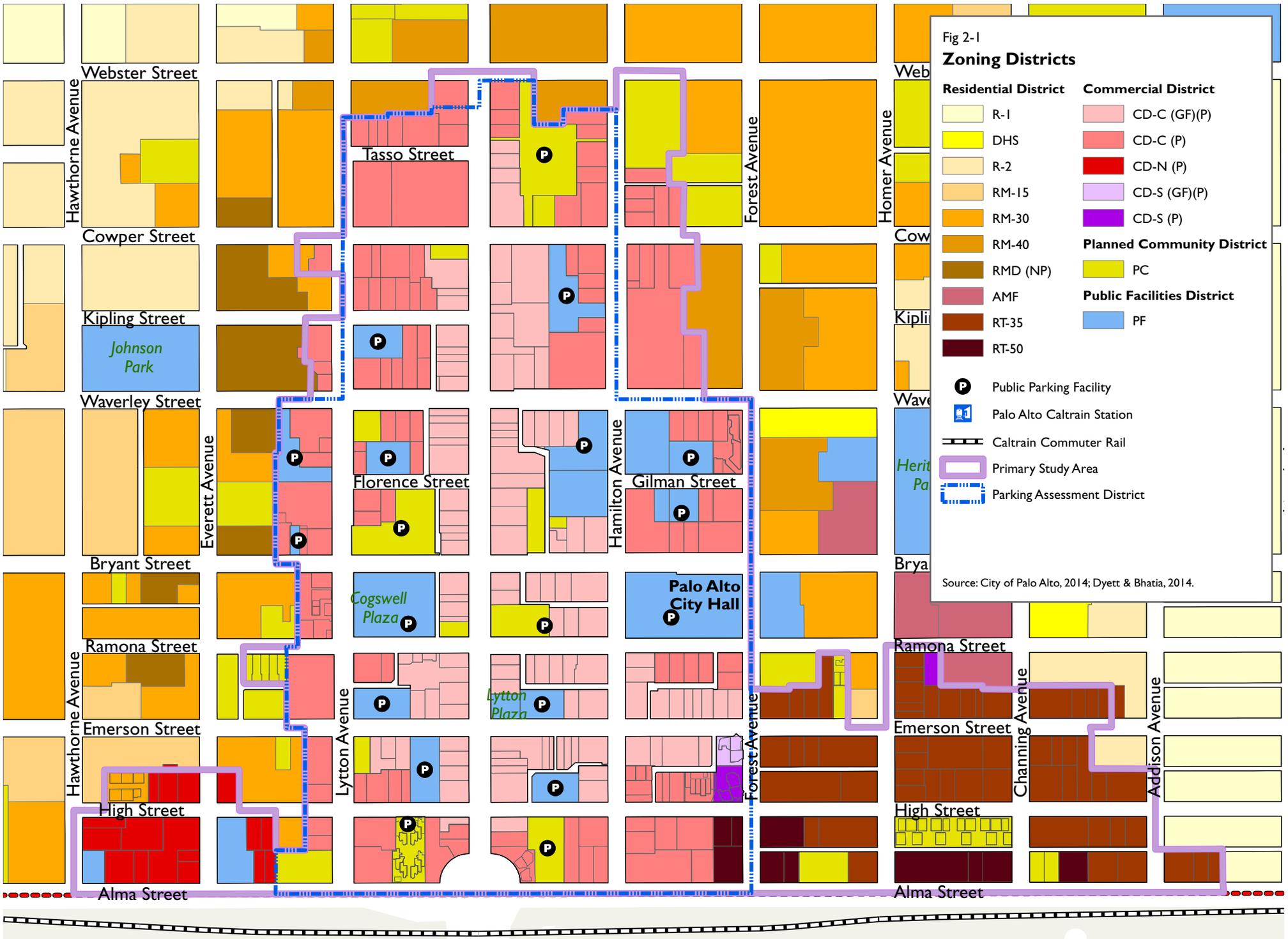


Fig 2-1
Zoning Districts

Residential District	Commercial District
<ul style="list-style-type: none"> R-1 DHS R-2 RM-15 RM-30 RM-40 RMD (NP) AMF RT-35 RT-50 	<ul style="list-style-type: none"> CD-C (GF)(P) CD-C (P) CD-N (P) CD-S (GF)(P) CD-S (P)
Planned Community District	
 PC	
Public Facilities District	
 PF	

- P Public Parking Facility
- Palo Alto Caltrain Station
- Caltrain Commuter Rail
- Primary Study Area
- Parking Assessment District

Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

El Camino Park

Palo Alto Caltrain Station



0 260 520 1,040 Feet

Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

Use	Vehicle Parking Requirement (Number of spaces)	Bicycle Parking Requirement	
		Spaces	Class
Downtown University Avenue Parking Assessment District – Applies to all uses except residential	1 space per 250 square feet (4 spaces per 1,000 square feet)	1 space per 2,500 square feet	40% long term 60% short term
Two-family Residential (R-2 and RMD Districts)	1.5 spaces per unit, of which at least one space per unit must be covered. Tandem parking allowed, with one tandem space per unit, associated directly with another parking space for the unit	1 space per unit	100% long term
Multiple Family Residential	1.25 space per studio unit 1.5 space per 1-bedroom unit 2 spaces per 2-bedroom or larger unit At least one space per unit must be covered. Tandem parking allowed for any unit requiring two spaces (one tandem space per unit, associated directly with another parking space for the same unit, up to a maximum of 25% of total required spaces for any project with more than 4 units)	1 space per unit	100% long term

Allowed Adjustments

Parking reductions are allowed under particular circumstances, including in the Downtown, to reflect features of a development project that would result in reduced parking demand. The Planning Director may allow parking reductions for projects that include on-site employee amenities; joint use/shared parking facilities; housing for seniors; affordable housing units and single room occupancy units; housing near transit facilities; and inclusion of transportation and parking alternatives (such as a Transportation Demand Management program).

Reductions for various circumstances may be combined, provided that the total reduction does not reduce the amount of parking by more than 30 percent of the total amount required for all projects, except for affordable housing and single-room occupancy unit projects, which may not be reduced by more than 40 percent of the total parking requirement, or senior housing projects, which may not be reduced by more than 50 percent of the total parking requirement. In addition, no reductions may be granted that would result in fewer than 10 parking spaces on a site.

In Lieu Fees/Exemptions

While the Downtown Parking Assessment District requires one on-site parking space for every 250 gross square feet of floor area for all non-residential uses, a number of public parking spaces within the CD district are available for use as “in-lieu parking” spaces to meet the parking requirement for certain projects. This in-lieu fee program facilitates development to occur on sites that would otherwise be precluded from development due to parking constraints. Off-site parking on such sites may be provided by payment of an in-lieu monetary contribution to the City to

defray the cost of providing such parking. The contributions for each required parking space are equal to the incremental cost of providing a net new parking space in the assessment district, plus the cost for the administration of the program, as described in Chapter 16.57 of the Municipal Code. In order to participate in the in-lieu parking program, a development site must satisfy one or more of the following criteria:

- Construction of on-site parking would necessitate destruction or substantial demolition of a designated historic structure;
- The site area is less than 10,000 square feet, but of such an unusual configuration that it would not be physically feasible to provide the required on-site parking;
- The site is greater than 10,000 square feet, but of such an unusual configuration that it would not be physically feasible to provide the required on-site parking;
- The site is located in an area where city policy precludes curb cuts or otherwise prevents use of the site for on-site parking; or
- The site has other physical constraints, such as a high groundwater table, which preclude provision of on-site parking without extraordinary expense.

Until recently, the Municipal Code had a number of exclusions from the parking requirement in the CD district. In October 2013, the City Council voted to amend the City's Zoning Ordinance related to some of these parking exemptions; this was in response to concern that the rapid pace of Downtown development in the several years prior, the number of exemptions granted, and the absence of new public parking

construction since 2003 were exacerbating the area's parking problems.

The actions included permanently eliminating the "exempt floor area" parking exemption (Sections 18.52.060(a)(2) and 18.52.060(c) in the Municipal Code), which allowed floor area up to a floor area ratio (FAR) of 1.0 to 1.0 to be exempt from parking requirements within the Downtown Parking Assessment Area. It applied to all or a portion of the floor area of a building that was located at or nearest grade and did not exceed an FAR of 1.0 to 1.0. Enacted in the mid 1980s, this parking exemption appears to have been intended to stimulate downtown development and provide equity to parking assessment district members, but is no longer necessary given the vitality of Downtown and the need for additional parking.

The City Council also eliminated the parking exemptions for Historic or Seismic Bonuses for a period of two years, as well as on-site parking exemptions for floor area bonuses derived through historic and seismic upgrades via the transfer of development rights program (Sections 18.18.070(a)(1), 18.18.080(g), 18.18.090(b)(1), 18.18.090(b)(1)(B), 18.52.070(a)(1)(B), 18.52.070(a)(1)(C)(i), and 18.52.070(a)(1)(D) in the Municipal Code). Regarding "grandfathered in" buildings that were previously exempted, the Council also disallowed the parking exemption for floor area developed or used previously for non-residential purposes and vacant at the time of the engineer's report during the parking district assessment, as was previously allowed in Section 18.52.070(a)(3) in the Municipal Code.

Certain parking exemptions are still in place. For instance, the parking requirement excludes square footage for handicapped

access that does not increase the usable floor area. Vacant parcels that are redeveloped are exempt from on-site parking requirements for the Downtown Parking Assessment District in certain circumstances. They must provide 0.3 parking spaces for every 1,000 square feet of site area, provided that the parcels were at some time assessed for parking under a Bond Plan E financing pursuant to Chapter 13.16 of the Municipal Code, or were subject to other ad valorem assessments for parking. Parking can be provided off-site if it is within a reasonable distance of the site using it, the assessment district boundary, and approved in writing by the Planning Director.

2.4 Bicycle/Pedestrian Transportation Plan

In 2003, the City of Palo Alto developed a Bicycle Transportation Plan to identify existing bikeways, analyze bicycle and pedestrian accident data, and recommend new bikeways, bicycle education and safety programs, and bicycle support facilities, including bike parking. It included an expansive bicycle network with bicycle boulevards, bike lanes on arterial streets, pedestrian bicycle grade separations, and improvements at key intersections. Lastly, it recommended programs to promote bicycle education and outreach and best practices for the design and maintenance of bicycle facilities.

The 2003 Bicycle Transportation Plan was updated in 2012. It incorporates new, innovative bicycle design standards to further promote and connect the City's extensive bicycle network, such as green bike lanes, cycletracks, and intersection through-markings. It expanded analysis to include pedestrian issues, aiming to improve links between shared use trails and on-street

facilities to key destinations. It includes a revised bicycle network and a priority project list, as well as a new policy framework.

2.5 Current Studies and Recent Council Actions

PARKING

2012 Windshield Survey

Previous City parking studies had focused on parking occupancy, but in 2012, a survey was conducted throughout the greater Downtown area to gather data on who was parking in and around Downtown and why. The Downtown Parking Study Group, a group of self-appointed representatives from local residents, the Palo Alto Downtown Business and Professional Association Parking Committee, and City staff, conducted the survey.

To gather data, the Downtown Parking Study Group placed survey cards on the windshields of vehicles parked on the streets throughout the Downtown Area. The survey findings were analyzed according to three distinct zones of the Downtown area: Downtown North (North of Lytton Avenue), Downtown Core, and South of Forest Avenue. In the Downtown North group, more downtown employees parked on the street than residents; however, in the South of Forest Avenue group, more residents were parked on the street than downtown employees. In the Downtown Core group, employees and visitors used street parking almost equally.

Downtown Parking Garage Study

The City is currently studying five publicly-owned surface parking lots in the Downtown District to determine their suitability for conversion to parking structures. By analyzing the benefits and shortcomings of each site for parking garage construction and identifying the cost-benefit ratio for construction of a garage at each site, the City can begin to determine which locations may be appropriate for construction of new parking garages, which would accommodate additional parking spaces on sites already used for that purpose. In addition, the study is evaluating the potential of using an attendant or valet at several of the existing City-owned and operated parking garages as a method to increase parking supply (as this service can make more efficient use of space through smaller spaces and fewer drive aisles), as either a temporary or long-term parking solution.

Residential Parking Permit Program

The City of Palo Alto is currently in the process of creating a citywide Residential Parking Permit (RPP) program. Until recently, the City Council had only adopted RPP programs in the College Terrace and Crescent Park neighborhoods, even though it had considered an RPP program in various neighborhoods across the City for well over a decade. Resident support for a RPP program in the Downtown district has grown substantially in recent years as development, congestion, and parking uses in the area have grown significantly. In general, the RPP program aims to preserve the quality of life in a neighborhood by ensuring adequate parking for local residents whose neighborhood streets see substantial “spillover” parking from busy commercial areas. It is seen as a tool to manage parking supplies and encourage commuters to use alternative travel modes, such as transit,

carpooling, or bicycling. The RPP program also acknowledges, however, the important role that street parking plays in serving existing businesses and employees, who use it to supplement the spaces available in parking surface lots and garages.

In January 2014, the City Council directed staff to create a RPP Citywide framework, which would establish procedures and criteria for neighborhoods throughout the City who wish to establish neighborhood parking restrictions due to intrusions from non-residential uses. The Council simultaneously directed staff to begin work on implementing the first RPP district, which will establish a permit program for the residential neighborhoods surrounding the Downtown. There is much support for the RPP program in Downtown Palo Alto among local residents, who are growing increasingly frustrated with parking spillover from the congested Downtown area; however, many local businesses and employers are concerned that the RPP program would negatively affect their economic vitality and employees. The City Council will continue to deliberate and debate the program in 2014.

TRAFFIC

Citywide Transportation Survey

In 2013, the City of Palo Alto conducted its first ever Citywide Transportation Survey to gather comprehensive travel mode data in the city. Through the survey, the City aimed to better understand how people who work in Palo Alto travel to work and how residents travel to their work destinations, both inside and outside of Palo Alto. The City encouraged both residents and persons traveling into Palo Alto to either take the short survey online or fill out a hard copy at public facilities or at their place of employment. It included questions on travel mode, bicycle and electric vehicle ownership, and parking usage. The

survey responses were categorized by whether the respondent was a resident of Palo Alto or an employee who worked in the city.

For the survey respondents who lived in Palo Alto, the vast majority owned vehicles, with well over half reporting having at least two vehicles in their household. However, the survey respondents also reflected Palo Alto's strong bicycling culture: over 90 percent of the respondents had a least one bicycle and over half had four or more bicycles in their households. Less than half (44 percent) of respondents commuted to a location outside of Palo Alto, while 39 percent worked within Palo Alto or at Stanford University. One in four of those respondents who commuted outside of Palo Alto traveled to the neighboring cities of Mountain View and Menlo Park. Downtown Palo Alto is the third most popular shopping district among respondents, after Town and Country Village and Midtown, and most people travel to these districts by car.

For the employees who work in Palo Alto and responded to the survey, nearly 18 percent came from the City of San Jose. Following San Jose, respondents came from nearby cities of Mountain View and Menlo Park, with 14 percent combined, while an equal number of people commute in to Palo Alto from other cities within the Peninsula, such as San Carlos, San Mateo, and Burlingame. Most employers in Palo Alto seemed to offer incentives to their employees to take alternative transportation to work, with the most popular being passes or discounts for transit. To encourage and assist them in taking an alternative form of transportation to work, survey respondents reported that showers and changing facilities at their place of employment would help, as would expanded bicycle and pedestrian facilities and cheaper transit fares.

The results from the survey will become the baseline data for future transportation programs and projects. It will be used by City staff to assess program initiatives, review programs and policies, and study current mobility issues.

Transportation Demand Management Plan

The City is currently initiating several Transportation Demand Management (TDM) measures in an effort to reduce traffic impacts within the city. Portions of the existing Municipal Code discuss TDM measures, but these policies and programs are not comprehensive or mandatory. Palo Alto's neighboring institution, Stanford University, has reduced vehicle trips by 40 percent using a comprehensive TDM program, and the City ultimately aims to achieve similar results in the Downtown area with the help of a new TMA (Transportation Management Association). The TMA will be launched in the summer of 2014 and will identify, market and manage transportation programs initially for the Downtown, although it may ultimately manage other TDM-related initiatives include the expansion of the Palo Alto shuttle program and expanded efforts to promote alternative modes of transportation.

The TMA has the goal of achieving a 30 percent reduction in single-occupant vehicle (SOV) trips by its third operational year. The TMA would focus on promoting other transportation options, including walking, biking, transit; alternative transportation modes such as ridesharing, vanpools, and shuttles and mass transportation, including Caltrain and BART.

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3 Downtown Development & Trends

This chapter focuses on development in Downtown, relying on staff reports, memos, and GIS data from the City of Palo Alto. First, it discusses existing Comprehensive Plan land uses in the Downtown, measured in acres at the parcel level. Next, it contrasts the floor area, measured in square feet, of the Downtown land uses between 1986 and 2013. The chapter ends with a specific discussion of non-residential floor area in the Downtown, focusing on non-residential development projects constructed since 1986 and future pipeline projects.

3.1 Comprehensive Plan Land Use Distribution

The City's Zoning Ordinance implements the Comprehensive Plan goals, policies, and programs for land use in the Downtown. The land uses allowed in the CD district and subdistricts are listed explicitly in the Zoning Ordinance (see Section 18.18.050). Land uses that are not listed in the ordinance are not allowed, excluding those uses that were grandfathered in (see Section 18.18.011). Generally, educational, religious, and assembly uses; office uses; residential uses (multiple family as part of a mixed

use development and residential care homes); retail uses; and most service uses are permitted in the CD district. Manufacturing and processing uses, public and quasi-public facility uses, recreation uses, transportation uses, temporary uses, and some service uses are conditionally permitted in the CD district. As stated earlier in Chapter 2 of this report, exclusive residential use is only allowed on sites designated as Housing Opportunity Sites in the Housing Element of the Comprehensive Plan; otherwise, residential uses are only permitted as part of a mixed use development in the CD district.

Within the CD district, public facilities are also allowed on sites zoned "PF." As stated in Section 18.28.040 of the Zoning Ordinance, uses that are permitted include park uses, park operations, and facilities that are owned, leased, operated, or used by the City of Palo Alto, the County of Santa Clara, the State of California, the federal government, the Palo Alto Unified School District, or any other governmental agency. In the PF district, on sites that are owned by the City, County, State, federal government, school district, or other governmental agency, the code conditionally permits educational, religious, and assembly uses; office uses; community and utility facilities; recreational uses; some service uses; and temporary, accessory, and support uses.

Uses that are allowed in the RT district include educational, religious, and assembly uses; office uses; residential uses; retail uses; and most service uses. Some service uses are conditionally permitted, as are transportation, public and quasi-public, and recreational uses.

Table 3-1 shows the existing Comprehensive Plan land uses measured at the parcel level in acres in the Peripheral Study Area and the Primary Study Area, which are shown in Figure 1-1.

Table 3-1: Existing Comprehensive Plan Land Uses by Acres in Downtown Palo Alto (2013)				
<i>Comprehensive Plan Land Use Designation</i>	<i>Acres in Peripheral Study Area</i>	<i>Percent of Total Acreage in Peripheral Study Area¹</i>	<i>Acres in Primary Study Area</i>	<i>Percent of Total Acreage in Primary Study Area¹</i>
Single Family Residential	127.42	38.2%	-	-
Multi-family Residential	86.88	26.1%	0.97	1.2%
Public Park	2.50	0.8%	0.44	0.5%
School	4.59	1.4%	-	-
Community Commercial	57.51	17.3%	57.48	71.3%
Service Commercial	0.49	0.2%	0.49	0.6%
Neighborhood Commercial	3.25	1.0%	3.23	4.0%
Major Institution/Special Facility	2.55	0.8%	2.55	3.2%
SOFA I & II CAP	48.04	14.4%	15.49	19.2%
TOTAL²	333.23	100.0%	80.65	100.0%
Notes:				
1. Percentages rounded to nearest tenth of a percent.				
2. Total acreage excludes rights-of-way.				

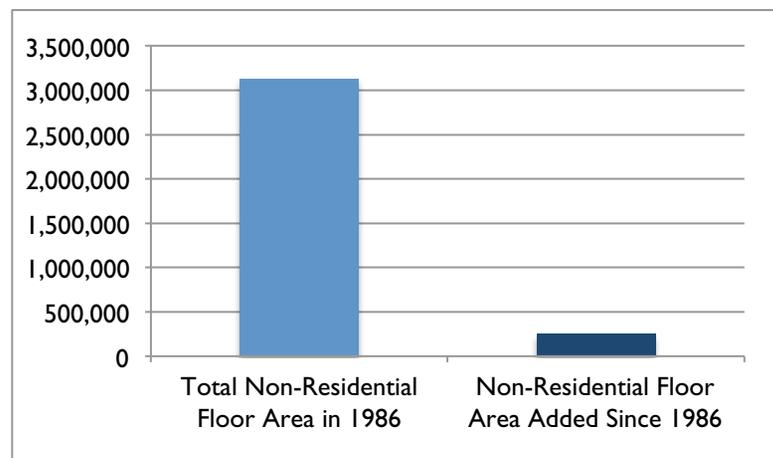
Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

3.2 Development Since 1986

TOTAL DEVELOPMENT SINCE 1986

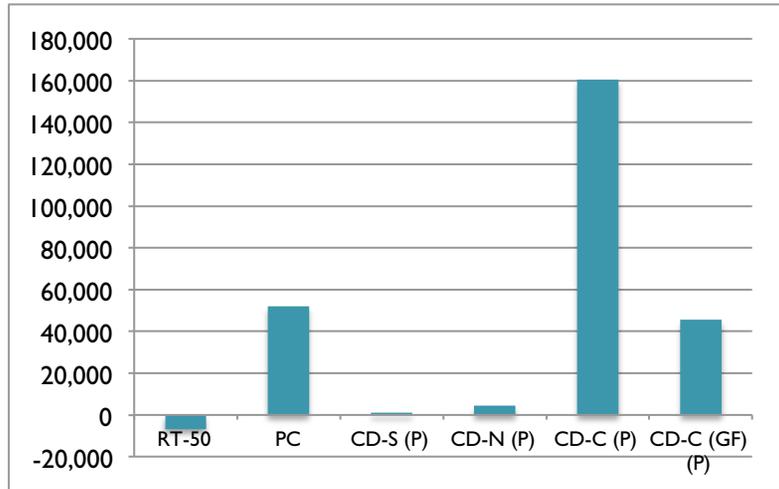
In 1986, there were about 3.3 million square feet of development in the Primary Study Area, with the vast majority of the space devoted to non-residential uses. About 250,000 square feet have been added in the two-and-a-half decades since, for a total of 3.55 million square feet of development in the Downtown, with about 3.16 million square feet occupied by non-residential uses. This is shown in Figure 3-1.

Figure 3-1: Primary Study Area Non-Residential Development Since 1986 in Square Feet



As shown in Figure 3-2, the majority of the development (62 percent) that has occurred in the Primary Study Area since 1986 has been in the CD-C (P) zone.

Figure 3-2: Primary Study Area Non-Residential Development Net Square Footage 1986-2013 by Zone



CHANGE IN LAND USES SINCE 1986

While the overall floor area in the Primary Study Area has increased by less than 10 percent between 1986 and 2013, the land use distribution of that floor area has changed considerably. The changes in land uses across the two-and-a-half decades correspond to broader changes in the City’s and the regional economies since the 1980s. Generally speaking, office and professional service uses have increased their share of floor area in the Primary Study Area, while light industrial uses (such as warehousing, distribution, and automotive services) have

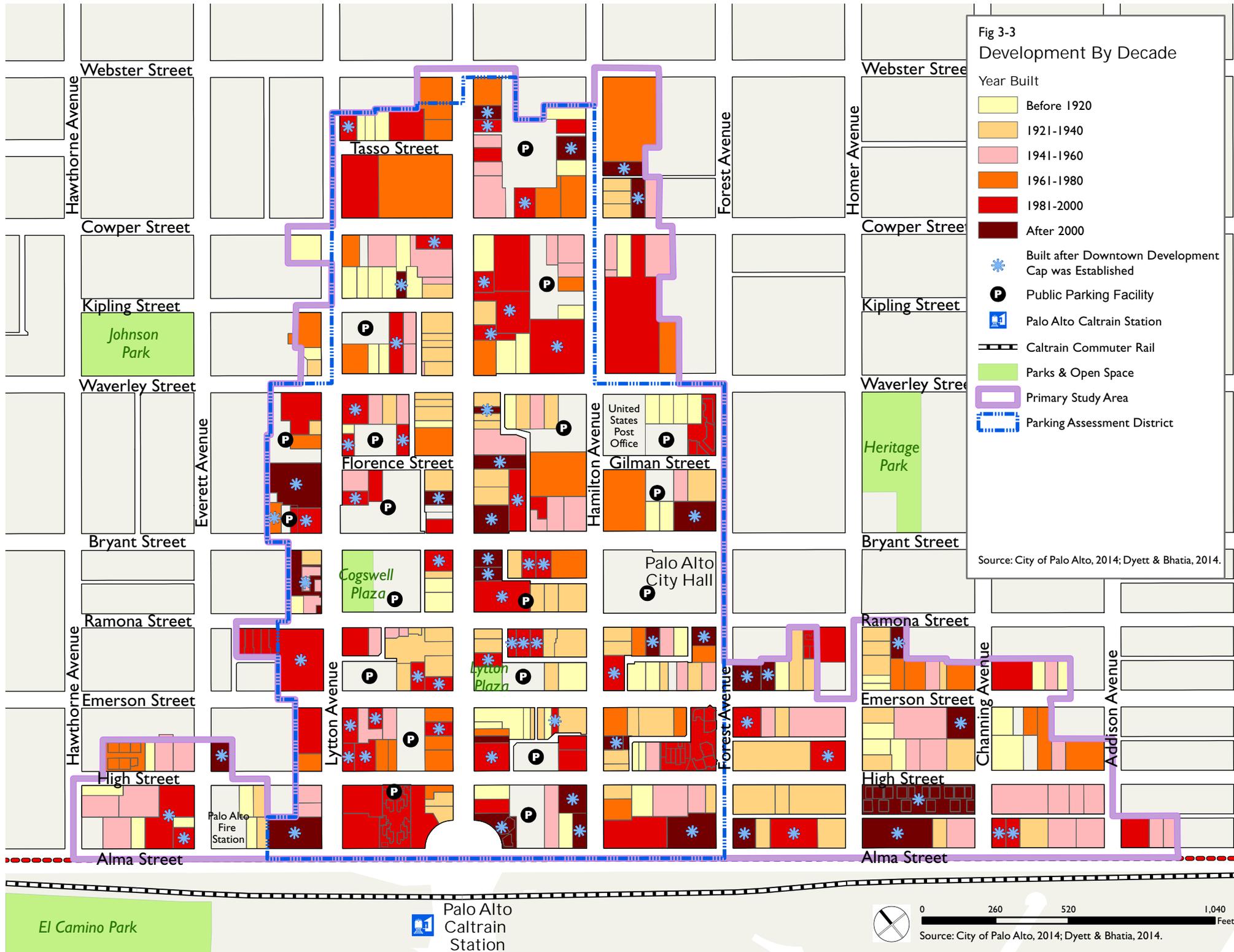
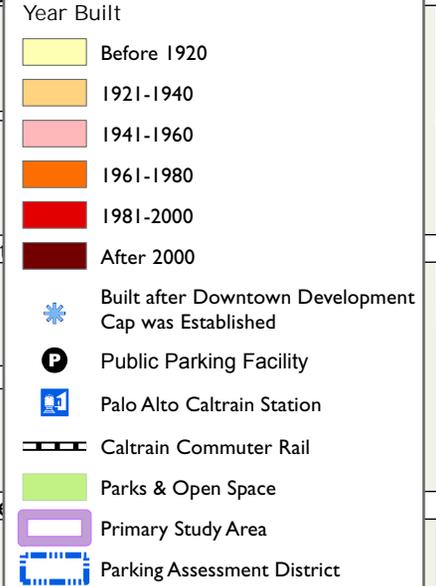
decreased considerably since 1986. Retail has remained one of the dominant uses.

However, the exact shift in share of square footage of the various land uses categories from 1986 to 2013 is not known precisely, for various reasons:

- The recorded existing land use data table as published in the yearly Downtown Monitoring Report is rounded to the nearest 25,000 square feet and was based on a table originally prepared in 1986. Over the years, because of rounding of incremental square feet, the table has generated a greater margin of error. Therefore, the number of square feet by use in the City’s records may not correspond exactly to what exists on the ground.
- The City uses a blended rate of one parking space for every 250 square feet per addition of nonresidential use, so the City has not collected data on the detailed land use breakdown of these non-residential uses.
- The City does not require business licenses. The lack of a business license or business registry requirement has resulted in incomplete business data throughout the Downtown and the City.
- Building permit use and occupancy data does not record the square footage use for projects filing for change of use and tenancy improvements.

Figure 3-3 shows development by decade in Downtown Palo Alto. Developments added since the cap was put in place are marked with a blue star.

Fig 3-3
Development By Decade



Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

0 260 520 1,040 Feet

Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

TRENDS IN DEVELOPMENT SINCE 1986

Since 1986, nearly 252,000 net square feet of non-residential development has been constructed in the Primary Study Area, as shown in Figure 3-4. In some years, such as 1994 and 2003, there were larger demolition projects that resulted in decline in non-residential floor area. However, in most years, development projects resulted in a positive net change in non-residential floor area. In the first two decades following 1986, growth varied from year to year, with the highest levels of non-residential construction occurring in the late 1980s and late 1990s. However, more recently, the Primary Study Area has grown substantially. In fact, over half of the total non-residential development in the Primary Study Area (52 percent) has been constructed since 2010, with almost 100,000 square feet constructed between 2012 and 2013 alone. Several of the recent developments include large mixed-use projects at 335/355 Alma Street and 135 Hamilton Street. Figure 3-4 shows the net change development each year since 1986, and Table 3-2 lists of all of the non-residential development projects in Downtown Palo Alto since 1986.

Figure 3-4: Net Change in Primary Study Area Non-residential Development, 1986 - 2013

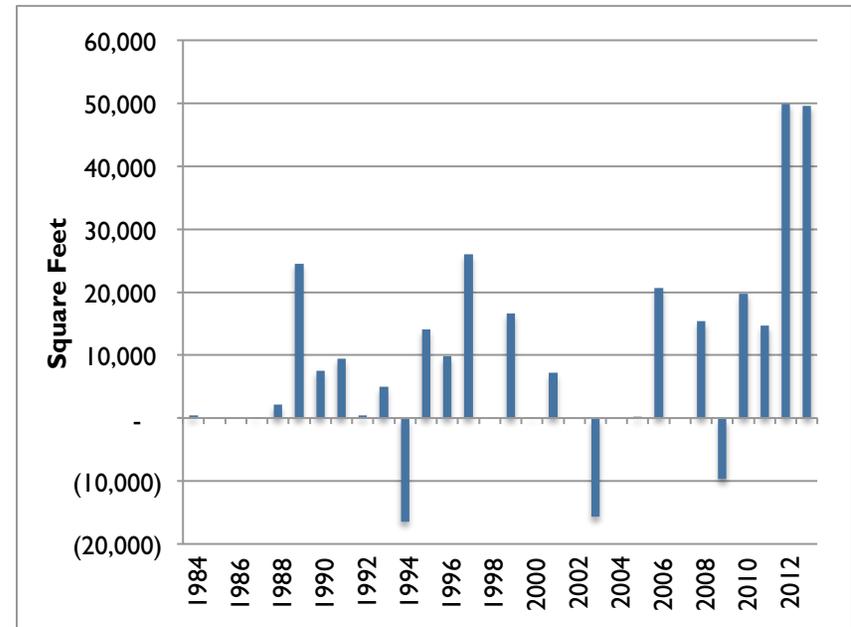


Table 3-2: Non-Residential Development Projects in Primary Study Area, 1986 – 2013		
<i>Project Address</i>	<i>Year</i>	<i>Net change in non-Residential Floor Area (square feet)</i>
520 Ramona Street ¹	1984	400
220 University Avenue	1987	65
151 Homer Avenue	1988	-9,750
314 Lytton Avenue	1988	-713
247-275 Alma Street	1988	1,150
700 Emerson Street	1988	4,000
431 Florence Street	1988	2,500
156 University Avenue	1988	4,958
401 Florence Street	1989	2,407
619 Cowper Street	1989	2,208
250 University Avenue	1989	20,300
550 University Avenue	1989	-371
529 Bryant Street	1990	2,491
305 Lytton Avenue	1990	200
550 Lytton Avenue ^{2,3}	1990	4,845
531 Cowper Street	1991	9,475
540 Bryant Street	1992	404
530/534 Bryant Street	1993	432
555 Waverley Street/425 Hamilton Avenue ³	1993	2,064
201 University Avenue	1993	2,450

Table 3-2: Non-Residential Development Projects in Primary Study Area, 1986 – 2013		
<i>Project Address</i>	<i>Year</i>	<i>Net change in non-Residential Floor Area (square feet)</i>
518 Bryant Street	1994	180
245 Lytton Avenue	1994	-21,320
400 Emerson Street ^{3,4}	1994	4,715
443 Emerson Street	1995	26
420 Emerson Street	1995	125
340 University Avenue	1995	-402
281 University Avenue	1995	-2,500
456 University Avenue	1995	7,486
536 Ramona Street	1995	134
725/753 Alma Street	1995	-1,038
552 Emerson Street	1995	177
483 University Avenue ⁵	1995	7,289
424 University Avenue	1995	2,803
901/909 Alma Street ^{3,4}	1996	4,425
171 University Avenue	1996	1,853
401 High Street	1996	350
430 Kipling Street ^{2,6}	1996	1,412
460-476 University Avenue	1996	1,775
400 Emerson Street ²	1997	2,227

Table 3-2: Non-Residential Development Projects in Primary Study Area, 1986 – 2013		
<i>Project Address</i>	<i>Year</i>	<i>Net change in non-Residential Floor Area (square feet)</i>
275 Alma Street	1997	3,207
390 Lytton Avenue	1997	17,815
411 High Street ⁶	1997	2,771
530 Ramona Street	1999	2852
705 Alma Street	1999	2814
200 Hamilton Avenue	1999	10913
550 Lytton Avenue	2000	93
437 Kipling Street	2001	945
701 Emerson Street	2001	434
723 Emerson Street	2001	400
880 - 884 Emerson Street	2001	312
539 Alma Street	2001	2,500
270 University Avenue	2001	2,642
800 High Street ⁷	2003	-15,700
164 Hamilton Avenue	2005	-2,799
657 Alma Street (101 Forest Avenue) ⁷	2005	3,029
820 Ramona Street	2006	2,936
382 University Avenue	2006	194
102 University Avenue	2006	8
325 Lytton Avenue	2006	17,515

Table 3-2: Non-Residential Development Projects in Primary Study Area, 1986 – 2013		
<i>Project Address</i>	<i>Year</i>	<i>Net change in non-Residential Floor Area (square feet)</i>
310 University Avenue	2008	7,481
317-323 University Avenue	2008	3,290
564 University Avenue	2008	4,475
278 University Avenue	2008	137
801-849 Alma Street ⁷	2009	-9,740
265 Lytton Avenue	2010	21,151
340 University Avenue	2010	-1,360
524 Hamilton Avenue	2011	9,345
630 Ramona Street	2011	437
668 Ramona Street	2011	4,940
661 Bryant Street	2011	0
335-355 Alma Street	2012	49,863
135 Hamilton Avenue	2013	19,960
537 Hamilton Avenue	2013	9,979
611 Cowper Street	2013	19,419
301 High Street	2013	200
Totals 1986-2013		251,690
I. Project approved during the Downtown Moratorium (9/84 to 9/86), but was not included in the Downtown EIR's "pipeline projects." As a result, the project is counted among the CD District's nonresidential development approvals since the enactment of the		

Table 3-2: Non-Residential Development Projects in Primary Study Area, 1986 – 2013		
<i>Project Address</i>	<i>Year</i>	<i>Net change in non-Residential Floor Area (square feet)</i>
Downtown Study Policies in 1986.		
2. Project converted residential space to non-residential space. Net non-residential space counts toward the 350,000 square foot limit.		
3. Project included covered parking that counts as floor area but not counted 350,000 square foot limit.		
4. Project was approved pursuant to PAMC Sections 18.83.120 or 18.83.130, which allow for a reduction in the number required parking spaces for shared parking facilities, joint use parking facilities, or substitution of 8 bike parking spaces for one vehicle space.		
5. In addition, project paid in-lieu fee for loss of 2 on-site parking spaces.		
6. In addition, projects paid in-lieu fee for loss of 4 on-site spaces.		
7. Part of the SOFA 2 CAP.		

Source: City of Palo Alto, 2014.

Moving forward, the City is currently considering approving over 36,000 square feet of non-residential development in Downtown. The pipeline includes the following non-residential projects, shown in Table 3-3.

Table 3-3: Downtown Palo Alto – Pipeline Projects (2014+), As of April 2014			
<i>Project Location</i>	<i>Non-Residential Square Feet Approved</i>	<i>Non-Residential Square Feet Removed</i>	<i>Net Added Non-Residential Square Feet</i>
636 Waverly St.	4,800	1,406	3,394
500 University Ave.	26,806	15,899	10,907
240 Hamilton Ave.	11,537	7,000	4,527
261 Hamilton Ave.	6,135	6,135	0
429 University Ave.	17,280	0	17,280
429 University Ave.		7,208	-7,208
640 Waverly St.	Details to be determined.		
451 University Ave.			

Source: City of Palo Alto, April 2014.

4 Special Development Types and Trends in the Downtown

As a result of the Downtown Study in 1986, new floor area bonuses were created to encourage seismic and historic renovations, as well as the provision of public benefits, in the Downtown. As part of the City's new growth limit on non-residential development in the CD district, 100,000 square feet of the total new floor area were reserved for projects demonstrating special public benefits and 75,000 square feet were reserved for projects that qualify for seismic, historic, or minor expansion exemptions. This chapter discusses the types and trends of development under these special programs since 1986.

4.1 As-of-Right and Bonus/TDR Densities & Intensities

Table 4-1 shows the development regulations for density and intensity for the zoning districts in the Primary Study Area. It includes non-residential, hotel, and mixed uses in the CD and RT districts, as well as uses in the PF district. It distinguishes between the maximum FAR allowed in the zone as-of-right and the maximum FAR allowed with the special programs and

bonuses where applicable. The PC district, which applies to some parcels in the Primary Study Area, is not included in the chart because each planned community with the PC district designation has unique development plans, programs, and designs that are approved by the Planning Commission and City Council.

Table 4-1: Development Standards for Downtown Zoning Districts					
<i>Non-Residential Uses</i>	<i>CD-C</i>	<i>CD-S'</i>	<i>CD-N'</i>	<i>RT-35</i>	<i>RT-50</i>
Maximum FAR	1.0	0.4	0.4	0.4	0.4
Maximum Size	25,000 square feet of gross floor area or 15,000 square feet above the existing floor area, whichever is greater, provided other floor area limits are not exceeded.			None	None
Maximum FAR with TDR or Bonus	3.0	2.0	2.0	1.3	1.5
Maximum Site Coverage	None	None	50%	None	None
<i>Mixed Use</i>	<i>CD-C</i>	<i>CD-S'</i>	<i>CD-N'</i>	<i>RT-35</i> ²	<i>RT-50</i> ²
Residential Density (du/acre)	40	30	30	None	None
Maximum Res. Average Unit Size (SF)	None	None	None	1,250	1,250
Maximum Residential FAR	1.0	0.6	0.5	1.15	1.3
Maximum Non-Residential FAR	1.0	0.4	0.4	0.4	0.4
Maximum Total FAR	2.0	1.0	0.9	1.15	1.3
Maximum FAR with TDR or Bonus	3.0	2.0	2.0	1.3	1.5
Maximum Site Coverage	None	50%	50%	None	None

Table 4-1: Development Standards for Downtown Zoning Districts					
<i>Hotel</i>	<i>CD-C</i>	<i>CD-S'</i>	<i>CD-N'</i>	<i>RT-35</i>	<i>RT-50</i>
Maximum FAR	2.0			1.15	1.3
<i>Public Facilities</i>	<i>PF</i>			<i>RT-35</i> ³	<i>RT-50</i> ³
Maximum FAR	1.0			None	None
Maximum Site Coverage	30%			None	None
Notes:					
1. In the CD-S and CD-N subdistricts, no new gross square footage of a medical, professional, general business, or administrative office use shall be allowed once the gross square footage of such office uses on a site has reached 5,000 square feet. In addition, no conversion of gross square footage from any other use to a medical, professional, general business, or administrative office use shall be allowed once the gross square footage of such office uses on a site has reached 5,000 square feet.					
2. For Planned Community (PC) Districts within the RT Districts, the maximum FAR is 1.5 for RT-35 and 2.0 for RT-50 Districts. See SOFA CAP 2 Section 5.090 for more details. Outside of SOFA CAP 2, the Zoning Ordinance does not include FAR and development regulations for the PC district.					
3. In the RT Districts, public facilities uses require a Conditional Use Permit.					

Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

Figure 4-1 shows combined total base FAR that is allowed in the Primary Study Area, and for much of the Downtown area, the maximum FAR is 1.0 without any bonuses. Figure 4-2 shows the combined total maximum FAR that is allowed under the bonus and TDR programs; for most sites in the Primary Study Area, these programs increase the maximum FAR to 3.0.

Figure 4-3 shows the combined total FAR as built in 2014, and it notes the sites that have received density bonuses through the TDR and/or bonus programs after 1986. The parcels with higher density are generally located on or around University Avenue, the main corridor in the Downtown, and the parcels with lower density are generally located on the edge of the Downtown core. As expected, many of the sites with higher FAR values benefited from the bonus and TDR programs; however, the map also shows that many of the sites with medium FAR values also benefited from the bonus and TDR programs.

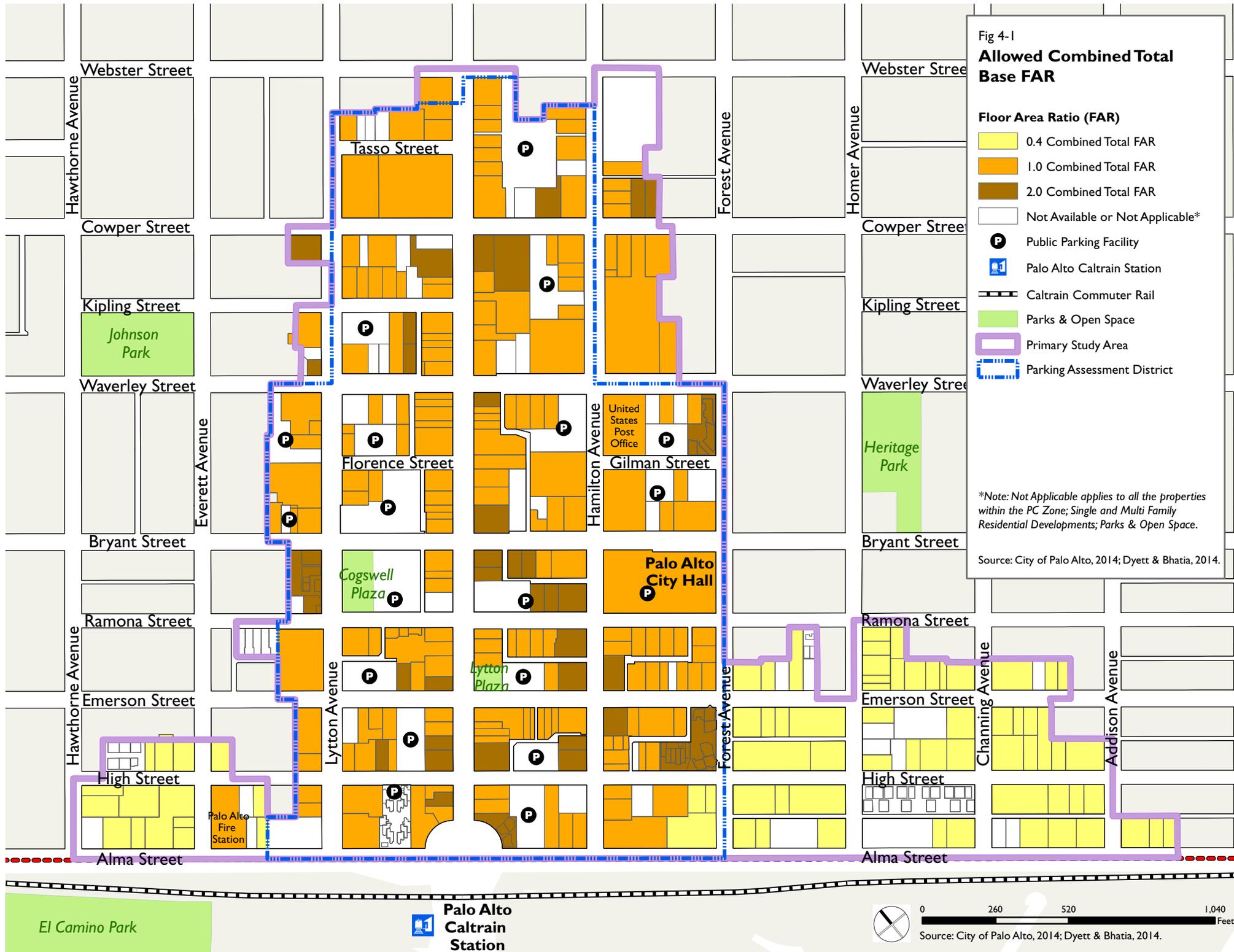
Under the existing regulations, there is capacity for additional square footage to be constructed as-of-right in the Primary Study Area, beyond what has actually been built.

Fig 4-1
Allowed Combined Total Base FAR

- Floor Area Ratio (FAR)**
- 0.4 Combined Total FAR
 - 1.0 Combined Total FAR
 - 2.0 Combined Total FAR
 - Not Available or Not Applicable*
- P Public Parking Facility
 - 1 Palo Alto Caltrain Station
 - Caltrain Commuter Rail
 - Parks & Open Space
 - Primary Study Area
 - Parking Assessment District

*Note: Not Applicable applies to all the properties within the PC Zone; Single and Multi Family Residential Developments; Parks & Open Space.

Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.



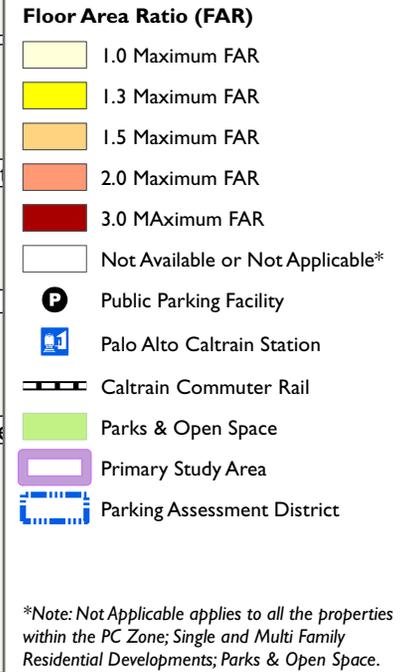
Palo Alto Caltrain Station



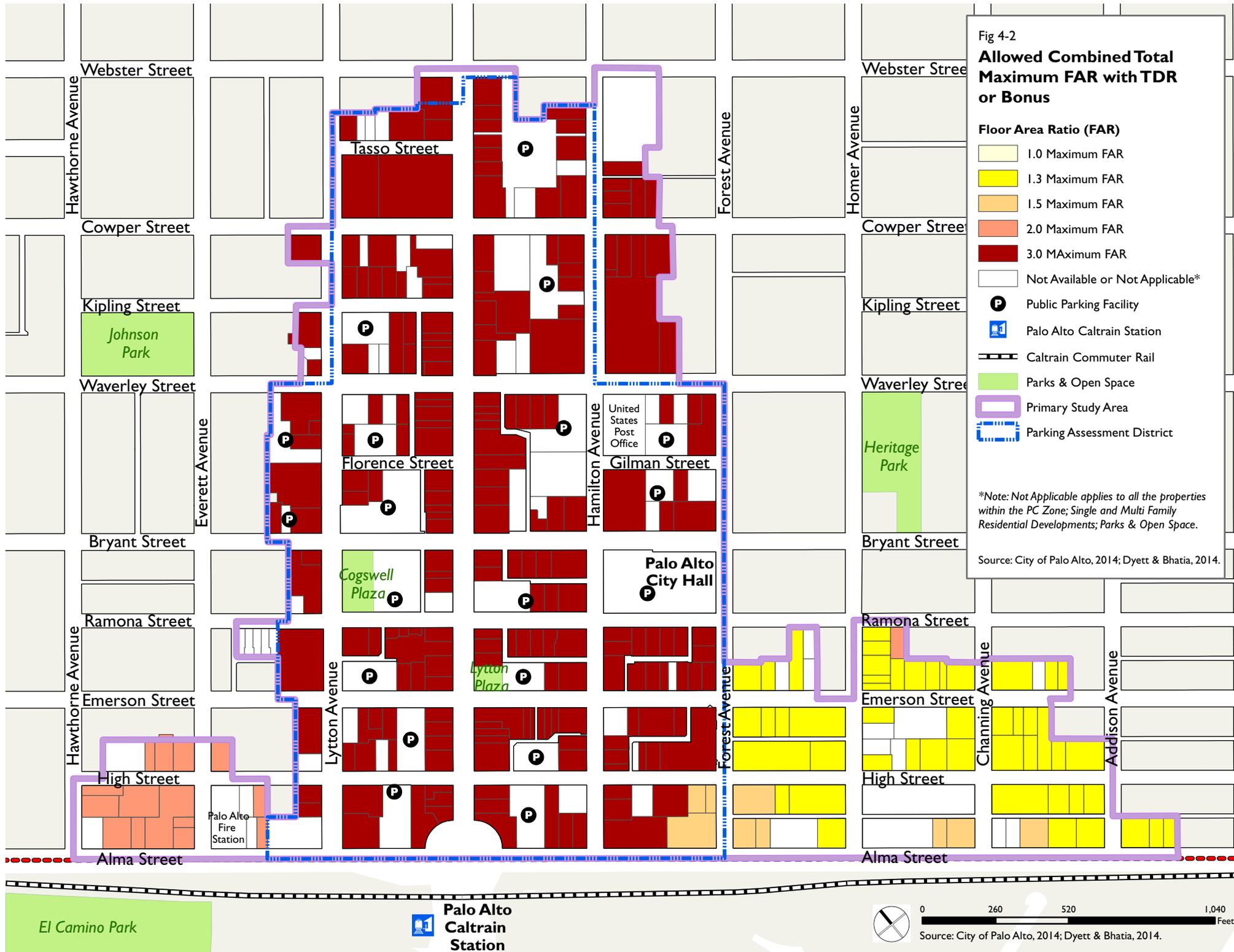
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Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

Fig 4-2
Allowed Combined Total Maximum FAR with TDR or Bonus



Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.



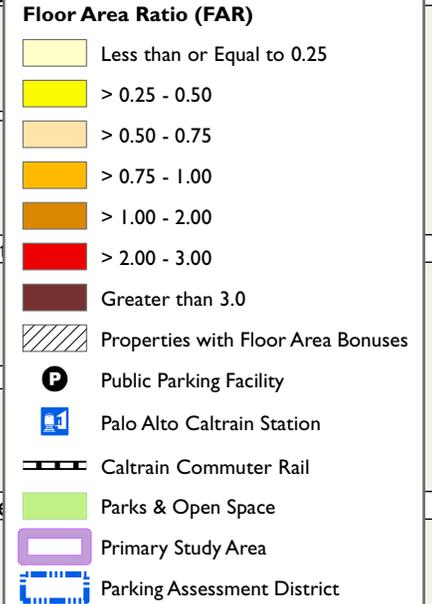
Palo Alto Caltrain Station



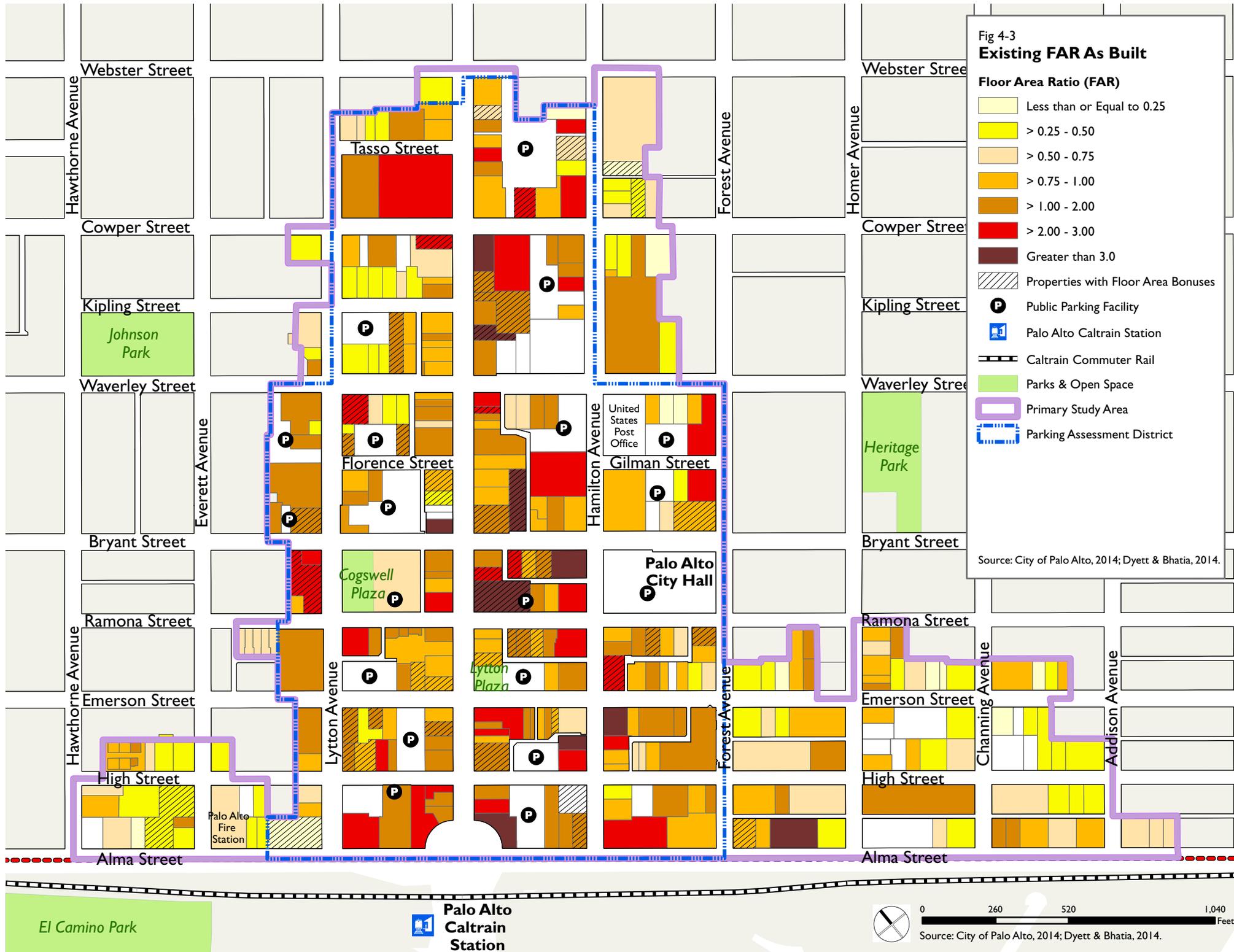
0 260 520 1,040 Feet

Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

Fig 4-3
Existing FAR As Built



Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.



4.2 Historic Property Renovation and Seismic Upgrade Bonuses

There are several types of floor area bonuses allowed under the Zoning Ordinance, as described in Section 18.18.070:

- **Seismic Rehabilitation Bonus.** A building that is in Seismic Category I, II, or III, and is undergoing seismic rehabilitation is allowed to increase its floor area by 2,500 square feet or 25 percent of the existing building, whichever is greater, without having the increase count towards the FAR. However, the increase in floor area is not permitted for buildings that exceed the FAR of 3.0 in the CD-C subdistrict or the FAR of 2.0 in the CD-N or CD-S subdistricts.
- **Historic Rehabilitation Bonus.** A building that is in Historic Category 1 or 2 and is undergoing historic rehabilitation is allowed to increase its floor area by 2,500 square feet or 25 percent of the existing building, whichever is greater, without having the increase count towards the FAR. However, the increase in floor area is not permitted for buildings that exceed the FAR of 3.0 in the CD-C subdistrict or the FAR of 2.0 in the CD-N or CD-S subdistricts.

For buildings in Historic Category 1 or 2 that are undergoing historic rehabilitation and currently exceed the FAR of 3.0 in the CD-C subdistrict or the FAR of 2.0 in the CD-N or CD-S subdistricts, a floor area bonus of 50 percent of the maximum allowable floor area for the site of the building (based on the FAR of 3.0 in the CD-C subdistrict and the FAR of 2.0 in the CD-N or CD-S

subdistricts) is allowed; however, the floor area bonus is not allowed on the site of the Historic Category 1 or 2 building, but instead may be transferred to another property or properties under the Transfer of Development Rights program.

- **Combined Historic and Seismic Rehabilitation Bonus.** A building that in Historic Category 1 or 2 and is undergoing historic rehabilitation, and is also in Seismic Category I, II, or III and is undergoing seismic rehabilitation is allowed to increase its floor area by 5,000 square feet or 50 percent of the existing building, whichever is greater, without having the increase count towards the FAR. However, the increase in floor area is not permitted for buildings that exceed the FAR of 3.0 in the CD-C subdistrict or the FAR of 2.0 in the CD-N or CD-S subdistricts.
- **Minor Bonus for Buildings Not Eligible for Historic or Seismic Bonus.** A building that is neither in Historic Category 1 or 2 nor in Seismic Category I, II, or III is allowed to increase its floor area by 200 square feet without having the increase count towards the FAR. However, the increase in floor area is not permitted for buildings that exceed the FAR of 3.0 in the CD-C subdistrict or the FAR of 2.0 in the CD-N or CD-S subdistricts.

Ultimately, over 112,000 square feet of non-residential development have been provided through the seismic, historic, or minor bonus square footage programs. Figure 4-4 shows the amount of square footage added each year after 1986 with the seismic, historic, or minor bonus square footage programs. Table 4-2 lists of all of the post-1986 projects that benefitted from the seismic, historic, or minor bonus square footage programs. Figure 4-5 maps these properties.

Figure 4-4: Non-Residential Development - Seismic, Historic, or Minor Bonus Square Footage, 1986-2013

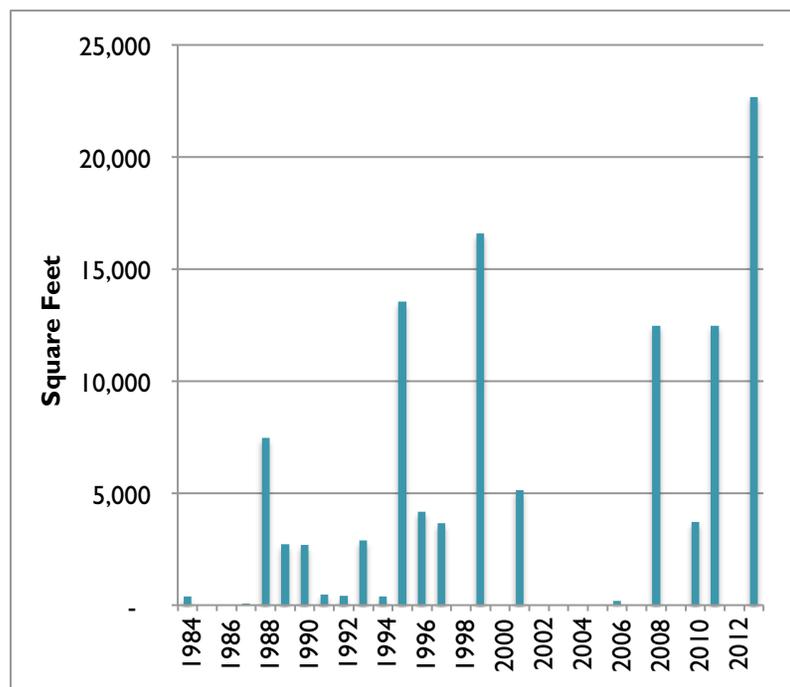


Table 4-2: Downtown Palo Alto Non-Residential Development Projects Receiving Seismic, Historic, or Minor Bonus Square Footage, 1986-2013			
<i>Project Location</i>	<i>Year</i>	<i>Seismic, Historic, or Minor Bonus Square Footage</i>	<i>Total Net Change in Non-Residential Square Footage</i>
520 Ramona Street	1984	400	400
431 Florence Street	1988	2,500	2,500
156 University Avenue	1988	4,958	4,958
401 Florence Street	1989	2,407	2,407
250 University Avenue	1989	300	20,300
529 Bryant Street	1990	2,491	2,491
305 Lytton Avenue	1990	200	200
531 Cowper Street	1991	475	9,475
540 Bryant Street	1992	404	404
530/534 Bryant Street	1993	432	432
201 University Avenue	1993	2,450	2,450
518 Bryant Street	1994	180	180
400 Emerson Street	1994	200	4,715
443 Emerson Street	1995	26	26
420 Emerson Street	1995	125	125
456 University Avenue	1995	7,486	7,486
536 Ramona Street	1995	134	134

Table 4-2: Downtown Palo Alto Non-Residential Development Projects Receiving Seismic, Historic, or Minor Bonus Square Footage, 1986-2013			
<i>Project Location</i>	<i>Year</i>	<i>Seismic, Historic, or Minor Bonus Square Footage</i>	<i>Total Net Change in Non-Residential Square Footage</i>
552 Emerson Street	1995	177	177
483 University Avenue	1995	7,289	7,289
424 University Avenue	1995	2,803	2,803
171 University Avenue	1996	1,853	1,853
401 High Street	1996	350	350
430 Kipling Street	1996	200	1,412
460-476 University Avenue	1997	1,775	1,775
274 Alma Street	1997	200	3,207
390 Lytton Avenue	1997	689	17,815
411 High Street	1997	2,771	2,771
530 Ramona Street	1999	2,852	2,852
705 Alma Street	1999	2,814	2,814
200 Hamilton Avenue	1999	10,913	10,913
539 Alma Street	2001	2,500	2,500
270 University Avenue	2001	2,642	2,642
382 University Avenue	2006	194	194

Table 4-2: Downtown Palo Alto Non-Residential Development Projects Receiving Seismic, Historic, or Minor Bonus Square Footage, 1986-2013			
<i>Project Location</i>	<i>Year</i>	<i>Seismic, Historic, or Minor Bonus Square Footage</i>	<i>Total Net Change in Non-Residential Square Footage</i>
310 University Avenue	2008	7,481	7,481
317-328 University Avenue	2008	2,500	3,290
564 University Avenue	2008	2,500	4,475
265 Lytton Avenue	2010	3,712	21,151
524 Hamilton Avenue	2011	5,200	9,345
630 Ramona Street	2011	437	437
668 Ramona Street	2011	4,940	4,940
661 Bryant Street	2011	1,906	0
135 Hamilton Avenue	2013	9,970	19,960
537 Hamilton Avenue	2013	5,775	9,979
611 Cowper Street	2013	6,938	19,419

Source: City of Palo Alto, 2013.

4.3 Projects Offering Significant Public Benefits

The City created a Planned Community (PC) zoning designation in 1951. It was revised in 1978 to require developers to provide public benefits for PC developments, and the zoning regulations for PC designated sites are contained in Section 18.38 of the Zoning Code. If a developer wants to build a project at a greater height, density, or FAR, or with a different mix of uses than is allowed under the current zoning for a site, they may choose to pursue a PC zoning change through a formal application to the City. The developer proposes public benefits that the project will include in the zoning change application, and the final package of public benefits is negotiated with the developer, City staff, and ultimately City Council. The Planning Commission, Architectural Review Board, and City Council must approve the zoning change application. While developers are encouraged to meet with the public to solicit resident input regarding the public benefits, there is no formal process for soliciting community feedback for PC zoning change applications. Ultimately, the type or amount of bonus is not pre-determined; it is decided as part of zoning change process by the involved parties. Traffic studies, public art, public plazas, community rooms, tree plantings, grocery stores, and affordable housing are all types of public benefits that have been provided in Palo Alto through the PC zoning designation.

Over 100 projects have been built with PC zoning since 1951 across the City. Of the non-residential square footage that has been constructed in the Downtown since 1986, at least 44,000 square feet have been constructed through the public benefit

bonus program. Table 4-3 shows the six projects that have benefitted from the program since 1986.

<i>Project Location</i>	<i>Year</i>	<i>Public Benefit Bonus Non-Residential Square Footage</i>
250 University Avenue	1989	11,000
529 Bryant Street	1990	2,491
531 Cowper Street	1991	9,000
483 University Avenue	1995	3,467
390 Lytton Avenue	1997	8,420
335-350 Alma Street	2012	9,700

Source: City of Palo Alto, 2013.

Figure 4-5 shows the properties that received FAR bonuses under the Seismic, Historic, and Minor Bonus program and the Public Benefits program. Many of the parcels that received FAR bonuses are located on or within a block of University Avenue, and most of the parcels received benefits under the Seismic, Historic, and Minor Bonus program.

Fig 4-5

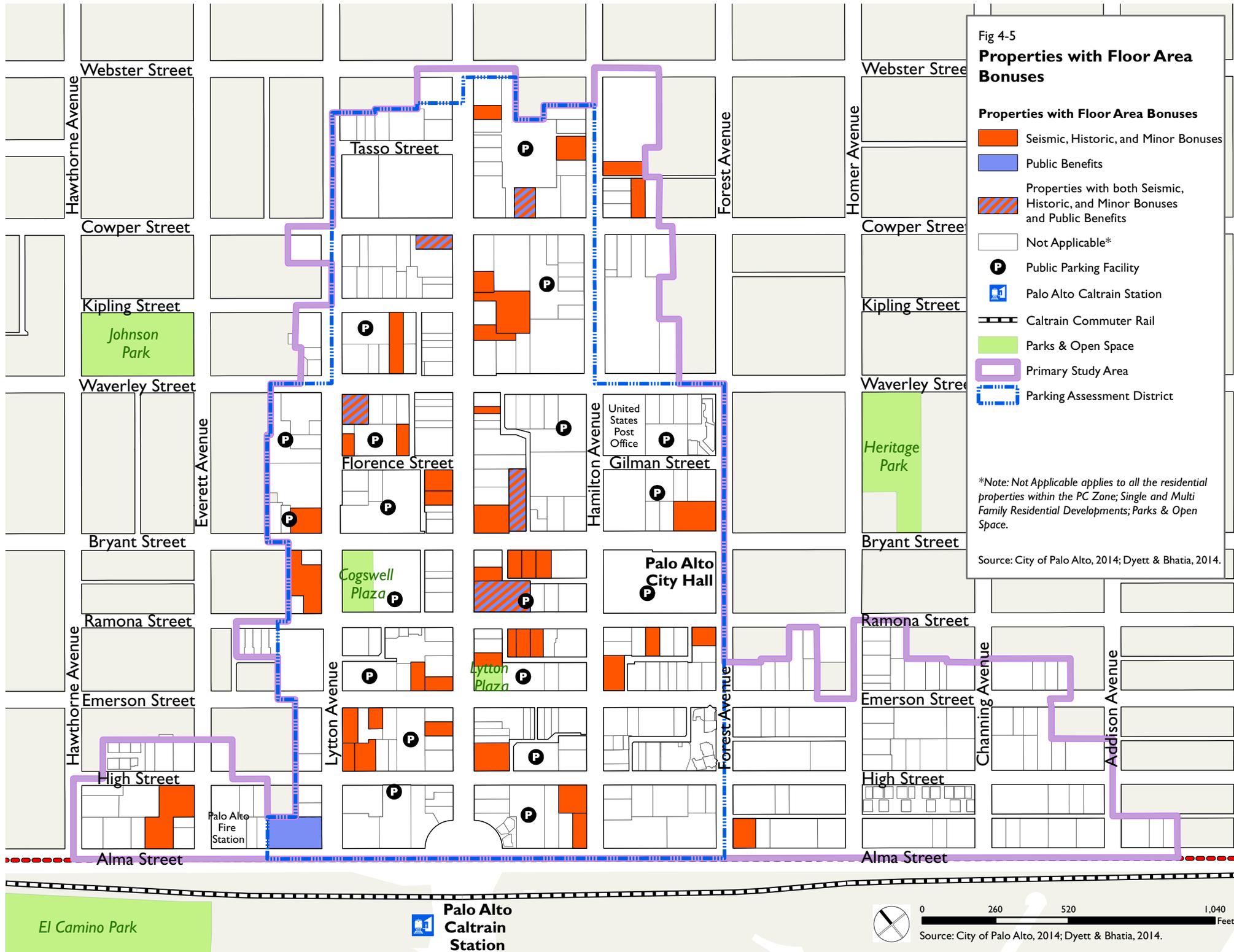
Properties with Floor Area Bonuses

Properties with Floor Area Bonuses

-  Seismic, Historic, and Minor Bonuses
-  Public Benefits
-  Properties with both Seismic, Historic, and Minor Bonuses and Public Benefits
-  Not Applicable*
-  Public Parking Facility
-  Palo Alto Caltrain Station
-  Caltrain Commuter Rail
-  Parks & Open Space
-  Primary Study Area
-  Parking Assessment District

*Note: Not Applicable applies to all the residential properties within the PC Zone; Single and Multi Family Residential Developments; Parks & Open Space.

Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.



 Palo Alto Caltrain Station



0 260 520 1,040 Feet

Source: City of Palo Alto, 2014; Dyett & Bhatia, 2014.

4.4 Transfer of Development Rights

To provide incentives for historic and seismic rehabilitation of private property in the Downtown, the City of Palo Alto created a Transfer of Development Rights (TDR) program in 1986. The regulations for the program are in Section 18.18.080 of the Municipal Code. The program provides a floor area bonus for the qualified rehabilitation of certain eligible historic buildings (“sender” sites), which may then be transferred to eligible sites in the Downtown commercial district (“receiver” sites). Historically, a significant part of the value of the TDR was the parking exemption, which exempted the first 5,000 square feet of TDR transferred from the applicable parking requirements (generally, 1 space per 250 square feet of floor area in the Downtown provided on-site, or in-lieu fees paid to the City). This exemption was eliminated from the TDR program in late 2013.

The use of TDR is one of the only ways in which most buildings in the Downtown can expand beyond the base allowable floor area, which is described in Section 3.4 of this report. The TDRs are sold by the owners of the sender site to another party; the transfer must be evidenced by a recorded document that identifies the transferor, the transferee, and the sender site. The purchase of TDRs includes no guarantee of a receiver site. The TDRs do not have to be assigned to or used on a receiver site at the time of the transfer, so they may be held for later use or resale. The TDR program functions in the Downtown market by ensuring that there is potentially more demand for development rights than supply; in other words, there are more receiver sites in the Downtown than sender sites. In 2007, the City Council voted to allow eligible City-owned historic properties in any zone district to be sender sites under the TDR ordinance, to transfer

historic or seismic rehabilitation floor area bonuses from these sites to eligible receiver sites in Downtown.

ELIGIBLE TDRS

According to City records, the Downtown has approximately 78 buildings that are eligible for a seismic or historic bonus under the TDR program. These buildings fall into three general categories: properties that have applied for and received TDRs under the City’s ordinance; properties that have been seismically or historically upgraded, but have not applied for or received TDRs; and properties that may be eligible for TDRs, but have chosen not to upgrade. Table 4-4 shows the potential TDR bonuses and parking exemptions of the 78 eligible historic and seismic buildings; it includes the three categories of properties and the total floor area, number of exempt parking spaces (if any), and the number of properties that are entitled to the properties under each category.

	<i>Floor Area (Square Feet)</i>	<i>Exempt Parking Spaces¹</i>	<i>Number of Properties</i>
<i>Properties with Documented Bonuses and TDRs</i>			
Downtown	123,783	471	32
SOFA ²	7,813	31	3
City-Owned ³	7,500	30	3
Subtotal	139,095	532	38
<i>Properties Upgraded; No Claim of TDRs</i>			
Downtown	29,307	0	11
SOFA	7,500	0	3

Table 4-4: TDR Bonuses for Originator Sites by Entitlement, October 2013			
	<i>Floor Area (Square Feet)</i>	<i>Exempt Parking Spaces¹</i>	<i>Number of Properties</i>
City-Owned	0	0	0
Subtotal	36,807	0	14
<i>Properties Eligible but Not Upgraded</i>			
Downtown	65,976	0	25
SOFA	2,500	0	1
City-Owned	0	0	0
Subtotal	68,476	0	26
Grand Total	244,378	532	78
Notes:			
<ol style="list-style-type: none"> Historically, the TDR program included a parking exemption, which exempted the first 5,000 square feet of TDR transferred from the applicable parking requirements (generally, 1 space per 250 square feet of floor area in the Downtown provided on-site, or in-lieu fees paid to the City). The TDR parking exemption was eliminated in late 2013 and will not apply to those properties that have updated but did not claim TDRs or those properties that are eligible but have not upgraded. TDRs generated in the SOFA may be used on site or transferred into the Downtown area. Assumption is that SOFA current remaining TDRs will be transferred into the Downtown area. City Owned properties include three properties outside of the Downtown area that could only be used in the Downtown area. Properties included: Children's' Library, College Terrace Library, and Sea Scout Building. 			

Source: City Council Staff Report, Parking Exemptions Code Ordinances, 10/21/13, Table 3 (with Exempt Parking Spaces updated to reflect changes in the Zoning Ordinance in late 2013).

As shown in Table 4-4, the total indicates that if all of the possible TDR bonuses were used, 244,378 additional square feet could be added to the Downtown. The next section describes how much of this potential square footage has been used.

TDR BONUSES USED IN THE DOWNTOWN

While not all eligible properties have taken advantage of the TDR program, a substantial number of properties have taken part in the program. The TDR program has been successful in providing an incentive for the private market to redevelop and upgrade historic and seismically unsafe buildings.

Table 4-5 shows the documented TDR bonuses used in the Downtown by origin, which refers to the sender site's location (Downtown, SOFA, or City-owned properties). It summarizes the total TDR bonuses that have been created as of October 2013, and it also shows how the TDR bonuses have been used in the Downtown by including the following subcategories: TDR bonuses transferred to a receiver site; TDR bonuses used on site; and TDR bonuses that have been created but not yet used. As shown in the table, a total of 139,095 square feet of floor area have been created through the TDR program. Of that total, about 41 percent (57,426 square feet) of the TDR bonuses have been transferred to a receiver site, while about 42 percent (58,022 square feet) of the TDR bonuses have been used on-site. The remaining TDR bonuses that have been created – about 17 percent (23,647 square feet) – have not been used as of late 2013. A total of 532 exempt parking spaces were created through the TDR program, which involved a total of 38 properties.

Table 4-5: Documented TDR Bonuses Used in the Downtown Area by Origin, October 2013			
	<i>Floor Area (Square Feet)</i>	<i>Exempt Parking Spaces¹</i>	<i>Number of Properties</i>
<i>Total Documented TDR Bonuses</i>			
Downtown	123,783	471	32
SOFA	7,813	31	3
City-Owned	7,500	30	3
Total	139,095	532	38
<i>TDR Bonuses Transferred to a Receiver Site</i>			
Downtown	52,926	202	13
SOFA	2,000	8	1
City-Owned	2,500	10	1
Subtotal	57,426	210 ²	15
<i>TDR Bonuses Used On-Site</i>			
Downtown	47,586	219	20
SOFA	2,000	8	1
City-Owned	0	0	0
Subtotal	58,022	229 ²	21
<i>TDR Bonuses Created but Not Used</i>			
Downtown	15,334	20	8
SOFA	3,313	13	2
City-Owned	5,000	20	2
Subtotal	23,647	93	12
Notes:			
1. Historically, the TDR program included a parking exemption, which exempted the first 5,000 square feet of TDR transferred from the applicable parking requirements (generally, 1 space per 250 square feet of floor area in the Downtown provided on-site, or in-lieu fees paid to the City). This table reflects those exempt parking places created through the TDR bonus			

Table 4-5: Documented TDR Bonuses Used in the Downtown Area by Origin, October 2013			
	<i>Floor Area (Square Feet)</i>	<i>Exempt Parking Spaces¹</i>	<i>Number of Properties</i>
program, because they were created before the parking exemption was eliminated in late 2013. With the elimination of the parking exemption, future TDR bonuses will not include exempt parking space.			
2. Some FAR transferred was not eligible for the parking exemption.			

Source: City Council Staff Report, Parking Exemptions Code Ordinances, 10/21/13, Table 4 (with Exempt Parking Spaces updated to reflect changes in the Zoning Ordinance in late 2013).

REMAINING TDR BONUSES

The data presented in Table 4-4 shows that a total of 244,378 square feet of floor area were eligible to be created through the TDR program. The data presented in Table 4-5 shows that a total of 139,095 square feet of floor area have been created through the TDR program, of which 115,448 square feet have actually been used. The remaining 23,647 square feet have been created but not used. A total of 105,283 square feet remain eligible to be created in the TDR program and may be created in the future. Adding 23,647 square feet (created but not used) to 105,283 square feet (eligible to be created) gives a **grand total of 128,930 square feet that can be used for Downtown projects in the future.** Table 4-6 summarizes this conclusion.

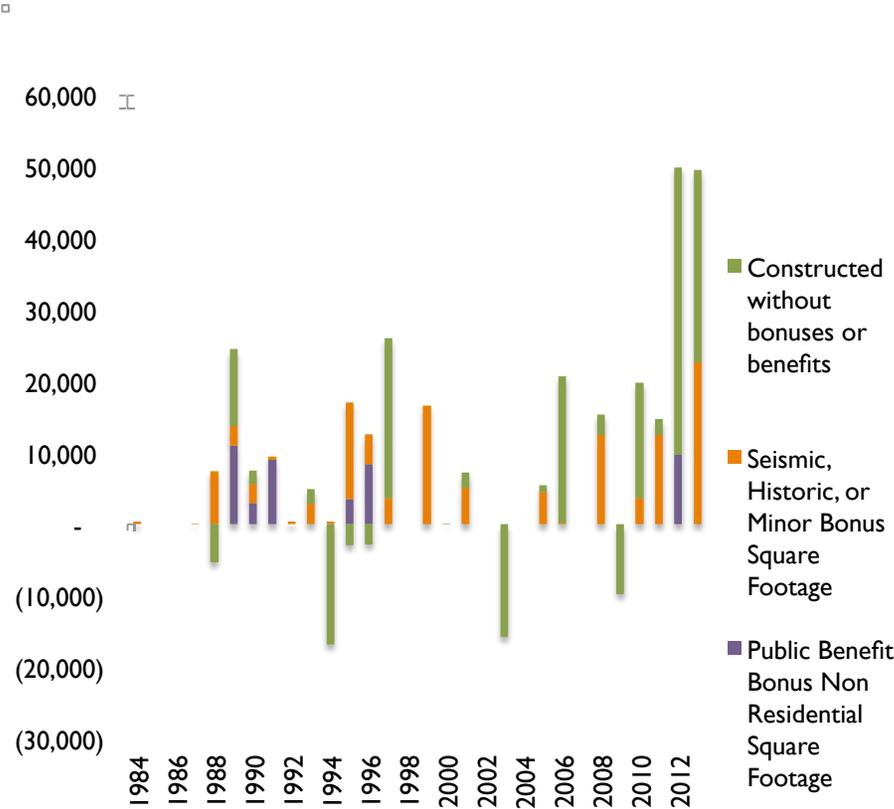
Table 4-6: TDR Bonuses Remaining for Use in Downtown Palo Alto, October 2013	
	<i>Square Feet</i>
Total TDR Bonuses Possible Under Program	244,378
TDR Bonuses Used	115,448
Used On-Site	58,022
Used On Another (Receiver) Site	57,426
TDR Bonuses Remaining for Use	128,930
Created but Not Used	23,647
Eligible to be Created	105,283

A total of 38 properties have used the program, out of the total eligible 78 properties. As discussed earlier, the parking exemption was historically included in the TDR program, but it was eliminated in late 2013. Before the elimination, a total of 532 parking spaces were exempted under the program; however, moving forward, no more parking spaces will be exempted as part of the TDR program.

4.5 Total Development Under Bonuses

The City’s development regulations provide substantial bonuses for non-residential projects in the Downtown. Well over half of the non-residential square footage in the Downtown – 63 percent – that has been constructed since 1986 has benefited from these programs. Figure 4-6 shows the amount of square footage each year that used seismic, historic, or minor floor area bonuses; public benefits bonuses; and no bonuses.

Figure 4-6: Non-residential Development (square feet) in Downtown: With and Without Bonuses, 1986-2013



5 Existing Transportation and Commute Trends

5.1 Existing Network

Downtown Palo Alto is a local and regional activity center consisting of office, retail, commercial, and multi-unit residential uses in northern Santa Clara County. Bordered by neighborhoods of single-family homes to the north, east, and west, and by Stanford University to the south, the city’s primary mixed-use district runs mostly along and between University, Hamilton, and Lytton Avenues, from Alma Street to Middlefield Road.

TRANSIT NETWORK

The Downtown has strong transit connections to Stanford and cities along the Peninsula. As Figure 5-1 shows, transit service centers at the southern end of downtown around the Palo Alto Transit Center.

The Transit Center is Caltrain’s second busiest station (see Table 5-1). It has seen a 50 percent growth in weekday boardings in the

last five years, outpacing system-wide ridership growth.¹ The station also served the most northbound bike boardings and southbound bike alightings on the line.² Weekend ridership is strong as well, with more southbound passengers getting off Caltrain in Palo Alto than at any other station.³

Bus connections concentrate in and around the Transit Center as well. Because of its location on the border between Santa Clara and San Mateo counties and near the western end of a major transbay crossing via the Dumbarton Bridge, Downtown Palo Alto is served by the Valley Transportation Agency, SamTrans, and the Dumbarton Express. The Stanford Marguerite, which is open to the general public for free, also provides service to the Stanford campus and Stanford Research Park. The City’s own shuttles make connections to neighborhoods southeast of downtown. Routes generally run along Lytton and Hamilton Avenues, using University Avenue to cross under Alma Street and enter the Transit Center. Table 5-2 lists the bus lines that serve the Downtown.

BIKE NETWORK

Downtown Palo Alto is currently served by one major north-south and one major east-west bike facility (see Figure 5-2). A Class II bike lane on Lytton Avenue provides a north-south route between Alma Street and Middlefield Avenue, with nearby

¹ Peninsula Joint Powers Board. “February 2013 Caltrain Annual Passenger Counts: Key Findings.” Page 21.

² Ibid page 30.

³ Ibid, page 31-32.

connections on both ends. A bike boulevard is provided on Bryant Street, a local street shared with automobiles that only provides through access to bicyclists from Meadow Drive to Palo Alto Avenue.

The City’s Bicycle and Pedestrian Transportation Plan, adopted in July 2012, recommends new Class I bike paths along Homer and Channing Avenues, numerous additional bike boulevards throughout the city, and a set of Class III shared roadways along University, Hamilton, High, Emerson, and Ramona streets in and around the Downtown.

The City is actively implementing the Bicycle and Pedestrian Transportation Plan and has committed \$1.2 million each year through 2018 to fund the implementation of specific projects. The City is pursuing additional regional grant funding to facilitate implementation of projects as designs are completed.

5.2 Current Journey-to-Work Characteristics

Table 5-3 shows U.S. Census Bureau estimates of commute mode split for workers and residents in the study area and citywide, based on data gathered from 2006-10. Study-area residents commute by single-occupancy vehicles (SOV) at a much lower rate than the city as a whole, at 53 percent versus 67 percent citywide (see Figure 5-3 for the boundaries of the study-area census tracts).⁴ While study-area residents commute by transit at

⁴ United States Census Bureau. American Community Survey 2006-2010 Five-Year Estimates. Table B08006.

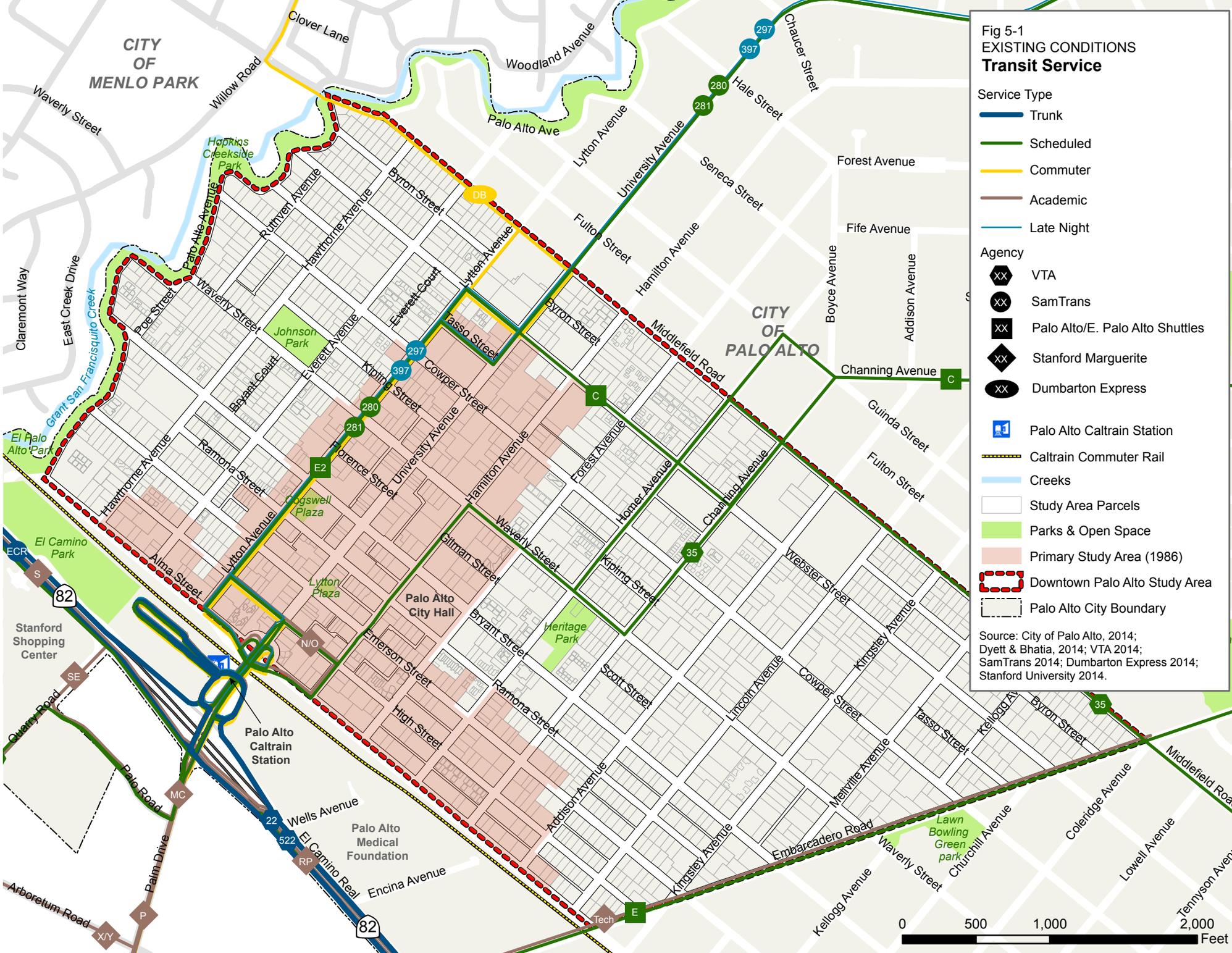
slightly higher rates than their counterparts citywide, most of the difference in SOV travel is due to the substantially higher walking and biking rates for downtown residents (23 percent versus 12 percent). There are differences in commute patterns between the two Census tracts in the study area. People living in the tract southeast of the Downtown, between Forest Street and Embarcadero, drive alone to work at a higher rate (60 percent) and use non-motorized modes at a lower rate (20 percent) than residents right around University Avenue (48 percent and 25 percent, respectively).

The commute behaviors of study-area workers are significantly different from those of residents. Approximately 72 percent of study-area workers commute by SOV and 7 percent bike or walk to work.⁵ The neighborhoods between Forest and Embarcadero have about one-quarter the workers of the Downtown, and the area’s workers’ drive-alone and public transit rates are about the same as those right around University Avenue.

⁵ U.S. Census Bureau, American Community Survey 2006-2010 Five-Year Estimates. Special Tabulation: Census Transportation Planning Package. Table A202105.

Different Survey Results: Census Bureau vs. the Study's Intercept Survey

The commuter behaviors reported in the American Community Survey are different from those found in the intercept survey completed for this study. This could be in part because the most current Census Bureau data showing the travel behaviors of the study area's employees was gathered between 2006 and 2010, while the intercept survey was completed in 2014. In addition, the sizes and demographic breakdowns of each sample could explain some of the differences. Figure 5-3 maps the boundaries of the census tracts versus the Primary Study Area. Also, the American Community Survey only reports on the commute behavior of workers who live in the Study Area and may or may not work there; the street intercept survey captured workers who were physically in the Study Area but may not actually live there.



**Fig 5-1
EXISTING CONDITIONS
Transit Service**

Service Type

- Trunk
- Scheduled
- Commuter
- Academic
- Late Night

Agency

- XX VTA
- XX SamTrans
- XX Palo Alto/E. Palo Alto Shuttles
- XX Stanford Marguerite
- XX Dumbarton Express
- 1 Palo Alto Caltrain Station
- Caltrain Commuter Rail
- Creeks
- Study Area Parcels
- Parks & Open Space
- Primary Study Area (1986)
- Downtown Palo Alto Study Area
- Palo Alto City Boundary

Source: City of Palo Alto, 2014;
Dyett & Bhatia, 2014; VTA 2014;
SamTrans 2014; Dumbarton Express 2014;
Stanford University 2014.



Table 5-1: Caltrain Ridership				
Station	Northbound		Southbound	
	Boardings (Bike Ridership)	Alightings (Bike Ridership)	Boardings (Bike Ridership)	Alightings (Bike Ridership)
San Francisco	0	10,734 (1,083)	10,786 (1,166)	0
Palo Alto	3,551 (426)	2,011 (221)	1,918 (219)	3,745 (455)
San Jose Diridon	3,378 (299)	31 (2)	110 (6)	3,527 (299)
Mountain View	3,492 (398)	350 (56)	384 (66)	3,411 (383)

Source: Caltrain Annual Passenger Counts, February 2013.

Table 5-2: Downtown Palo Alto Bus Connections								
Agency	Line	Headways		Span		Connections to Downtown	Ridership	
		Weekday	Weekend	Weekday	Weekend		Weekday	Monthly
Valley Transportation Authority ⁶	22	10 to 15 minutes, longer early morning/late night	10 to 15 minutes, longer early morning/late night	24 hours	24 hours	Palo Alto Transit Center	925	N/A
	522	10 to 15 minutes, longer early morning/late night	10 to 15 minutes, longer early morning/late night	5 a.m. to 11 p.m.	9 a.m. to 7:30 p.m.	Palo Alto Transit Center	500	N/A
	35	~30 minutes	1 hour	6:30 a.m. to 10 p.m.	8:30 a.m. to 8 p.m.	Hamilton, Channing, Homer, University and	North: 150 South: 40	N/A

⁶ Ridership source: VTA. November 2013.

Table 5-2: Downtown Palo Alto Bus Connections								
Agency	Line	Headways		Span		Connections to Downtown	Ridership	
		Weekday	Weekend	Weekday	Weekend		Weekday	Monthly
						the Palo Alto Transit Center		
SamTrans ⁷	ECR	15 minutes, 30 minutes early morning and evening	18-20 minutes, 30 minutes early morning and evening	4 a.m. to 2 a.m.	5 a.m. to 2 a.m.	Palo Alto Transit Center	N/A	17,150
	280/281	30 minutes (combined)	~20-30 minutes (combined)	6 a.m. to 10:30 p.m.	8 a.m. to 7 p.m.	University, Lytton, and the Palo Alto Transit Center	N/A	16,400
	297	4 nightly runs in each direction	1 hour	10:45 p.m. to 5:30 a.m. (last southbound run ends at 2:30 a.m.)	7 a.m. to 8:30 p.m.	University, Lytton, and the Palo Alto Transit Center	N/A	1,960
	397	1 hour	1 hour	12:45 a.m. to 6:30 a.m.	12:45 a.m. to 6:30 a.m.	University, Lytton, and the Palo Alto Transit Center	N/A	1,470
Dumbarton Express ⁸	DB	20-30 minutes	N/A	5:30 a.m. to 8 p.m.	N/A	University, Lytton, and the Palo Alto Transit	150	N/A

⁷ Ridership source: SamTrans. October 2013.

⁸ Ridership source: AC Transit. Average, July and August 2011.

Table 5-2: Downtown Palo Alto Bus Connections								
Agency	Line	Headways		Span		Connections to Downtown	Ridership	
		Weekday	Weekend	Weekday	Weekend		Weekday	Monthly
						Center		
Stanford Marguerite	N/O	40 minutes	40 minutes	8:30 p.m. to 2 a.m. (academic year only)	8:30 p.m. to 2 a.m. (academic year only)	Stops at Lytton and Alma, Emerson and University, and Palo Alto Transit Center	N/A	N/A
	S, SE, MC, P, X, Y, RP, and TECH	Varies, academic year only except SE	SE Only, 45 minutes	Varies	9:45 a.m. to 3:45 p.m.	Palo Alto Transit Center	N/A	N/A
Palo Alto Shuttle ⁹	Crosstown	1 hour	N/A	7:30 a.m. to 5:30 p.m.	N/A	Lytton, Webster, and the Palo Alto Transit Center	340	N/A
	Embarcadero	10 to 20 minutes	N/A	7 a.m. to 10 a.m. and 3 p.m. to 7 p.m.	N/A	Stops at Alma and Lytton and Palo Alto Transit Center	225	N/A
East Palo Alto Community Shuttle	1 and 2	20-30 minutes during peak hours, 1 hour during off-peak	1 hour	5:15 a.m. to 8:15 p.m. and 11 p.m. to 2 a.m.	6:30 a.m. to 10 a.m. and 3:45 p.m. to 11:15 p.m.	Lytton and the Palo Alto Transit Center	N/A	N/A

⁹ Ridership Source: City of Palo Alto.

Fig 5-2
EXISTING CONDITIONS
Bike Network

-  Bike Boulevard
-  Class 1 (Bike Path)
-  Class 2 (Bike Lane)
-  Class 3 (Shared Bike Route)
-  Palo Alto Caltrain Station
-  Caltrain Commuter Rail
-  Creeks
-  Study Area Parcels
-  Parks & Open Space
-  Primary Study Area (1986)
-  Complete Study Area
-  Palo Alto City Boundary

Source: City of Palo Alto, 2014;
Dyett & Bhatia, 2014.

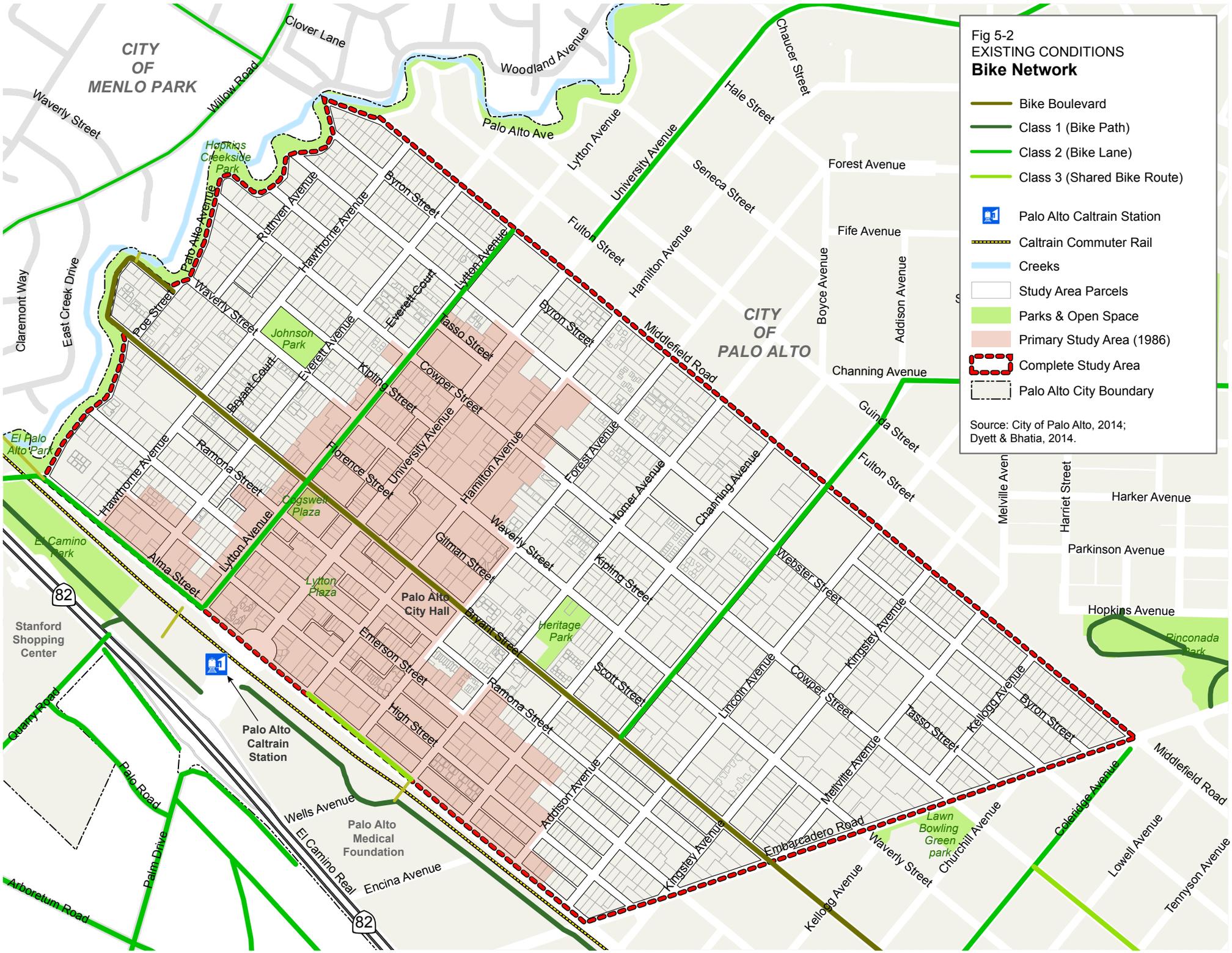


Table 5-3: Commute Mode Split					
<i>Mode</i>	<i>Citywide Residents</i>	<i>Study Area Residents</i>	<i>Citywide Workers</i>	<i>Study Area Workers</i>	<i>Study-Area Workers (Survey)¹</i>
Drive Alone	67%	53%	75%	72%	40%
Carpool	6%	7%	10%	8%	5%
Transit	5%	6%	5%	8%	48%
Walk	5%	13%	2%	4%	3%
Bike	7%	10%	3%	3%	5%
Other	10%	11%	5%	5%	N/A
<p>1. The possible reasons for the differences between the mode split reported by the Census and that reported in the survey are described on page 5-2. In addition, the survey completed as part of this study was a street intercept survey, which captured workers physically in the Study Area who may not actually live in the Study Area as well. The commute behavior of workers coming from outside Palo Alto would not be captured by the Census.</p>					

Source: First four columns – American Community Survey 2006-2010; study-area worker survey completed as part of the Downtown Development Cap Evaluation.



CITY OF MENLO PARK

CITY OF PALO ALTO

Tract 5113.02

Tract 5113.01

Palo Alto Caltrain Station

Palo Alto Medical Foundation

Stanford Shopping Center

Arboretum Road

Palo Road

Wells Avenue

Encina Avenue

Lawn Bowling Green park

Rinconada Park

El Palo Alto Park

El Camino Park

Cogswell Plaza

Lytton Plaza

Palo Alto City Hall

Heritage Park

Greenwood Avenue

Harker Avenue

Parkinson Avenue

Hopkins Avenue

Coleridge Avenue

Lowell Avenue

Tennyson Avenue

Channing Avenue

Guinda Street

Fulton Street

Webster Street

Kingsley Avenue

Tasso Street

Kellogg Avenue

Byron Street

Embarcadero Road

Middlefield Road

Middlefield Road

Channing Avenue

Homer Avenue

Kipling Street

Scott Street

Lincoln Avenue

Cowper Street

Melville Avenue

Embarcadero Road

Kellogg Avenue

Waverly Street

Churchill Avenue

Forest Avenue

Hamilton Avenue

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Emerson Street

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Ramona Street

Alma Street

Quarry Road

Forest Avenue

Hamilton Avenue

Forest Avenue

Hamilton Avenue

6 Parking Conditions

The greater Downtown area contains more than 8,500 parking spaces, more than half of them in the core of the Downtown (Primary Study Area). This chapter details the distribution of these parking spaces, regulations that govern their use, and occupancy patterns seen in six separate observations in the spring and fall of 2013.

6.1 Parking Inventory, Regulations, and Permits

Table 6-1 shows the distribution of public parking spaces by type throughout the Primary Study Area.

Area	On-Street ¹¹	Off-Street	Total
Primary Study Area	1,790	3,104	4,894
University North	1,289	0	1,289

¹⁰ This inventory does not include private off-street spaces.

¹¹ A block face was considered part of the Primary Study Area if any portion of it or the block face immediately across the street fell within the boundary defined for the 1986 development-cap zone.

Area	On-Street ¹¹	Off-Street	Total
University South	1,910	63	1,973
Professorville	673	0	673
Total	5,652	3,167	8,819

Note: This inventory includes 63 spaces in the 800 High Street garage that are not included in the occupancy data presented later in the chapter. The 36 spaces in lot X (located at the Sheridan Hotel, across Alma Street from the study area) is not included in the inventory or occupancy numbers.

Source: City of Palo Alto, Spring 2013 Inventory.

ON-STREET

The study area contains 5,652 total on-street parking spaces, including 1,790 within the Primary Study Area.¹² Between 8 a.m. and 5 p.m. on non-holiday weekdays, drivers may park for free for a maximum of two hours per day in each of four color-coded zones within the Primary Study Area, as shown in Figure 6-1. To continue parking on the street in downtown after reaching the two-hour limit, a driver would need to move to a different color zone and would not be able to re-park in the same color zone that day. Curbside parking throughout the study area is free.

¹² City of Palo Alto, parking inventory (Spring 2013), adjusted one block to account for the end of construction.

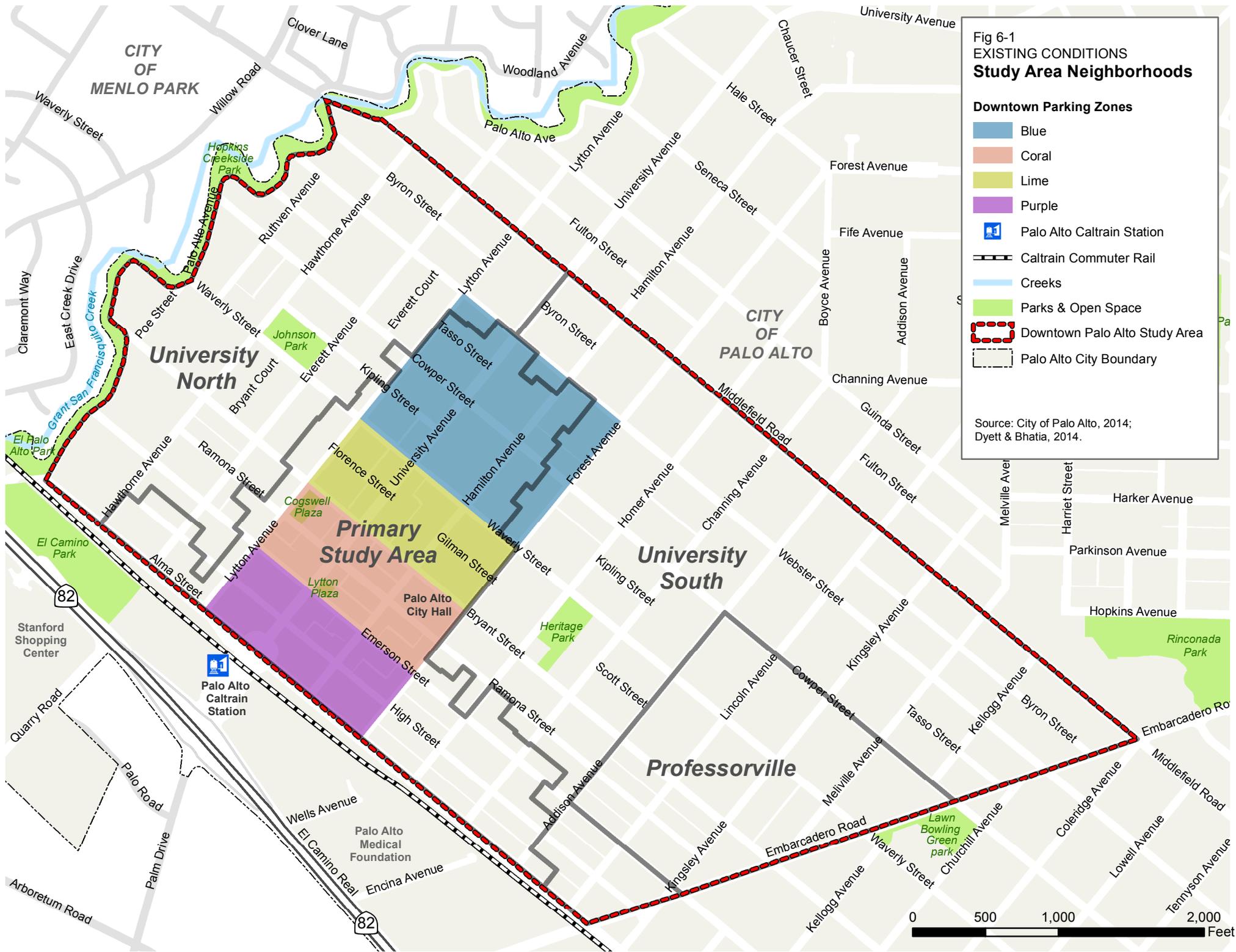
Fig 6-1
EXISTING CONDITIONS
Study Area Neighborhoods

Downtown Parking Zones

- Blue
- Coral
- Lime
- Purple
- Palo Alto Caltrain Station

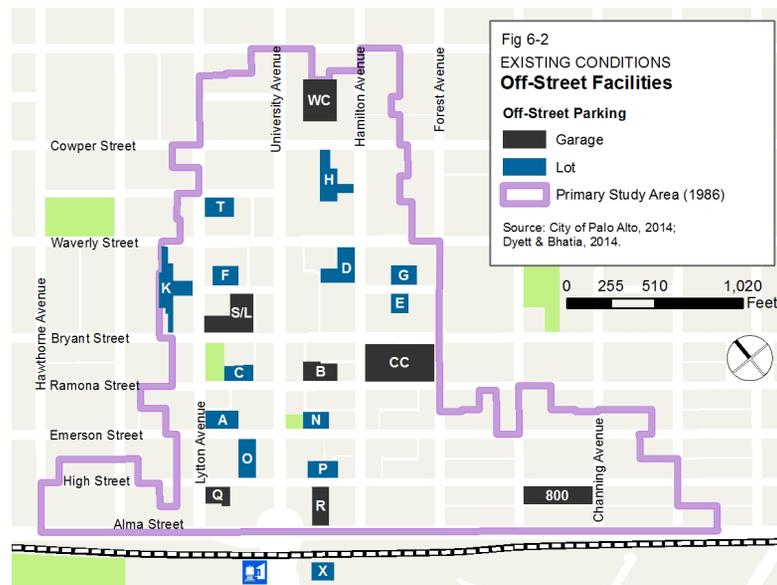
- Caltrain Commuter Rail
- Creeks
- Parks & Open Space
- Downtown Palo Alto Study Area
- Palo Alto City Boundary

Source: City of Palo Alto, 2014;
Dyett & Bhatia, 2014.



OFF-STREET

There are 19 public garages and lots in the study area, with all but one located within the Primary Study Area (see Figure 6-2). These off-street facilities contain 3,167 parking spaces. The 36-space Lot X is located outside the study area but is used by downtown employees. More than half of off-street spaces are reserved for permit holders in nine of the facilities, and the rest are free with a three-hour time limit between 8 a.m. and 5 p.m. on non-holiday weekdays.



Permits are for employees of Downtown businesses and are generally issued for a specific location, though the City offers some permits that are transferrable between Garages WC, S/L,

and CC. Permits cost \$466 per year, \$146.50 per quarter, or \$17.50 per day.¹³ The City also offers lower-cost permits for two lots further outside the core area, X (\$75 per year, \$26 per quarter) and 800 High Street (\$250 per year, \$75 per quarter). Permits must be purchased in-person at City Hall. Garage Q and lots E and G are exclusively for permit-holders. Lots K, C, and T and garages S/L, R, WC, and CC all include a combination of permit-only and hourly spaces, and the remaining garages and lots are exclusively for hourly parking.

6.2 Current Parking Occupancy

Parking occupancy data was collected by the City of Palo Alto for four time periods in the spring and fall of 2013.¹⁴ The spring data collection effort included weekday observations at 8 a.m., 12 p.m., 7 p.m., and 12 a.m. The fall effort included weekday observations at 8 a.m., 7 p.m., and 12 a.m. and one Saturday observation at 12 p.m. Data collection did not include private off-street spaces.

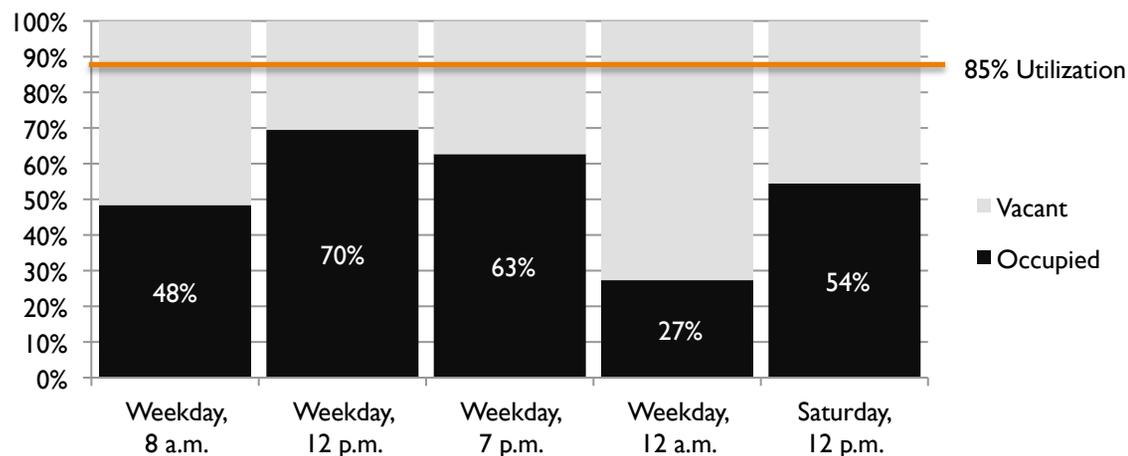
The 8 a.m. observations were averaged for reporting in this section. The spring 7 p.m. and 12 a.m. observations included only garages, and as such, data showing combined on- and off-street occupancy for those two observation time points is exclusively from the fall effort.

¹³ City of Palo Alto. "Parking." Retrieved from <http://www.cityofpaloalto.org/depts/pln/transit/parking.asp> on 2/26/14.

¹⁴ Off-street occupancy data did not include the garage at 800 High Street or Lot X. As such, occupancy percentages were calculated using the inventory at the other 18 lots and garages.

Figure 6-3 shows the Peripheral Study Area parking occupancy for each of the observation time points. The peak occupancy for the whole study area was the weekday 12 p.m. observation, with 70 percent of spaces occupied. This is significantly below an 85 percent occupancy target that would leave open an average of one space per block, or per 8 to 10 parking spaces in a parking facility.¹⁵ It is important to note that occupancy is far higher in some parts of the study area than others.

Figure 6-3: Peripheral Study Area Public Parking Occupancy (All Facilities)



¹⁵ Target occupancy rates of 85 percent and 90 percent are effective industry-standards for analyzing the demand for on- and off-street spaces, respectively. In other words, maintaining 15 percent and 10 percent vacancy rates for corresponding on- and off-street stalls help to ensure an “effective parking supply.” It is at these standard occupancy levels that roughly one space per block is available, making searching or “cruising” for parking unnecessary, and off-street lots maintain adequate maneuverability.

OCCUPANCY BY AREA

Parking occupancy was significantly higher within the Primary Study Area than other neighborhoods for all but the overnight time periods. As Figure 6-4 shows, the district's on- and off-street facilities reached 77 percent occupancy during the area-wide peak of 12 p.m., when downtown facilities must accommodate both daytime employees and lunch patrons. Occupancy reached 78 percent at 7 p.m., after most workers have left the area but during the period of peak demand for dining and entertainment activities. Midnight occupancy was 15 percent, reflecting both those parking overnight and those visiting late-night bars and restaurants.

Occupancy was generally higher at the curbside than in the off-street facilities. On-street occupancy was at 80 percent for the 7 p.m. observation, while occupancy in the district's garages and lots was 76 percent. The difference in demand was larger for the 12 p.m. weekday observation, with 84 percent curbside occupancy and 74 percent garage occupancy.

Figures 6-5, 6-6, and 6-7 show parking occupancy for the other three neighborhoods in the study area. In the neighborhood northwest of University Avenue and the colored zone (University North), occupancy peaks at 70 percent during the area-wide peak. Weekday 12 p.m. occupancy was 57 percent for University South and 47 percent for Professorville. Consistent with their residential character, all three neighborhoods show higher overnight occupancy, between 33 percent and 46 percent.

Figure 6-4: Primary Study Area Public Parking Occupancy (On + Off)

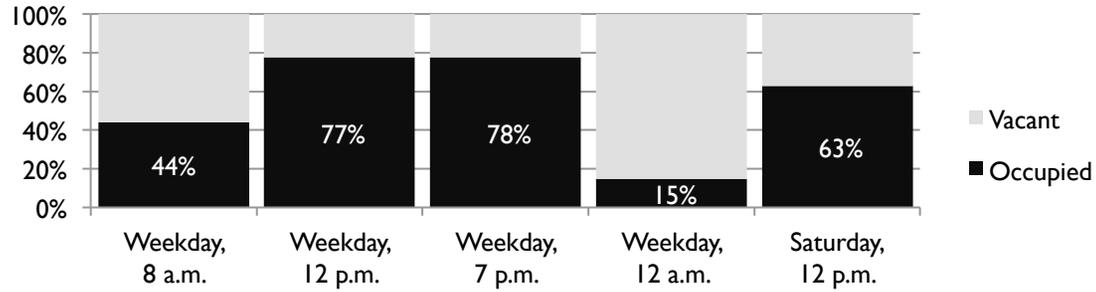


Figure 6-5: University North Public Parking Occupancy (On + Off)

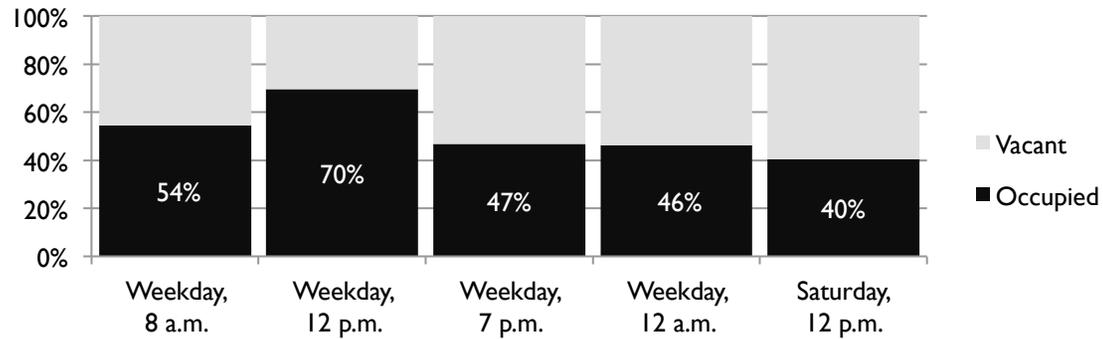


Figure 6-6: University South Public Parking Occupancy (On + Off)

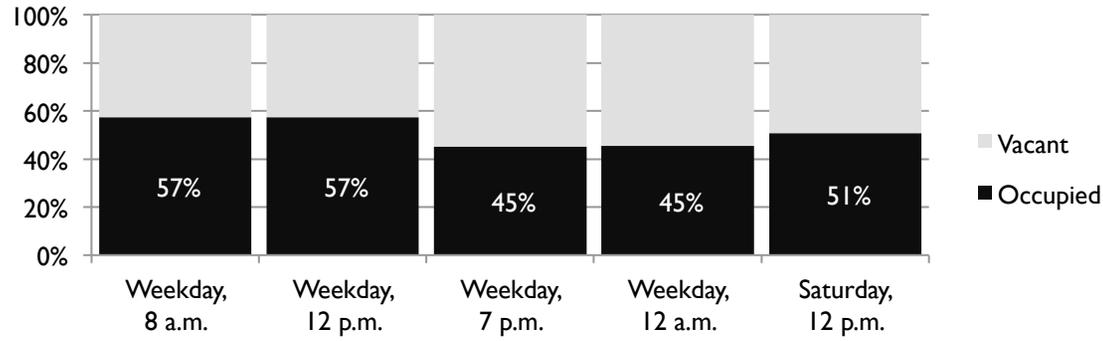
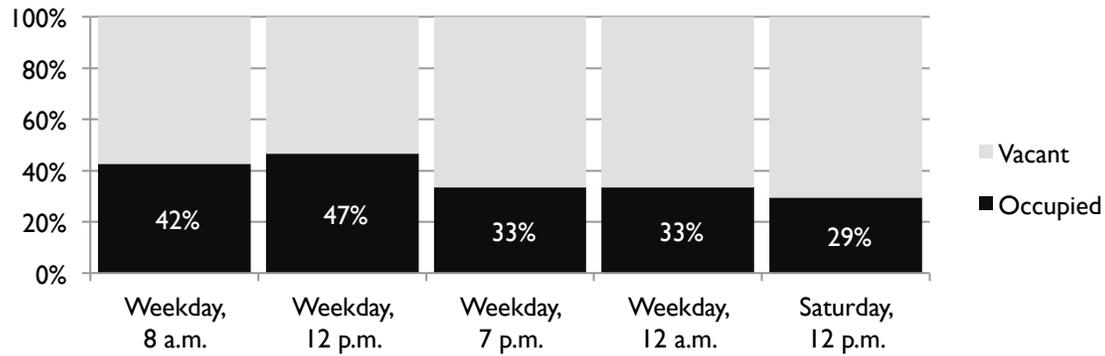


Figure 6-7: Professorville Public Parking Occupancy (On + Off)



Figures 6-8 through 6-11 (end of chapter) show that there are concentrations of near-full occupancy that likely make residents and visitors perceive significant parking deficits at times of high occupancy.

As Figure 6-8 shows, most blocks with high levels of occupancy at 8 a.m. were located in the residential parts of the study area. University North blocks with higher density housing showed particularly high rates of occupancy, and Lot K, on the edge of the Primary Study Area, was the only one with more than 75 percent occupancy during the time period.

Figure 6-9 shows that during the midday peak, a majority of curbside parking in the Primary Study Area and in an area within four blocks of Alma Street to the southeast were over the 85 percent occupancy threshold. During the weekday evening peak (Figure 6-10), the area of high occupancy is more limited but still covered much of the Primary Study Area. During each period, however, seven off-street facilities in the central district were below 75 percent occupied, and a portion of block faces even in the areas of high on-street occupancy were below the same threshold, leaving a significant number of open spaces.

The Saturday 12 p.m. observation period shows a similar occupancy pattern to the weekday 7 p.m. observation, plus a cluster of block faces with higher rates of occupancy across from the Palo Alto Junior Museum in the University South neighborhood (Figure 6-11).

OCCUPANCY BY FACILITY TYPE

The area's 12 parking lots were generally occupied at higher levels than the six garages for which occupancy data was available. As Figure 5-12 shows, lot occupancy peaked at 93

percent for the 7 p.m. observation, while garage occupancy for the same time period was 62 percent. Garages are effectively a driver's third preference, behind spaces in lots and at the curbside. As Figure 6-13 shows, occupancy of hourly off-street spaces was higher during the midday and evening periods, while both largely unoccupied during the morning and overnight periods.

The City currently sells 62 percent more permits than there are permit-only spaces in off-street facilities, and occupancy still reaches only 65 percent during the peak occupancy period. However, City officials believe occupancy may increase once Palo Alto's new resident permit-parking program goes into effect, as employee-permit holders who currently tend to park on the street will need to move into off-street spaces. At the same time, the shifting travel behaviors of younger employees, new office development closer to the Caltrain station, and the City's transportation demand management efforts could all combine to continue the sustained shift away from single-occupancy-vehicle travel already seen in travel behavior data (see Chapter 5).

Employee Mode Split and Parking

The American Community Survey estimates that 72 percent of Primary Study Area employees drive alone to work and 8 percent carpool. Such mode shares would generate approximately 8,800 commuter cars in the study area during workdays. However, the City's study-area parking inventory totals only 8,756 and the peak-hour (weekday, 12 p.m.) occupancy of on- and off-street public spaces was only 6,089. Based on this data, the average mode split is likely closer to that found in the intercept survey conducted for this study, in which 40 percent of employee respondents reported driving alone to work and 5 percent reported carpooling. These numbers would yield approximately 4,900 employee cars in downtown, a more realistic total.

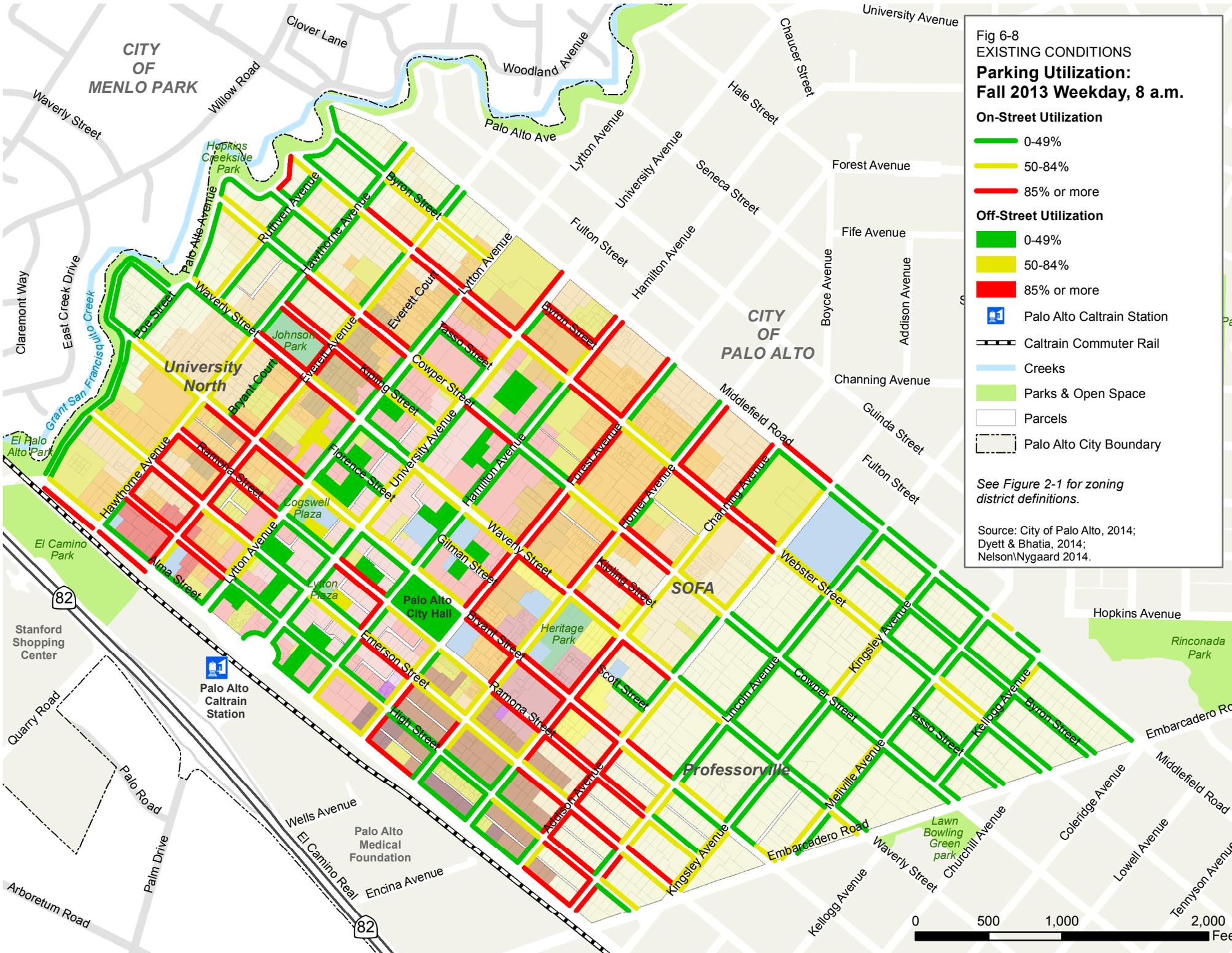


Fig 6-8
 EXISTING CONDITIONS
**Parking Utilization:
 Fall 2013 Weekday, 8 a.m.**

- On-Street Utilization**
- 0-49%
 - 50-84%
 - 85% or more
- Off-Street Utilization**
- 0-49%
 - 50-84%
 - 85% or more
- Palo Alto Caltrain Station
 - Caltrain Commuter Rail
 - Creeks
 - Parks & Open Space
 - Parcels
 - Palo Alto City Boundary

See Figure 2-1 for zoning district definitions.

Source: City of Palo Alto, 2014;
 Dyett & Bhatia, 2014;
 NelsonNygaard 2014.



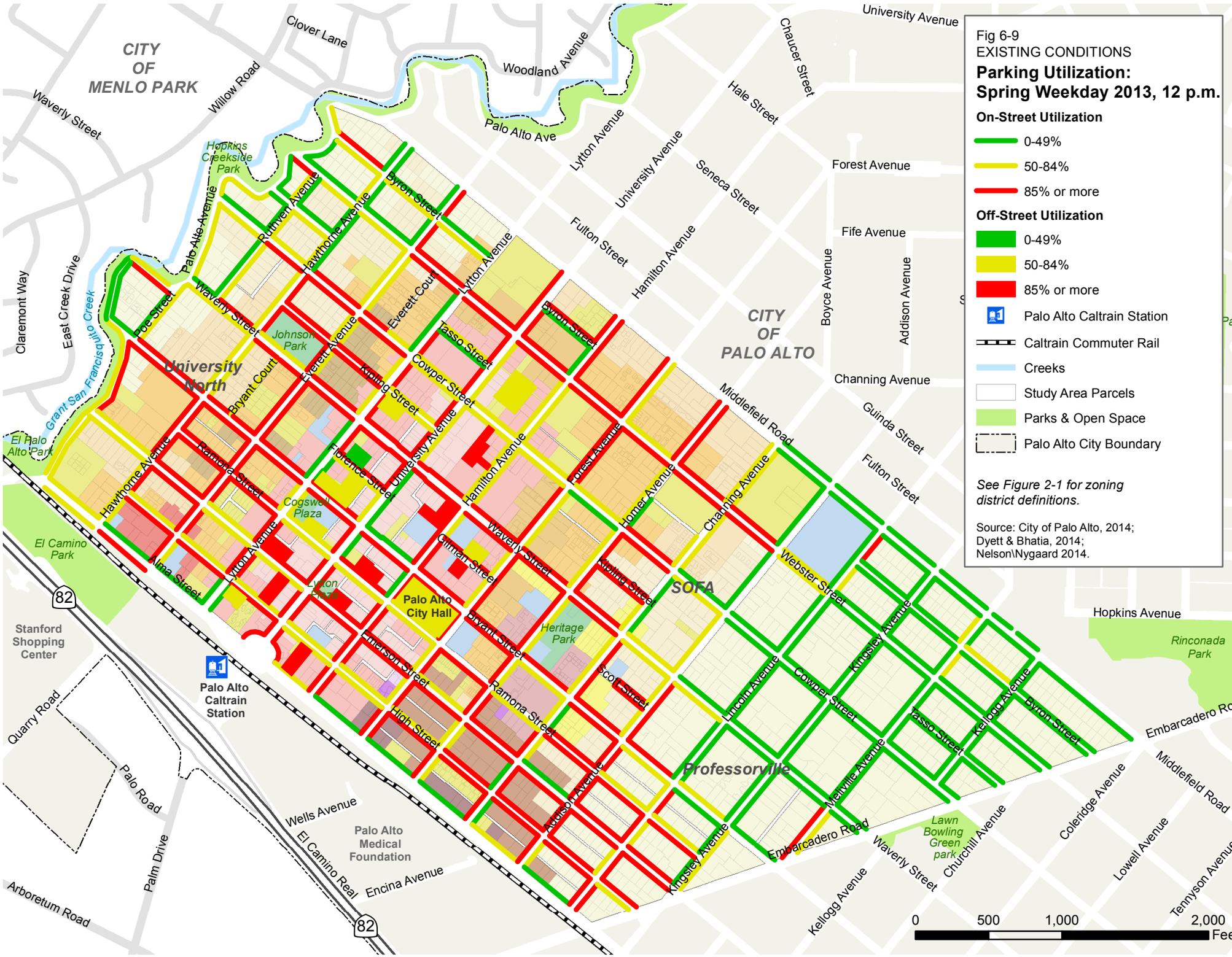


Fig 6-9
 EXISTING CONDITIONS
**Parking Utilization:
 Spring Weekday 2013, 12 p.m.**

- On-Street Utilization**
- 0-49%
 - 50-84%
 - 85% or more
- Off-Street Utilization**
- 0-49%
 - 50-84%
 - 85% or more
- Palo Alto Caltrain Station
 - Caltrain Commuter Rail
 - Creeks
 - Study Area Parcels
 - Parks & Open Space
 - Palo Alto City Boundary

See Figure 2-1 for zoning district definitions.

Source: City of Palo Alto, 2014;
 Dyett & Bhatia, 2014;
 Nelson\Nygaard 2014.



Fig 6-10
 EXISTING CONDITIONS
**Parking Utilization:
 Fall 2013 Weekday, 7 p.m.**

On-Street Utilization

- 0-49%
- 50-84%
- 85% or more

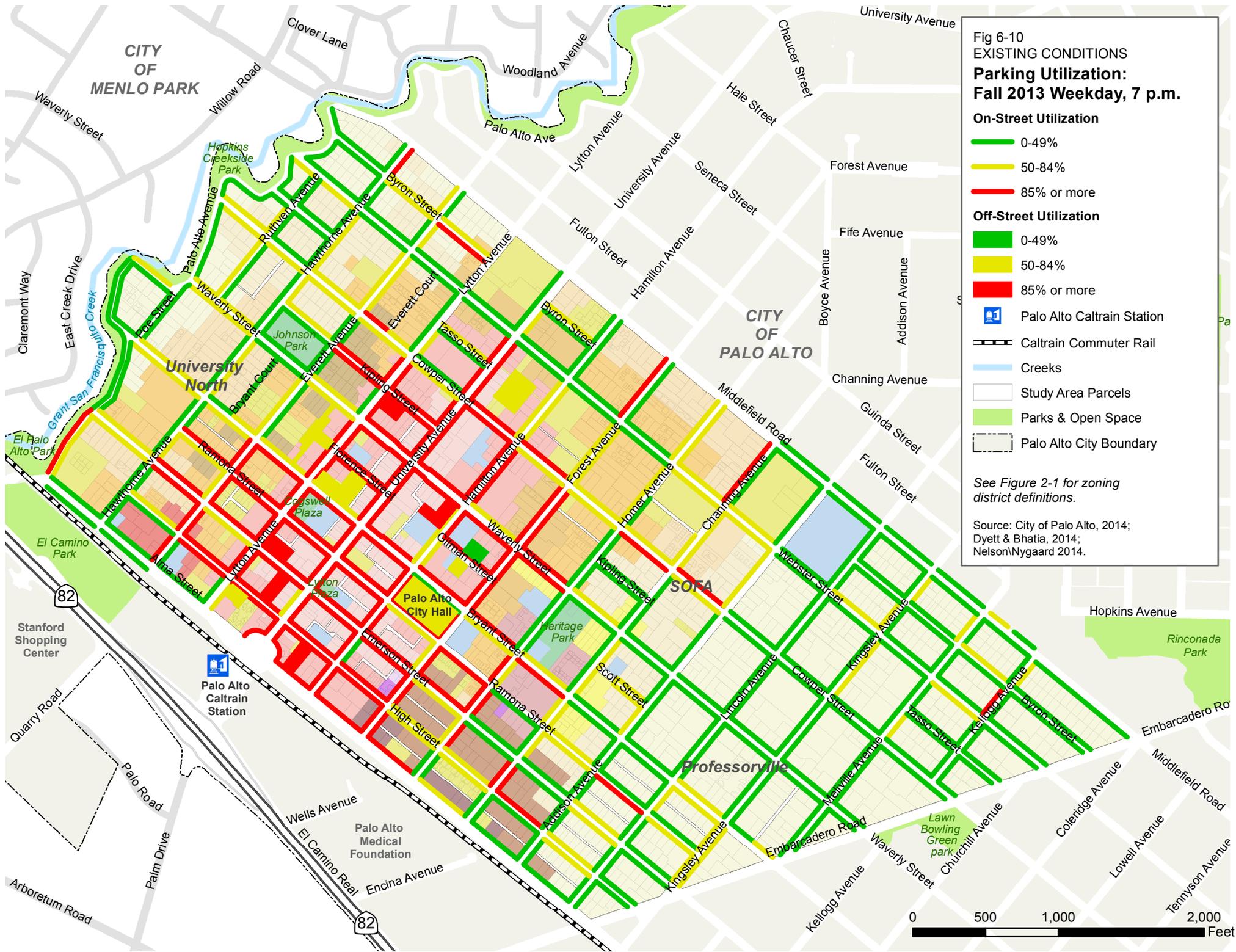
Off-Street Utilization

- 0-49%
- 50-84%
- 85% or more

- Palo Alto Caltrain Station
- Caltrain Commuter Rail
- Creeks
- Study Area Parcels
- Parks & Open Space
- Palo Alto City Boundary

See Figure 2-1 for zoning district definitions.

Source: City of Palo Alto, 2014;
 Dyett & Bhatia, 2014;
 Nelson\Nygaard 2014.



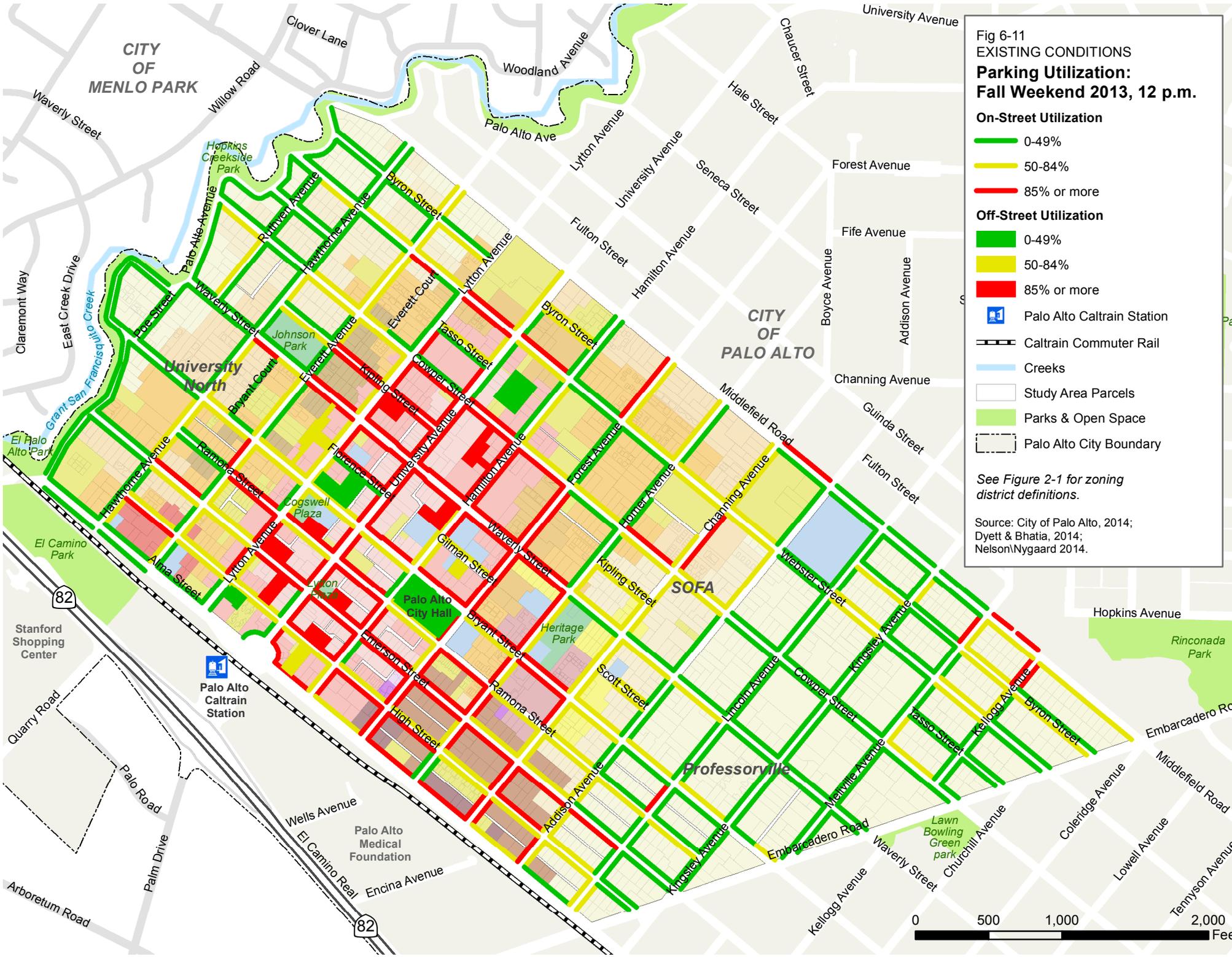


Fig 6-11
 EXISTING CONDITIONS
**Parking Utilization:
 Fall Weekend 2013, 12 p.m.**

- On-Street Utilization**
- 0-49%
 - 50-84%
 - 85% or more
- Off-Street Utilization**
- 0-49%
 - 50-84%
 - 85% or more
- Palo Alto Caltrain Station
 - Caltrain Commuter Rail
 - Creeks
 - Study Area Parcels
 - Parks & Open Space
 - Palo Alto City Boundary

See Figure 2-1 for zoning district definitions.

Source: City of Palo Alto, 2014;
 Dyett & Bhatia, 2014;
 Nelson\Nygaard 2014.



Figure 6-12: Public Lot and Garage Space Occupancy

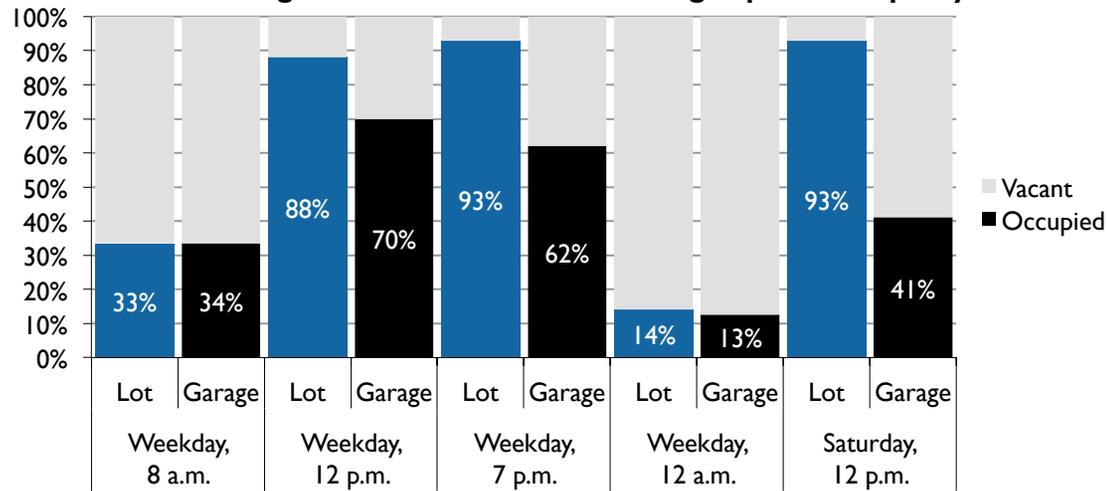
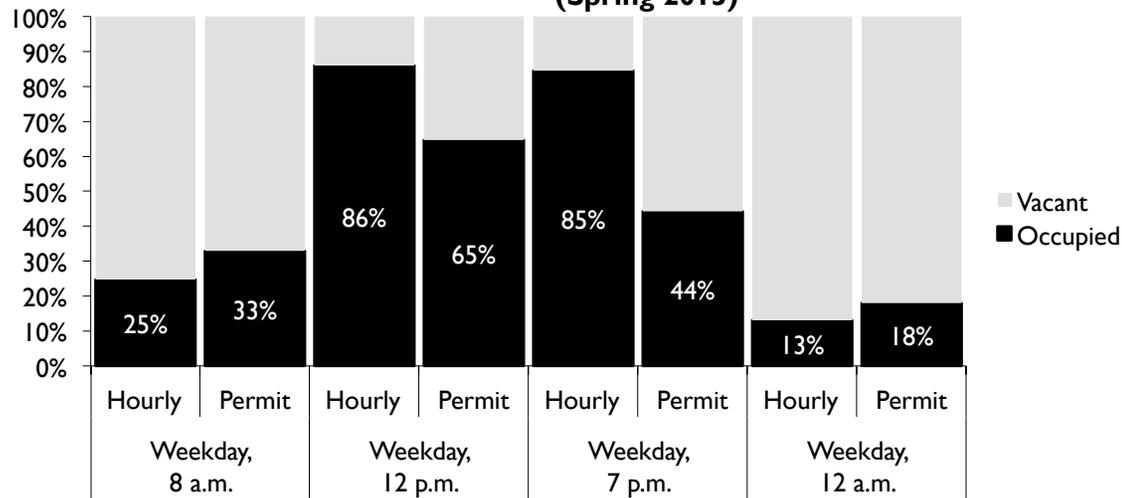


Figure 6-13: Off-Street Hourly vs. Permit Space Occupancy (Spring 2013)



CONCLUSIONS

While parking occupancy data in the study area indicates that Downtown's overall public parking supply is adequate to meet demand, the supply is only adequate if the use of residential neighborhood streets by employees who work in the Downtown is acceptable to the community. Also, the lower occupancy of City-owned garages indicates that there is a hierarchy of demand: motorists will always prefer free on-street parking near their destination over a parking lot, garage, or lower-demand curb a few blocks away.

Management policies can help address this issue by incentivizing drivers to use all available facilities. Strategies like the residential parking permit, increased signage and, as feasible, curbside metering can help maximize the use of existing supply, complementing the City's new transportation demand management efforts and, as needed, the development of new parking facilities. This analysis did not look at private parking, but shared parking agreements with private lots and garages could be another promising strategy. Such agreements, which allow public use of such facilities during off-peak hours, could open up new capacity without the financial and opportunity costs of building new public off-street facilities.

7 Traffic Evaluation

7.1 Volumes

The focus of the traffic evaluation for this study is the key intersections within the Downtown area of the City of Palo Alto. The following signalized intersections were identified as study intersections due to their location on the key streets within the City of Palo Alto street network that provide access to the Downtown land uses and parking.

1. El Camino Real & Palo Alto Avenue/Sand Hill Road
2. Alma Street & Lytton Avenue
3. Alma Street & Hamilton Avenue
4. University Avenue & Bryant Street
5. Middlefield Road & Lytton Avenue
6. Middlefield Road & University Avenue
7. Middlefield Road & Hamilton Avenue
8. Middlefield Road & Embarcadero Road
9. El Camino Real & Page Mill Road
10. El Camino Real & University Avenue North Bound
11. El Camino Real & University Avenue South Bound

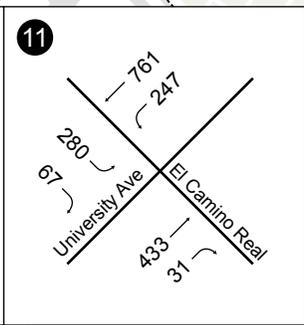
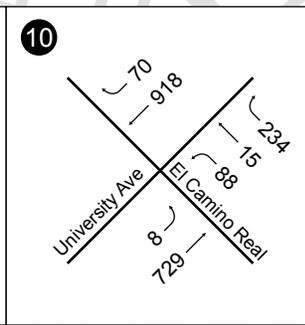
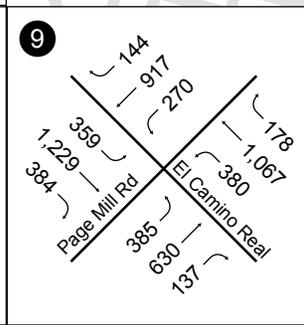
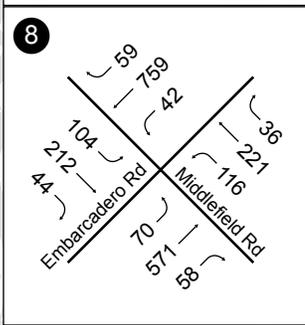
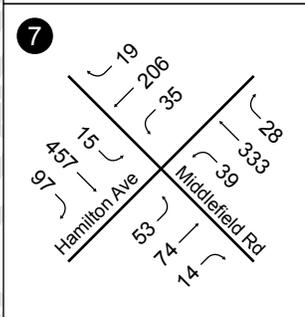
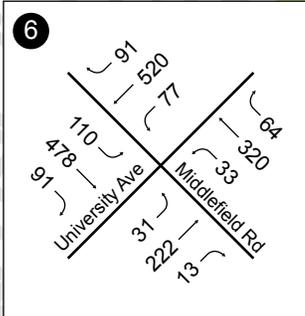
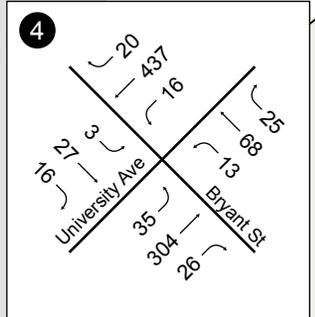
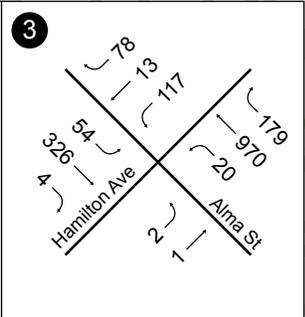
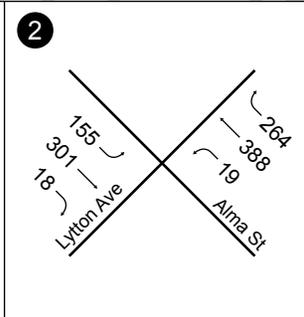
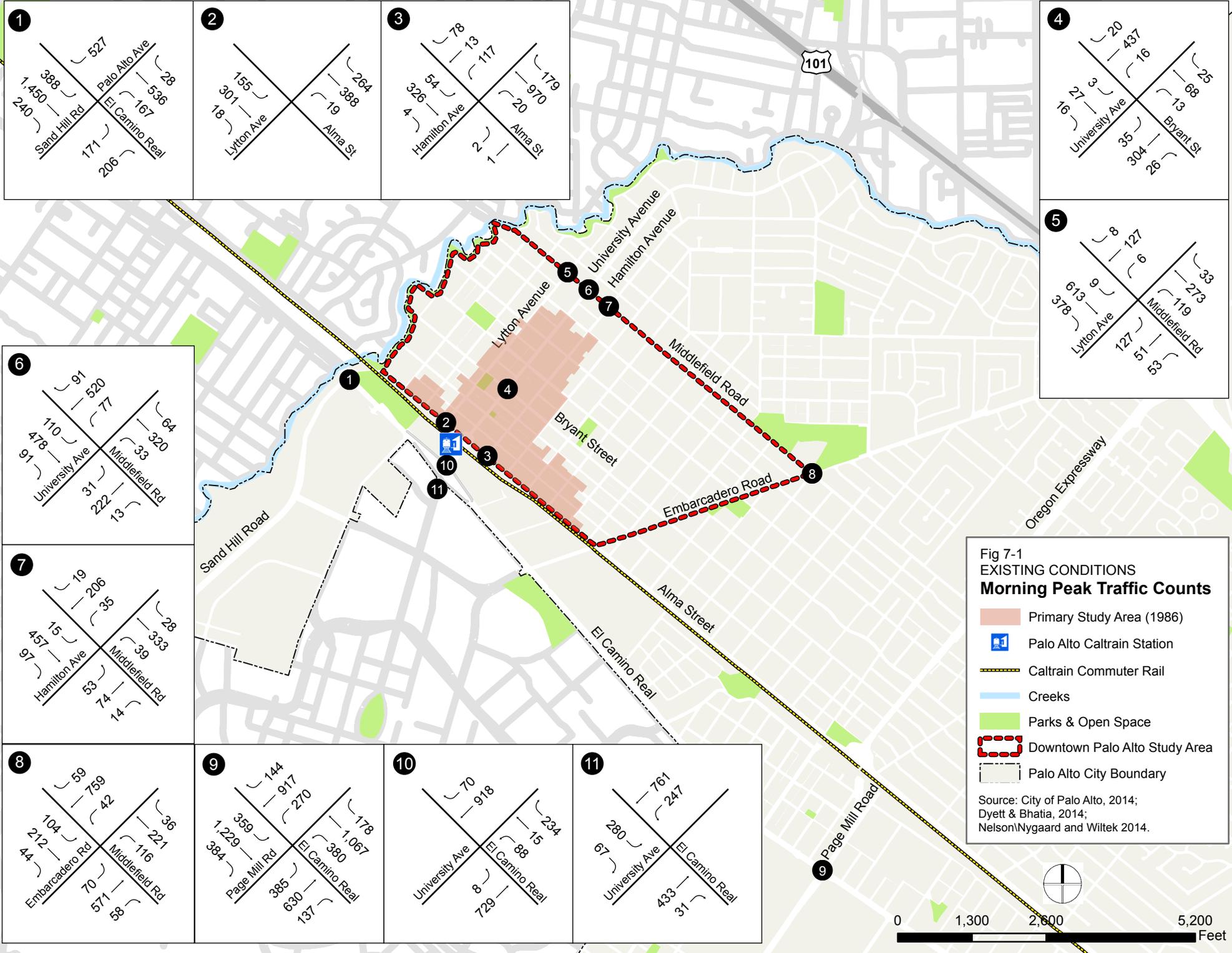
It is noted that some of the above intersections are part of the Santa Clara Congestion Management Program (CMP) with peak period turning movement counts conducted every year. This

program enables historical comparison of the study area intersections.

For this evaluation, AM and PM peak period turning movement counts were undertaken on January 29th, 2014 and included automobile, bicycle, and pedestrian movements. AM peak period counts were conducted from 7:00 AM to 9:00 AM, while PM peak period counts were conducted from 4:00 to 6:00 PM. From those counts, the AM and PM Peak Hour volume was determined for automobile, pedestrian, and cyclist volumes respectively, based on the 60-minute period with the highest volume for each mode.

AUTOMOBILE

Figures 7-1 and 7-2 show the motor vehicle turning movements at each of the 11 intersection count locations during the AM and PM peak hours. The majority of automobile commute trips by non-residents, to and from jobs in Palo Alto, arrive from the south during the AM Peak Hour and depart towards the south during the PM Peak Hour. Given this pattern, the predominant regional traffic movement is in the north-south direction along El Camino Real, which carries a much higher automobile volume than Downtown streets, while Embarcadero carries commute traffic to and from US Highway 101.



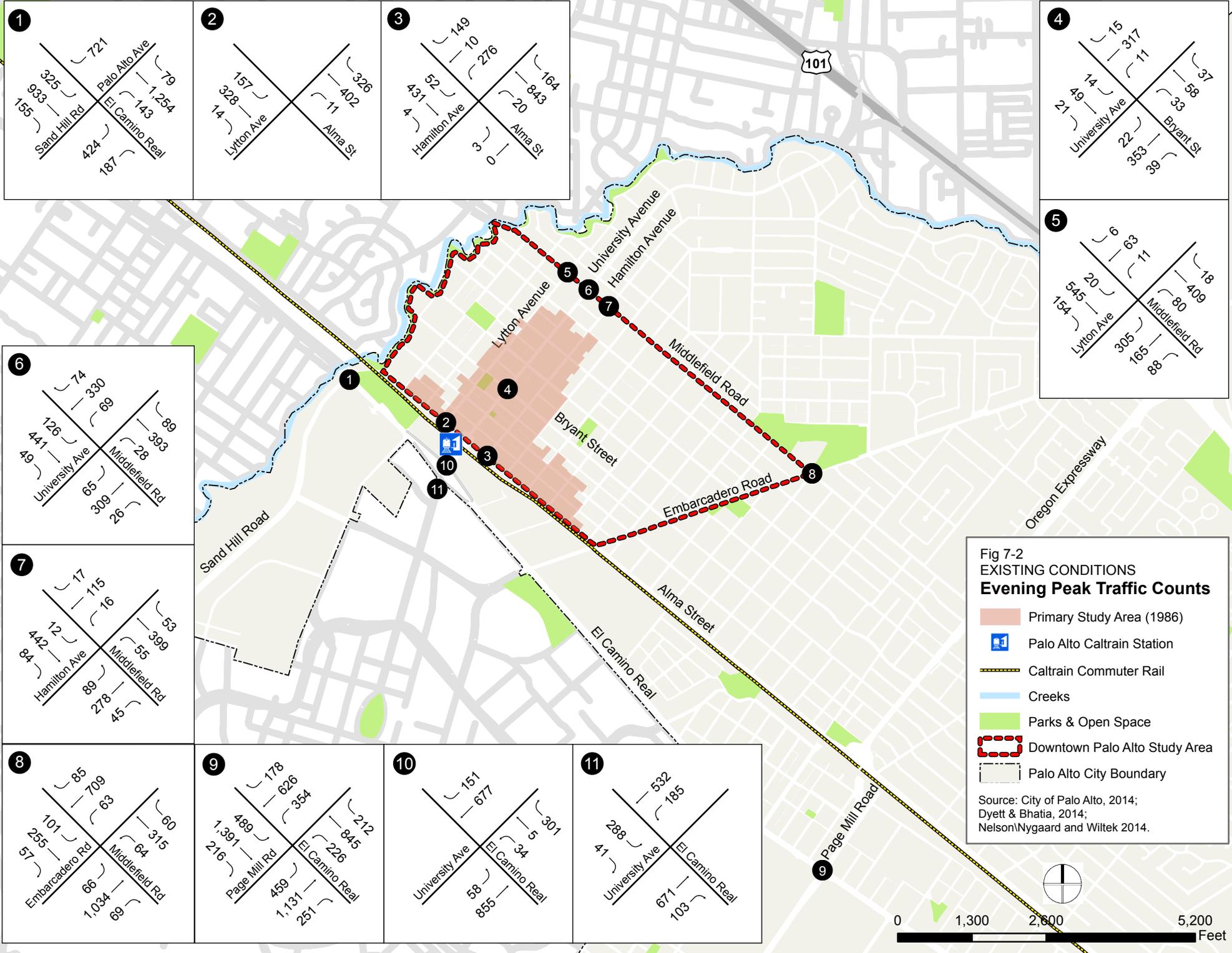
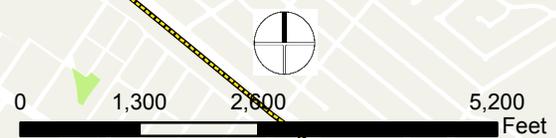


Fig 7-2
EXISTING CONDITIONS
Evening Peak Traffic Counts

- Primary Study Area (1986)
- Palo Alto Caltrain Station
- Caltrain Commuter Rail
- Creeks
- Parks & Open Space
- Downtown Palo Alto Study Area
- Palo Alto City Boundary

Source: City of Palo Alto, 2014;
 Dyett & Bhatia, 2014;
 Nelson\Nygaard and Wiltek 2014.



Within the Downtown area, Alma Street serves as the primary north-south route to access the Caltrain station as well as El Camino Real. Middlefield Road serves as the residential arterial connecting the residential neighborhoods with Embarcadero and the Oregon Expressway to the south.

The east-west movement is primarily served by University Avenue, with the heaviest volumes westbound in the AM peak and eastbound during the PM peak. As expected there is a heavy westbound movement on University Avenue from downtown Palo Alto to the Stanford University Campus and adjacent employment sites during the AM peak and eastbound during the PM peak.

PEDESTRIAN

With the proximity of the Palo Alto Caltrain Station as well as the Downtown destinations, there is significant pedestrian activity within the study area. The pedestrian crossing volumes during the AM and PM Peak Hours are shown on Figures 6-4 and 6-5, respectively.

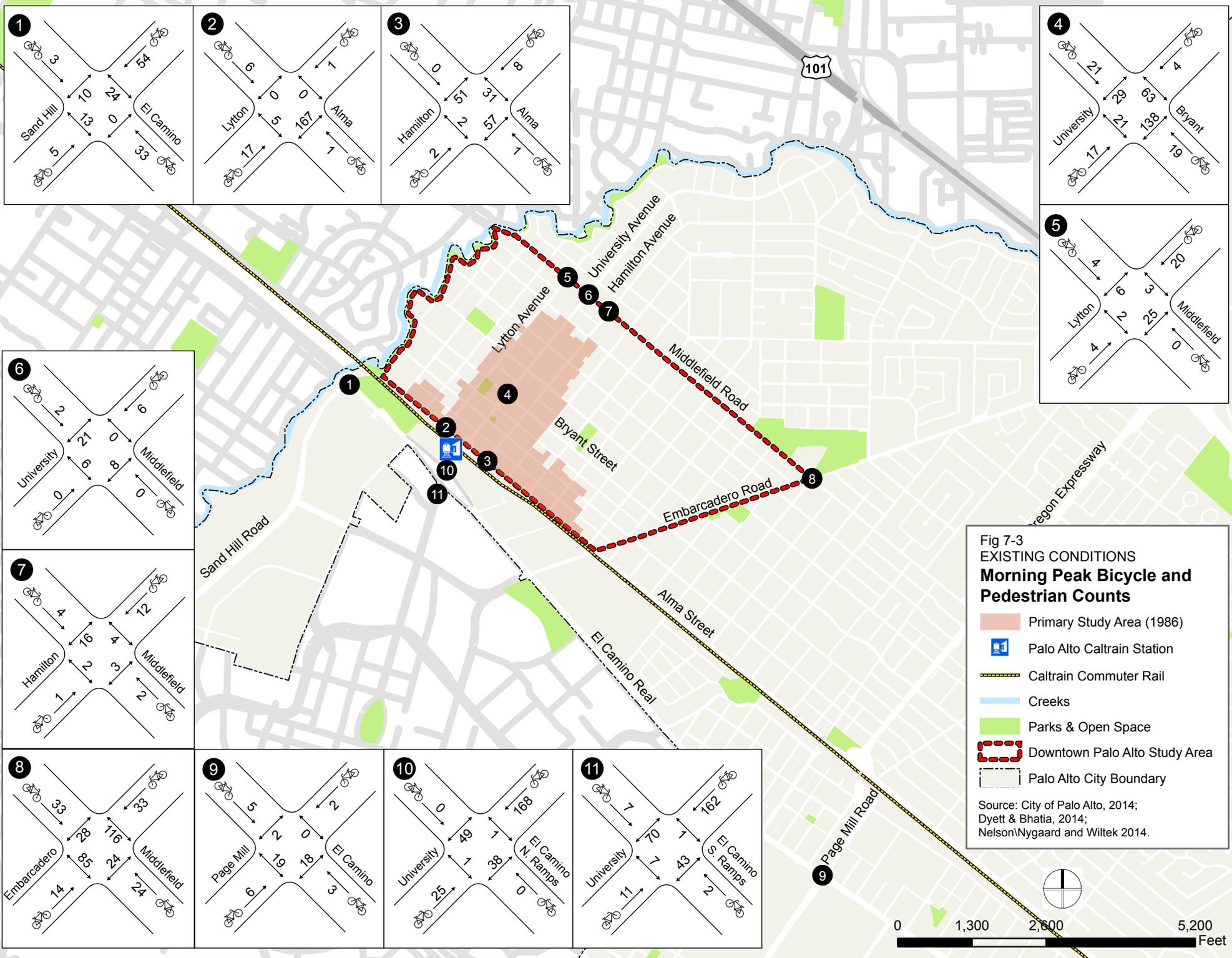
The highest pedestrian volumes among the 11 intersection count locations during the AM and PM Peak Hours are at the entrances to the Palo Alto Caltrain Station along Alma Street at Lytton Avenue and Hamilton Avenue, as well as along University Avenue at Bryant Street. These locations are signalized with crosswalks while the Alma Street study intersections also feature pedestrian push buttons. As already stated, the Palo Alto Caltrain Station is the second busiest within the system and has 5,469 daily boardings. The pedestrian volumes near the station reflect this activity.

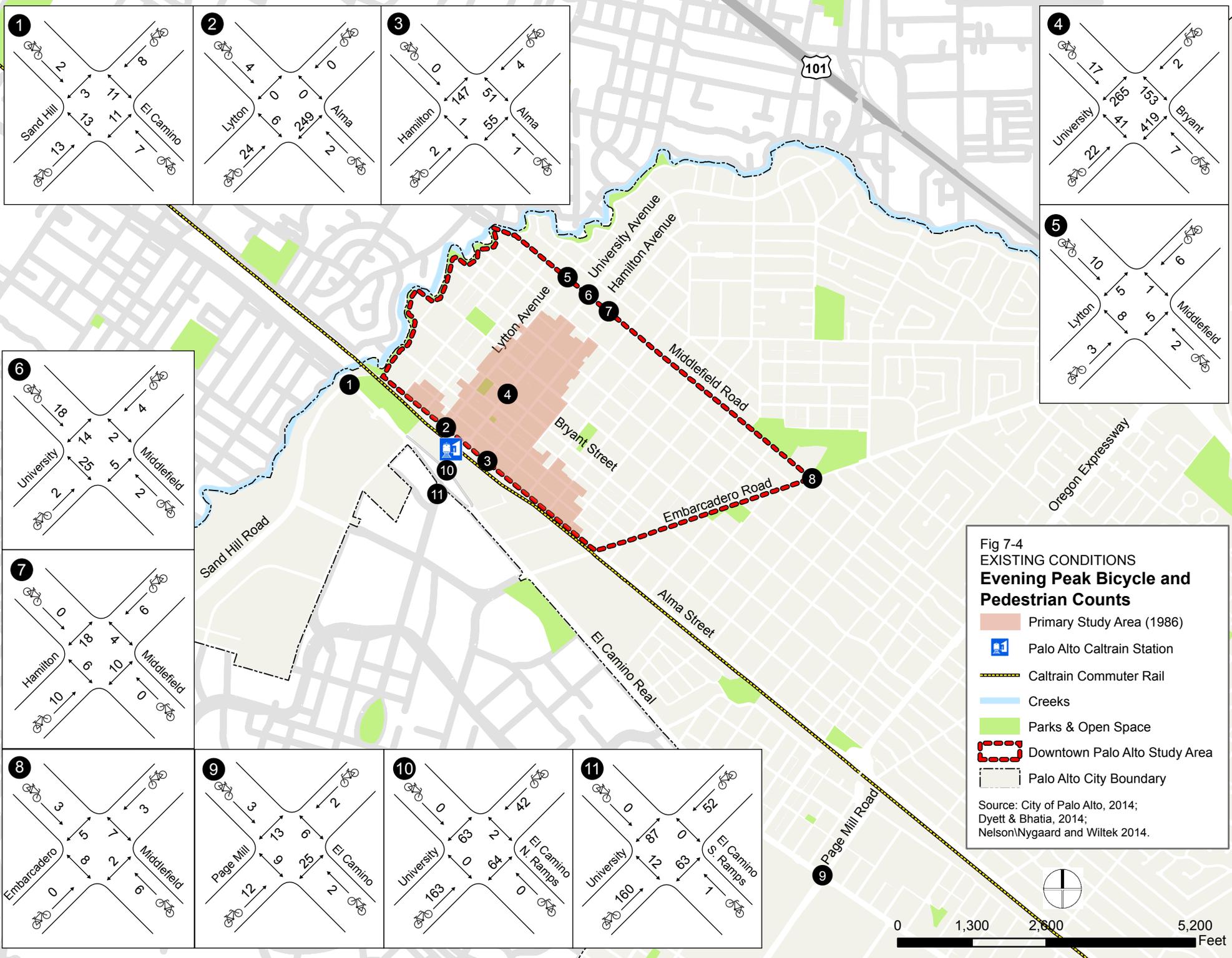
It is noted that the intersection of Embarcadero and Middlefield Road has high pedestrian traffic during the AM peak hour due to the Walter Hays Elementary School located in the northeast quadrant of the intersection. Pedestrian activity in the PM peak hour is very light by comparison, as the PM peak hour occurs after school hours.

CYCLIST

Cyclist activity has similar characteristics to that of the pedestrian volumes in that the primary destination is the Caltrain Station. The peak hour bicycle volumes are also shown on Figures 7-3 and 7-4. The intersection counts indicate that the east-west route from the Caltrain Station along University Avenue to the Stanford Campus is in demand during the AM peak period and in the reverse direction during the PM peak period. Caltrain ridership data confirms that the bike ridership is second highest in the system behind only San Francisco with 644 average weekday bike boardings.

East of the Caltrain Station, cyclist volumes are significantly lower during the peak hours and may reflect that cyclists are more likely to use the less traveled residential roadways than the arterials counted for this evaluation.





7.2 Traffic Operations

Traffic operations at each of the 11 study area intersections were evaluated using Highway Capacity Manual (HCM) methodology to determine the level of service (LOS) at each study intersection during the AM and PM Peak Hours. LOS is a qualitative evaluation based on the average delay to motorists at each intersection. LOS ranges from LOS A, representing free-flow conditions with very low level delay, to LOS F representing poor progression with significant delays. Table 7-1 provides a definition of each LOS rating.

LOS	Flow Type	Operational Characteristics	Intersection Control Delay (seconds/vehicle)	
			Signal Control	2-Way-Stop or All-Way Stop Control
A	Stable Flow	Free-flow conditions with negligible to minimal delays. Excellent progression with most vehicles arriving during the green phase and not having to stop at all. Nearly all drivers find freedom of operation.	< 10	0 – 10
B	Stable Flow	Good progression with slight delays. Short cycle-lengths typical. Relatively more vehicles stop than under LOS A. Vehicle platoons are formed. Drivers begin to feel somewhat restricted within groups of vehicles.	> 10 – 20	> 10 – 15
C	Stable Flow	Relatively higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant, although many still pass through without stopping. Most drivers feel somewhat restricted.	> 20 – 35	> 15 – 25
D	Approaching Unstable Flow	Somewhat congested conditions. Longer but tolerable delays may result from unfavorable progression, long cycle lengths, and/or high volume-to-capacity ratios. Drivers may feel restricted during short periods due to temporary back-ups.	> 35 – 55	> 25 – 35
E	Unstable Flow	Congested conditions. Delays result from poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures occur frequently. There are typically long queues of vehicles waiting upstream of the intersection. Driver maneuverability is very restricted.	> 55 – 80	> 35 – 50
F	Forced Flow	Generally considered to be unacceptable for most drivers. Zero or very poor progression, with over-saturation or high volume-to-capacity ratios. Several individual cycle failures occur. Queue spillovers from other locations restrict or prevent movement.	> 80	> 50

Source: Highway Capacity Manual (HCM) 2010.

The City of Palo Alto standard for signalized intersections is LOS D or better. City policy also mandates that automobile, bicycle and pedestrian safety should be given a priority over LOS in some cases (based on Palo Alto Comprehensive Plan Policy T-39).

Table 7-2 summarizes the results of the intersection LOS analysis at each of the 11 study intersections. The results show that all the study area intersections currently operate at acceptable levels of service during peak hours based upon the City of Palo Alto LOS standards, with the exception of El Camino Real at Page Mill Road, which operates at LOS E during the AM peak hour. This intersection, however, is part of the CMP roadway network and does meet the CMP LOS standard.

Table 7-2: Existing Conditions: Intersection Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	Avg. Delay	LOS	Avg. Delay	LOS
El Camino Real/Sand Hill Rd.	25.5	C	33.0	C
Alma St./Lytton Ave.	18.6	B	6.5	A
Alma St./Hamilton Ave.	11.9	B	20.2	C
University Ave./Bryant St.	15.5	B	15.1	B
Middlefield Rd./Lytton Ave.	6.8	A	11.1	B
Middlefield Rd./University Ave.	35.0	C	38.0	D
Middlefield Rd./Hamilton Ave.	8.9	A	15.9	B
Middlefield Rd./Embarcadero Rd.	42.8	D	50.1	D
El Camino Real/Page Mill Rd.	55.1	E	54.7	D
El Camino Real/University Ave. NB	9.7	A	13.1	B
El Camino Real/University Ave. SB	9.3	A	10.3	B

Source: Nelson\Nygaard, 2014.

7.3 Queuing and Delay

Automobile delay is greatest on the key regional routes that provide access to Palo Alto – such as El Camino Real, Embarcadero, Sand Hill Road, and Page Mill Road – while average delay is lower at intersections within the Downtown area.

Several factors account for the reduced level of delay at Downtown intersections. Traffic volumes are lower on Downtown streets, while rates of walking are higher. In addition, the narrower width of Downtown streets allow for shorter traffic signal cycles, thus reducing the wait time for a green light or walk signal. For example, most signals on University Avenue within downtown operate on a 75-second cycle – with 50 seconds allocated to University Avenue traffic, pedestrians and bicyclists, and 25 seconds allocated to cross-traffic. As a result, the wait for a green light on University Avenue within the downtown core is generally less than 25 seconds for the average driver. While frequent queuing of vehicles does occur on University Avenue, particularly given the high volume of pedestrian traffic and closely spaced signals that accommodate pedestrian walk phases, the duration of the wait-time at each intersection is relatively short.

Queuing was observed on University Avenue at several gateway points to the Downtown, particularly the portion of University Avenue near Middlefield Road, as well as some delays near the Caltrain station. These delays are primarily a function of the transition from larger blocks that emphasize traffic flow outside of downtown to smaller, pedestrian-oriented blocks within downtown. Delays near Middlefield also appear to be caused in part by an imbalance between the longer cycle length where

University intersects Middlefield, and shorter signal cycles at downstream intersections to the west of Middlefield.

On the Downtown streets parallel to University Avenue – such as Lytton and Hamilton avenues – recent site visits noted some queuing associated with several small construction projects on those streets.

Parking activity did not appear to be a key contributor to observed queuing in the core of Downtown, although it is likely that a portion of motorists, on parallel streets in particular, are in fact traveling to and from available parking spaces. In addition, some queuing was observed near the Caltrain station related to passenger pick-ups and drop-offs.

7.4 Multi-Modal Circulation Conditions

Downtown Palo Alto provides a comfortable environment for travel on foot or via bicycle, particularly given the small blocks, generally ample sidewalk widths, relatively short pedestrian crossing distances, and close proximity of complementary land uses.

Table 7-3 compares the rates of walking and biking through four intersections representing different parts of the study area:

- Downtown Core: University Avenue and Bryant Street
- Caltrain Station: Lytton Avenue and Alma Street
- Northern Edge: University Avenue and Middlefield Road

- Southern Edge: University Avenue and El Camino Real

Overall, the rate of walking and bicycling is particularly high within the core of the Downtown. The volume of pedestrian crossings at University Avenue and Bryant Street during the PM Peak Hour is nearly as high as the traffic volume. Bike volumes through the gateway at the southern edge of the study area, at University Avenue and El Camino Real, are higher than at any of the other representative intersections, as the intersection serves as the key bike route between the Caltrain station and Stanford University. The intersection at Alma Street and Lytton Avenue, an important pedestrian connection with the Caltrain station, shows particularly high pedestrian volumes that might have been higher in the absence of construction that was underway near the intersection at the time of the count. Finally, the intersection at University Avenue and Middlefield Road, a gateway to a lower-density residential area and U.S. 101, shows little non-auto traffic.

City of Palo Alto Downtown Development Cap Evaluation

Table 7-3: Multi-Modal Volumes and Mode Split, PM Peak							
<i>Intersection</i>	<i>Motor Vehicle Volumes</i>		<i>Pedestrian Volumes</i>		<i>Bicycle Volumes</i>		<i>Total Intersection Volume</i>
	<i>Sum of Approach</i>	<i>% of Total</i>	<i>Sum of Approach</i>	<i>% of Total</i>	<i>Sum of Approach</i>	<i>% of Total</i>	
University Ave. & Bryant St.	1,898	53%	1,599	44%	109	3%	3,606
Alma St. & Lytton Ave.	2352	84%	401	14%	49	2%	2,802
University Ave. & Middlefield Rd.	3,911	97%	73	2%	59	1%	4,043
University Ave. & El Camino (Southern Ramps)	3,497	85%	302	7%	339	8%	4,138
<i>Source: Nelson/Nygaard and Wiltec, 2014.</i>							

8 Conclusions and Next Steps

8.1 Conclusions and Implications

DEVELOPMENT TRENDS

Amount and Character of Non-Residential Development Since 1986

According to the most recent data available in 2014, the total amount of floor area in the Primary Study Area is about 3.5 million square feet, with about 3.35 million square feet occupied by non-residential uses. Of that, about 250,000 square feet of non-residential development projects have been added since 1986, when the City's Development Cap was created. Thus, relative to the total amount of development in the Primary Study Area, non-residential development from the last two-and-a-half decades is a small portion – just over 7 percent – of the total floor area.

While the amount of floor area constructed since 1986 has only increased slightly relative to the total floor area in the Primary Downtown Study Area, the land uses have changed significantly since the 1980s. In 1986, light industrial and commercial uses were interspersed with office and retail uses throughout the

Downtown area. Nearly 16 percent of the Downtown floor area was occupied by lighter industrial and commercial uses, including basement storage, utility facilities, automotive services, warehousing and distribution, and manufacturing.

By 2013, however, many of these lighter industrial and commercial uses had decreased significantly or disappeared altogether from the Downtown area, occupying only about 7 percent of the Primary Study Area floor area. In contrast, professional and personal service uses increased substantially between 1986 and 2013, with personal services increasing nearly 67 percent and office uses increasing 27 percent. In all, office, retail, business, and personal services occupied about half of the total floor area in the Primary Study Area in 1986, but nearly 60 percent of the total floor area in 2013. These changes in the land uses in the Downtown over the two-and-a-half decades correspond to broader changes in the City's and the regional economies since the 1980s.

The amount of development in Downtown Palo Alto gradually increased after 1986, but it has accelerated in recent years. In fact, over half of the Downtown's total non-residential development since 1986 has been constructed in the last three years, with over 100,000 square feet constructed in the Primary Study Area in 2012 and 2013 alone. Even with the recent increase in supply of floor area, demand is on the rise, and the vacancy rate in the Downtown fell from about 9 percent in 2009 to nearly 2 percent in 2013.

The significant public benefits, historic renovations, seismic upgrades, and minor expansion bonus programs have been used in many development projects in the Downtown. In fact, well over half of the non-residential square footage in the Primary

Study Area – 63 percent – that has been constructed since 1986 has benefitted from these programs. While these programs have been successful in preserving and enhancing historic building stock, improving building safety, and providing public benefits, they may have also contributed to the City’s parking and traffic issues, as much of the development under these programs has been exempt from the City’s parking requirements, while adding floor area to the Downtown.

Ultimately, while total building floor area has increased in Downtown Palo Alto since 1986, the new construction accounts for less than 10 percent of the total building square footage in the area overall. The more notable changes have been the change in uses in existing buildings, with much more of the Downtown floor area devoted to professional, personal, and commercial services today than in the past. Furthermore, many Internet and software start-up firms have higher levels of employment intensity (employees per square foot) compared to traditional office uses. It is these changes in use and building occupancy in the Downtown overall that have likely contributed to increased traffic and parking demand. Palo Alto is one of the very few cities that does not require business licenses; thus the distribution of various kinds of office uses, for example, in the Downtown is not readily known. One of the next tasks in this evaluation of the Downtown Development Cap is to survey existing businesses to determine how many employees occupy the space and better understand the means by which they travel to work, which in turn impacts parking demand and traffic.

PARKING AND TRAFFIC

On-street parking in the Primary Study Area is challenging for long periods during the day as well as in evenings. During the

period of highest demand, weekdays at noon, many block faces south of Bryant Street and in other multi-block clusters throughout the northwestern portion of the study area are near 100 percent occupancy. However, occupancy data suggests that the taken as a whole, the area’s overall parking supply is sufficient to meet current parking demand and to accommodate some future growth. The area’s off-street facilities are below full capacity at peak periods, with garages overall and permit spaces in particular showing significant vacancy. In addition, in areas with large numbers of fully occupied block faces, there also tend to be some block faces nearby with at least a few open spaces available. In short, the City could improve parking with strategies that address not just new supply, but better management of existing facilities. The overall parking supply is sufficient to meet demand, if the community accepts that many Downtown employees park for free on neighborhood streets.

Traffic counts suggest that congestion is an issue, but could be mitigated. All intersections in and immediately around the study area currently operate at or above the City’s level of service D standard. Only the El Camino Real and Page Mill Road intersection, which serves significant traffic to and from other area job centers and regional destinations, operates below this standard during the morning peak.

A variety of data sources suggest that significantly more people are coming to the Downtown via non-auto modes than in the past. Boardings at the Palo Alto Caltrain station are up 51 percent since 2009, and a survey conducted for this study suggests that area employees are driving alone to the area at much lower rates than they did just a few years ago. In addition, counts of car, bike, and pedestrian activity at University Avenue and Bryant Street, an intersection that is representative of

intersections throughout the core of Downtown, shows that non-auto travelers already account for a significant portion of downtown travel behavior. These trends may keep congestion at acceptable levels and enable current parking supplies to continue satisfying overall demand, even with additional development.

In the short term, dealing with uneven parking demand and shortages will require a multi-pronged approach. The City is already moving forward on implementation of transportation demand management measures that will encourage even more people to walk, bike, and use transit to get to Downtown. The City Council has recently directed City staff to create a Residential Parking Permit program; the potential for increased parking demand in the Downtown core from employees who currently park in adjacent residential areas may well justify investments in new parking facilities, an option that the City is currently exploring.

The City should also be exploring more active parking management as a cost-effective way to address parking challenges. Increasing the use of signage to direct people to underutilized garages would help make better use of past investments. The City is currently developing an RFP for technology solutions to parking challenges, including parking guidance systems that will help motorists find available spaces in parking lots and garages. These dynamic signs, which could show the number of open spaces in large facilities like the Civic Center and Waverly-Cowper garages, could be particularly useful. Shared parking arrangements with private parking facilities should be explored for evening and weekend peak periods. Finally, while pricing of on-street spaces is often unpopular, the City should continue to revisit it as a potential strategy as the Downtown continues to grow.

8.2 Next Steps

EMPLOYER SURVEY

The first survey conducted for this study gathered information on the Downtown parking and travel trends of a wide variety of users: residents, employees, and visitors to Downtown Palo Alto. A second survey will aim to update information on typical employee density and employees' means of travel to work. The survey will be conducted primarily by phone, with follow-up conducted in person.

DEVELOPMENT CAPACITY ANALYSIS AND GROWTH PROJECTIONS

Based on the GIS database, available development capacity will be calculated, based on sites with potential to change in the coming decade based on certain metrics (building intensity, improvement to land value ratio, historical designation, use, etc.) Existing development at the opportunity sites will be compared against potential floor area limits, and amount of capacity available, TDR "sending" capacity, and other parameters. From this, a set of development projections (5, 10, and potentially 20 years) will be developed that assume continued use of TDRs and other existing provisions, but removal of the development cap. The formulation of future development scenarios will be based on a detailed analysis of development capacity and feasibility in the Downtown based on market and financial considerations. The formulation of realistic development scenarios will inform study projections related to parking, traffic, and other impacts of interest to the City.

TRAFFIC MODELING AND FUTURE PARKING NEEDS

Traffic operations will be modeled and parking demand calculated based on the various development scenarios for the Downtown. Impacts of parking and traffic will be assessed not just in the Downtown Primary Study Area, but also on adjacent neighborhoods. Results of these analyses will be presented to the public, stakeholders, and decision-makers for their review and comment, and used to inform Phase II of the Downtown Development Cap Study, in which future policy direction will be determined.

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