

Parking for San Jose's Future

**Aligning San Jose's Parking Policies with
Envision San Jose 2040 General Plan Goals**

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I – Introduction

This report seeks to address disparities between the goals of San Jose’s new General Plan, *Envision San Jose 2040*, and its current policies for off-street parking requirements found in its Municipal Zoning Ordinance. The goal of this report is to make policy recommendations for San Jose that will align the city’s parking policies with its General Plan goals.

As will be discussed at length, San Jose’s new General Plan seeks to redirect the city’s history of sprawling development patterns into focused growth areas that will allow for fiscal and environmental sustainability. Key aspects of *Envision San Jose 2040* are:

- A shift away from private automobiles as the primary mode of transportation to a balanced transportation network
- A mix of land uses and increased population density, particularly along transit corridors and at infill sites
- A high jobs-to-employed resident ratio
- A firm urban growth boundary

Despite these policy goals, the current requirements for off-street parking in San Jose’s zoning ordinance still require developers to provide large amounts of off-street parking for every type of land use. Off-street parking is associated with spread-out land development, inefficient transit service, and high rates of automobile use, all of which will inhibit full implementation of *Envision 2040* goals.

1.1 – General Themes and Criteria for Analysis

The effects of parking zoning on transportation, housing, and the environment are examined throughout this report. Chapter Two’s literature review focuses on these themes while Chapter Four studies cases where parking reforms have been put into practice. When analyzing parking literature and case studies, the following questions will be considered. These questions are derived from the goals of *Envision San Jose 2040*, which are discussed in more detail in Chapter Three. The questions are also used as criteria for the policy analysis in Chapter Four.

- Does the policy result in increased use of alternative transportation?
- Does the policy help reduce vehicle miles travelled, rates of automobile use, and/or rates of automobile ownership?
- Does the policy result in an increase of housing supply?
- Does the policy increase the affordability of housing?
- Is there a reduction in automobile emissions as a result of the policy?

In addition to these questions, the criteria for Chapter Four’s policy analysis will include community engagement, historic preservation, downtown revitalization, economic development and political feasibility. Each of these themes is derived from the *Envision 2040* goals discussed in Chapter Three.

- Does the policy result in increased jobs in the city?
- Does the policy result in increased retail?
- Does the policy result in added revenue for the city?
- Did the policy receive support from the community or from local officials when it was initially implemented?
- Has the policy received subsequent support?
- Does the policy assist with historic preservation?
- Does the policy help support downtown revitalization?

1.2 – Structure of this Report

Current literature on parking policy, including the history of parking policy, contemporary use of parking zoning, and examples of progressive policy reforms, is reviewed in Chapter Two. Chapter Three provides an overview of *Envision San Jose 2040*, focusing on the goals most relevant to this report. Chapter Three also provides a detailed look at San Jose’s current parking provision and the effects of the city’s parking zoning practices. Chapter Four reviews case studies of US cities that have made attempts to implement progressive parking reform. Literature and cases reviewed in these chapters are then analyzed in Chapter Five. Policy recommendations for the City of San Jose are based on this analysis and are included in Chapter Five. Chapter Six summarizes this report and offers suggestions for further research.

II – Off-Street Parking Zoning: History, Use, and Effects

This report focuses in part on the negative effects parking zoning has had and continues to have on cities and the environment. Parking zoning is defined as a policy or set of policies that use off-street parking as a tool to reduce traffic congestion and manage limited on-street storage space. These policies have traditionally set the minimum number of off-street parking spaces to be provided by developers for every type of land use a developer might build.¹ On-street policies are often used to complement off-street zoning. Off-street parking zoning has been and continues to be the preferred tool of US cities as evidenced by its near universal use throughout the country.²

This chapter examines academic and professional research of parking policy in the US and abroad to understand the history, use, and effects of off-street parking requirements. This literature will help to provide context for Chapter Three’s discussion of San Jose’s policies and goals, Chapter Four’s case studies, and Chapter Five’s policy analysis.

2.1 – An Introduction to Parking Zoning

Our modes of travel have dramatic impacts on the economy and the environment. Private automobiles are the main mode of transportation in North America and are gaining in prominence elsewhere. Several factors contribute to high rate of automobile use, including public investment, the convenience and perceived safety of private automobile use, a lack of alternative travel modes, and built environments that all but prohibit effective public transit systems, bicycle networks, and pedestrian environments. The policies that cities and other agencies use to address automobile storage play an important role in automobile use. Off-street parking requirements have been shown to increase automobile dependency, decrease housing affordability, and contribute to the degradation of the environment. Off-street parking requirements make automobile use convenient, consume large amounts of land, and spread development, making walking, biking and transit use difficult.

This discussion will focus on parking zoning’s effects on housing, transportation, and the environment. The studies discussed provide much evidence to suggest that our current parking policies have high social and environmental costs. According to studies and academic literature, parking zoning – particularly minimum parking requirements – is associated with:

- Automobile-dependency as a result of spread-out development, zone-segregated land uses, lowered densities, and decreased walkability³
- Increased housing costs as a result of land consumption and bundled parking⁴

¹ Donald Shoup, “The Trouble with Minimum Parking Requirements,” *Transportation Research Part A: Policy and Practice* 33, no. 7–8 (1999), 549.

² Erik Ferguson, “Zoning for Parking as Policy Process: A Historical Review,” *Transport Reviews* 24, no. 2 (2004), 53.

³ Shoup, “The Trouble with Minimum Parking Requirements,” 557.

⁴ W. Jia and M. Wachs, “Parking Requirements and Housing Affordability: Case Study of San Francisco,” *Transportation Research Record: Journal of the Transportation Research Board* 1685, no. 1 (1999), 159.

- Environmental degradation from automobile exhaust and impervious surfaces⁵
- Economic costs associated with automobile subsidies and increased costs of transportation, goods, and municipal services⁶

Recently, a small number of US cities have begun to adapt their parking policies in an effort to reduce automobile use and its associated externalities. These policies are a recent phenomenon and their effects have not yet been fully realized. These policies are referred to as progressive parking policies in this report and will be discussed both here and in Chapter Four.

2.1.1 – The Purpose and Use of Parking Zoning

Parking requirements in municipal zoning ordinances have been used almost exclusively to increase the supply of off-street automobile storage. While the earliest parking regulations – found in New York City’s 1916 zoning ordinance – attempted in part to decrease the amount of space dedicated to parking,⁷ the vast majority of parking zoning has increasingly required more and more off-street space.⁸ This type of parking zoning – requiring a minimum number of off-street spaces based on type of land use – is now ubiquitous, used in over 95% of US cities.⁹

Cities use parking zoning in similar ways and for similar reasons.¹⁰ Paraphrasing from the City of San Jose’s Municipal Zoning Ordinance, the purpose of requiring off-street parking is to:

- Meet the parking and loading needs generated by development
- Promote effective vehicle circulation
- Reduce traffic congestion
- Increase safety for road users
- Enhance the aesthetics of nearby areas
- Mitigate the adverse effects of a given land use on neighboring uses
- Utilize off-street land resources as efficiently as possible¹¹

Whether or not San Jose – or any city – achieves these goals is another question, one that will be answered in the following sections as well in Chapter Three’s analysis of existing parking conditions in San Jose. For example, despite these statements from the city’s zoning ordinance, underpriced and oversupplied parking induces and increases – rather than reduces – traffic congestion.¹²

⁵ Amélie Y. Davis, Bryan C. Pijanowski, Kimberly D. Robinson, and Paul B. Kidwell, “Estimating Parking Lot Footprints in the Upper Great Lakes Region of the USA,” *Landscape and Urban Planning* 96, no. 2 (May 2010), 68.

⁶ Amélie Y. Davis, Bryan C. Pijanowski, Kimberly Robinson, and Bernard Engel, “The Environmental and Economic Costs of Sprawling Parking Lots in the United States,” *Land Use Policy* 27, no. 2 (April 2010), 255-256.

⁷ Ferguson, “Zoning for Parking as Policy Process: A Historical Review,” 49.

⁸ Shoup, “The Trouble with Minimum Parking Requirements,” 559.

⁹ Ferguson, “Zoning for Parking as Policy Process: A Historical Review,” 50.

¹⁰ Shoup, “The Trouble with Minimum Parking Requirements,” 550.

¹¹ City of San Jose, “Parking and Loading,” in “Title 20: Zoning Ordinance,” *San Jose Municipal Code* (San Jose, 2001), 2.

¹² Shoup, “The Trouble with Minimum Parking Requirements,” 555.

2.1.2 – Methods for Setting Parking Requirements and Increases in Parking Supply

In order to set minimum parking requirements, cities typically consult the Institute of Traffic Engineers (ITE) *Trip Generation* manual.¹³ The ITE manual provides estimated traffic generations rates for specific land uses based on floor area, number of employees, number of residential units, number of bedrooms, and so on. The manual is used by cities to set the minimum amount of parking needed to meet demand during the holiday shopping season.¹⁴ Table 1 is an example of trip generation rates found in this manual.

Table 1: Example of trip generation rates from the Institute of Traffic Engineers

Description	Unit of Measure	Trips Per Unit (PM Peak)
General Light Industrial	1,000 SF	0.97
Single-Family Detached Housing	Dwelling Units	1.01
Hotel	Rooms	0.59
County Park	Acres	0.06
Park and Ride Lot with Bus Service	Parking Spaces	0.62
Bowling Alley	1,000 SF	3.54
Athletic Club	1,000 SF	5.96
Prison	1,000 SF	2.91
Lodge/Fraternal Organization	Members	0.03

Source: Data adapted from Institute of Transportation Engineers, *Trip Generation Manual*, 9th ed. (Washington, D.C.: ITE, 2012).

Recent studies have presented flaws in the trip generation rates contained in the ITE manual. For example, parking lots built using requirements based on *Trip Generation* rates have been found to be underutilized, suggesting that ITE trip generation rates are inflated.¹⁵ The methods for determining these generation rates are also questionable. Fifty percent of the traffic generation rates in the manual are based on four or fewer surveys of specific locations. Twenty-two percent of these are based on a single survey. All of the surveys are based in suburban settings with limited public transit and free parking, which skews the rates as these factors induce automobile use. Additionally, the ITE manual does not disclose important information as to why a particular location was surveyed or when, making it difficult for a city to determine if a particular generation rate is applicable to local context. The ITE manual is, however, the only comprehensive source of traffic generation rates and is therefore considered to be the most credible source for setting parking requirements.¹⁶

Studies of parking supply – the number of spaces built by a developer, as opposed to the number of spaces required – also suggest that parking minimums are inflated and increase the supply of parking. Studies in Los Angeles¹⁷ and New York¹⁸ show that existing supply is at or near the

¹³ Shoup, “The Trouble with Minimum Parking Requirements,” 550-551.

¹⁴ Shoup, “The Trouble with Minimum Parking Requirements,” 551.

¹⁵ Adam Smith, *A Study of Parking Utilization for Neighborhood Shopping Centers Along VTA Transit Routes in San Jose: Are Minimum Parking Requirements Too High?* (San Jose State University, 2011), 44.

¹⁶ Shoup, “The Trouble with Minimum Parking Requirements,” 551-552.

¹⁷ W. Bowman Cutter and Sofia F. Franco, “Do Parking Requirements significantly Increase the Area Dedicated to Parking? A Test of the Effect of Parking Requirements Values in Los Angeles County,” *Transportation Research Part A: Policy and Practice* 46, no. 6 (2012), 920.

¹⁸ Furman Center for Real Estate and Urban Policy, *Searching for the Right Spot: Minimum Parking Requirements and Housing Affordability in New York City* (2012), 9.

required minimum, suggesting that the developers of these properties would have provided fewer spaces had it been possible. Regardless of inflated parking generation rates, this is the method by which the majority of cities set their parking requirements.

2.1.3 – Effects of Parking Zoning: Transportation, Housing Affordability, and the Environment

Professional and academic studies are mostly in agreement that parking zoning has had negative impacts on cities and the environment. Parking zoning induces and subsidizes automobile use, increasing vehicle miles travelled; spreads-out land uses, making active transportation and transit use difficult; and increases the costs of goods, services, and rent by bundling the price of parking into the price of development. These requirements also add increased strain on the environment through automobile emissions, land consumption, and the loss of permeable surfaces. The following sections will discuss these themes in more detail.

2.2 – The Effects of Parking Zoning on Transportation

The findings of several studies indicate that ample free parking increases the likelihood that an individual will choose to travel by automobile. Additionally, several studies have found that parking lots are typically underutilized.

2.2.1 – Increased Rates of Automobile Use

Several studies have found that automobile use increases as parking supply increases. These studies have examined relationships between automobile use and on- and off-street parking supply, parking permit districts, distance and type of trip, income, parking zoning requirements, and the built environment. In each case, as the availability of parking increases, so do the rates of automobile use.

The presence of off-street automobile storage facilities at residences plays a significant role in automobile use.¹⁹ These facilities include garages, carports, and driveways. Not only do these facilities play a significant role, but off-street parking at homes in general has been found to be the most significant factor in car ownership, even more significant than income.²⁰ This is the case in both urban and suburban settings in the United States.²¹

The availability of off-street parking is strongly associated with increased rates of automobile commuting. Residential off-street parking supply is associated with higher rates of automobile commuting, meaning that individuals who are able to store an automobile at home are more likely to drive to work.²² Parking supply in a central city setting also encourages driving. A greater supply of parking in the city center encourages automobile use instead of transit. Free

¹⁹ Zhan Guo, “Does Residential Parking Supply Affect Household Car Ownership? The Case of New York City,” *Journal of Transport Geography* 26, no. 0 (January 2013), 24.

²⁰ Guo, “Does Residential Parking Supply Affect Household Car Ownership?” 25.

²¹ Guo, “Does Residential Parking Supply Affect Household Car Ownership?” 22.

²² Rachel Weinberger, “Death by a Thousand Curb-Cuts: Evidence on the Effect of Minimum Parking Requirements on the Choice to Drive,” *Transport Policy* 20 (2012), 100.

parking further encourages this behavior.²³ The same also applies to a city's parking supply as a whole. Cities with less parking have fewer commuters using automobiles.²⁴

A 2012 study of the long term effects of parking zoning in New York City found that parking zoning had increased the rate of automobile use by increasing parking supply. Developers in New York have built at or near the minimum parking requirements in the city's zoning ordinance at 77 percent of residential developments,²⁵ suggesting that these requirements have increased automobile use. Daily automobile commute trips in New York increased 50 percent 50 years after minimum parking requirements went into effect.²⁶ Likewise, a 2008 survey of California found that dense metropolitan areas with high minimum parking requirements are much more likely to have high rates of automobile use than dense areas with fewer required spaces.²⁷ The availability of parking, therefore, is one of the most significant factors in automobile use.²⁸

On-street curbside parking is also linked to increased automobile use. The presence of on-street parking has been found to increase the likelihood that a household will own a car and use it to commute.²⁹ Changes in parking policy also impact automobile ownership and use. For example, reductions in the frequency of street sweeping in New York increased car ownership rates and increased vehicle miles travelled per household. This is the result of a household not having to move its car for street sweeping as often, effectively increasing the on-street supply of parking.³⁰ Free and readily available short-term curbside parking also encourages more automobile use.³¹

Parking permits have also been found to increase automobile use. Residential parking permits increase the likelihood that a household will own an automobile, given the additional on-street parking availability created by the permit district.³² Programs to give employees permits to park in residential neighborhoods also significantly increase automobile commuting to work.³³ Policies to allow central city business owners and their employees to park in nearby parking districts increase automobile use.³⁴ In sum, increased access to parking increases the likelihood that one will choose to drive.

²³ Tom Rye, Kim Hunton, Stephen Ison, and Nazan Kocak, "The Role of Market Research and Consultation in Developing Parking Policy," *Transport Policy* 15, no. 6 (2008), 393.

²⁴ Christopher McCahill and Norman Garrick, "An Evaluation of Automobile Use, Parking Provision, and Urban Activity" (lecture, Conference on Performance Measures for Transportation and Livable Communities, Austin, TX, September 7-8, 2011).

²⁵ Furman Center for Real Estate and Urban Policy, *Searching for the Right Spot*, 9.

²⁶ Furman Center for Real Estate and Urban Policy, *Searching for the Right Spot*, 7.

²⁷ Daniel G. Chatman, "Deconstructing Development Density: Quality, Quantity and Price Effects on Household Non-Work Travel," *Transportation Research Part A: Policy and Practice* 42, no. 7 (2008), 1025.

²⁸ Chatman, "Deconstructing Development Density," 1025.

²⁹ Guo, "Does Residential Parking Supply Affect Household Car Ownership?" 26.

³⁰ Guo, "Does Residential Parking Supply Affect Household Car Ownership?" 26.

³¹ Rye et al., "The Role of Market Research and Consultation in Developing Parking Policy," 393.

³² Guo, "Does Residential Parking Supply Affect Household Car Ownership?" 26.

³³ Weinberger, "Death by a Thousand Curb-Cuts," 100.

³⁴ Rye et al., "The Role of Market Research and Consultation in Developing Parking Policy," 393.

Underpriced and free on-street parking not only encourages automobile use, but induces parking cruising, whereby a motorist continually circles an area looking for an unoccupied space.³⁵ Parking cruising contributes to congestion, causes distracted driving, and increases vehicles miles travelled. About 30 percent of cars in traffic in the United States are searching for parking.³⁶



Figure 1: Many studies have shown that underpriced curbside parking increases automobile use, including a study of on-street parking in central Edinburgh, pictured here. Photograph by the author.

2.2.2 – Parking Occupancy Studies Show Underutilization of Off-Street Parking

As discussed above, increased parking supply increases rates of automobile ownership. The easier it is to park, the more likely an individual is to drive. Parking requirements induce automobile use by providing an ample amount of parking.³⁷ While parking zoning policies typically require large amounts of parking to be provided, many parking lots remain underutilized. Findings from several parking occupancy studies show that parking occupancy levels are often well below their optimal rate.

³⁵ Richard Arnott and John Rowse, “Downtown Parking in Auto City,” *Regional Science and Urban Economics* 39, no. 1 (January 2009), 7.

³⁶ Arnott and Rowse, “Downtown Parking in Auto City,” 12.

³⁷ Shoup, “The Trouble with Minimum Parking Requirements,” 555.

Parking occupancy, both on- and off-street, is considered optimal at 85 percent. This figure is considered to best utilize scarce land resources while providing vacancies that minimize parking cruising. Parking provision recommendations based on the ITE *Trip Generation* manual are intended to meet peak demand with 85 percent occupancy.³⁸ Eighty-five percent, therefore, is used as the threshold for whether or not an area is over- or under-parked.

Studies of parking occupancy in San Jose show existing parking supply to be underutilized. A survey of parking in the Alameda Business District completed in 1999 and again in 2007 by the San Jose Redevelopment Agency found the district to be over-parked. The 1999 study found an overall peak-demand rate of 55 percent for on- and off-street parking.³⁹ In 2007, the peak-demand increased to 67 percent with an excess supply of 296 parking spaces.⁴⁰ A 2011 study of shopping centers along light rail lines in San Jose found their parking lots to be consistently underutilized. There were 1,861 unused spaces during the peak period and 1,900 during the non-peak period.⁴¹ Figure 2 shows an underutilized light rail station parking lot in San Jose. A study of transit-oriented residential developments at passenger rail stations in San Jose showed similar results. On average, parking facilities at these locations were 22 percent underutilized.⁴² In both studies, the number of spaces at each location was based on San Jose's zoning ordinance, which was created using ITE trip generation rates.⁴³ An occupancy survey conducted by this report's author found San Jose to have citywide occupancy rate of 37.9 percent. This survey will be further discussed in Chapter Three.

³⁸ Shoup, "The Trouble with Minimum Parking Requirements," 560.

³⁹ San Jose Redevelopment Agency, *The Alameda Business District Parking Study*, prepared by Fehr & Peers Transportation Consultants (San Jose, 2008), 9.

⁴⁰ San Jose Redevelopment Agency, *The Alameda Business District Parking Study*, 13.

⁴¹ Smith, "A Study of Parking Utilization for Neighborhood Shopping Centers Along VTA Transit Routes in San Jose," 43-44.

⁴² San Jose State University and Santa Clara Valley Transportation Agency, *A Parking Utilization Survey of Transit-Oriented Development Residential Properties in Santa Clara County*, (San Jose, 2010), 50.

⁴³ Smith, "A Study of Parking Utilization for Neighborhood Shopping Centers Along VTA Transit Routes in San Jose," 44.



Figure 2: A deserted parking lot at a light rail station during the morning commute period in San Jose. Photograph by the author.

Parking occupancy rates were studied in Tippecanoe County, Indiana, home to Purdue University and a portion of the Lafayette Metropolitan Statistical Area. Parking lots from urban, suburban, and rural zip codes were randomly sampled. The combined parking occupancy rate for residential, commercial, and industrial land uses was 28 percent,⁴⁴ far below the occupancy rates expected to be generated using ITE guidelines. Findings from these studies conclude that parking lots are typically underutilized and parking supply is generally greater than parking demand.

2.3 – The Effects of Parking Zoning on Housing Affordability

Off-street parking at residential land uses increases the cost of housing and decreases housing affordability. These impacts are the result of the consumption of land for parking facilities, the cost to developers of providing parking, and the costs of providing parking subsequently being passed on to the consumer.

2.3.1 – Parking Provision and the Cost of Development

The amount of land consumed by parking has a significant impact on housing affordability. By decreasing the amount of land available for development, the cost of development – and therefore the price of housing – increases. It has been estimated that approximately 55 percent of all developed properties in the US are dedicated to parking,⁴⁵ leaving less than half of all developable land available for profit-generating and/or community-serving activities.

⁴⁴ Davis et al., “The Environmental and Economic Costs of Sprawling Parking Lots in the United States,” 258.

⁴⁵ Davis et al., “The Environmental and Economic Costs of Sprawling Parking Lots in the United States,” 258.

Minimum parking requirements have been found to increase the amount of space dedicated to parking on a given parcel. These requirements decreased site density by reducing the overall area that can be used for development.⁴⁶ A 2010 study in San Jose, for example, found that 2.5 parking spaces had been built per unit at residential developments surveyed, though a parking occupancy survey found that only 1.3 spaces per unit were used.⁴⁷ Parking zoning has doubled the total supply of parking at these sites, decreasing the amount of land dedicated to the actual land use.

On-site parking does not increase the value of a property.⁴⁸ Providing parking at a development ranges from \$10,000 to \$30,000 per individual space,⁴⁹ with underground parking more than doubling these costs⁵⁰ and maintenance adding approximately \$800 per space per year.⁵¹ The costs to provide these spaces are not recovered in the same way in which other land improvements accrue value. Additional parking required by municipal zoning ordinances reduces the amount of developable land and drives up overall development costs. The costs of providing parking may also make a project too costly to build.⁵² This is especially likely in markets with high land values or for projects that require a garage or underground parking.⁵³

⁴⁶ Cutter and Franco, "Do Parking Requirements significantly Increase the Area Dedicated to Parking?" 919.

⁴⁷ San Jose State University and Santa Clara Valley Transportation Agency, *A Parking Utilization Survey of Transit-Oriented Development Residential Properties in Santa Clara County*, 2.

⁴⁸ Cutter and Franco, "Do Parking Requirements significantly Increase the Area Dedicated to Parking?" 907.

⁴⁹ San Jose State University and Santa Clara Valley Transportation Agency, *A Parking Utilization Survey of Transit-Oriented Development Residential Properties in Santa Clara County*, 60; Shoup, "The Trouble with Minimum Parking Requirements," 556.

⁵⁰ Shoup, "The Trouble with Minimum Parking Requirements," 556.

⁵¹ San Jose State University and Santa Clara Valley Transportation Agency, *A Parking Utilization Survey of Transit-Oriented Development Residential Properties in Santa Clara County*, 61.

⁵² Eran Feitelson and Orit Rotem, "The Case for Taxing Surface Parking," *Transportation Research Part D: Transport and Environment* 9, no. 4 (2004), 320.

⁵³ Furman Center for Real Estate and Urban Policy, *Searching for the Right Spot*, 6.



Figure 3: San Jose's General Plan emphasizes increased housing units and high-rise construction downtown, such as the new luxury apartment high-rise pictured here. Current parking requirements significantly increase the cost of developing these types of projects. Photograph by the author.

2.3.2 – Parking Bundling and Housing Affordability

While the cost of providing parking increases the overall cost of development, these costs are not borne solely by the developer as they are instead passed onto the consumer through bundled parking. Parking bundling is defined as the inclusion of the costs of providing off-street parking with the price of goods, services, and rent.

The costs of parking are externalized in the form of higher costs of good and services. If a municipal zoning ordinance requires 1.5 spaces to be provided with a housing unit, the tenants will pay for those spaces with higher rent, whether or not they use them or own automobiles. Even individuals who do not own automobiles must pay for the costs of parking. In 1999, 10.6 million American households did not own a car but still had to pay for parking in the costs of housing.⁵⁴ A 1996 study of San Francisco found the inclusion of parking to have a significant impact on the price of housing. Single-family homes with off-street parking sold for 11.8 percent more than those without. Similarly, condos with off-street parking sold for 13 percent more than those without.⁵⁵

The price of housing is increased by decreasing the amount of land available for development and by bundling the costs of parking into the costs of housing. As discussed above, parking provision decreases the amount of land available for development, making development of a

⁵⁴ Shoup, "The Trouble with Minimum Parking Requirements," 568-569.

⁵⁵ Jia and Wachs, "Parking Requirements and Housing Affordability," 8.

parcel more costly. Because parking does not contribute positively to land value, developments are therefore less profitable.⁵⁶

2.4 – The Effects of Parking Zoning on the Environment

Off-street parking has been found to have a negative impact on the environment. Off-street parking consumes large amounts of land and is associated with increased automobile emissions.

2.4.1 – Parking and Land Consumption

As discussed above, parking supply has been found to negatively affect housing affordability, increasing the costs of living. This is due in part to the amount of land consumed for parking.⁵⁷ The consumption of land for parking has been found to negatively affect the environment by paving over permeable surfaces and degrading natural features.⁵⁸ Creating impermeable surfaces contributes to the depletion of ground water and increased toxicity of local waterways through urban runoff.⁵⁹

Two studies in the Great Lakes region of the United States attempted to measure the amount of land dedicated to parking. Using aerial imagery and random sampling, researchers found parking lots to cover 6.57 percent of the total land area in Tippecanoe County, Indiana. For reference, the ratio of parking lots to parks in the county is 3:1 in developed areas. A total of 202,714 parking spaces were estimated for the area, or 2.2 per registered passenger vehicle and 6.6 per family.⁶⁰

Looking to the greater region, the second study used these results to estimate parking lot coverage for Illinois, Indiana, Michigan, and Wisconsin. Combined, there exists an estimated 486 square miles of parking. Using the same methods in the previous study of Tippecanoe County, 43 million spaces were estimated for the region, or 1.7 per registered automobile and 1.8 per person of driving age.⁶¹ It should be noted that this study did not include garages or driveways at single-family homes, underground parking, and on-street spaces. This explains why these results are inconsistent with other studies that estimate up to five spaces per vehicle.⁶²

The findings of these studies show that a tremendous amount of land is consumed by parking. In Tippecanoe County alone, the ecosystem service value – the value that natural features contribute to an ecosystem – has been reduced by 38.4 percent as a result of parking.⁶³ In the Upper Great Lakes Region, 6.25 percent of all forested land has been lost as a result of parking.⁶⁴ This region is not dissimilar from other areas of the United States, including San Jose, in terms of parking zoning requirements, built environments, and land uses. These findings are therefore

⁵⁶ Cutter and Franco, “Do Parking Requirements significantly Increase the Area Dedicated to Parking?” 907.

⁵⁷ Davis et al., “The Environmental and Economic Costs of Sprawling Parking Lots in the United States,” 258.

⁵⁸ Davis et al., “Estimating Parking Lot Footprints in the Upper Great Lakes Region of the USA,” 74.

⁵⁹ Davis et al., “Estimating Parking Lot Footprints in the Upper Great Lakes Region of the USA,” 69.

⁶⁰ Davis et al., “The Environmental and Economic Costs of Sprawling Parking Lots in the United States,” 258.

⁶¹ Davis et al., “Estimating Parking Lot Footprints in the Upper Great Lakes Region of the USA,” 74.

⁶² Shoup, “The Trouble with Minimum Parking Requirements,” 557.

⁶³ Davis et al., “The Environmental and Economic Costs of Sprawling Parking Lots in the United States,” 258.

⁶⁴ Davis et al., “Estimating Parking Lot Footprints in the Upper Great Lakes Region of the USA,” 74.

reflective of the overall impact that parking zoning has had in the United States. The results of this study have been extrapolated to the rest of the US, estimating that parking consumes approximately 55 percent of all developed properties in the country.⁶⁵

The methods of these two studies will be revisited in Chapter Three's discussion of San Jose's current parking supply.

2.4.2 – Parking Supply and Increased Automobile Emissions

A positive correlation has been found between parking supply and automobile emissions. The decentralized nature of suburban destinations in the US increases automobile dependency by making alternative modes of travel impractical in most communities. Individuals must drive to and park at multiple destinations that are spread apart by low-density development. This activity is harmful to the environment in two ways. It causes increased emissions by increasing the total number of vehicle miles travelled.⁶⁶ It also incrementally increases the amount of parking through traffic generations rates, causing more and more surfaces to be paved and the loss of more land.⁶⁷ This incremental increase in parking supply also induces more automobile use and its associated costs.⁶⁸

The results of a policy used by the City of Portland to decrease emissions shows a relationship between parking supply and emissions. Prior to 1972, Portland's air quality violated federal carbon monoxide levels one out of every three days of the year. In order to improve air quality, Portland placed a moratorium on downtown parking provision, freezing the total parking supply at its existing amount. The policy was effective at reducing carbon monoxide levels. Portland has not exceeded federal levels since 1984.⁶⁹ This decrease in emissions correlates positively with the decrease in Portland's downtown parking supply and shows a relationship between parking supply and pollution. Portland's policy will be discussed in greater detail in Chapter Four.

Considering that free parking induces parking cruising and therefore increases total vehicle miles travelled in a given area, it is further evident that parking supply induces behavior that is damaging to the environment.⁷⁰

2.5 – Progressive Parking Policy

In recent years, some cities have adapted their parking policies in an effort to minimize the negative externalities associated with parking zoning. These progressive policies are often intended as a tool to reach larger city goals related to housing affordability, economic

⁶⁵ Davis et al., "The Environmental and Economic Costs of Sprawling Parking Lots in the United States," 258.

⁶⁶ Chih-Peng Chu and Mei-Ting Tsai, "A Study of an Environmental-Friendly Parking Policy," *Transportation Research Part D: Transport and Environment* 16, no. 1 (January 2011), 90.

⁶⁷ Chu and Tsai, "A Study of an Environmental-Friendly Parking Policy," 90.

⁶⁸ Shoup, "The Trouble with Minimum Parking Requirements," 555.

⁶⁹ Rachel Weinberger, John Kaehny, and Matthew Rufo, "US Parking Policies: An Overview of Management Strategies," (San Francisco: Institute for Transportation and Development Policy, 2010), 54.

⁷⁰ Arnott and Rowse, "Downtown Parking in Auto City," 12.

development, and environmental stewardship. This section will discuss the goals of progressive parking policies and provide examples.

2.5.1 – The Goals of Progressive Parking Policy

The goals of progressive parking policies vary from city to city and even from policy to policy. There are common themes among the various policies that have been studied and that have been implemented by local jurisdictions. Fiscal and environmental sustainability are two important goals, as are economic development and even historic preservation.

Progressive parking policies have been used as tools for redevelopment and historic preservation, as has been the case in Pasadena⁷¹ and Los Angeles.⁷² Portland has used parking policies to reduce air pollution.⁷³ Parking policy has been used as a tool for economic development in cities such as Boulder⁷⁴ and Redwood City.⁷⁵ San Francisco has used progressive policies to improve safety and decrease vehicle miles travelled.⁷⁶

A given policy may be used as a tool to meet several city goals. For example, Redwood City's *Parking Management Plan* describes the goals of its current policies as economic development, downtown preservation, and the efficient use of land resources.

The conventional approach to parking spreads [land uses] out to the point where a real downtown just isn't possible. Our favorite [city centers] ... would not be possible to build under conventional codes. But ... these are great places and we must retain them and expand them. However, even if we didn't care about creating nice places and we wanted to apply the conventional parking approach to Downtown, we probably couldn't. Property values are incredibly high in Downtown and they're getting higher. This makes surface parking lots an unattractive proposition. Anyone who pays top dollar for land wants to have as much of it generating revenue as possible, and surface parking doesn't do that. Above-ground parking structures are much more efficient with land, but they are very, very expensive. In fact, they tend to cost \$20,000 to \$25,000 or more per space. Underground garages are the most land-efficient, but they are also the most expensive. ... New garages in Palo Alto cost their local government nearly \$51,000 per ... space. Put simply, we cannot just build our way out of this situation. Do we need to have enough parking? Absolutely. But we must be sure to have 'just enough' and not 'more than enough.' And with that just enough amount we must be very shrewd and efficient, in order to make it work as well as possible.⁷⁷

The issues addressed in Redwood City's *Parking Management Plan* are shared among many cities. These issues are arguably the result of off-street requirements in the zoning ordinances of just about every city in the United States.

⁷¹ Donald Shoup, *The High Cost of Free Parking*, Chicago: APA Press (2011), 403.

⁷² Shoup, *The High Cost of Free Parking*, xxxiii.

⁷³ Paul Smith, interview by author, San Jose, CA, September 5, 2013.

⁷⁴ Weinberger, Kaehny, and Rufo, "US Parking Policies," 56.

⁷⁵ City of Redwood City, *The Downtown Redwood City Parking Management Plan* (Redwood City, 2005), 5.

⁷⁶ Weinberger, Kaehny, and Rufo, "US Parking Policies," 51.

⁷⁷ City of Redwood City, *The Downtown Redwood City Parking Management Plan*, 5.

Specific policies and experiences of US cities' parking reforms will be discussed in greater detail in Chapter Four.

2.5.2 – Examples of Progressive Parking Policy

The following examples are taken from academic literature studying the effects of parking policy as well as from cities that have attempted parking reform. Each of these is a tool that a city can use to help achieve a variety of its goals.

- **Unbundled parking:** Unbundled parking requires parking to be paid for by the user, either through market-rate pricing for each individual use of a parking space or by requiring a user to rent or buy a parking space. This policy prevents the costs of parking from being passed on to a larger community by requiring only users to pay. In this way, the price of parking is removed from the price of goods, services, and rents.⁷⁸ Unbundled parking can be an effective tool for increasing the affordability of housing.⁷⁹
- **In-lieu fees:** Rather than requiring private developers to provide parking, a city or other jurisdiction can charge developers an in-lieu fee to cover the trip generation costs incurred by new development. In-lieu fees can be spent by municipalities in numerous ways, including investing in transit and in municipal parking garages. In-lieu fees can help cities achieve density and alternative transportation goals by reducing the sprawling development associated with surface parking lots.⁸⁰
- **Reduced parking requirements:** Cities may update their zoning ordinances to decrease the amount of land dedicated to parking and to decrease the total parking supply in a given area. Rather than use the trip generation rates provided by the ITE manual, reduced minimums could be context-based, using data from surveys of parking occupancy performed within individual cities.⁸¹
- **Parking maximums:** Rather than requiring a minimum number of parking spaces to be built at individual land uses, cities can prohibit an over-supply of parking by limiting the number of spaces a developer can provide.⁸²
- **No parking requirements:** Parking requirements can be waived altogether, allowing a developer to not provide any parking, if desired.⁸³
- **Parking “freeze”:** A moratorium can be placed on parking provision in a given area, freezing the current parking supply by preventing any new parking from being built.

⁷⁸ Shoup, “The Trouble with Minimum Parking Requirements,” 568.

⁷⁹ Jia and Wachs, “Parking Requirements and Housing Affordability,” 8.

⁸⁰ Donald Shoup, “In Lieu of Required Parking,” *Journal of Planning Education and Research* 18, no. 307-320 (1999), 1-2.

⁸¹ Shoup, “The Trouble with Minimum Parking Requirements,” 568.

⁸² Weinberger, Kaehny, and Rufo, “US Parking Policies,” 51.

⁸³ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 51.

This is likely to only work in areas of significant density and a variety of land uses, and with frequent transit service.⁸⁴

- **Shared parking:** Shared parking allows two or more land uses to share parking facilities. In the US, most zoning ordinances require every individual land use to provide its own off-street parking as a means to mitigate the effects of the trips it generates. This often results in the oversupply of parking and underutilized surface parking lots, as evidenced by studies of parking occupancy.⁸⁵ Allowing multiple land uses to share a single parking facility is a method to reduce the amount of area dedicated to parking, reduce the supply of parking, preserve historic buildings and neighborhoods, control the costs of development, and minimize the need to drive to and park at multiple destinations.⁸⁶ This policy can be especially effective if used among land uses with alternate peak demand periods, such as by pairing a medical office with a movie theater, or an apartment complex with ground floor retail, where one use generates mostly daytime trips and the other generates mainly evening trips.⁸⁷



Figure 4: Due to zoning policies that require every land use to provide its own parking, suburban areas of cities have an overabundance of parking, which is underutilized most of the time, as shown above in West San Jose. Shared parking can help to solve this over-parked problem. Photograph by the author.

- **Market pricing and demand-responsive pricing:** Market pricing requires the user to pay the actual costs of parking rather than a smaller fee subsidized by public dollars. This allows for the true price of parking to be captured in the fee charged to the user. It also allows for the demand for parking to be more efficiently managed. Market pricing often involves demand-responsive pricing, a tool that sets the price of parking based on demand, with the price fluctuating throughout the day and week. Areas with higher demand – typically close to major destinations – are priced higher than those with less demand.⁸⁸ The pricing is adjusted over time in an attempt to achieve a parking

⁸⁴ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

⁸⁵ Shoup, “The Trouble with Minimum Parking Requirements,” 568.

⁸⁶ Chu and Tsai, “A Study of an Environmental-Friendly Parking Policy,” 90.

⁸⁷ San Jose Redevelopment Agency, *The Alameda Business District Parking Study*, 4.

⁸⁸ Shoup, “The Trouble with Minimum Parking Requirements,” 560.

occupancy rate of 85 percent.⁸⁹ Market pricing can also provide increased revenue to local governments.⁹⁰

- **Parking benefit district:** Revenue raised through parking pricing can be reinvested into the priced area in the form of streetscape enhancements, transit investments, building façade improvements, and other neighborhood improvements. Parking benefit districts can both manage parking demand through parking pricing and improve general conditions within a community.⁹¹

The policies listed here are examples of ways in which cities and academics are re-visioning parking zoning in order to achieve societal goals. This list is not exhaustive of the various tools cities are using to change their parking policies. These policies will be revisited in Chapter Four's case studies.

⁸⁹ Arnott and Rowse, "Downtown Parking in Auto City," 7.

⁹⁰ Weinberger, Kaehny, and Rufo, "US Parking Policies," 64.

⁹¹ Shoup, *The High Cost of Free Parking*, 408.

III – Parking in San Jose: Conflicts between Current Policy and Future Goals

As mentioned at the beginning of this report, San Jose’s current General Plan, *Envision San Jose 2040*, has ambitious goals to redirect growth away from the sprawling development of recent decades and toward growth that provides fiscal and environmental sustainability. The plan seeks to increase the amount of housing units, jobs, and retail in the city while preserving open spaces and reducing the number of single-occupancy vehicle trips by 50 percent. Implementation of this plan will require policies that are aligned with *Envision 2040* goals, including parking policies.

This chapter evaluates San Jose’s current parking policies in light of the previously-discussed parking literature and *Envision 2040* goals. The chapter will begin with an overview of the development of San Jose and the adoption of *Envision San Jose 2040*. A discussion of existing parking conditions in San Jose will follow. Conflicts between existing policies and future goals will be discussed at the conclusion of this chapter. If San Jose is to achieve its mode shift and sustainability goals, it will need to adopt parking policies that do not conflict with these goals.

3.1 – The Growth of San Jose

San Jose is one of the largest cities in the United States and has one of the largest technology industries in the world. Despite the size of the city and its economy, San Jose’s growth for the latter half of the twentieth century has created a host of problems that affect the city’s fiscal and environmental sustainability, as well as its ability to deliver municipal services.⁹²

For much its existence, San Jose was a small town with an economy tied to agriculture. Founded in 1777 as California’s first civilian settlement, San Jose initially served as a farming community to support military establishments in San Francisco and Monterey.⁹³ The city retained a small, agricultural-based community through World War Two. In the 1950s, the city began a rapid annexation process of adjacent land and communities, quickly growing its boundaries and subsequently spreading development and decreasing its population density. This occurred as national policies encouraged home and automobile ownership, giving rise to the American suburb. Inevitably, new residential neighborhoods were created and automobile-oriented development gave rise to the private automobile as the primary means of transportation. This type of development continued well into the 1990s, increasingly straining city services, economic development, and quality of life for residents, as well as the health of the city’s natural environment.⁹⁴

A generation of low-density, spatially-segregated, sprawling development in San Jose has placed an enormous strain on the city’s ability to generate revenue and provide services. Zone-

⁹² City of San Jose, “Envision San Jose 2040,” in *Envision San Jose 2040 General Plan* (San Jose, 2011), c. 1, 65.

⁹³ City of San Jose, “Experience San Jose,” SanJoseCA.gov (San Jose, 2013), <http://sanjoseca.gov/Index.aspx?NID=127> (accessed February 17, 2013).

⁹⁴ City of San Jose, “Envision San Jose 2040,” c. 1, 64.

separated land uses have contributed to automobile dependency, which has negative impacts on health, safety, economic development, and the environment.⁹⁵ Eighty-seven percent of trips made by San Jose residents are by automobile (78 percent drive-alone and nine percent carpool).⁹⁶ This is the result of San Jose's history of spatially segregating land uses from one another, making walking and transit use ineffective means of transportation and therefore necessitating automobile use as the primary means to move about the city.⁹⁷ One of the main goals of San Jose's General Plan is to overcome the obstacles to a balanced transportation network that has made so many in San Jose dependent upon private automobiles for daily use.

3.2 – San Jose's Current Off-Street Parking Zoning

Like most US cities, the City of San Jose currently requires private developers to provide off-street parking at all new developments. This policy increases the supply of off-street parking in the city by ensuring that every single land use provides enough parking to meet the needs it is deemed to generate. As discussed previously, the purpose of requiring off-street parking, as stated in San Jose's Municipal Zoning Ordinance, can be summarized as an effort to:

- Meet the parking and loading needs generated by development
- Promote effective vehicle circulation
- Reduce traffic congestion
- Increase safety for road users
- Enhance the aesthetics of surrounding areas
- Mitigate the adverse effects of a given land use on neighboring uses
- Utilize off-street land resources as efficiently as possible⁹⁸

The following sections discuss the city's policies for off-street parking.

3.2.1 – Current Off-Street Parking Requirements

Title 20 of the City's Municipal Code provides all of the zoning ordinances governing land use within San Jose. The section on parking covers the entire 176 square land miles of the city, with the exception of the downtown core, requiring off-street parking to be provided at all land uses.

The city's parking requirements are very specific, calling out minimum requirements for every land use imaginable. Broader categories of uses include agriculture and resources, education and training, entertainment and recreation, and health and veterinary services. Specific examples of land uses that require parking include:

- Single-family dwelling units
- Multi-family dwelling units
- Office, business, and administrative uses

⁹⁵ City of San Jose, "Envision San Jose 2040," c. 1, 2-3.

⁹⁶ City of San Jose, "Land Use and Transportation," in *Envision San Jose 2040 General Plan* (San Jose, 2011), c. 6, 37.

⁹⁷ City of San Jose, "Land Use and Transportation," c. 6, 2.

⁹⁸ City of San Jose, "Parking and Loading," 2.

- Churches
- Cemeteries
- Batting cages
- Playgrounds
- Private security offices
- Emergency ambulance stations
- Catalog and mail order houses
- Free-standing automatic teller machines
- Stockyards and slaughterhouses

The required amount of off-street parking is specific to each land use and is generally determined by area, number of residential units, or number of employees. A single family home, for example, requires two covered spaces, regardless of the size of the house.⁹⁹ Multi-family homes vary by number and type of units, ranging from 1.25 spaces per studio to two spaces for a three bedroom apartment, with the number of spaces increasing by 0.15 for each additional bedroom.¹⁰⁰ Commercial spaces are generally allocated by square footage. Grocery stores must provide one space per every 200 square feet and furniture stores must provide at least one per every 250 square feet.¹⁰¹ The unit of measurement varies for some specific land uses. Hospitals, for example, must provide one space for every 2.5 beds.¹⁰² The ordinance also requires two spaces for every free-standing automatic teller machine.¹⁰³ Table 2 provides an example of the requirements found in Chapter 20.90.060, “Number of Parking Spaces Required,” in Title 20 of the Municipal Code.

Table 2: Example of parking requirement table in San Jose's Zoning Ordinance

Use	Vehicle Parking Required
Bed and Breakfast	2 spaces, plus one per guest room, plus 1 per employee
Dry cleaner	1 per 200 sq. ft. of floor area
Maintenance and repair, small consumer goods	1 per 200 sq. ft. of floor area
Mortuary and funeral services	1 per 4 seats, plus 1 per company vehicle
Personal services	1 per 200 sq. ft. of floor area
Photo processing and developing	1 per 200 sq. ft. of floor area

Source: City of San Jose, “Parking and Loading,” in “Title 20: Zoning Ordinance,” *San Jose Municipal Code* (San Jose, 2001).

⁹⁹ City of San Jose, “Parking and Loading,” 14.
¹⁰⁰ City of San Jose, “Parking and Loading,” 18.
¹⁰¹ City of San Jose, “Parking and Loading,” 9.
¹⁰² City of San Jose, “Parking and Loading,” 11.
¹⁰³ City of San Jose, “Parking and Loading,” 13.

According to San Jose’s ordinance, parking spaces may not be shared amongst uses, meaning adjacent spaces cannot be included as part of a development’s required spaces, even these spaces are not well-utilized.¹⁰⁴ There is an exception for alternating uses, or adjacent uses that generate parking demand at different, mutually-exclusive times.¹⁰⁵ For example, a church with only evening and weekend service could share its parking with a school that only has weekday morning and afternoon uses. For this exception to be granted, the zoning ordinance requires that the provided parking be adequate to serve parking demand for the duration of a building’s life, so if the church was housed in a building that could be used for some other purpose were the church to vacate the space, then the shared, alternate parking would not be permitted. Successful examples of shared alternative parking are few in San Jose, with one notable example being a school parking lot in the Alameda Neighborhood Business District west of downtown that serves a nearby movie theater and retail uses during the evening and on weekends.¹⁰⁶ This example will be further discussed in Chapter Four.

On-street parking can never serve as part of the required supply. This is the case even if the on-street supply near a development is vacant at all times prior to the development. Based on the ordinance’s stated purpose of efficient traffic circulation, it can be assumed that on-street parking may calm traffic, contributing to slower circulation and potential congestion, which the ordinance specifically seeks to mitigate.

As previously discussed, these parking minimums are based on trip generation rates within ITE’s *Trip Generation* manual. The purpose of this type of zoning is to create self-contained land uses that have adequate parking to meet the needs of the trips they are deemed to generate during the peak demand period in order to mitigate the effects of a given land use on adjacent uses and vehicle circulation. Cities use the ITE manual because of its comprehensiveness and not necessarily because its generation rates are correct or because off-street parking has been determined to be the best solution,¹⁰⁷ as was discussed in Chapter Two.

3.2.2 – Exceptions to Off-Street Parking Requirements

There are a few exceptions to San Jose’s parking requirements. Anything built in the city’s downtown core, which covers about one square mile of the city, is not subject to these requirements.¹⁰⁸ Structures built before November 10th, 1965, are also exempt from requirements, so long as there is not a substantial change in the use of the structure or the structure itself.¹⁰⁹ Of the city’s 315,255 housing units, 68,321 were built prior to 1960, or approximately 22 percent of total housing units.¹¹⁰ Since precise data is not available for homes built up to November 10th, 1965, and an additional 61,874 units were built in the 1960s,¹¹¹ it

¹⁰⁴ City of San Jose, “Parking and Loading,” 3.

¹⁰⁵ City of San Jose, “Parking and Loading,” 26.

¹⁰⁶ San Jose Redevelopment Agency, *The Alameda Business District Parking Study*, 4.

¹⁰⁷ Shoup, “The Trouble with Minimum Parking Requirements,” 560.

¹⁰⁸ City of San Jose, “Parking and Loading,” 2.

¹⁰⁹ City of San Jose, “Parking and Loading,” 7.

¹¹⁰ United States Census Bureau, “Table DP04: Selected Housing Characteristics, 2007-2011 American Community Survey 5-Year Estimates,” http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_11_5YR_DP04 (accessed May 1, 2013).

¹¹¹ United States Census Bureau, “Table DP04: Selected Housing Characteristics.”

should be safely assumed that parking requirements apply to at least 41 percent of the city’s housing stock. Similar data on non-residential uses was not readily available at the time of this report.



Figure 5: This apartment building next to San Jose City Hall was constructed in 1930 and has been continuously used for housing, exempting it from off-street parking requirements. The building has 14 units but only two on-site parking spaces. Photograph by the author.

Additional exceptions are given to uses that occur in or near a “main street” setting. Uses that qualify can receive a fixed percent reduction in the required amount of parking spaces. The following five “main street” exceptions are listed in the zoning ordinance:

- Uses that utilize alternative transportation, located within 2,000 feet of a rail station or a neighborhood business district as designated by the city’s General Plan, may receive up to a ten percent reduction¹¹²
- Ground-floor retail in a neighborhood business district needs only to provide one space per 400 square feet,¹¹³ as opposed to one parking space per 200 square feet outside of neighborhood business districts¹¹⁴
- Non-residential uses in neighborhood business districts that do not impose curb cuts onto the main street and do not employ parking reductions for ground-floor uses (as mentioned in the bullet point above) can receive a thirty percent reduction in required spaces
- Single-family homes that are built with a detached garage behind the home may receive a reduction to a single covered space

¹¹² City of San Jose, “Parking and Loading,” 27.

¹¹³ City of San Jose, “Parking and Loading,” 28.

¹¹⁴ City of San Jose, “Parking and Loading,” 8-9.

- Multi-family homes in or near neighborhood business districts that provide unbundled parking, car-share programs, and eliminated curb cuts to the main street can have parking reduced to 0.8 spaces per unit¹¹⁵

There are a small handful of other uses that can receive parking reductions with a development permit. Included uses are ministorage facilities, emergency residential shelters, senior housing developments, gas stations, and performing arts rehearsal spaces.¹¹⁶ This is contingent upon each individual use meeting city requirements for adequate parking supply throughout the duration of the building's life.¹¹⁷ If it is determined that a substantial change to the building could occur that would generate more trips and parking demand, parking reductions will not be granted. For example, if a ground floor space is built to house a performing arts rehearsal space but could easily be used for retail if the rehearsal space was vacated, it would be unlikely that the city would grant a reduction.

Finally, parking reductions are granted to uses within parking assessment districts, with approval from the City Council.¹¹⁸ Presumably, this is to encourage on-street metered parking or paid parking in municipal garages, which constitute a revenue stream for the city. There are a limited number of these districts in San Jose, including Japantown, the county government area, the area surrounding the former San Jose Medical Center, San Jose State, the Arena, the Diridon regional transit station, and much of the downtown core.¹¹⁹ Land uses within parking assessment districts make up a small fraction of total land uses in San Jose. Reductions in these areas therefore do not contribute significantly to an overall reduction in the citywide supply of off-street parking.

The areas of the city that are zoned as downtown core, are designated neighborhood business districts in the city's General Plan, or are within parking assessment districts combine for a total of less than three square miles, or 1.7 percent of total land in the city.¹²⁰ Therefore, the parking requirements contained with the city's zoning ordinance apply to over 98 percent of all land uses in the city. Figure 6 shows this area in relation to the total area of the city.

¹¹⁵ City of San Jose, "Parking and Loading," 27-29.

¹¹⁶ City of San Jose, "Parking and Loading," 29.

¹¹⁷ City of San Jose, "Parking and Loading," 26.

¹¹⁸ City of San Jose, "Parking and Loading," 29-30.

¹¹⁹ City of San Jose, "Parking Meters," SanJoseCA.gov, <http://www.sanjoseca.gov/index.aspx?NID=1871> (accessed May 1, 2013).

¹²⁰ City of San Jose, "Neighborhood Business Districts" (2008), ArcGIS shapefile accessed April 2013 via San Jose State University.

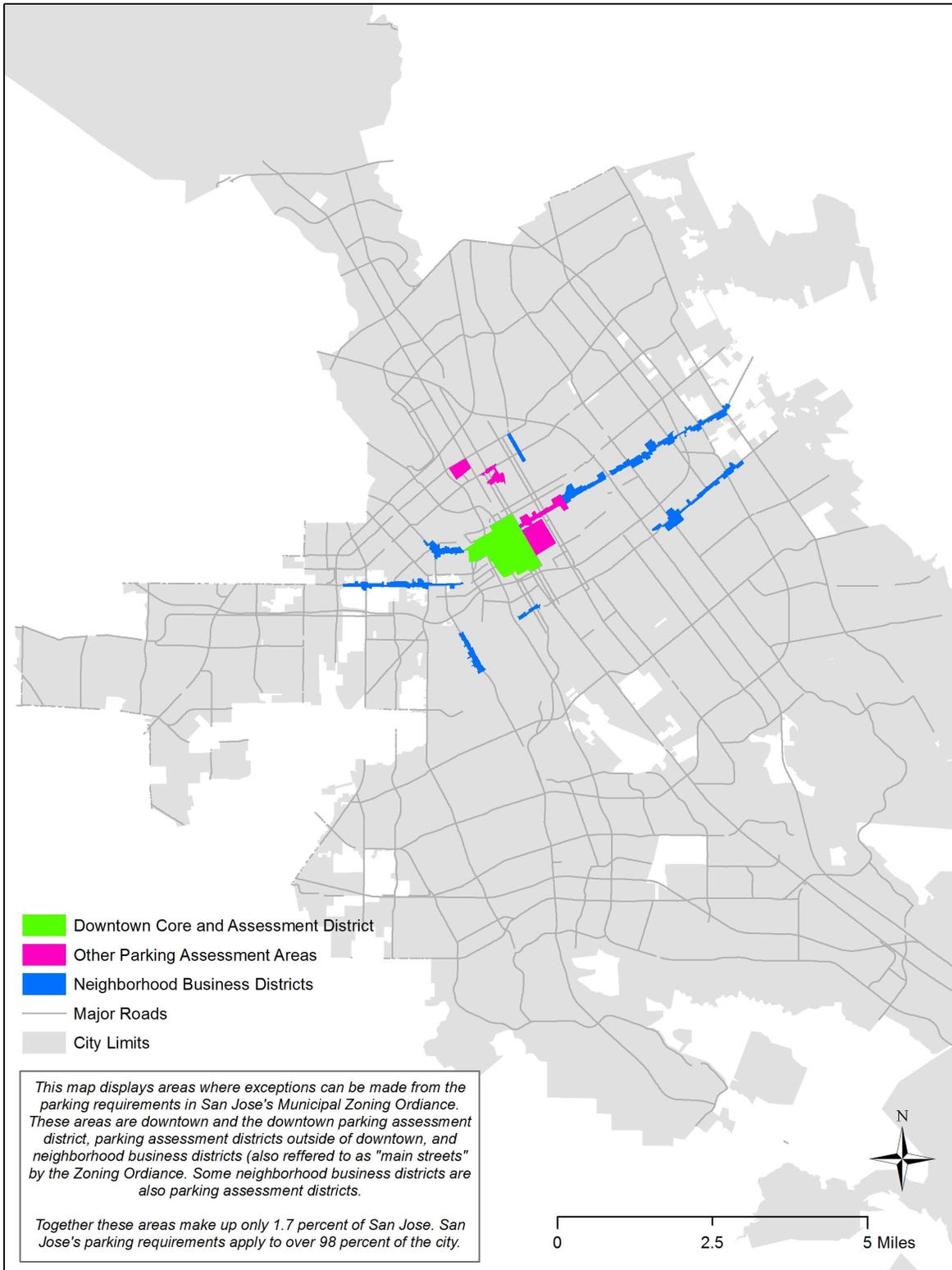


Figure 6: Areas within San Jose's city limits where exceptions are permitted from the parking requirements in San Jose's Municipal Zoning Ordinance. Map created by the author using GIS data created by the author and GIS data from the City of San Jose.

3.3 – Looking Toward 2040: San Jose’s Current General Plan Goals

Since passing its first growth measures in the 1990s, San Jose is now attempting to reign in decades of sprawling development, zone-segregated land uses, and automobile supremacy. Its current General Plan, *Envision San Jose 2040*, is its most ambitious move away from an automobile-oriented city to date. Key features of this plan include preserving the city’s urban growth boundary, providing a greater mix of land uses, and focusing new development at infill sites along transit lines, at regional transit centers, in under-utilized commercial properties, and in the city’s downtown core.¹²¹

3.3.1 – Goals of *Envision San Jose 2040*

The goals of *Envision San Jose 2040* are to focus growth into areas that allow for higher density and less dependence on automobiles. These goals include intensifying land uses, jobs, and housing density in key locations throughout the city. These locations include existing activity centers such as neighborhood business districts, regional transit centers, transit corridors, underutilized commercial properties throughout the city’s many neighborhoods, and the downtown core. Focusing future growth into these areas is the city’s main tool to protect open spaces, increase safety, effectively deliver city services, generate revenue, and increase residents’ quality of life.

Specifically, *Envision San Jose 2040* seeks to:

- Create complete neighborhoods while maintaining the character and cohesiveness of existing neighborhoods¹²²
- Add 120,000 new high-density, compact housing units focused in existing infill areas near transit to maximize current transit capacity, increase employment capacity, foster walkability, and maintain San Jose’s urban growth boundary¹²³
- Add 470,000 new jobs, focused in existing job centers and near regional transit stations, with greater flexibility for all types of commercial activity¹²⁴
- Create a jobs-to-employed resident ratio of 1.3:1¹²⁵
- Revitalize under-utilized properties at 70 sites around the city through an Urban Village planning process in order to promote walking, biking, and transit use; accommodate housing needs; create denser urban settings with minimum density requirements for housing; and spur economic development and job growth¹²⁶
- Utilize urban form that promotes walking, bicycling, and complete streets, and advances the city’s transportation mode shift goals
- Minimize resource consumption and reduce San Jose’s role in global climate change¹²⁷
- Concentrate housing and employment in the city’s traditional urban core and promote the development of high-rise structures¹²⁸

¹²¹ City of San Jose, “Envision San Jose 2040,” c. 1, 14-15.

¹²² City of San Jose, “Envision San Jose 2040,” c. 1, 16.

¹²³ City of San Jose, “Envision San Jose 2040,” c. 1, 16.

¹²⁴ City of San Jose, “Envision San Jose 2040,” c. 1, 17.

¹²⁵ City of San Jose, “Envision San Jose 2040,” c. 1, 17.

¹²⁶ City of San Jose, “Envision San Jose 2040,” c. 1, 18.

¹²⁷ City of San Jose, “Envision San Jose 2040,” c. 1, 22.

- Maintain an urban growth boundary at the 15 percent hillside slope¹²⁹
- Make active transportation a viable commute mode.¹³⁰

The most ambitious of *Envision 2040* goals is the transportation mode shift the city hopes to achieve by 2040: a 50 percent reduction in solo automobile trips.¹³¹ Table 3 shows the city’s existing transportation mode share and its 2040 mode shift goals.

Table 3: San Jose's mode shift goals for 2040

Mode	2008	2040
Drive alone	77.80%	No more than 40%
Carpool	9.20%	At least 10%
Transit	4.10%	At least 20%
Bicycle	1.20%	At least 15%
Walk	1.80%	At least 15%
Other	5.80%	Not included

Source: Data adapted from City of San Jose, “Land Use and Transportation,” in *Envision San Jose 2040 General Plan* (San Jose, 2011).

Implementation of *Envision San Jose 2040* is based on phases for when certain areas of the city are to be developed. Development is planned to occur in a way that promotes job growth and alternative transportation, which places emphasis on job-related development throughout focused growth areas and job growth and housing in the downtown core. When job growth and density thresholds in given areas are met, new development will be triggered in other areas.¹³² The point is to not allow future development to widen the gap between the current abundance of housing and lack of jobs and to limit growth in areas that are currently automobile-dependent.

3.3.2 – Parking and Envision San Jose 2040

Envision 2040 contains little discussion of current and future parking policy. Most of the language on parking is either vague or merely suggests that an alternative policy be considered, without saying what that policy should be. Parking is discussed briefly in two chapters of the General Plan, “Quality of Life” and “Land Use and Transportation.”

The General Plan’s chapter on neighborhood quality of life includes a brief discussion of:

- Clustered parking, shared parking,¹³³ and minimized visual impact of parking to promote walking and bicycling¹³⁴
- Reduced parking minimums, alternative parking, and transportation demand strategies as a consideration to reduce the area dedicated to surface parking¹³⁵

¹²⁸ City of San Jose, “Envision San Jose 2040,” c. 1, 23.

¹²⁹ City of San Jose, “Envision San Jose 2040,” c. 1, 24.

¹³⁰ City of San Jose, “Envision San Jose 2040,” c. 1, 24.

¹³¹ City of San Jose, “Land Use and Transportation,” c. 6, 37.

¹³² City of San Jose, “Implementation,” in *Envision San Jose 2040 General Plan* (San Jose, 2011), c. 7, 6.

¹³³ City of San Jose, “Quality of Life,” in *Envision San Jose 2040 General Plan* (San Jose, 2011), c. 4, 4.

¹³⁴ City of San Jose, “Quality of Life,” c. 4, 18.

¹³⁵ City of San Jose, “Quality of Life,” c. 4, 15.

- Unbundled parking as an option, not a requirement, for real estate development¹³⁶
- Parking garages and underground parking as an alternative to downtown surface parking¹³⁷

While the chapter on quality of life briefly discusses each of these alternative parking strategies, no specific action items are given.

The General Plan’s land use and transportation chapter discusses parking in more detail. The land use section of the chapter discusses balancing parking needs,¹³⁸ minimizing the impact of parking lots in neighborhoods by placing them behind buildings,¹³⁹ and allowing under-utilized parking to serve adjacent, non-residential uses.¹⁴⁰ The transportation section of this chapter provides the most detail in regard to parking policy, including discussion of:

- Compact land use patterns that allow for “park once and walk” destinations
- Parking pricing for city employees
- Transit-oriented development with reduced parking requirements
- Discouraging developers from providing more parking than required
- Allowing for reduced parking minimums at mixed-use sites with transportation demand management strategies
- Allowing underutilized private parking lots to be shared with adjacent, non-residential uses
- Considering nearby on-street and city-owned parking facilities as a feasible means to manage parking supply
- Unbundling parking¹⁴¹

In addition to these policy discussions, this section offers three action items in regard to parking – updating existing minimum parking requirements in the zoning ordinance, developing policies for sharing underutilized private parking spaces, and considering reducing parking supply.¹⁴² Separate from this discussion, the General plan also speaks briefly, and in very general terms, about updating current zoning to reflect *Envision 2040* goals,¹⁴³ though it does not say which specific parts of the zoning code and does not mention parking policy. While the General Plan does make mention of progressive parking policies that have the potential to help achieve city goals, the language is sparse and few action items are offered.

¹³⁶ City of San Jose, “Quality of Life,” c. 4, 17.

¹³⁷ City of San Jose, “Quality of Life,” c. 4, 17.

¹³⁸ City of San Jose, “Land Use and Transportation,” c. 6, 9.

¹³⁹ City of San Jose, “Land Use and Transportation,” c. 6, 11.

¹⁴⁰ City of San Jose, “Land Use and Transportation,” c. 6, 14.

¹⁴¹ City of San Jose, “Land Use and Transportation,” c. 6, 50.

¹⁴² City of San Jose, “Land Use and Transportation,” c. 6, 50.

¹⁴³ City of San Jose, “Land Use and Transportation,” c. 6, 5.

3.4 – Current Parking Supply in San Jose

For this report, a comprehensive review of existing off-street parking has been completed, trying as best as possible to include all land dedicated to off-street parking within San Jose’s city limits. County pockets existing within San Jose’s boundaries are included, such as the Burbank and Sunol-Midtown neighborhoods. The survey was completed by digitizing off-street parking in a 2010 aerial image of the city.¹⁴⁴ Off-street lots serving commercial, industrial, multi-family residential, government facilities, schools, and public facilities are included. Not included in the survey are parking facilities at single family homes or any on-street parking.

Based on this survey, it is estimated that parking lots in San Jose combine for a total of 9.52 square miles, covering 5.4 percent of the total land area of the city. These results are displayed in Figure 7. The methodology used in this survey was adapted from parking supply surveys discussed in Chapter Two.¹⁴⁵ Details on how this survey was designed and executed are located in the appendix at the end of this report.

¹⁴⁴ Bing Maps, “Bing Maps Aerial” (2010), www.esri.com/software/arcgis/arcgisonline/services/bing-maps.

¹⁴⁵ Davis et al., “The Environmental and Economic Costs of Sprawling Parking Lots in the United States,” 258; Davis et al., “Estimating Parking Lot Footprints in the Upper Great Lakes Region of the USA,” 68.

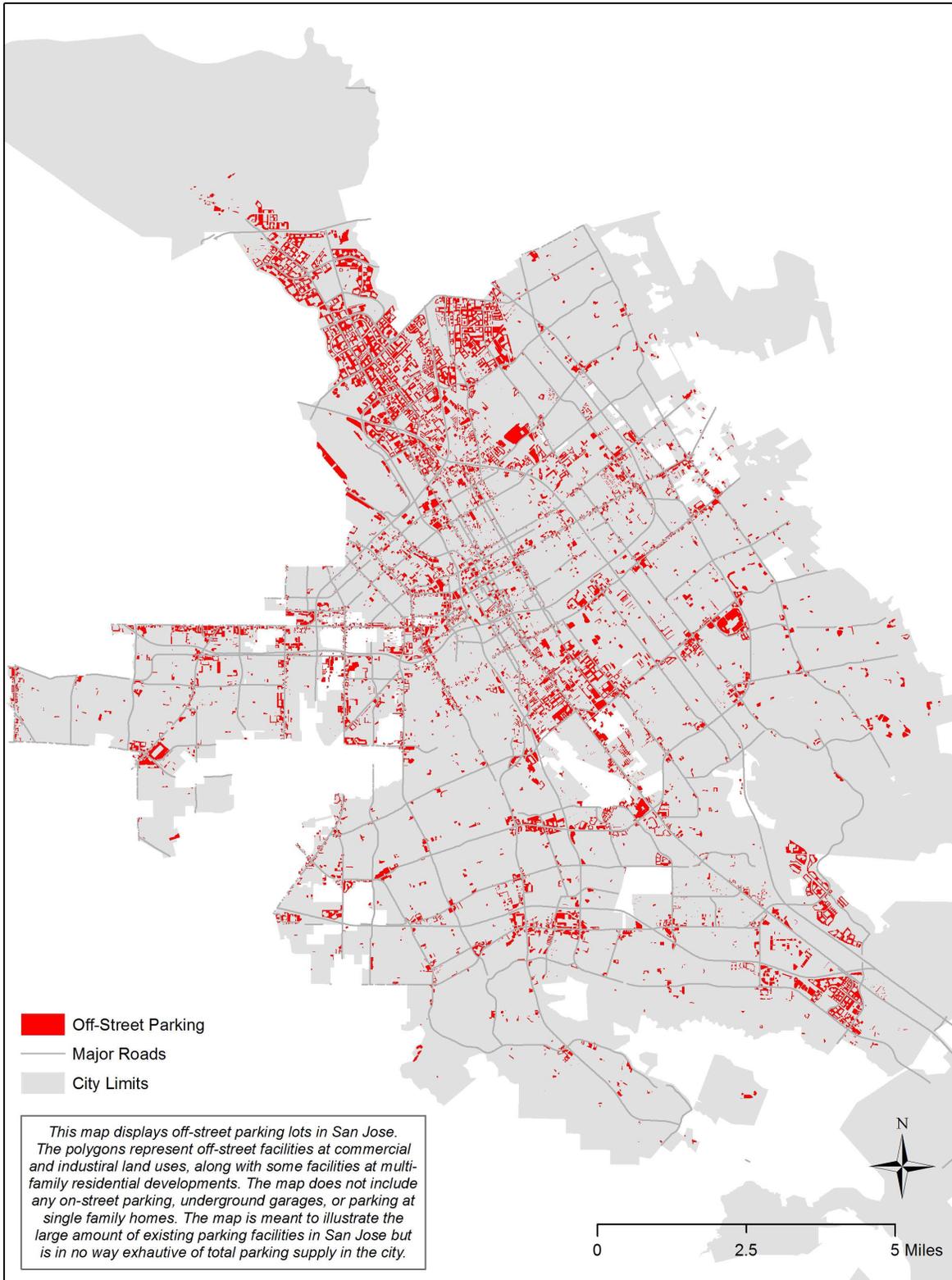


Figure 7: Off-street parking in San Jose as digitized from 2010 aerial imagery. Map created by the author using GIS data created by the author and GIS data from the City of San Jose.

The following three maps visually illustrate the amount of space surface parking alone consumes at three specific locations in San Jose: West San Jose, North San Jose, and downtown. Figure 8 shows off-street parking in downtown San Jose, which is the oldest and densest area of the city. Downtown is the most transit rich-area of San Jose and one of the most transit-served communities of the San Francisco Bay Area.¹⁴⁶ The density levels and mix of uses also make downtown San Jose bicycle- and pedestrian-friendly, yet there is a still a large supply of parking, particularly of surface parking.

¹⁴⁶ City of San Jose, “Land Use and Transportation,” c. 6, 42.



Figure 8: Off-street parking in downtown San Jose. Map created by the author using GIS data created by the author and GIS data from the City of San Jose.

Figure 9 shows off-street parking in West San Jose, which is composed of older residential neighborhoods and commercial uses spanning several decades of development in the city, including the older Burbank/West San Carlos neighborhood business district, the 1950s-era Valley Fair indoor shopping mall, and the recently-built Santana Row outdoor shopping mall. West San Jose is an important growth area as the Burbank/West San Carlos area is one of the first neighborhoods to undergo an Urban Village planning process. Additionally, Santana Row effectively serves as San Jose's first Urban Village.¹⁴⁷ Santana Row was built before passage of *Envision 2040* but serves as a model for future Urban Villages. According to the General Plan,

Urban Villages [are] areas with ... compact and dense form [that are] attractive to the City's projected growing demographic groups (i.e., an aging population and young workers seeking an urban experience), [and] support walking, provide opportunities to incorporate retail and other services in a mixed-use format, and support transit use.¹⁴⁸

With these goals in mind, the parking supply in this area should decrease as growth continues, but under current parking zoning requirements, this is likely not possible.

¹⁴⁷ City of San Jose, "Envision San Jose 2040," c. 1, 18.

¹⁴⁸ City of San Jose, "Envision San Jose 2040," c. 1, 16.

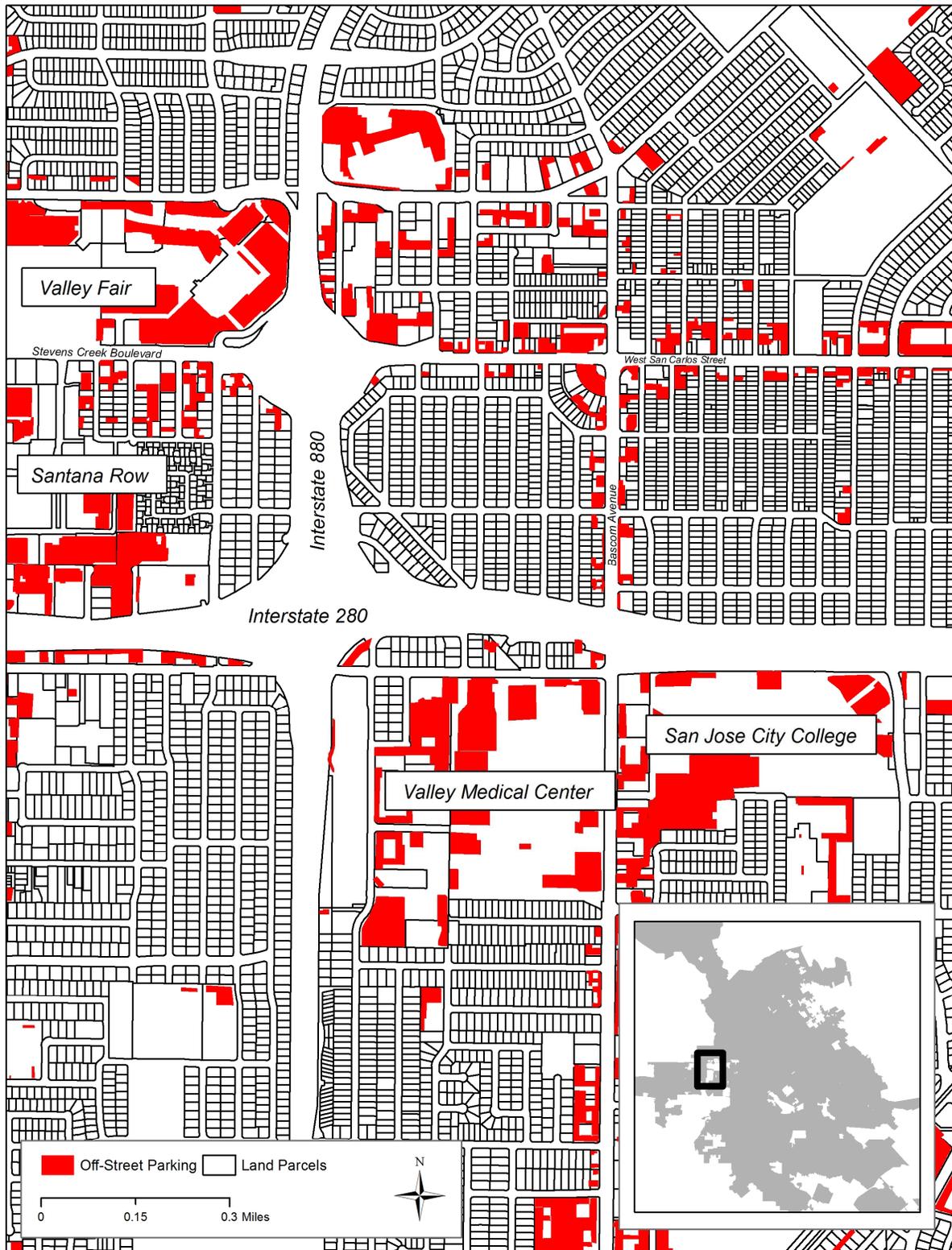


Figure 9: Off-street parking at commercial and quasi-public land uses in West San Jose. Map created by the author using GIS data created by the author and GIS data from the City of San Jose.

Off-street parking in North San Jose is shown in Figure 10. This area has the city’s highest concentration of jobs, particularly of tech-industry jobs. The community is built along the county’s main light rail transit corridor and is adjacent to the main artery of the city’s off-street bikeways network. It is also an important growth area in *Envision San Jose 2040* and will see a considerable amount of commercial, residential, and industrial growth in the coming decades.¹⁴⁹ North San Jose is currently dominated by automobile-oriented design and is heavily paved-over by surface parking, despite access to alternative transportation facilities and plans for future growth.¹⁵⁰

¹⁴⁹ City of San Jose, “Envision San Jose 2040,” c. 1, 28-29.

¹⁵⁰ City of San Jose, “Land Use and Transportation,” c. 6, 7.



Figure 10: Off-street parking at industrial land uses and technology-sector employment centers in North San Jose. Map created by the author using GIS data created by the author and GIS data from the City of San Jose.

This survey estimates that San Jose has 581,673 off-street parking spaces. This is a conservative figure, as only the top floor of above-ground parking structures were counted, lots that were obscured by trees or other objects were not considered, underground parking was not counted, and only a handful of multi-family carports were included. The appendix included at the end of this report details how the number of spaces was estimated.

In order to illustrate the amount of residential parking that was *not* digitized from the aerial image, Figure 11 shows the same digitized parking in Figure 7 in relation to individual land use designations. The vast residential areas display relatively few digitized parking areas, however each individual residential land use features off-street parking in the form of garages, carports, and driveways, not to mention the amount of on-street parking available to motorists.

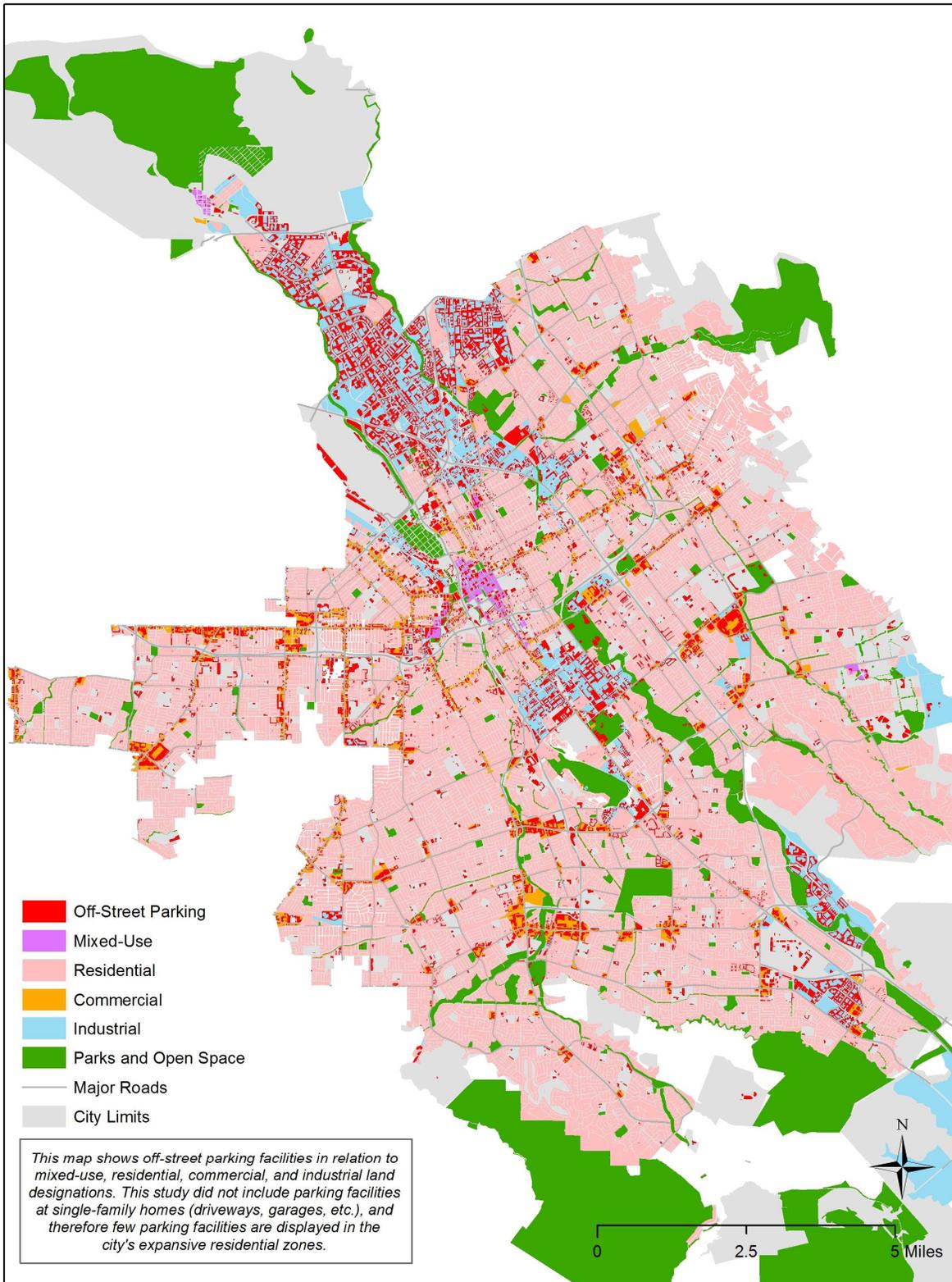


Figure 11: Digitized off-street parking in relation to land use designations. Map created by the author using GIS data created by the author and GIS data from the City of San Jose.

According to the American Community Survey, there were an estimated 206,580 single family homes in San Jose in 2011. Because the zoning ordinance requires two spaces per single family home, an additional 413,160 spaces can be added to the digitized parking, for a total of 994,832 off-street parking spaces citywide. This does not include driveways at single family homes, which are often used for off-street parking and have been found to significantly increase the amount of off-street parking at single family homes.¹⁵¹ This brings the total area dedicated to parking up to an estimated 9.61 square miles, or 5.5 percent of the land area of San Jose. Figure 12 shows the amount of space that 9.61 square miles would consume if all existing parking was combined into a single area.

¹⁵¹ Guo, “Does Residential Parking Supply Affect Household Car Ownership?” 25.

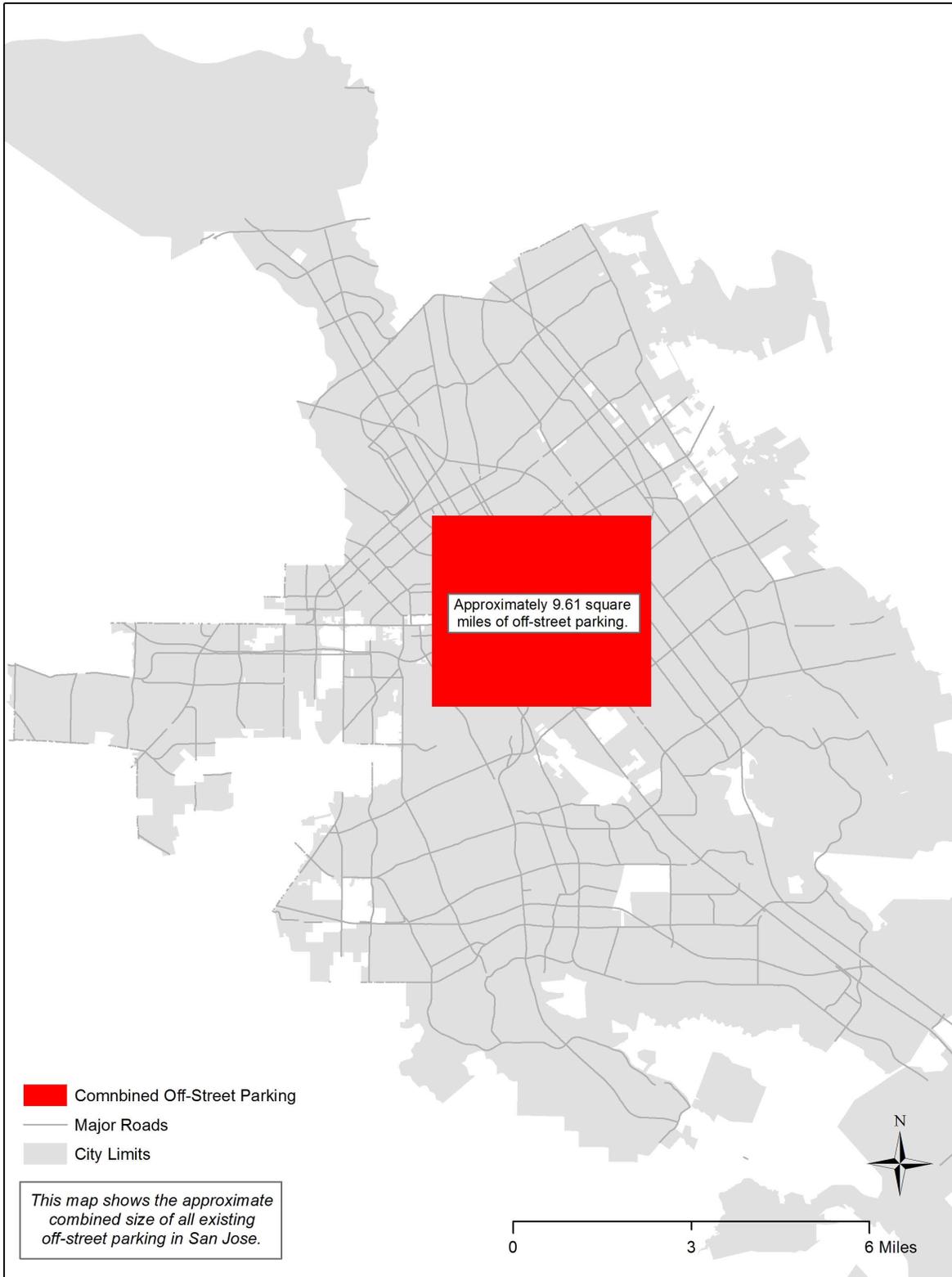


Figure 12: Approximate size of all off-street parking in San Jose combined into one area. Map created by the author using GIS data created by the author and GIS data from the City of San Jose.

Table 4 summarizes the amount of off-street parking in San Jose that has been estimated for this report.

Table 4: Summary of estimated off-street parking spaces and land consumption in San Jose, 2010-2011

Parking Estimation	Amount
Parking spaces estimated from aerial imagery, excluding single family homes	581,673 off-street spaces
Parking spaces estimated at single family homes	413,160 off-street spaces
Total estimated parking spaces	994,832 off-street spaces
Estimate square footage of land dedicated to parking	9.61 square miles
Percent of San Jose's land area dedicated to parking	5.46 percent

3.4.1 – Estimated Occupancy Rate of San Jose’s Current Off-Street Parking Supply

As discussed in Chapter Two, ITE’s *Traffic Generation* is used by most cities to set minimum off-street parking requirements for developments. The recommended parking supply in *Traffic Generation* is based on what the ITE believes to be the number of trips generated by a given use during peak parking time, which occurs in the afternoon during the holiday shopping season. The number of spaces recommended is to ensure an 85 percent occupancy rate during peak demand.¹⁵²

Previous parking occupancy surveys in San Jose have come to mixed results as to how well utilized parking is in San Jose. This is due to the varying focuses of the surveys. In every case, though, parking was found to be under-utilized, meaning there is an excessive supply of parking in San Jose.¹⁵³ The results of the survey completed for this report find off-street parking that is *outside* of single-family residences in San Jose to be 38 percent occupied, far lower than the 85 percent optimal rate discussed in Chapter Two. This makes for an excess of 361,397 spaces citywide. These results only consider the 581,673 spaces estimated from the aerial image survey and do not consider any spaces attributed to single family homes. The appendix includes details on how this survey was conducted.

3.5 – Current Parking Zoning and Conflicts with San Jose’s General Plan Goals

As discussed, San Jose’s current General Plan has ambitious goals to increase the number of housing units, jobs, and retail within the city while preserving open spaces and reducing the number of single-occupancy vehicle trips by 50 percent. The purpose of this section is to discuss conflicts between current parking zoning and *Envision 2040* goals. It is also to estimate the amount of parking that would be created under current parking zoning if the city succeeds in implementing the goals in *Envision 2040* without modifying its parking requirements.

¹⁵² Shoup, “The Trouble with Minimum Parking Requirements,” 551.

¹⁵³ Smith, *A Study of Parking Utilization for Neighborhood Shopping Centers Along VTA Transit Routes in San Jose*, 43-44; San Jose State University and Santa Clara Valley Transportation Agency, *A Parking Utilization Survey of Transit-Oriented Development Residential Properties in Santa Clara County*, 50; San Jose Redevelopment Agency, *The Alameda Business District Parking Study*, 9.

3.5.1 – General Plan Goals Affected by Current Parking Requirements

As mentioned previously in this report, many of the major goals of *Envision San Jose 2040* will be negatively impacted should San Jose’s current parking policies remain intact. Important goals that will be affected are to:

- Accommodate 120,000 new housing units in focused growth areas¹⁵⁴
- Create 470,000 new jobs¹⁵⁵
- Develop high-rise structures in focused growth areas¹⁵⁶
- Revitalize under-utilized properties to promote alternative transportation, accommodate housing, create dense settings, and enable job growth¹⁵⁷
- Minimize resource consumption and reduce the city’s role in global climate change¹⁵⁸
- Maintain San Jose’s urban growth boundary¹⁵⁹

3.5.2 – Estimated Future Off-Street Parking Supply Using Current Zoning Requirements

If the city is successful in implementing its General Plan, there will be an additional 120,000 housing units and 470,000 jobs by 2040.¹⁶⁰ The city does not enumerate the type of housing units these will be or the type of job. Therefore, an estimate of future off-street parking will be based on the most conservative figures possible in order to prevent an inflated amount.

Assuming all additional housing units are single-family – which is unlikely, given the General Plan’s goals for housing and population density¹⁶¹ – there will be an additional 240,000 residential parking spaces. For jobs, the current zoning ordinance requires one space per employee for nearly every commercial and industrial land use, along with parking for guests and customers, typically based on square footage. Since it is too difficult to determine the types of jobs that will be created in the coming decades, this estimate only considers the required parking for employees. Under this scenario, jobs will create an additional 470,000 parking spaces in San Jose.

Using San Jose’s current parking zoning, housing and jobs projections combined will create at least an additional 710,000 parking spaces by 2040, nearly doubling the current supply. This assumes that developers will have provided no more than the minimum amount of parking required. It also assumes that no exceptions will have been made, no new neighborhood business districts will have been established, and no new parking assessment districts will have been created. It also does not take into account the downtown core.

Using a standard parking space of eight feet by 22 feet,¹⁶² this will produce an additional 4.48 square miles of parking spaces. Given that parking spaces make up only 39 percent of the total area dedicated to parking – as discussed in the appendix – this creates an additional 11.62 square miles of land dedicated to parking in San Jose by 2040 under current zoning conditions. When

¹⁵⁴ City of San Jose, “Envision San Jose 2040,” c. 1, 16.

¹⁵⁵ City of San Jose, “Envision San Jose 2040,” c. 1, 17.

¹⁵⁶ City of San Jose, “Envision San Jose 2040,” c. 1, 23.

¹⁵⁷ City of San Jose, “Envision San Jose 2040,” c. 1, 18.

¹⁵⁸ City of San Jose, “Envision San Jose 2040,” c. 1, 22.

¹⁵⁹ City of San Jose, “Envision San Jose 2040,” c. 1, 24.

¹⁶⁰ City of San Jose, “Envision San Jose 2040,” c. 1, 16.

¹⁶¹ City of San Jose, “Envision San Jose 2040,” c. 1, 17.

¹⁶² City of San Jose, “Parking and Loading,” 21.

combined with existing parking, this additional parking results in an estimated total of 1,704,832 parking spaces and 21.23 square miles of land dedicated to parking, or 12.1 percent of the total land area of the city. Figure 13 shows the amount of the city that this parking would consume if it is built.



Figure 13: Approximate size of estimated future off-street parking in San Jose, combined into one area. Map created by the author using GIS data created by the author and GIS data from the City of San Jose.

Given San Jose's goals to create increase its density and maintain its current urban growth boundary, where will this parking be located? If the city's parking zoning remains as is, it will be difficult to accommodate all the desired housing and jobs *and* parking spaces associated with these new housing units and employment centers. Given that the costs of underground parking significantly increase the cost of housing, sometimes even making developments unprofitable, it would not be wise to assume that this amount of parking could simply be placed underground. The pattern of sprawling development and large surface parking currently seen in San Jose and surrounding cities would continue, despite the city's goals. Figure 14 shows off-street parking in downtown San Jose that has been built as the result of parking zoning requirements. Despite the density afforded by high-rise construction, parking requirements continue to spread development. This scenario is likely to continue despite the goals of *Envision 2040*, unless parking policies are changed.

An additional question is the necessity of this amount of parking. Among other goals, *Envision 2040* seeks to reduce solo automobile use by 50 percent. This is a significant reduction in automobile use, given that 78 percent of current trips in San Jose are completed by car.¹⁶³ Reducing driving rates means that the amount of space dedicated to parking – arguably too high already – will become even more unnecessary. What, then, comes first, the driving reduction or the parking reduction? Continuing to require large amounts of parking facilities until driving rates decrease is not a feasible solution given that excessive amounts of parking encourage automobile use.

¹⁶³ City of San Jose, "Land Use and Transportation," c. 6, 37.



Figure 14: This empty surface lot serves a high rise office building in downtown San Jose. Given the city's current parking zoning requirements, will San Jose's goal of filling its skyline with more high-rise buildings result in more large surface parking lots? Photograph by the author.

IV – Case Studies: The Effectiveness of Progressive Policies in Eight American Cities

Numerous communities have attempted to reform their parking policies to meet broader city goals. These policies date as far back as the 1970s when the City of Portland established a freeze on downtown parking supply in an attempt to improve its air quality. This chapter discusses a variety of policies that have been put into practice in order to understand their effectiveness; effectiveness alone, however, will not determine a policy's suitability as a tool for San Jose. Chapter Five's policy analysis will use criteria based on *Envision 2040* goals to help make recommendations based on the policies in this chapter along with literature reviewed earlier in this report.

Information in these case studies has been taken from peer-reviewed journals, government documents, studies conducted by local agencies, and interviews with city staff members. Phone, email, and in-person interviews were conducted by this report's author in Fall 2013 with staff members of select cities studied in this report. The purpose of these interviews is to supplement case study material with first-hand experience and other information not available in print sources.

4.1 – Increasing Housing Supply while Preserving Historic Resources in Los Angeles

In 1999, the City of Los Angeles passed its Adaptive Reuse Ordinance (ARO) to streamline the process of converting historic commercial buildings into residential buildings.¹⁶⁴ As stated in the city's *Adaptive Reuse Handbook*,

“Adaptive reuse” means adapting an existing economically obsolete building for a new more productive purpose [sic]. The changes are substantial, physical alterations that modify the building's original intent.¹⁶⁵

The City of Los Angeles attempted to solve two problems with its ARO: the large number of vacant buildings in downtown Los Angeles and the shortage of housing in the city.¹⁶⁶ The loss of historic buildings due to redevelopment¹⁶⁷ and the affordability of housing were of concern to the city and to members of the community.¹⁶⁸ The properties that the ordinance initially applied to were mostly vacant Art Deco-style commercial towers in the city's historic downtown.¹⁶⁹

The ordinance waives several zoning requirements from these types of properties. Density restrictions are waived, removing limits on the number of housing units each project can contain.

¹⁶⁴ City of Los Angeles, *Adaptive Reuse Program*, Los Angeles, CA: City of Los Angeles (2006), 7.

¹⁶⁵ City of Los Angeles, *Adaptive Reuse Program*, 9.

¹⁶⁶ Shoup, *The High Cost of Free Parking*, xxxii.

¹⁶⁷ City of Los Angeles, *Adaptive Reuse Program*, 118.

¹⁶⁸ City of Los Angeles, *Adaptive Reuse Program*, 127.

¹⁶⁹ Shoup, *The High Cost of Free Parking*, xxxii.

Existing parking at each property must be maintained under the ordinance, but no additional parking or loading zones need to be supplied.¹⁷⁰

The ordinance was successful in increasing the city's housing supply while maintaining its historic building stock. In downtown alone, 6,500 housing units were added between 1999 and 2006.¹⁷¹ For comparison, only 4,300 were added downtown between 1970 and 2000.¹⁷² The popularity and success of the ARO was so great that by 2003 it was extended beyond downtown to several other Los Angeles neighborhoods¹⁷³ and allowed citywide on a case-by-case basis.¹⁷⁴ By 2008, 56 historic office buildings had been converted into over 7,300 housing units across Los Angeles, all without adding a single new parking space. Given that the city's zoning ordinance prior to the ARO required two off-street parking spaces to be provided per residential unit, many of these buildings either would have remained vacant or been torn down.¹⁷⁵ Without the ARO, existing zoning requirements would have continued to decrease the density and housing supply of Los Angeles while increasing the amount of land dedicated to parking. Figure 15 shows a grouping of historic buildings in downtown Los Angeles, many of which have been converted to housing without the addition of new parking.

¹⁷⁰ City of Los Angeles, *Adaptive Reuse Program*, 9.

¹⁷¹ City of Los Angeles, *Adaptive Reuse Program*, 7.

¹⁷² Shoup, *The High Cost of Free Parking*, xxxiii.

¹⁷³ Shoup, *The High Cost of Free Parking*, xxxiii.

¹⁷⁴ City of Los Angeles, *Adaptive Reuse Program*, 7.

¹⁷⁵ Shoup, *The High Cost of Free Parking*, xxxii.



Figure 15: Through use of the Adaptive Reuse Ordinance, many of these historic buildings in downtown Los Angeles were converted to housing without the addition of parking. Without this ordinance, many of these buildings may have remained vacant or been demolished. Photograph by the author.

The community response to the initial downtown ARO in 1999, as well as to the extension of the program in 2003, was positive. When the ARO was first introduced to downtown Los Angeles, there was little concern over the change in parking regulation given how few people lived downtown at the time.¹⁷⁶ City officials, seeing that the parking requirements prior to the adoption of the ARO prevented the conversion of these buildings, supported the parking zoning changes in the ordinance to support an increase in housing supply.¹⁷⁷ The benefits of the ARO did not stop with historic preservation or increased housing supply, but also contributed to increased jobs and added revenue from higher taxes on increased property values.¹⁷⁸ There has been much support from developers, property owners, housing advocates, and the City of Los Angeles for the ARO.¹⁷⁹

4.2 – Preserving Old Pasadena through Parking Policy

Similar to Los Angeles, Pasadena’s downtown suffered from a major decline in the mid-twentieth century. This was due to rise of the suburbs and the inability for Old Pasadena businesses to compete with shopping malls and other commercial uses featuring convenient

¹⁷⁶ Ken Bernstein, interview by author, San Jose, CA, September 6, 2013.

¹⁷⁷ Shoup, *The High Cost of Free Parking*, xxxii.

¹⁷⁸ Shoup, *The High Cost of Free Parking*, xxxiv.

¹⁷⁹ Ken Bernstein, interview by author, San Jose, CA, September 6, 2013.

automobile access and ample free parking. The result was vacant properties and decaying buildings in the historic center of the city. Pasadena officials addressed this problem by reforming downtown parking policies. Specifically, the City of Pasadena created a parking benefit district to finance downtown improvement projects and allowed property owners a way to revitalize downtown buildings without needing to meet the zoning ordinance's off-street parking requirements.¹⁸⁰

Rather than requiring businesses and property owners to provide off-street parking – a requirement that would result in either the continuation of vacant and blighted properties or the destruction of Old Pasadena's historic building stock – the city now allows for a parking credit to be paid to waive parking requirements. The parking credits also allow for changes or intensification in land uses without requiring additional off-street parking.¹⁸¹ This parking credit has raised enough revenue to allow the city to finance two municipal parking garages, or enough off-street space to satisfy the parking needs generated by downtown businesses.¹⁸² Municipal garages created through parking credits have also had an impact on automobile use. Rather than driving to and parking at each of their destinations, surveys have found that visitors to Old Pasadena visit 2.7 destinations per average time parked in municipal garages, which constitutes a decrease in vehicular travel per destination.¹⁸³

In 1993, parking meters were installed in an effort to manage on-street parking and generate funds for the city. Revenue generated at meters was reinvested directly into the metered blocks, funding \$5 million worth of streetscape improvements, including converting old alleyways into pedestrian paths with direct access to downtown retail. Meter revenue has also been used to fund additional policing in the district.¹⁸⁴

There has been wide community support for parking credits. Saving Old Pasadena was important to many community members who saw their historic city center threatened by suburban investment and urban renewal, particularly an early attempt to revitalize downtown that resulted in the demolition of three historic blocks to build an unsuccessful indoor shopping mall. Additionally, the policy helped businesses to compete with their suburban counterparts by better managing parking and reinvesting in historic resources. Finally, the total amount of parking in Old Pasadena was not reduced, just moved from individual properties to centrally-located garages.¹⁸⁵ While some businesses dislike the fee and some visitors to downtown feel that parking should be free, the policy has been a win for all involved and is thus well-supported.¹⁸⁶ The benefits that this program affords the community have lead city planners to consider ways in which to expand the program to other areas of the city. An in-lieu fee would be unlikely given the difficulty in purchasing land to build the required public parking facilities.¹⁸⁷ The city is,

¹⁸⁰ Shoup, *The High Cost of Free Parking*, 403.

¹⁸¹ Robert Montano, interview by author, San Jose, CA, September 30, 2013.

¹⁸² Shoup, *The High Cost of Free Parking*, 405.

¹⁸³ Robert Montano, interview by author, San Jose, CA, September 30, 2013.

¹⁸⁴ Shoup, *The High Cost of Free Parking*, 406-407.

¹⁸⁵ Shoup, *The High Cost of Free Parking*, 403-405.

¹⁸⁶ Robert Montano, interview by author, San Jose, CA, September 30, 2013.

¹⁸⁷ Shoup, "In Lieu of Required Parking," 2.

however, currently modeling methods to allow on-street parking to satisfy parking needs at new developments.¹⁸⁸

The metered parking improvement district did not initially receive the same amount of public support. The largest opponents were local business owners who feared that the installation of meters would drive away customers, despite the prevailing lack of available parking caused by downtown employees parking for free throughout the day.¹⁸⁹ Reinvesting meter revenue directly into the metered area helped boost support. Over the years, the benefits accrued to Old Pasadena from meter revenue have won the program tremendous community support. In 2011 alone, the meters generated \$1.3 million for direct investment into the area. The extra policing presence on the street provided by parking enforcement officers is also welcomed by business owners and other community members, contributing to continued support and the overall success of the parking meter district.¹⁹⁰

4.3 – Improving Air Quality by Freezing Parking Supply in Portland

Portland, Oregon, employs a variety of on- and off-street parking policies in an effort to achieve a number of city goals, including economic development and the promotion of transit use. Progressive parking policies in Portland date back to the early 1970s. These policies initially stem from concerns over poor air quality as a result of automobile emissions.¹⁹¹

In the early 1970s, downtown Portland's air quality exceeded federal carbon monoxide levels approximately one out of every three days. This led to a freeze on downtown parking supply in 1972, limiting the amount of downtown parking to its then-current 45,000 spaces.¹⁹² At the time, the goals of this policy were well-received by the community¹⁹³ and proved quite successful: downtown Portland has not exceeded federal carbon monoxide standards since 1984.¹⁹⁴

¹⁸⁸ Robert Montano, interview by author, San Jose, CA, September 30, 2013.

¹⁸⁹ Shoup, *The High Cost of Free Parking*, 405-406.

¹⁹⁰ Shoup, *The High Cost of Free Parking*, 406-407.

¹⁹¹ Paul Smith, interview by author, San Jose, CA, September 5, 2013.

¹⁹² Weinberger, Kaehny, and Rufo, "US Parking Policies," 54.

¹⁹³ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

¹⁹⁴ Weinberger, Kaehny, and Rufo, "US Parking Policies," 54.



Figure 16: Thanks to a freeze on downtown parking supply beginning in the 1970s, downtown Portland's air quality has significantly improved. Photograph by the author.

Since this time, Portland has continued its efforts to reduce vehicle miles travelled by continuing to limit parking supply. Although there is no longer a strict moratorium on downtown parking, Portland has in place several policies to manage the amount of off-street parking that is built in downtown and in other areas of the city, mostly dense, mixed-use neighborhoods and areas surrounding major transit stations. In 1997, the downtown parking freeze was replaced with a combination of relaxed parking minimums, parking maximums,¹⁹⁵ and incentives for shared parking and bicycle parking provisions.¹⁹⁶ This was intended as tool to implement the city's goal of reducing vehicle miles travelled by 10 percent over a twenty year period beginning in 1992.¹⁹⁷

These parking policies – combined with transit investments – were successful in helping to change the way Portlanders move about the city, as transit use has increased consistently since the 1970s.¹⁹⁸ A growing population of young Portlanders, ages 20-30, who are less likely to value owning a personal automobile, also helps fuel Portland's shift toward alternative transportation.¹⁹⁹

In recent years, community response to Portland's progressive policies has been mixed. No overall consensus exists among Portlanders in regard to parking policy. One reason for this lack of consensus is that rates of automobile ownership are not reflective of Portland's mode-split, meaning that more automobiles are owned than are actually used, creating a surplus of automobiles and a need to store them, which results in a perceived lack of parking. As will be

¹⁹⁵ Weinberger, Kaehny, and Rufo, "US Parking Policies," 54.

¹⁹⁶ City of Portland, "Attachment A," (Portland, 2013), <http://www.portlandoregon.gov/bps/article/443436> (accessed Septmeber 24, 2013).

¹⁹⁷ Weinberger, Kaehny, and Rufo, "US Parking Policies," 56.

¹⁹⁸ Weinberger, Kaehny, and Rufo, "US Parking Policies," 56.

¹⁹⁹ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

discussed below, the recent economic recession and current recovery also play a role in the community's attitude toward parking policy.²⁰⁰

Developers have been the strongest supporters of parking maximums and relaxed requirements in select areas of Portland. The policy of requiring little-to-no parking saves developers considerable amounts of money and allows them to better utilize their resources for economic gain. Developers have come to rely on the city's projections for future growth, transportation mode-split, and rates of automobile ownership. Development has been occurring in transit-rich areas and is targeted toward a younger, less automobile-dependent demographic.²⁰¹ Not only have waivers not been given out by the city to allow a given developer to build above the parking maximum since the 1970s,²⁰² a waiver has not been requested since this time,²⁰³ attesting to the policy's positive reception by the development community. Developers have also utilized Portland's allowance of parking entitlements, a policy that allows developers to share their parking rights with other developers. Rather than give away parking entitlements, some developers have partnered to build joint parking to be shared between land uses. Other developers have made arrangements with existing properties to allow for the sharing of existing parking facilities.²⁰⁴

Residents and businesses, on the other hand, show less support and have often expressed the desire for more parking. This desire has grown stronger since the economy has begun to recover and development activity has increased. While the policy of allowing housing in certain settings to be built without any parking has been in effect for several years, it was not until the recent economic recovery that many of these projects have come on-line. Portland suddenly has an increased number of housing units but no additional parking, placing strain on existing curbside supply. While the city believes that current on-street parking is enough to manage demand and that further mode shift away from automobiles will help to manage this supply, residents and business owners are suddenly seeing fewer spaces available immediately at their destinations. These changes have increased the number of residents and business owners who view parking maximums and related policies as problematic. Historically underpriced street parking has also played a role in this perception, since motorists have long enjoyed being able to park anywhere they want for little cost.²⁰⁵

It should be noted that, despite recent dissatisfaction with parking policy, Portland's strategies and goals have received much support from the public. Portland's parking policies currently have about as much support from residents and businesses as they do opposition. Additionally, the two areas with the highest amount of limited parking – Northwest Portland and the Pearl District – have the lowest rates of housing vacancy and the highest property values, suggesting that the benefits posed by strict parking maximums are desirable.²⁰⁶

²⁰⁰ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

²⁰¹ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

²⁰² Weinberger, Kaehny, and Rufo, "US Parking Policies," 56.

²⁰³ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

²⁰⁴ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

²⁰⁵ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

²⁰⁶ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

4.4 – Efficient Use of Land Resources in Seattle

King County Metro, the Seattle-area public transit provider, has adopted a policy aimed to “right-size” the amount of parking that developers build at multi-family residential developments. The program has several goals, including

- Economic development
- Reduced barriers to building housing at urban infill sites and near transit
- Reduced housing costs
- Increased use of alternative transportation modes
- Reduced vehicle miles travelled and automobile emissions²⁰⁷

The program uses a context-specific method for determining the proper amount of parking at multi-family housing. This method is completed using location-based data of urban development, population density, and proximity to jobs and transit to model the ideal ratio between housing units and parking stalls.²⁰⁸ The model even allows for the influence of parking pricing to be captured in its results, based on whether or not parking will be bundled into the cost of housing.²⁰⁹ The ideal amount of parking is that which manages parking demand while encouraging walking, bicycling, and transit use. Finding the correct amount of parking also helps developers overcome obstacles to development such as financing and traditional parking zoning ordinances.²¹⁰ It should be noted that, while the tool will most often reduce the amount of parking that traditional zoning would require, there are instances where the right amount of parking – the “just enough,” as King County Metro puts it – will be an increase above what would typically be required of a given development, requiring a small number of developers to provide more parking rather than less.²¹¹

The program is still in its pilot phase. The county is actively working with community members and developers to create projects that demonstrate the benefits of the program. To date, the community has been very accepting of the program. There has been a lot of interest in the tool so far, especially for mixed-use multi-family developments that contain retail or other commercial components. There has also been a lot of political support, primarily from decision-makers who would like to see the program influence parking policy in the greater Seattle area. There has yet to be any negative response to the program. Given that the program is still in its infancy, there is little data to show whether or not it is achieving its goals.²¹²

²⁰⁷ King County Metro, “Right Size Parking,” (Seattle 2013), <http://metro.kingcounty.gov/up/projects/right-size-parking/> (accessed September 10, 2013).

²⁰⁸ King County Metro, “Right Size Parking.”

²⁰⁹ King County Metro, “King County Multi-Family Residential Parking Calculator, (Seattle 2013) <http://www.rightsizeparking.org/> (accessed September 10, 2013).

²¹⁰ King County Metro, “Right Size Parking.”

²¹¹ Daniel Rowe, interview by author, San Jose, CA, September 17, 2013.

²¹² Daniel Rowe, interview by author, San Jose, CA, September 17, 2013.



Figure 17: King County's Right-Size Parking program seeks to determine the appropriate amount of parking based on a variety of factors for developments in the Seattle area. Photograph by the author.

4.5 – Demand-Responsive Pricing and Decreased Vehicle Miles in San Francisco

San Francisco's efforts to decrease parking cruising,²¹³ generate revenue for the city, and depoliticize parking policy²¹⁴ have taken shape in an on-street parking management program called SFpark. SFpark is a parking regulation-based approach to congestion management.²¹⁵ The mechanism to accomplish these goals is demand-responsive pricing. Rather than subsidize on-street parking with low meter rates, parking meters are set at a rate that will produce a desired occupancy based on demand. SFpark attempts to achieve an 85 percent occupancy rate by pricing on-street parking such that one or two spaces will always be available on any given block. Prices are set to favor short-term parking and encourage turnover. On- and off-street pricing promotes garage use for motorists wishing to park for a longer period of time. In-ground sensors collect occupancy and turnover data to help the city set ideal pricing. Reducing parking cruising reduces congestion and vehicle miles travelled, both of which contribute to air quality and safety concerns. Before implementation of SFpark, parking cruising accounted for up to 30 percent of all cars in traffic.²¹⁶ Efficiently utilizing the city's existing on-street parking facilities helps manage the demand for increased parking supply. The program is currently being used in around the city's Financial District and South-of-Market areas, some of San Francisco's densest neighborhoods.

²¹³ San Francisco Municipal Transportation Authority, "About SFpark," (San Francisco 2013) <http://sfpark.org/about-the-project/> (accessed May 1, 2013).

²¹⁴ Shoup, *The High Cost of Free Parking*, xxi.

²¹⁵ San Francisco Municipal Transportation Authority, *SFpark: Putting Theory into Practice – Post-Launch Implementation Summary and Lesson Learned*, San Francisco: San Francisco Municipal Transportation Authority (2011), 14.

²¹⁶ Shoup, *The High Cost of Free Parking*, 358.



Figure 18: SFpark employs demand-responsive pricing and real-time parking data to manage on- and off-street parking in San Francisco's densest neighborhoods. Photograph by the author.

While SFpark has been successful thus far in accomplishing its goals, it has not been as successful in its efforts to satisfy the San Francisco community. From the outset, the San Francisco Municipal Transportation Agency (SFMTA) knew that community outreach would be an important factor for implementing SFpark. Parking in San Francisco – along with many American communities – is often a controversial, political, and even emotional subject, and one not to be taken lightly. Since implementation, SFpark has received mixed support and has sparked criticism, despite early and ongoing efforts to reach out to the public.²¹⁷

To reach out to the community, the SFMTA took two approaches. One approach was to directly engage the community by having SFMTA staff attend as many neighborhood, business, and community meetings as feasible, with the goal of explaining the program and addressing concerns. Secondly, SFMTA created a website for SFpark in an effort to brand the program, explain the technology behind the meters, and express the benefits of the program. This resulted in initial support from some businesses and community leaders.²¹⁸

A negative response from the community came when the metered parking district expanded into neighborhoods in the city that historically had not been priced. Some residents and business owners felt that not enough community outreach had been completed while others disagreed with the need for more priced parking.²¹⁹ The SFMTA moved forward with its plans to price parking in these neighborhoods, but only included a small portion of the new meters as a part of SFpark. This implementation plan, however, was not effectively communicated to the public, resulting in public animosity toward an expanded non-SFpark metered district being placed on SFpark itself, damaging SFpark's relationship with some of the San Francisco community.²²⁰

²¹⁷ Lauren Mattern, interview by author, San Jose, CA, September 19, 2013.

²¹⁸ Lauren Mattern, interview by author, San Jose, CA, September 19, 2013.

²¹⁹ Aaron Bialick, "SFpark Mission Bay Plan Sees Backlash from Potrero Hill Residents," *Streetsblog* 2012. <http://sf.streetsblog.org/2012/01/13/sfpark-mission-bay-plan-sees-backlash-from-potrero-hill-residents/> (accessed September 18, 2013).

²²⁰ Lauren Mattern, interview by author, San Jose, CA, September 19, 2013.

Despite mixed support from community members, the project has received a great deal of political support from city leaders.²²¹ This may be in part because the SFMTA is run by the city and thus benefits from increased revenue from meter rates²²² and from decreased service delays in its bus system that are caused in part by parking cruising.²²³ Additionally, combating air pollution is politically popular in San Francisco; SFpark’s potential to reduce emissions by reducing parking cruising has gained political support for the program.²²⁴ Parking pricing, however, is still a political issue since the city votes on meter rate increases. Tying pricing to an objective metric such as SFpark depoliticizes parking policy, which can help gain additional political support for the program.²²⁵

4.6 – Priced and Repurposed Curb Space in New York City

New York City, particularly the boroughs of Brooklyn and Manhattan, has historically suffered from poorly-managed curbside parking. Some of the parking-related challenges faced by the city include:

- Parking cruising to find unoccupied space
- Double parking when unoccupied space is not available
- A severe lack of commercial parking, especially for commercial vehicles loading and unloading goods²²⁶

These issues are all the result of underpriced curbside parking, which is itself the result of a political culture hostile to changes in parking pricing. New York City’s Department of Transportation (NYCDOT) has struggled to price on-street space at a rate that encourages short-term use with high turnover. New York already has fewer metered spaces than other major American cities, and the spaces that it does price are at a much lower rate than other major cities. There has been no political will from elected officials to raise parking fees, and neighborhood and business groups have been outspokenly opposed to increases.²²⁷

²²¹ Lauren Mattern, interview by author, San Jose, CA, September 19, 2013.

²²² Shoup, *The High Cost of Free Parking*, 696.

²²³ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 53.

²²⁴ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 53.

²²⁵ Shoup, *The High Cost of Free Parking*, xxi-xxii.

²²⁶ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 63.

²²⁷ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 62.



Figure 19: With little incentive for short-term parking, many New York City blocks are saturated with on-street automobile storage. Photograph by the author.

Despite opposition, the NYCDOT has been successful in two realms of parking policy: creating more commercial loading space through parking rate changes and creating higher turnover in select neighborhoods through time limitations. The latter of these outcomes occurred at spaces that were already metered, avoiding the challenge of expanding priced parking.²²⁸

Changes that benefited commercial vehicles were the result of pricing curb spaces that were already allocated solely to commercial vehicles but lacked pricing and time restrictions. This policy change was the result of the commercial vehicle industry's frustration with New York's inefficient management of on-street loading. Because these spaces were already restricted to commercial vehicles, NYCDOT was able to overcome community opposition to priced parking and install meters for commercial vehicles. The policy has been very successful and has been well-received since implementation.²²⁹

To manage parking-related congestion from private automobiles cruising for parking, NYCDOT has started a program called ParkSmart in which parking meters are priced and timed to create sufficient turnover. Due to the severely underpriced curbside parking in New York, parking-related congestion makes up a higher percent of traffic in New York than it does in other American cities. For example, forty-five percent of traffic in Park Slope, Brooklyn, is cruising to find a parking space, much higher than the estimated US average of 30 percent. Where ParkSmart has been implemented, it has proven successful in reducing curbside occupancy during peak demand periods. The challenge with ParkSmart is the public's unwillingness to

²²⁸ Weinberger, Kaehny, and Rufo, "US Parking Policies," 63.

²²⁹ Weinberger, Kaehny, and Rufo, "US Parking Policies," 63.

accept meter rate increases, let alone an expanded metered district. Generally speaking, neighborhood political resistance to priced on-street parking and to increases in existing pricing remains high. ParkSmart is an opt-in program, meaning neighborhoods may choose to participate if community support will allow, limiting the project from expanding into other areas of the city.²³⁰

The resulting reduction in congestion and improved on-street parking management has created excess road capacity, enabling NYCDOT to reallocate some parking and even travel lanes toward other modes of travel.²³¹ NYCDOT has been able to repurpose some of this freed-up right-of-way to make improvements for bicyclists and pedestrians. Travel lane reductions have allowed for the installation of parking-protected bike lanes, giving bicyclists enhanced space for travel.²³² Since the first of these protected bike lanes was implemented, bicycling rates in the city have significantly increased.²³³ Additionally, parking and travel lanes that have been converted to pedestrian plazas with outdoor cafes have increased city revenue through added sales tax and increased employment.²³⁴



Figure 20: Excess road capacity created by minimizing parking cruising and double parking has allowed New York City to reallocate some of its roadway to pedestrians and bicycles, such as this sidewalk extension in Manhattan. Photograph by the author.

²³⁰ Weinberger, Kaehny, and Rufo, "US Parking Policies," 63-64.

²³¹ Shoup, *The High Cost of Free Parking*, 699.

²³² Weinberger, Kaehny, and Rufo, "US Parking Policies," 64.

²³³ New York City Department of Transportation, "Bicycle Counts," (2013)

<http://www.nyc.gov/html/dot/html/bicyclists/bike-counts.shtml> (accessed September 27, 2013).

²³⁴ Shoup, *The High Cost of Free Parking*, 699.

4.7 – Shared Parking Solutions in a Central San Jose Neighborhood

A successful, albeit small-scale, example of progressive parking policy comes from San Jose itself. The Alameda, a neighborhood business district immediately adjacent to downtown San Jose, utilizes shared parking to meet parking demand. This strategy allows private off-street parking to serve more than one land use. The goal of San Jose’s policy is to effectively utilize land resources and to avoid supplying additional off-street parking.

After an initial parking study was completed in 1999, several recommended parking improvements were implemented. The study was then repeated in 2007, in part to measure the effects of these parking improvements. Shared parking was implemented at a neighborhood school parking lot and separately at a community center. The school’s parking lot was made available for non-school uses in evenings and on weekends. Shared use of this lot primarily serves nearby businesses, restaurants, and a movie theater. The community center’s lot was made open to the public at all times during the day.²³⁵

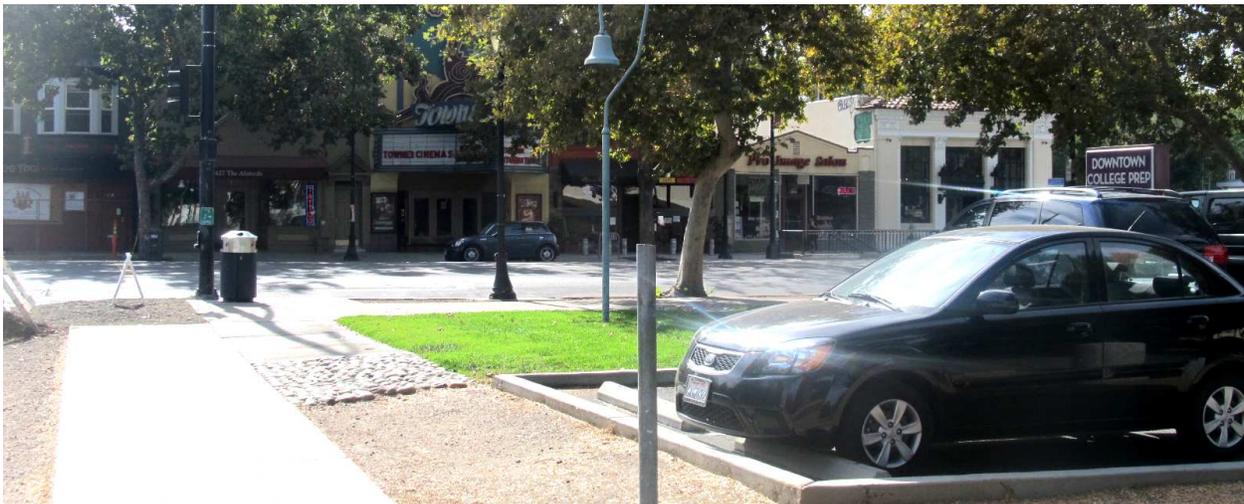


Figure 21: The parking lot at Downtown College Prep in San Jose is shared with businesses along the Alameda neighborhood business district. Photograph by the author.

²³⁵ San Jose Redevelopment Agency, *The Alameda Business District Parking Study*, 9.



Figure 22: The lot is open to the public when school is not in session. Photograph by the author.

Parking occupancy surveys show the shared-use strategy to be a success. In 1999, the study area for the Alameda Business District had a peak occupancy of 55 percent, well under the optimal utilization rate. This initial study concluded that the overall area to have no existing shortage of parking supply, despite finding localized issues within the study area. Rather than recommending additional parking to mitigate the few under-supplies areas, the study recommended the shared-use of existing lots. The 2007 study found a 67 percent occupancy rate in the district.²³⁶

During community outreach for both the 1999 and 2007 studies, it was found that residents in the vicinity of the Alameda Business District favor shared parking. The policy is especially favorable when existing, private, off-street, and underutilized parking lots become shared parking between businesses or lots open to the public. Residents are also weary of employee spill-over and are generally in favor of establishing residential parking permit districts on adjacent residential blocks, preventing employee and special event parking from impacting their neighborhoods.²³⁷ Residential permit districts currently exist along some of the neighborhood streets in vicinity of the Alameda Business District, however the City of San Jose is currently not expanding this program due to staffing shortages.²³⁸

²³⁶ San Jose Redevelopment Agency, *The Alameda Business District Parking Study*, 9-11.

²³⁷ San Jose Redevelopment Agency, *The Alameda Business District Parking Study*, 18-19..

²³⁸ City of San Jose, "Residential Permit Parking," SanJoseCA.gov (2013) <http://sanjoseca.gov/index.aspx?nid=3386> (accessed September 30, 2013).

4.8 – A Case of Counter-Productive Parking Reform in Chicago

The cases discussed thus far have been successful in achieving a majority of their goals. A brief discussion of an unsuccessful policy is included here as this policy has the potential to be adopted in other cities.

In 2009, the City of Chicago leased its entire 34,500 on-street parking meters to Morgan Stanley, a multinational financial corporation, for 75 years at a one-time payment of \$1.16 billion.²³⁹ The purpose for leasing the spaces, according to then-Mayor Richard Daley, was to account for a shortfall in the city's budget.²⁴⁰ A community and political backlash resulted from the meter lease. This backlash stems from:

- The lack of community outreach performed before the lease was signed²⁴¹
- The under-valuation of the metered spaces in the lease²⁴²
- The lack of flexibility the city now has over its roadways²⁴³

No reasonable amount of time was given for public engagement in the process. Once the city accepted a bid on the metered spaces, there was a very short window in which the public could comment, given that the contract was awarded by the City Council only three days after the bidding process closed.²⁴⁴ Despite a history of Chicago neighborhoods resisting meter increases,²⁴⁵ the public played no role whatsoever in this deal, leaving many frustrated with what they perceived as a secretive process.²⁴⁶

Backlash also resulted over the price paid to the City of Chicago to lease the meters, with critics claiming that the short-term payment of \$1.16 billion cost the city a billion dollars in the long term. Contrary to Mayor Daley's assertion that the historic resistance to meter increases would have cost the city more if Chicago did not privatize the spaces,²⁴⁷ a report from the City's Office of the Inspector General found the spaces to be worth \$2.13 billion over the course of 75 years.²⁴⁸ The spaces were therefore under-valued by 46 percent in the lease agreement,²⁴⁹ with the city receiving \$974 million less than what this resource is worth.²⁵⁰ The ability for Chicago

²³⁹ Weinberger, Kaehny, and Rufo, "US Parking Policies," 60.

²⁴⁰ City of Chicago. *Report of Inspector General's Findings and Recommendations: An Analysis of the Lease of the City's Parking Meters*. Chicago: City of Chicago, 2009, 25.

²⁴¹ Weinberger, Kaehny, and Rufo, "US Parking Policies," 61.

²⁴² City of Chicago. *Report of Inspector General's Findings and Recommendations*, 23.

²⁴³ Weinberger, Kaehny, and Rufo, "US Parking Policies," 61.

²⁴⁴ City of Chicago. *Report of Inspector General's Findings and Recommendations*, 32.

²⁴⁵ John Kaehny, "Chicago Pays the Price for Parking Privatization," *Streetsblog* (New York, June 2009), <http://www.streetsblog.org/2009/06/17/chicago-pays-the-price-for-parking-privatization/> (accessed October 5, 2013).

²⁴⁶ Weinberger, Kaehny, and Rufo, "US Parking Policies," 61.

²⁴⁷ John Kaehny, "Chicago Pays the Price for Parking Privatization."

²⁴⁸ City of Chicago. *Report of Inspector General's Findings and Recommendations*, 24.

²⁴⁹ City of Chicago. *Report of Inspector General's Findings and Recommendations*, 24.

²⁵⁰ Weinberger, Kaehny, and Rufo, "US Parking Policies," 61.

to balance its budget for one year has resulted in its inability to collect meter revenue for several decades to come.

The privatization of the city's metered spaces has even more dire consequences for the city's transportation network and sustainability goals than it does for revenue generation and community relations. Major components of the lease prevent Chicago from making changes to its street network. Under the agreement, the city cannot remove meters or change meter rates or hours without compensating Morgan Stanley. This makes achieving Chicago's sustainability goals difficult, as pedestrian bulb-outs, protected bike lanes, and rapid bus systems cannot be implemented without paying Morgan Stanley for lost revenue due to the loss of metered parking. Making improvements for bicyclists, pedestrians, and transit users on major arterials is now a difficult and expensive task for the city to achieve.²⁵¹ Additionally, any attempts at parking reform, such as market-based and demand-responsive pricing, cannot be implemented given the fixed meter structure set in the terms of the lease.²⁵² Because the rates are fixed, blocks with dramatically different demand rates are priced the same, creating local traffic problems.²⁵³ Chicago has essentially doomed itself to 75 years of parking problems.

²⁵¹ Weinberger, Kaehny, and Rufo, "US Parking Policies," 61.

²⁵² Shoup, *The High Cost of Free Parking*, 686-687.

²⁵³ Weinberger, Kaehny, and Rufo, "US Parking Policies," 61.

V – Policy Analysis and Recommendations

Chapter Five analyzes various progressive parking policies from the case studies and literature discussed in this report in order to make recommendations for San Jose. These policies are analyzed for their effectiveness in achieving goals similar to those of *Envision San Jose 2040*. The policies with the highest scores are recommended for use by the City of San Jose as a means to help achieve its General Plan goals. The analysis focuses on the policies used in various US cities discussed in Chapter Four and is supplemented with professional and academic studies from Chapter Two.

5.1 – Criteria for Analysis

The criteria for analysis in this report are based on the housing, transportation, economic, and environmental goals of *Envision San Jose 2040*. Community engagement and political support are also included as criteria, given *Envision 2040's* emphasis on engaging the community during General Plan implementation.²⁵⁴ Other themes discussed in the General Plan, such as historic preservation and downtown revitalization, are also included.²⁵⁵ These themes were first discussed in Chapter One. The following are criteria used to analyze the effectiveness of each policy:

- Housing
 - Is the supply of housing increased as a result of the policy?
 - Is the affordability of housing increased as a result?
- Transportation
 - Does the policy result in an increase in the use of alternative transportation?
 - Is there a reduction in vehicle miles travelled, rates of automobile use, and/or rates of automobile ownership?
- Employment/Economy
 - Does the policy result in increased jobs?
 - Does the policy result in increased retail?
 - Does the policy result in added revenue for the city?
- Environment
 - Is there a reduction in automobile emissions?
 - Does the policy preserve open spaces and/or the city's urban growth boundary?
 - Does the policy help reduce urban sprawl?
- Engagement
 - Did the policy receive support from the community before and during implementation?
 - Has the policy received subsequent support from the community since implementation?
 - Did the policy receive political support when it was first conceived and implemented?

²⁵⁴ City of San Jose, "Implementation," c. 7, 3.

²⁵⁵ City of San Jose, "Envision San Jose 2040," c. 1, 23; City of San Jose, "Land Use and Transportation," c. 6, 20.

- Has the policy received political support since implementation?
- Other goals
 - Does the policy assist with historic preservation?
 - Does the policy contribute to downtown revitalization?
 - Does the policy help to increase the overall density of the city?

The following section examines various progressive parking policies. The discussion and analysis of each will be framed by the criteria listed above.

5.2 – Policy Analysis

The policies in Chapter Four’s case studies were discussed in order to be evaluated for their potential effectiveness in implementing San Jose’s goals. This section uses a policy matrix for various categories of San Jose’s General Plan goals to evaluate these policies. The evaluation is based on the criteria discussed above. Recommendations for parking reform in San Jose will be based on analysis of these case studies as well as of literature reviewed in Chapter Two.

5.2.1 – Housing

On-site parking at residences is associated with increases in housing and development costs due to the loss of land for profit-generating development²⁵⁶ and the bundling of parking.²⁵⁷ Additionally, parking requirements spread-out land uses and decrease the amount of land available for development, resulting in lowered density and fewer housing units.²⁵⁸ Studies from New York, Los Angeles, San Francisco, and elsewhere have come to these conclusions. In San Francisco, for example, renter- and owner-occupied housing units without parking are more affordable than units with parking.²⁵⁹ In New York City²⁶⁰ and San Jose,²⁶¹ parking requirements have decreased overall density; decreased densities have a negative impact on housing affordability, particularly when densities are decreased due to parking provision.²⁶²

Of the policies discussed in Chapter Four, Los Angeles’s Adaptive Reuse Ordinance is the policy that best achieved goals similar the housing element of *Envision San Jose 2040*. San Jose wishes to add 140,000 new housing units citywide and emphasizes downtown as a focused growth area. The Adaptive Reuse Ordinance successfully increased downtown Los Angeles’s housing supply by 7,300 units,²⁶³ with a major focus in the downtown core.²⁶⁴ Housing affordability was also increased, which is an important goal of *Envision 2040*.

²⁵⁶ Cutter and Franco, “Do Parking Requirements significantly Increase the Area Dedicated to Parking?” 907.

²⁵⁷ Shoup, “The Trouble with Minimum Parking Requirements,” 568.

²⁵⁸ Cutter and Franco, “Do Parking Requirements significantly Increase the Area Dedicated to Parking?” 907.

²⁵⁹ Jia and Wachs, “Parking Requirements and Housing Affordability,” 8.

²⁶⁰ Furman Center for Real Estate and Urban Policy, *Searching for the Right Spot*,” 9.

²⁶¹ San Jose State University and Santa Clara Valley Transportation Agency, *A Parking Utilization Survey of Transit-Oriented Development Residential Properties in Santa Clara County*, 2.

²⁶² Feitelson and Rotem, “The Case for Taxing Surface Parking,” 320.

²⁶³ Shoup, *The High Cost of Free Parking*, xxxii.

²⁶⁴ City of Los Angeles, *Adaptive Reuse Program*, 7.

Seattle’s pilot-program is likely to increase housing supply in the city through increased development activity and more land available for development as a result of decreased parking requirements. The housing that will be built through this program will be of the type called for in *Envision 2040*: transit-oriented housing and urban infill.²⁶⁵ This is the same type of housing currently being built with reduced parking and parking maximums in Portland.²⁶⁶ Results of the policy analysis for housing goals are shown in Table 5.

The experiences of cities in each of these cases are support by findings in the literature. Most notable for the housing discussion is that unbundled parking removes the price of parking from goods, services, and rents,²⁶⁷ and that unbundled parking and parking zoning reductions are effective tools for increasing the affordability of housing.²⁶⁸ The policies used in Los Angeles, Seattle, and Portland feature forms of parking unbundling and reductions.

Table 5: Policy Analysis Matrix – Case Studies and *Envision 2040* Housing Goals

City and Policy	Increased Housing Supply	Increased Housing Affordability
Chicago - Privatized On-Street Parking		
Los Angeles - Adaptive Reuse Ordinance	7,300 housing units added to downtown Los Angeles	Housing supply increased, parking unbundled
New York - ParkSmart		
Pasadena - Parking Credits for Downtown Redevelopment		
Pasadena - Parking Benefit District		
Portland - Freeze on Downtown Parking Supply		
Portland - Parking Requirements	Developers are building more housing as a result	
San Francisco - SFpark		
San Jose - Shared Parking on the Alameda		
Seattle - Right-Size Parking	Allows for more housing than parking to be developed, removes barriers to building infill housing and housing at transit	Housing supply increase, parking unbundled

²⁶⁵ Daniel Rowe, interview by author, San Jose, CA, September 17, 2013.

²⁶⁶ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

²⁶⁷ Shoup, “The Trouble with Minimum Parking Requirements,” 568.

²⁶⁸ Jia and Wachs, “Parking Requirements and Housing Affordability,” 8.

5.2.2 – Transportation

Increases in parking supply, especially free parking, and large amounts of required parking increase the likelihood that an individual will own or operate an automobile.²⁶⁹ Studies have found that a decrease in parking requirements or in overall parking supply decrease rates of automobile use, particularly for commute trips.²⁷⁰ Several mid-sized US cities with large parking provisions, such as San Mateo and Albany, have high rates of automobile commuters, while similarly sized cities with much lower parking provision, such as Berkeley and Cambridge, have lower rates of automobile commute trips.²⁷¹ The availability of parking, as discussed in Chapter Two, is the most important factor in automobile use.²⁷² As supply increases, so do rates of automobile use, as studies of New York, Edinburgh, and others have shown.²⁷³ Studies have also shown the opposite: as parking supply decreases, rates of automobile use also decrease, as evidenced by studies of Portland and other cities.²⁷⁴

Several policies examined in Chapter Four ranked well in achieving transportation goals similar to those of San Jose, as shown below in Table 6. San Jose seeks to reduce solo automobile use by approximately 50 percent by 2040 while increasing rates of walking, biking, carpooling, and transit use. New York’s ParkSmart and both Portland’s parking freeze and reduced parking policies were most successful at achieving transportation-related goals similar to those of San Jose. Bicycle commuting has increased in New York due to ParkSmart’s success in reducing double-parking and parking cruising, creating excess road capacity by reducing vehicle miles travelled and repurposing this capacity for bicycle facilities.²⁷⁵ Both of Portland’s policies resulted in an increase in transit use.²⁷⁶

The findings of several studies provide additional support for the methods used by New York and Portland. Studies have found optimal curbside pricing to significantly reduce parking cruising.²⁷⁷ Studies have found this to be the case in Redwood City²⁷⁸ and San Francisco,²⁷⁹ and through ParkSmart, in select areas of New York City.²⁸⁰ Cities with fewer parking spaces have been found to have fewer automobile commuters and increased amounts of transit use,²⁸¹ supporting Portland’s experiences that parking reductions increase transit use. As has been the case in Portland, increasing transit use by reducing parking requirements has been successful because of significant investments in transit²⁸² and a functional transit network.²⁸³

²⁶⁹ Chatman, “Deconstructing Development Density,” 1025.

²⁷⁰ McCahill and Garrick, “An Evaluation of Automobile Use, Parking Provision, and Urban Activity.”

²⁷¹ McCahill and Garrick, “An Evaluation of Automobile Use, Parking Provision, and Urban Activity.”

²⁷² Guo, “Does Residential Parking Supply Affect Household Car Ownership?” 25.

²⁷³ Furman Center for Real Estate and Urban Policy, *Searching for the Right Spot*, 7; Rye et al., “The Role of Market Research and Consultation in Developing Parking Policy,” 393.

²⁷⁴ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 54.

²⁷⁵ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 64.

²⁷⁶ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 54.

²⁷⁷ Arnott and Rowse, “Downtown Parking in Auto City,” 12; Zhen (Sean) Qian, Feng (Evan) Xiao, and H. M. Zhang, “The Economics of Parking Provision for the Morning Commute,” *Transportation Research Part A: Policy and Practice* 45, no. 9 (2011), 876-877.

²⁷⁸ Shoup, *The High Cost of Free Parking*, 403.

²⁷⁹ San Francisco Municipal Transportation Agency, “Extended Meter Hours Study,” (San Francisco, 2010): 19.

²⁸⁰ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 64.

²⁸¹ McCahill and Garrick, “An Evaluation of Automobile Use, Parking Provision, and Urban Activity.”

²⁸² Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

Table 6: Policy Analysis Matrix - Case Studies and *Envision 2040* Transportation Goals

City and Policy	Increased Alternative Transportation Use	Reduced Automobile Use
Chicago - Privatized On-Street Parking		
Los Angeles - Adaptive Reuse Ordinance		
New York - ParkSmart	Excess road capacity allows for enhanced bicycle and pedestrian spaces; increase in bicycle commuting	Decreases in parking cruising have decreased vehicle miles travelled (VMT)
Pasadena - Parking Credits for Downtown Redevelopment		On average, a motorist visits 2.7 businesses, a decrease in vehicular travel per trip
Pasadena - Parking Benefit District		
Portland - Freeze on Downtown Parking Supply	Increased transit use	Mode shift to transit use
Portland - Parking Requirements	Increased transit use	Mode shift to transit use
San Francisco - SFpark		Decreases in parking cruising have decreased vehicle VMT
San Jose - Shared Parking on the Alameda		
Seattle - Right-Size Parking	Plans to increase transit use	Plans to reduce VMT

5.2.3 – The Environment

Land consumption and automobile emissions result from parking zoning requirements as vast amounts of land are paved over to create parking lots,²⁸⁴ which in turn induce automobile use.²⁸⁵ The ecosystem service value provided by natural features, such as open space and wetlands, is compromised by the consumption of land for parking. Parking supply has also paved over vast stretches of forested lands.²⁸⁶ The negative externalities associated with parking zoning can be minimized through various progressive parking reforms. With the exception of that of Chicago,

²⁸³ Furman Center for Real Estate and Urban Policy, *Searching for the Right Spot*,” 5.

²⁸⁴ Davis et al., “The Environmental and Economic Costs of Sprawling Parking Lots in the United States,” 258.

²⁸⁵ Shoup, “The Trouble with Minimum Parking Requirements,” 551.

²⁸⁶ Davis et al., “The Environmental and Economic Costs of Sprawling Parking Lots in the United States,” 258.

each policy evaluated here has had a positive impact on the environment, in some cases even reducing existing impacts to the environment.

In this analysis, Portland's policies had the strongest positive impact on the environment, given the city's success in reducing air pollution. Reductions in vehicle miles travelled resulting from decreases in parking cruising as well as a shift toward alternative transportation use also helped to achieve environmental goals. Cities that saw a reduction in vehicle miles travelled are Portland, Pasadena, New York, and San Francisco. Seattle's pilot program is also intended to reduce vehicle miles travelled.²⁸⁷ Chicago's privatization policy, on the other hand, may actually contribute negatively to the environment, given that the policy makes implementation of alternative transportation modes difficult in areas with metered parking.²⁸⁸

Studies support reduced automobile emissions as a result of decreased vehicle miles travelled. In particular, the practice of parking at each individual destination has negative impacts on the environment. Reducing the necessity to move one's car from each location one visits reduces the amount of pollutants emitted from automobiles.²⁸⁹ Old Pasadena successfully decreased vehicle miles travelled with a "park once" strategy.²⁹⁰ Higher-densities and mixes of land uses have been found to decrease land consumption²⁹¹ and the need to drive to individual destinations,²⁹² which in turn decrease emissions. The natural environment in Portland and many of the other cities analyzed here have benefited from reduced vehicle miles travelled as a result of progressive parking reforms.

²⁸⁷ King County Metro, "Right Size Parking."

²⁸⁸ Weinberger, Kaehny, and Rufo, "US Parking Policies," 61.

²⁸⁹ Chu and Tsai, "A Study of an Environmental-Friendly Parking Policy," 90.

²⁹⁰ Robert Montano, interview by author, San Jose, CA, September 30, 2013.

²⁹¹ Davis et al., "The Environmental and Economic Costs of Sprawling Parking Lots in the United States," 258.

²⁹² Chu and Tsai, "A Study of an Environmental-Friendly Parking Policy," 90.

Table 7: Policy Analysis Matrix – Case Studies and *Envision 2040* Environmental Goals

City and Policy	Reduced Automobile Emissions	Reduced Sprawl
Chicago - Privatized On-Street Parking		
Los Angeles - Adaptive Reuse Ordinance		Added infill housing in the city's core rather than in outlying areas
New York - ParkSmart	Decreased parking cruising	
Pasadena - Parking Credits for Downtown Redevelopment	Reduced VMT (On average, a parked car visits to 2.7 businesses, a decrease in vehicular travel per trip)	
Pasadena - Parking Benefit District		
Portland - Freeze on Downtown Parking Supply	Portland hasn't exceeded federal carbon monoxide levels since 1984	Not applicable - the freeze was lifted in the 1990s
Portland - Parking Requirements	Portland hasn't exceeded federal carbon monoxide levels since 1984	
San Francisco - SFpark	Decreased parking cruising	
San Jose - Shared Parking on the Alameda		Prevented new parking from being built
Seattle - Right-Size Parking	Reduces VMT	

5.2.4 – Employment and the Economy

San Jose seeks to increase the number of jobs within the city, an effort that will shift the jobs-poor city to a net worker importer. The city also wishes to increase the amount retail in its neighborhoods and create a more vibrant downtown that will serve as a regional destination. Each of these goals increases city revenue and helps to more effectively deliver city services.

Los Angeles, Pasadena, and New York’s parking policies rank the highest at achieving employment and economic goals similar to those of *Envision 2040*. Policies in these cities helped to increase employment and city revenue. Additionally, Los Angeles and Pasadena’s parking policies contributed to the revitalization of their downtowns. A study of similar parking policies in Redwood City found that these policies resulted in great economic and employment benefits. Businesses and developers have reinvested heavily in Redwood City’s downtown, creating a vibrant urban center.²⁹³

²⁹³ Shoup, “The Trouble with Minimum Parking Requirements,” 551.

Table 8: Policy Analysis Matrix - Case Studies and *Envision 2040* Economic and Employment Goals

City and Policy	Increased Jobs	Increased Retail	Added Revenue for the City
Chicago - Privatized On-Street Parking			\$1.17 billion (one-time payment)
Los Angeles - Adaptive Reuse Ordinance	Revitalization of downtown LA, including new businesses	Revitalization of downtown LA, including new businesses	Increased Property Values
New York - ParkSmart	Increased number of employees at outdoor cafes	Allowed for public right-of-way to be converted to public plazas with outdoor cafes	Increased Meter Rates
Pasadena - Parking Credits for Downtown Redevelopment	Increased employment at new downtown businesses	Revitalization of vacant commercial properties for downtown shops	Sales tax
Pasadena - Parking Benefit District	Increased employment downtown	Assists with the revitalization of downtown	Meters provide \$1.3 million per year
Portland - Freeze on Downtown Parking Supply			
Portland - Parking Requirements	Construction jobs for new developments		
San Francisco - SFpark			Increased Meter Rates
San Jose - Shared Parking on the Alameda		Better access to existing retail	
Seattle - Right-Size Parking			Provide additional revenue through sales tax/property value increases

5.2.5 – Community and Political Support

Of the cases examined in this report, Pasadena’s parking credit program received the widest amount of support from residents, businesses, and local politicians. While an occasional business owner in Old Pasadena questions why they should have to pay the credit – required of most Old Pasadena businesses – the program has been viewed by the public as being very successful in achieving its goals.²⁹⁴ Los Angeles’s Adaptive Reuse Ordinance has also been well-received by its community, although, given that no one lived in downtown Los Angeles when the program first began, there were no residents who could have been in favor of or

²⁹⁴ Robert Montano, interview by author, San Jose, CA, September 30, 2013.

opposed to the policy.²⁹⁵ Portland's parking freeze was also highly supported by its community for its ambitious goals to reduce air pollution, and has been seen by the community as a success.²⁹⁶ Developers in Seattle are very interested in and supportive of King County Metro's Right-Size Parking program, but it is not clear at this point how residents will receive the changes.²⁹⁷

²⁹⁵ Ken Bernstein, interview by author, San Jose, CA, September 6, 2013.

²⁹⁶ Paul Smith, interview by author, San Jose, CA, September 5, 2013.

²⁹⁷ Daniel Rowe, interview by author, San Jose, CA, September 17, 2013.

Table 9: Policy Analysis Matrix - Case Studies and *Envision 2040* Community and Political Support

City and Policy	Initially Supported by the Community	Continues to be Supported by the Community	Supported Politically
Chicago - Privatized On-Street Parking	No community outreach performed	No	Yes
Los Angeles - Adaptive Reuse Ordinance	There was no living in downtown LA to be for or against this policy; business and property owners supported the policy due to the large amount of vacant buildings	The policy was successfully expanded to other parts of the city	Supported politically for downtown revitalization and increasing housing supply
New York - ParkSmart	Little overall support	Little overall support	Little overall support
Pasadena - Parking Credits for Downtown Redevelopment	Supported by businesses and downtown property owners	Supported by businesses and downtown property owners	Supported politically for downtown revitalization
Pasadena - Parking Benefit District		Supported by businesses and downtown property owners	Supported politically for downtown revitalization
Portland - Freeze on Downtown Parking Supply	Supported by the general public to improve air quality	Supported by the general public	Supported politically to improve air quality
Portland - Parking Requirements	Supported by developers, businesses, and residents	Supported by developers, mixed support from businesses and residents	Yes
San Francisco - SFpark	Community appreciated outreach efforts and program goals	Support has declined	Supported due to increased meter revenue for the city, improved transit time, and decreased automobile emissions
San Jose - Shared Parking on the Alameda	Supported by nearby residents	Supported by nearby residents	
Seattle - Right-Size Parking	Supported by developers	Not applicable - new policy	Decision makers would like to see this policy influence parking policy at a larger regional level

5.2.6 – Miscellaneous Goals: Preservation, Revitalization, and Density

Envision 2040 contains a number of other goals that have not been discussed as thoroughly in this report as those analyzed thus far in this section. These goals include historic preservation, downtown revitalization, and increased density. While not discussed in depth in this report, these goals are nonetheless important to the city to achieve. These goals, therefore, are included here as a miscellaneous category.

Los Angeles and Pasadena have best achieved these goals. Los Angeles’s Adaptive Reuse Ordinance, Pasadena’s parking credit program, and Pasadena’s parking benefit district have lead to a revitalized downtown with greater density and preserved a significant amount of each city’s historic building stock. Table 10 shows the results of the miscellaneous goals analysis.

Table 10: Policy Analysis Matrix - Case Studies and *Envision 2040* Historic Preservation, Downtown Revitalization, and Increased Density Goals

City and Policy	Historic Preservation	Downtown Revitalization	Increased Overall Density
Chicago - Privatized On-Street Parking			
Los Angeles - Adaptive Reuse Ordinance	Saved 56 historic buildings	Yes	Adding 7,300 housing units to Los Angeles's core, less area dedicated to parking
New York - ParkSmart			
Pasadena - Parking Credits for Downtown Redevelopment	Allowed for the renovation of historic buildings	Yes	Revitalized downtown
Pasadena - Parking Benefit District	Allowed for the renovation of a historic district	Yes	Revitalized downtown
Portland - Freeze on Downtown Parking Supply		Yes	Less area dedicated to parking
Portland - Parking Requirements			Less area dedicated to parking
San Francisco - SFpark			
San Jose - Shared Parking on the Alameda			
Seattle - Right-Size Parking			Less area dedicated to parking

5.3 – Recommended Parking Policies for the City of San Jose

Based on Chapter Two’s literature review and this chapter’s policy analysis, the following recommendations are being made for San Jose.

1. Allow for the conversion of historic commercial buildings to residential buildings without requiring additional off-street parking to be provided.
2. Charge in-lieu fees to businesses and developers rather than require off-street parking; use the in-lieu fees to manage off-street supply in centrally-located municipal garages and to make transit investments.
3. Institute parking maximums in dense, transit-rich areas; reduce parking minimums citywide.
4. Expand San Jose’s metered parking district into neighborhoods outside of downtown; reinvest meter revenue directly into the blocks where it is collected.
5. Change the Zoning Ordinance to allow for shared parking among adjacent land uses.
6. Expand existing and create new residential parking permit districts to prevent parking spill-over in dense, high-activity areas.

5.3.1 – Historic Building Conversion without Additional Parking

It has been projected that San Jose will grow by 50 percent in the coming decades, resulting in a 2040 population of approximately 1.5 million. To accommodate this growth, *Envision 2040* plans for 120,000 new housing units to be built in focused growth areas, including downtown. At the same time, the city wants its downtown to become a vibrant city center and regional destination. Preserving its historic buildings is an important part of accomplishing this goal.

Los Angeles was successful in increasing its downtown housing stock while preserving historic buildings. While San Jose does not have nearly the same number of vacant historic buildings as Los Angeles did when it first enacted its Adaptive Reuse Ordinance, San Jose could nonetheless benefit from allowing underutilized commercial buildings to be converted into apartments and condominiums. This policy could also be used outside of downtown in focused growth areas and Urban Villages. There are several prominent historic buildings, such as the one shown in Figure 23, that have been vacant for decades and could be converted to housing if the zoning ordinance was changed. As it stands, the amount of parking required for residential land uses is prohibitive of this type of conversion: there is simply not enough available land to provide the parking required for a residential conversion. Allowing buildings to be converted with only their existing parking, as has been done in Los Angeles, would solve this issue and help the city to achieve its General Plan goals.

San Jose is concerned not only with increasing its housing supply, but with housing affordability. As discussed in Chapter Two, parking bundling decreases housing supply by increasing the costs of development. On-site parking adds no value to a development²⁹⁸ and instead decreases the

²⁹⁸ Cutter and Franco, “Do Parking Requirements significantly Increase the Area Dedicated to Parking?” 907.

amount of land available for development and therefore profit.²⁹⁹ Developers do not bear these costs but instead pass them onto consumers. In the case of housing, this means higher rents or mortgages.³⁰⁰

One reason for city's to be concerned with affordable housing supply is to ensure that employees can live near where they are likely to work or where they can access transit. Higher housing costs push low-income individuals and families into outlying areas, forcing long commutes that typically occur in single-occupancy vehicles.³⁰¹ Adopting a policy similar to Los Angeles's Adaptive Reuse Ordinance will help San Jose to address this issue by increasing the supply of housing in the central part of the city without bundling parking.



Figure 23: If San Jose had a policy similar to Los Angeles's Adaptive Reuse Ordinance, vacant buildings such as this one in the city's downtown could be converted into housing without needing additional parking. Photograph by the author.

5.3.2 – In-Lieu Fees Instead of Additional Parking

Pasadena's parking credits have been successful in managing parking supply, preserving historic buildings, and revitalizing downtown. San Jose could benefit from a similar program.

Pasadena's parking credits are a type of in-lieu fee, which cities typically require businesses and developers to pay instead of requiring additional off-street parking to be built. Cities use these fees to mitigate traffic impacts created by new development. Pasadena uses credits collected in Old Pasadena to build and manage city-owned parking facilities. These facilities have helped maintain a dense city center by preventing an abundance of surface parking lots. Additionally, the central location of these facilities has helped reduce driving as those who choose to drive

²⁹⁹ Davis et al., "The Environmental and Economic Costs of Sprawling Parking Lots in the United States," 258.

³⁰⁰ Shoup, "The Trouble with Minimum Parking Requirements," 568.

³⁰¹ City of San Jose, "Envision San Jose 2040," c. 1, 63.

downtown can park once rather than continuing to drive to and park at each individual destination.³⁰²

Studies have shown in-lieu fees to have had positive impacts on cities. In-lieu fees that are used to create shared-use parking facilities efficiently maximize land use by meeting the total parking demand of a given area with fewer parking spaces.³⁰³ Centralized facilities – including those resulting from in-lieu fees – have been found to decrease vehicle miles travelled by decreasing the amount of times one needs to re-park their automobile.³⁰⁴ In-lieu fees can reduce costs to developers as the assessed impact is often less than the cost of satisfying minimum parking requirements.³⁰⁵ In-lieu fees can also help with better urban form by decreasing gaps between buildings and setbacks from the street that are often created by parking lots.³⁰⁶ Better urban form is yet another goal of *Envision 2040*.³⁰⁷

While Pasadena’s parking credits are only used in its downtown area, San Jose could charge in-lieu fees in other areas of the city that have density and land-use features similar to a downtown setting, such as the Santana Row/Valley Fair area. The Urban Village component of *Envision 2040* can also include in-lieu fees for parking to help the city finance garages, make transit investments, and complete its bicycle network. San Jose already employs a type of in-lieu fee in the traffic mitigation fees charged to developers in North San Jose,³⁰⁸ making a policy of this type feasible given the city’s experience with these fees. By paying a fee instead of providing on-site parking, San Jose can maintain and develop dense, mixed-use neighborhoods, helping to achieve a variety of *Envision 2040* goals.

5.3.3 – Parking Maximums in Dense Areas, Reduced Parking Elsewhere

Replacing parking requirements with parking maximums in dense areas while reducing parking requirements elsewhere is strongly recommended to the City of San Jose to help achieve its environmental, housing, mode shift, and density goals. This may be the most controversial of all the recommendations listed in this report, given the findings of the public’s perception of parking supply in various studies.³⁰⁹ This policy, however, will likely be the most effective in achieving General Plan goals since current parking zoning in San Jose has resulted in lowered densities and an over-supply of parking, as discussed in Chapter Three. As discussed throughout this report, the single most important factor in automobile ownership and use is the availability of parking.³¹⁰ If San Jose is to truly reduce single-occupancy vehicle use, then the city must reduce its citywide parking zoning requirements to reflect current occupancy use and future desired use.

³⁰² Robert Montano, interview by author, San Jose, CA, September 30, 2013.

³⁰³ Shoup, “In Lieu of Required Parking,” 2.

³⁰⁴ Chu and Tsai, “A Study of an Environmental-Friendly Parking Policy,” 90.

³⁰⁵ Donald Shoup, “In Lieu of Required Parking,” 2.

³⁰⁶ Shoup, “In Lieu of Required Parking,” 2.

³⁰⁷ City of San Jose, “Envision San Jose 2040,” c. 1, 47.

³⁰⁸ City of San Jose, “Envision San Jose 2040,” c. 1, 29.

³⁰⁹ Rye et al., “The Role of Market Research and Consultation in Developing Parking Policy,” 391; San Francisco Municipal Transportation Agency, “Extended Meter Hours Study,” (San Francisco, 2010), 18.

³¹⁰ Guo, “Does Residential Parking Supply Affect Household Car Ownership?” 24-25.

Portland has had considerable success with its parking reduction programs, which have increased transit use, reduced automobile ownership, and assisted with improved air quality. Seattle's Right-Sized Parking program has shown that reduced parking requirements do not discourage development, given the amount of interest the program has received from developers.³¹¹ The same is true of Portland where developers have been very interested in reduced and even eliminated parking requirements. Since the housing recovery has been underway, a number of developments without parking are either under construction or have been constructed.³¹²

Specific requirements and maximums in San Jose would need to be context-sensitive and, like Portland, should consider density, location, and proximity to transit.³¹³ Serious reductions can be enacted in and around the city's urban core, in transit-rich areas, in and near traditional neighborhood business districts, and along transit corridors. Not only will parking reductions in these areas help achieve mode shift and density goals, but they can also help developments get built in the first place, as parking requirements often prohibit the construction of dense housing at infill sites, as studies in New York and Seattle have shown.³¹⁴

Parking requirements for the rest of the city should be reduced to reflect the current underutilization of existing parking. Continuing to require the prevailing amount of parking that has been in effect citywide will only lead to increased automobile dependency through the spreading and segregating of land uses,³¹⁵ and to decreased density.³¹⁶ Maintaining current levels of required parking is unsustainable in the long-term.

³¹¹ Daniel Rowe, interview by author, San Jose, CA, September 17, 2013.

³¹² Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

³¹³ Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

³¹⁴ Furman Center for Real Estate and Urban Policy, *Searching for the Right Spot*, 6; King County Metro, "Right Size Parking."

³¹⁵ Shoup, "The Trouble with Minimum Parking Requirements," 557.

³¹⁶ Cutter and Franco, "Do Parking Requirements significantly Increase the Area Dedicated to Parking?" 919.



Figure 24: Dense, infill housing developments in transit-rich areas of San Jose are still required to provide large amounts of parking, significantly increasing the cost of development. This project in downtown has several levels of above- and below-ground parking. Photograph by the author.

5.3.4 – Expanded Metered Parking and Revenue Return

Increases in meter rates and meter districts have helped Pasadena, San Francisco, and New York achieve a number of goals. Each city has been successful in reducing rates of automobile use and generating revenue. Additionally, New York and Pasadena have successfully used metered parking for economic development. Pasadena has used this tool to revitalize its downtown, which now thrives with a number of small businesses. New York’s on-street parking program has allowed a portion of its roadway to be converted into outdoor cafes, increasing employment and retail in metered areas.

Studies of parking pricing have found that most on-street parking in the United States is severely under-priced, causing a host of financial, environmental, and congestion management issues for cities.³¹⁷ Market-pricing treats on-street parking as a resource to be best-utilized, while under-pricing does not allow the full economic benefits of the space to be captured by the city or by local businesses.³¹⁸ Pricing that encourages turnover has stronger benefits for cities, businesses, and even individuals,³¹⁹ despite the perception that parking should be free and readily

³¹⁷ Arnott and Rowse, “Downtown Parking in Auto City,” 7.

³¹⁸ Shoup, *The High Cost of Free Parking*, 408.

³¹⁹ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 64.

available.³²⁰ Additionally, pricing strategies that achieve an optimal 85 percent occupancy rate while encouraging long-term parking in off-street facilities reduces parking cruising.³²¹ This, in turn, reduces vehicle miles travelled and therefore automobile emissions.³²² Congestion relief as a result of parking pricing can improve transit service³²³ and even allow for the repurposing of travel lanes.³²⁴ Meter revenue return has helped the expansion of metered districts win vital community and political support.³²⁵

Increased employment, reduced automobile use, and a thriving downtown are all goals of San Jose. San Jose uses meters in its downtown, near its university, county government center, main transit center, and sports arena, as well as in its Japantown Business District. There are, however, many other major destinations and business districts in the city where parking is in high demand. A parking assessment district in Willow Glen, at Kelley Park/Municipal Stadium/San Jose State University South Campus, or at Santana Row/Valley Fair could generate revenue, regulate parking supply, and incentivize alternative transportation use. Demand-responsive pricing techniques could also be used to charge more during high demand and less, or none, during low-demand. Time restrictions can also be used in areas where pricing may not be appropriate.



Figure 25: Free parking at major destinations such as San Jose’s Santana Row induces automobile use. Priced parking would help the city achieve a number of its goals. Revenue collected could be used for neighborhood improvements. Photograph by the author.

Of the parking meter districts analyzed in this report, Pasadena’s has been the most successful. This is due to direct reinvestment of meter fees into the metered areas for streetscape improvements and policing. Not only did the city achieve its goals of economic development, historic preservation, and reduced automobile use, but the returned revenue helped the program to be well-supported by the community. Because of this, San Jose should follow Pasadena’s model of reinvesting meter revenue directly into the streets where it is collected to make

³²⁰ Rye et al., “The Role of Market Research and Consultation in Developing Parking Policy,” 393.

³²¹ Arnott and Rowse, “Downtown Parking in Auto City,” 7.

³²² Arnott and Rowse, “Downtown Parking in Auto City,” 12.

³²³ Weinberger, Kaehny, and Rufo, “US Parking Policies,” 53.

³²⁴ Shoup, *The High Cost of Free Parking*, 699.

³²⁵ Shoup, *The High Cost of Free Parking*, xxix.

streetscape and safety improvements. Community support for metered parking is important, and San Joseans have previously voiced concern over parking rates.³²⁶ Pasadena's experience, however, shows that revenue return helps to gain public support.

5.3.5 – Shared parking

Given that this report found San Jose's off-street parking occupancy rate to be 38 percent, far below the desired 85 percent rate, it is recommended that the city allow future developments to utilize existing parking at adjacent land uses. This will assist with infill development, density goals, and walkability. It can also be a tool for economic development as it may free up land that is currently dedicated to parking for other uses. This tool can also help reduce vehicle miles travelled among individuals who continue to drive, given that shared parking can reduce the need to drive to multiple destinations.³²⁷ This is an important consideration given that *Envision 2040* still anticipates single-occupancy vehicle use to comprise roughly 40 percent of all trips.

5.3.6 – Expanded Residential Permit Zones

While not one of the policies directly addressed in the policy analysis, expanding the city's residential permit districts would be a useful way to help implement the recommendations of this chapter. The tools mentioned thus far have the potential to cause parking spill-over, which has been cited as a concern by San Jose residents.³²⁸ Expanding residential permit districts and developing new ones could prevent spill-over by preventing anyone but local residents to park on residential blocks adjacent to metered districts.

It should be noted that studies in New York and Edinburgh have shown that residential permit districts can increase automobile use. This is because residential zones can often effectively increase the total supply of parking by providing additional access to parking facilities and thus inducing demand. Studies have shown that this increase occurs primarily when motorists from outside of the permit area are given access, such as business district employees who commute from a different part of the city and then park along residential blocks adjacent to the city center.³²⁹ Residential permit districts, however, can decrease parking supply by preventing access to on-street facilities adjacent to major activity centers, thus managing curbside space and directing commuters to alternative methods of transportation. The only risk that may be encountered with this method is creating more parking for residents in permit zones, which has been found to lead to increased automobile ownership.³³⁰ Given San Jose's pattern of single-family neighborhoods adjacent to dense commercial centers, and the city's plans for land use intensification, increasing supply for a small number of commuters while decreasing overall supply for the majority of commuters may be a beneficial trade-off.³³¹

Figure 26 shows existing residential permit parking zones in relation to downtown San Jose and San Jose's neighborhood business districts. As downtown and neighborhood business districts

³²⁶ Pierluigi Olivera, "Why Free Parking is a Bad Idea," *San Jose Inside*, (March 2010)

http://www.sanjoseinside.com/news/entries/03_01_10_why_free_parking_is_a_bad_idea/

³²⁷ Chu and Tsai, "A Study of an Environmental-Friendly Parking Policy," 90.

³²⁸ San Jose Redevelopment Agency, *The Alameda Business District Parking Study*, 18.

³²⁹ Weinberger, "Death by a Thousand Curb-Cuts," 100; Rye et al., "The Role of Market Research and Consultation in Developing Parking Policy," 393.

³³⁰ Guo, "Does Residential Parking Supply Affect Household Car Ownership?" 26.

³³¹ Olivera, "Why Free Parking is a Bad Idea."

grow, and as new business districts and Urban Villages are created through implementation of *Envision 2040*, new residential permit districts could prove useful in managing parking supply and incentivizing alternative methods of travel.

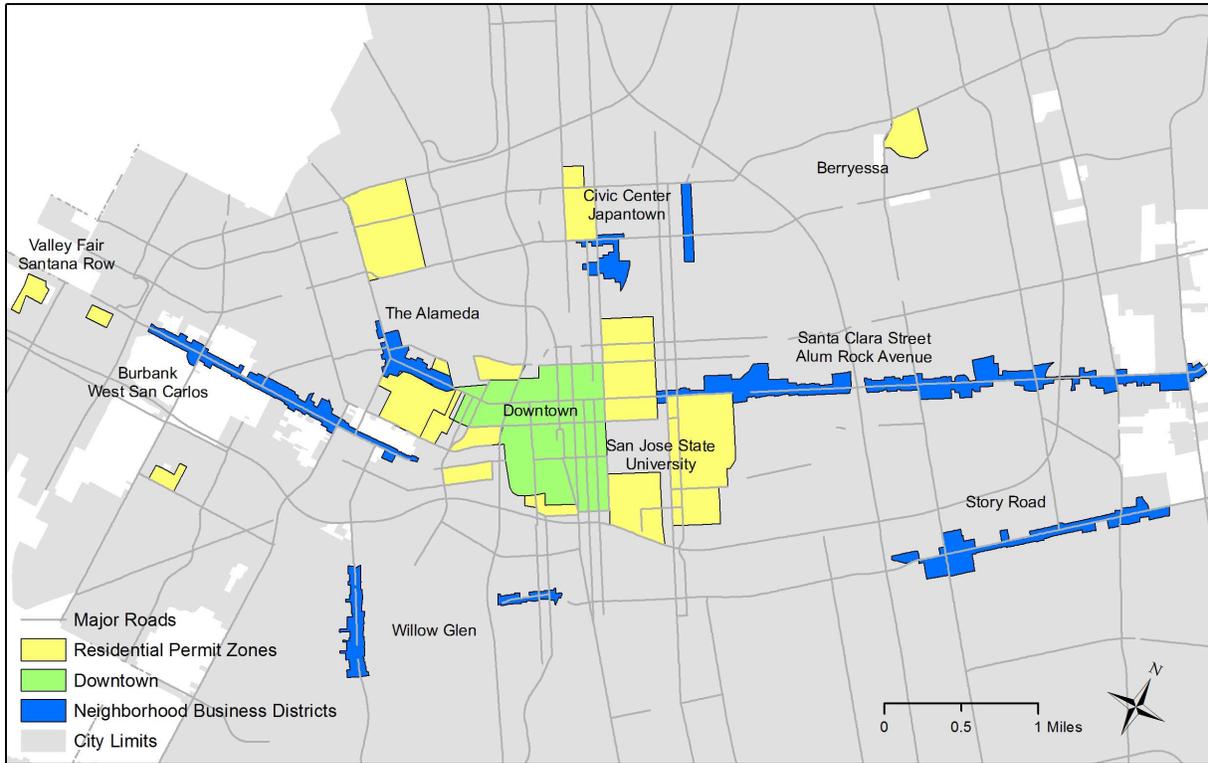


Figure 26: Existing Residential Permit Parking Districts in San Jose. Map created by the author using GIS data created by the author and GIS data from the City of San Jose.

5.3.7 – Policies Not Recommended for San Jose

A parking freeze similar to downtown Portland and privatized on-street parking similar to Chicago are not recommended policies for the City of San Jose. While Portland’s policy was very effective, the city was able to shift many of its trips onto transit, which transit investments and the centralized nature of the Portland area have allowed.³³² San Jose, on the other hand, is decentralized and has many transit-poor areas. The San Francisco Bay Area as a region is further decentralized and has many missing links in its transit system. The interconnectedness of San Jose’s economy with the rest of the Bay Area and the current commute patterns of many San Jose workers would likely not allow for a successful moratorium on providing downtown parking. Instead of a parking freeze, San Jose should pursue reducing parking requirements and instituting parking maximums while continuing to invest in local and regional transit. These strategies have been effective in achieving the goals of other cities and would work well in San Jose.

Chicago’s experience with privatized parking has many lessons for other cities, including San Jose. With its ambitious goals to retrofit the city into a walkable urban environment, San Jose

³³² Sara Schooley, interview by author, San Jose, CA, September 24, 2013.

needs as much flexibility as possible to reallocate its roadway to other modes and uses, something Chicago is effectively prohibited from doing. Also, the one-time payment received by Chicago is a loss in revenue in the long term, given that the city is no longer able to collect revenue beyond this initial payment. It is in the best interest of cities to maintain their parking assessment districts as a community resource for the benefit of the public, as had been the case in Redwood City³³³ and Pasadena,³³⁴ and can also be the case in San Jose.

³³³ Shoup, *The High Cost of Free Parking*, xxix.

³³⁴ Shoup, *The High Cost of Free Parking*, 408.

VI – Conclusion and Further Study

This report examined academic literature and case studies of cities that have attempted parking reform in order to recommend parking policies that can help implement the *Envision San Jose 2040* General Plan. To summarize, these policies are to:

- Allow the conversion of vacant commercial buildings into housing without requiring off-street parking
- Charge in-lieu fees to businesses, developers, and/or property owners instead of requiring additional parking
- Adopt parking maximums in dense, transit-rich areas and reduce parking minimums elsewhere
- Expand the city's parking assessment district into a larger geographic area and reinvest the collected revenue back into the assessment areas
- Allow shared parking among adjacent land uses
- Expand residential parking permit districts to account for parking spill-over

The cases discussed in this report represent only a small amount of the literature on parking policy. Additionally, there are other cities that are piloting parking reforms. Further research into progressive parking policy would benefit the City of San Jose as it reforms current policies and works toward General Plan implementation. Suggested areas for further study include:

- **The effects of parking policy on financing development.** In cities such as Portland and San Francisco that have used progressive policies for many years, what experiences have developers had in obtaining financing for their projects? Have these policies had any significant effect on financing projects compared to cities with traditional parking zoning?
- **The effects of parking policy on rates of automobile ownership.** While many of the cities included in this report have seen a reduction of automobile use and an increase in alternative modes of transportation, a comprehensive study of parking policy's effect on rates of automobile ownership could be useful. Does ownership decrease as driving decreases, or does the rate of ownership remain constant despite lowered driving rates? If so, are individuals storing automobiles that they are not using? How does this scenario affect the amount of parking that should be required by cities?
- **Further study of parking occupancy in San Jose.** This report includes the results of previous studies of parking occupancy in San Jose as well as the results of a survey conducted by the report's author. The surveys referenced in this report studied specific locations within the city while the survey completed for this report used aerial imagery for the entire city. While useful in discussing parking in San Jose, these surveys each have their limitations. It is recommended that the city conduct several comprehensive studies of citywide off-street parking, including parking at private land uses. This can

help the city understand the ways in which its existing parking is being used to help determine how much to require for future development.

Envision San Jose 2040 is an ambitious plan to redirect decades of unsustainable growth toward a viable future that fosters economic development and promotes a high quality of life for residents. A plan of such caliber needs an equally ambitious strategy for managing its current parking supply and for guiding parking provision in the future. If San Jose is to succeed in implementing its General Plan, its automobile-oriented parking policies need to be realigned to meet the vision that is *Envision San Jose 2040*. Fortunately many other cities have taken steps in similar directions and have many lessons in parking policy to offer to San Jose.

Appendix: Parking Supply and Occupancy Estimation Methods

Chapter Three of this report includes surveys of existing parking supply and parking occupancy rates in San Jose, completed by the report's author. The methods for these surveys were adapted from similar studies completed by Davis et al for parking supply and occupancy rates in Midwestern cities.³³⁵ As discussed in Chapter Three, the purpose of these surveys was both to estimate the amount of existing parking and to determine how well that parking is being used. Both of these surveys were completed simultaneously. The purpose of this appendix is to describe this process.

To complete these surveys, the following steps were taken:

- Using ArcGIS and a Bing Maps area image from 2010,³³⁶ all parking lots within the City of San Jose and county pockets within San Jose's city limits were digitized. GIS files used to delineate city limits and county pockets were created by the Santa Clara Valley Transportation Authority and accessed via San Jose State University.³³⁷
- Using methods from Davis et al, parking lots were considered marked parking stalls of three or more cars arranged in a uniform fashion. All surface lots were included, as well as the top levels of parking garages and some carports at multi-family residences.³³⁸
- 6,880 parking lot polygons were created. In order to estimate the total off-street parking supply in San Jose as well as estimate the overall parking occupancy rate, 207 polygons (three percent of the total) were randomly sampled using a random number generator.
- Total spaces and occupied spaces were counted in each of the sampled polygons.
- The number of occupied spaces was divided by the total number of spaces to estimate an occupancy rate of 37.9 percent (rounded to 38 percent in the text of this report).
- The total number of parking spaces was multiplied by the average size of a parking space in San Jose – 176 square feet – based on the requirements within the zoning code which dictate that a non-angled space for a regular-sized vehicle be eight feet by 22 feet.³³⁹
- The resulting square footage was then divided by the total area of the 207 sampled polygons, estimating that parking spaces take up 38.6 percent of the digitized parking lots.
- The total square footage for all parking lots was then multiplied by this percent and the resulting number divided by the size of a parking space, which resulted in a citywide estimate of 581,672 off-street spaces.
- Additional off-street spaces from single family homes were estimated using American Community Survey Five-Year Estimates from 2007-2011.³⁴⁰ This survey estimates

³³⁵ Davis et al., "The Environmental and Economic Costs of Sprawling Parking Lots in the United States," 258; Davis et al., "Estimating Parking Lot Footprints in the Upper Great Lakes Region of the USA," 74.

³³⁶ Bing Maps, "Bing Maps Aerial" (2010), www.esri.com/software/arcgis/arcgisonline/services/bing-maps.

³³⁷ Santa Clara Valley Transportation Authority, "SJCityBoundary," ArcGIS shapefile accessed April 2013 via San Jose State University.

³³⁸ Davis et al., "The Environmental and Economic Costs of Sprawling Parking Lots in the United States," 258.

³³⁹ City of San Jose, "Parking and Loading," 21.

³⁴⁰ United States Census Bureau, "Table DP04: Selected Housing Characteristics."

206,580 single family homes. Single-family homes in San Jose are required to have two covered parking spaces, which makes for an estimated 413,160 parking spaces at these homes alone.

- This brings the estimated total spaces in the city up to 994,832. This figure was not included in the occupancy survey since the occupancy survey only involved parking spaces and parked cars that were visible in the aerial image.

Table 11 is an example of the geospatial attributes for polygons sampled in these surveys. The feature identification number (FID) was created by ArcGIS to track each off-street parking polygon. FID numbers in this table were selected using a random number generator from the 6,880 polygons created for this report. The square footage for each polygon was calculated using ArcGIS. Total and occupied spaces were determined by the author through visual inspection of the aerial photo.

Table 11: Example of GIS attributes for randomly sampled polygons of San Jose off-street parking

FID (GIS Feature Identification Number)	Total Spaces	Occupied Spaces	Square Feet
2	87	66	50822.81
4	409	9	107937.40
10	228	143	5987.68
16	28	9	9767.10
29	92	75	23856.50
38	46	8	18481.59
52	60	25	22339.32
65	30	10	11837.96
83	34	14	16865.04
84	83	6	40349.75
91	58	6	25177.82

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