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The Burden of Requiring Car Parking at Transit-oriented Development Sites in Silicon Valley

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The Burden of Requiring Car Parking at Transit-oriented Development Sites in Silicon Valley

An Analysis of Reduced Parking at Transit-oriented Developments and Policy Recommendations for Building Less Parking

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16. Abstract

While people in Silicon Valley get around using various modes, and billions of dollars are spent supporting public transit, development near transit is planned primarily to account for single-occupancy automobiles. Car parking minimums set by cities often dictate this narrow scope. Yet, these requirements have all manner of negative consequences, which will be addressed in this paper. In place of these minimums, the authors outline different transportation strategies that cities and developers can implement in new developments to make communities more accessible, affordable, vibrant, and healthy. In this research, the authors analyze data on 21 transit-oriented housing developments (TOD) in Silicon Valley that have been reviewed since 2017. In this paper, the authors look back at these projects, including their parking ratios, how close they are to particular types of transit, if they are affordable or market-rate housing, and any Transportation Demand Management (TDM) measures developers committed to implementing. The authors find that developers capitalized on rules allowing them to reduce parking, and some took a proactive approach to reduce required parking by implementing TDM measures. Analysis shows that many developers want to build less parking than required. Changing parking policy can reduce the amount of parking built, lower the cost of housing, and encourage more sustainable forms of mobility. Key recommendations include: eliminating parking minimums, imposing parking maximums near transit, requiring bicycle and micromobility parking minimums, unbundling parking, and future-proofing structured parking. To offset the reduced parking and encourage other ways of getting around, the authors recommend TDM measures be required, and recognize that bicycle facilities, transit passes, and commercial/retail on ground floors encourage sustainable transportation choices and help create vibrant neighborhoods.

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1. Introduction

With some of the worst traffic congestion on the planet[1] and transportation as the leading cause of greenhouse gas (GHG) emissions,[2] driving in Silicon Valley is both unpleasant and unsustainable. At the same time, the region has a growing public transportation system[3] [4] and network of bike lanes,[5] with a mild year-round climate ideal for active transportation.[6] Traffic congestion and improved alternatives make getting around by train, bus, bike, e-scooter, and walking more appealing. This raises the question of why development in Silicon Valley is primarily planned around single-occupancy automobile travel.

Even as Silicon Valley sees improvements in its public and active transportation networks, governments set parking minimums that subsidize single-occupancy automobile travel. With most cities requiring developments to provide between 1.25[7] and 2[8] parking spaces for studio apartments, cities are not only undermining their investment in alternatives, they're going against their own stated goals to reduce GHG emissions.[9] The authors believe the amount of parking in new developments, especially those near transit, runs counter to the vision of a more sustainable, equitable, and vibrant region that so many elected leaders, city officials, and community members seek.

This report analyzes the amount of parking provided at transit-oriented developments that have been reviewed by the authors and research team. It first shares the authors' perspective on the impacts of parking requirements. Next, it presents an overview of transit service and parking requirements for residential developments in Silicon Valley to set the stage for the analysis. The authors analyze data on 21 transit-oriented developments based on the following criteria:

- parking ratios,
- type of transit near developments,
- housing type (affordable vs. market rate), and
- Transportation Demand Management (TDM) measures included by the developer

After analyzing the different parking ratios of each subset of developments, three case studies are presented to highlight the analysis. Based on previously established values and the analysis results, the authors' make policy recommendations on parking requirements and TDM measures.

2. Impacts of Parking: A Perspective

Creating sustainable, equitable, and vibrant communities is an important goal for Silicon Valley, and other regions around the country, and globally. While parking is often viewed purely as a transportation issue, the authors contend that choices around parking - and providing TDM measures as substitutes for parking - have far-reaching impacts beyond individual developments. Parking can affect the transportation choices residents make, the amount of local air pollution, the affordability of projects and rents, and the vibrancy of the streets around developments.

Parking imposes high costs on development that can make projects less viable. Automobile parking increases the cost of building homes, especially around transit stations where the high land prices and density require underground or structured parking. It is estimated each parking space in Santa Clara County costs between $33,000 for an above-ground surface lot to $75,000 for underground parking.[10] Another estimate, based on an analysis from TransForm, affirmed by local developers such as Urban Catalyst, indicates structured parking costs are $50,000 to $80,000 per parking space (excluding regular maintenance or personnel costs).[11] The cost of building the minimum required parking can increase the total cost to the point where the project is no longer viable.[12] Car parking also takes up a significant amount of square footage in a development that could be used for other productive uses, such as ground-floor retail or bike facilities for residents.[13]

Excess parking creates higher rents, especially for low-income households. The costs from building parking spaces are passed on from the developer to the individuals occupying that building. Research by Professor C.J. Gabbe finds that average American renters—including those who may not have a car or use a parking spot—spend an additional 17% of their rent on parking in their building's garage.[14] This disproportionately impacts low-income renters, 58% of who spend more than 50% of their income on housing in California.[15]

Excess parking leads to more car use, which in turn increases traffic, pollution, and risk to public safety. An abundance of parking that is included as part of an apartment's rent (bundled parking) increases the likelihood of car ownership.[16] If cities make it easy for cars to exist and provide more parking, more cars will be on the road. Residents of Silicon Valley and other communities have seen these countless times when streets and highways are widened.[17] This concept is known as induced demand. More cars beget more congestion, which leads to more air pollution and greenhouse gas emissions. The more that roads are set up for cars (especially those traveling at higher speeds), the more dangerous it is for pedestrians, bicyclists, scooter riders, and other vulnerable road users.[18]

Parking takes away from other more pressing priorities of the community. Every parking space built is not only a financial cost for a developer, but it is also a wasted opportunity to build housing or community benefits that don't require vehicle ownership. For example, Shoup finds that parking requirements in LA reduce the number of homes in a residential building by 13%.[19]

Building less parking encourages greater use of sustainable, affordable, and space efficient public transit. With billions of dollars being invested in new public transit infrastructure and operations, cities should encourage transit ridership, not automobile use. With a recently redesigned bus network,[20] the introduction of BART, and other major transit investments planned in Santa Clara County,[21] building excessive parking will discourage ridership and reduce the return on these investments.[22]

3. Transit-oriented Development in Santa Clara County

Santa Clara County is located at the southern end of the San Francisco Bay, with Caltrain commuter rail or Bay Area Rapid Transit (BART) connections to San Francisco, Oakland, Berkeley, and Peninsula cities. There are nine Caltrain commuter rail stops in the county with all-day service and two BART stations that can support transit-oriented developments. Most areas suitable for transit-oriented development in Santa Clara County are near the 62 Santa Clara Valley Transportation Authority (VTA) light-rail stations or major bus stops with two or more VTA bus lines that run at least every 15-minutes during peak hours. These rail and bus stops are determined to be "major transit stops" by the California Legislature.[23] Developments within a ½ mile radius are considered major transit stops or transit-oriented developments (TOD) by the State of California.[24]

Santa Clara County's transportation system is dominated by the personal automobile, with only 4% of commuters using public transportation, whereas 85% either drove alone or carpooled in 2018.[25] In the same year, only 2.5% of households in the county did not own a car, while 16% had one, and 81% had two or more, which is higher than the national average.[26] San José is the largest city in Santa Clara County and has the most major transit stops suited to transit-oriented development. As San José expanded from 95,000 to 1.02 million residents from 1950 to 2019, it followed the typical pattern of suburban sprawl.[27] Estimates are that 84–94% of all residential land in San José is zoned exclusively for single-family homes.[28]

While transit makes up a small share of commuting trips, governments and taxpayers (through successful ballot measures) are making major investments in public transportation. Meanwhile, cities and VTA are focusing their infrastructure investments on improving or expanding transit infrastructure. Improvements include a countywide bus system redesign in 2020, an extension of BART to downtown San José, a light rail extension, and frequency increases for Caltrain.[29] With these major investments, already congested roads, and the need to address global warming, new transit developments should prioritize transit over automobile trips.

3.1 Parking Requirements at Residential Developments

When building new residential developments, cities usually set a minimum amount of car, motorcycle, and bike parking required for each new home. San José requires 1.25 car parking spaces for each studio and up to 2 car parking spaces for 3-bedroom apartments.[30] Other cities, such as Santa Clara, require at least two parking spaces, even for studios.[31]

Requiring parking minimums commonly leads to excess parking near major transit stops. A study of seven TODs across the United States at peak hours found that only 51.2–84.0% of parking spaces were filled.[32] According to the study's authors, too much parking was required at these TOD locations. San José also has excess parking at multi-family residential developments.

According to the nonprofit TransForm's GreenTRIP Parking Database, in its survey of 29 buildings in San José, 25% of the 4,791 parking spaces in those buildings were unused. At the same time, 11 projects in other Santa Clara County cities had 30% of spaces unused.[33]

In San José, developments can reduce parking by up to 50% in certain areas if Transportation Demand Management (TDM) measures are adopted.[34] Even with the potential to reduce parking, many developments in Silicon Valley stick with what is required or build more than the minimum. When pressed on why they provide more parking than the cities require, developers often state that lenders require it or it matches what the local market demands, but they rarely reference qualitative data.[35]

4. Analysis of TODs

For this research, the authors reviewed 21 developments within a half-mile of major transit stops with either rail or two or more frequent bus lines. These 21 developments (out of a total of 27 developments) include 5,800 planned units, in projects that range in size from 44 to 786 units, with the locations shown in Figure 1. On average, the parking ratio for the reviewed transit-oriented developments was 0.85 parking spaces per unit, which is well below what cities require. Only four of the 21 proposed projects planned to include more than 1.25 spaces per unit, the base requirement for studio apartments in most Silicon Valley cities. Many of the reviewed developments with lower parking ratios had to seek approval for parking reductions during the entitlement process to lower the amount of parking required and thus comply with the pertinent zoning ordinances.

4.1 Type of Transit Accessible and Average Parking Ratio

The average parking ratio differed based on the type of transit access to the development for reviewed projects, as shown in Table 1 below. Different types of transit offer advantages in the frequency and reliability of service, which can affect the ability of residents to access jobs and amenities without a car.

Table 1. Average Parking Ratio at Transit-oriented Developments by Type of Transit Within ½ Mile

Type of Transit Station Within ½ Mile	Number of Projects	Average Parking Ratio
Diridon Station Multi-modal Transportation Hub	4	0.75
Santa Clara Valley Transportation Authority (VTA) Light Rail Station	5	0.84
Two or more frequent VTA bus lines	10	0.81
Caltrain Commuter Rail Station*	2	1.3
All Transit Types	21	0.85

*Caltrain commuter rail TOD projects were in Santa Clara and Sunnyvale, which are both cities that require more parking and offer fewer ways of reducing parking than San José.

On average, developments near Diridon Station—Silicon Valley's main multi-modal transportation hub with light rail, frequent bus, commuter rail, and a planned BART station—provided 0.75 automobile spaces per residential unit. Developments near Diridon Station have the lowest average parking ratio compared to developments near other types of transit. The two

developments near Caltrain commuter rail stations that were reviewed had an average of 1.3 parking spaces per residential unit. The much higher average parking ratio near these commuter rail stations was likely affected by the low frequency of Caltrain outside of commuting hours and the stricter parking requirements in the cities of Sunnyvale and Santa Clara, where these two developments are located.

Projects near light rail stations had an average of 0.84 parking spaces per unit, while those close to two or more frequent bus stops had an average of 0.81 spaces per unit. These projects near frequent bus stops included a wide range of parking ratios from 1.39 spaces per unit (2101 Alum Rock Ave) to 0.02 spaces per unit (The Village at Roosevelt, an affordable and supportive housing development).

While it is expected that developments near Diridon Station with the most transit options would have the lowest average parking ratio, it is unexpected that light rail and frequent bus routes would have similar average ratios at 0.84 and 0.81, respectively. Since light rail runs on separated tracks, the service could be presumed to be more reliable than bus service that can become stuck in traffic. In the case of VTA light rail, the headways of every 15 minutes might offer less mobility than two or more frequent buses, even if they are less reliable.

4.2 Average Parking Ratio Lower at Affordable Housing Developments

Table 2. Average Parking Ratio Proposed at Market-Rate and Affordable Housing Developments

Affordable Housing vs. Market-rate	Number of Projects	Average Parking Ratio
Affordable Housing Projects	8	0.62
Market-rate (may include affordable units)	13	1.04

Of the TODs reviewed by the authors, the average affordable housing project had lower amounts of parking than developments with market-rate units, with an average of 0.62 spaces per unit compared to 1.04 parking spaces per unit (as shown in Table 2). Parking minimums are substantially lower for affordable housing projects, which likely corresponds to the lower ratios. San José requires between zero parking spaces for one-bedroom, very-low-income units and 0.75 parking spaces for 3-bedroom, moderate-income units (as shown in Table 3).[36] This is significantly less than the 1.25 for one-bedroom and 2 spaces in 3-bedroom units in developments with market-rate housing.

Table 3. Minimum Parking Requirements at Affordable and Market-rate Developments in San José

	Number of parking spaces required per residential unit.			
Living Unit Size	Very Low Income	Low Income	Moderate Income	Market Rate
Studio	0	0.25	0.5	1.25
One-Bed	0	0.25	0.5	1.25
Two-Bed	0.25	0.5	0.75	1.7
Three-Bed	0.25	0.5	0.75	2

Source: "Code of Ordinances | San José, CA | Municode Library," accessed June 22, 2021. https://library.municode.com/ca/san_jose.

The lower amounts of parking required by San José for affordable housing correspond to the lower parking ratios in the reviewed affordable housing TODs (0.62 spaces per unit) compared to market-rate TODs (1.04 spaces per unit). With the high cost of building structured parking, affordable housing developers are capitalizing on the option to build less.

4.3 Transportation Demand Management to Reduce Parking Ratios

Transportation Demand Management (TDM) refers to strategies used to increase people's transportation choices going to and from a development.[37] In places like Silicon Valley, where most people drive alone, this primarily means providing options beyond personal automobiles. In San José, developments that adopt TDM measures—such as providing alternative modes, ground-floor commercial, or bike/pedestrian infrastructure improvements—can reduce their required amount of parking. While many adopted TDM measures impose costs on the developer, they can enable parking reductions and are more cost-effective than building parking.

The authors reviewed developments that have adopted several TDM strategies, with high bike parking ratios and transit passes as common and measurable ones. Of the 21 transit-oriented developments we have identified, 11 provide either transit passes or high levels of bike parking (as shown in Table 4). Some of the reviewed developments have not decided on TDM measures and might adopt transit passes or ample bike parking as they move further through the entitlement process.

Table 4. Transportation Demand Management Efforts and Parking Ratios at Transit-oriented Developments

Transportation Demand Management	Number of Projects	Average Parking Ratio
Provide transit passes or mobility stipend	5	0.38
Provide at least 0.9 bike parking ratio (spaces/unit)	8	0.73

The authors reviewed four transit-oriented developments that provide transit passes to residents and one that will provide a mobility stipend. These five developments provided an average of 0.38 parking spaces per unit. Providing transit passes for VTA light rail and bus service is done through the VTA Smart Pass program, requiring all building residents to receive a pass. It costs between $82.75 and $180 a year, depending on the level of transit access and a market rate or affordable development.[38]

While the cost of providing transit passes to all residents is not insignificant, throughout the building's life cycle, this option offers significant savings compared to building structured parking. The cost of providing VTA transit passes to a three-person household over 50 years is estimated to be $20,000, compared to between $75,000 and $100,000 for providing a single parking space (as shown in Table 5). The willingness of developers to provide transit passes to residents in exchange for building less parking is an indication that parking requirements might be too high.

Table 5. Cost of Structured Parking Compared to Providing VTA Transit Passes

Type	Structured Parking (per space)	Below Ground Parking (per space)	VTA Transit Pass (per person)	VTA Transit Pass 3-Person Household
Initial Expense	$50,000	$75,000	None	None
Yearly Expense	$500	$500	$135	$405
Cost over 50 Years	$75,000	$100,000	$6,750	$20,250

* VTA SmartPasses (Transit Passes) must be purchased for everyone in the building and costs $135 a year per person in market-rate developments with light rail access.

Data Source: Parking cost, maintenance cost & transit pass cost.

The authors also reviewed eight developments that provided significantly more (at least 0.94 spaces per unit) bike parking than required, with an average of 1.11 secure bike parking spaces per unit and a high of 1.73 spaces. Developments with significant bike parking have an average car parking ratio of 0.73 spaces per unit (as shown in Table 4). While this was not significantly lower than the average TOD development at 0.85 spaces per unit, it is an additional TDM measure developers are willing to implement in exchange for reduced parking. Lower parking ratios at transit-oriented developments that implemented TDM measures show developers are willing to spend money on other measures that allow them to build less parking than many cities require.

5. Transit-oriented Developments Parking Reform: Recommendations

Based on the experience of working with developers, and in consultation with community members, the authors present the following recommendations for cities to reform parking requirements at transit-oriented developments:

Parking Minimums: Parking minimums are outdated concepts that assume all trips will be made with personal automobiles. Now, more people are moving away from owning cars.[39] At transit-oriented developments, parking minimums prioritizing cars are counter-productive, which is why cities such as San Diego[40], Portland, and San Francisco[41] have been shifting away from them.

The 21 transit-oriented developments reviewed for this report have significantly lower amounts of parking than would normally be required under existing parking minimums. If cities in Santa Clara County did not have parking minimums, even less parking would likely be built, and residents would have more incentives to use more efficient and environmentally-friendly modes of transportation.

Parking Maximums: At transit-oriented developments, parking maximums should be considered in place of parking minimums. With huge investments being made in transportation and cities like San José adopting climate action plans,[42] leaders should consider limiting the amount of parking that can be provided at developments within a half-mile of major transit stops.

Bicycle and Micromobility Parking Minimums: While the authors do not recommend that developments have car parking minimums, they recommend bicycle parking minimums. New developments should have at least one secure bike parking space per unit. With the rise of electrified micromobility (also known as electric scooters and electric bikes), new developments should also be required to provide secure parking for e-scooters, e-mopeds, and e-bikes, with convenient access to power outlets for charging.

Require Unbundled Parking: Parking in residential developments in which parking spaces are offered as part of the overall cost of a home encourages (and subsidizes) more cars.[43] This situation negatively affects those who choose to live without a car by requiring them to cover the cost of parking for car owners. The authors recommend Silicon Valley city leaders explore ways of requiring parking to be rented independently of apartments (and perhaps condos).

Future-Proofing New Parking: When developers build structured parking at transit-oriented developments, they should make it easily convertible to other uses as circumstances and needs change. San José currently requires all new developments to build structured parking that can be converted to other uses in its Citywide Design Standard and Guidelines.[44] The authors advocate

for these changes and believe the detailed guidelines will lead to the future conversion of parking structures.

Incentivize Transportation Demand Management (TDM) measures: The authors argue TDM measures encourage sustainable transportation choices and help create vibrant neighborhoods. If new residents, workers, and visitors choose sustainable transportation modes, this can create a snowball effect encouraging others to make the shift. Just as communities have been designed around the easy use of the automobile, policies can shift to encourage other travel behavior.

The authors recommend TDM plans to reduce parking for all new developments. While there are numerous types of TDM measures, the authors foremost recommend measures that prioritize public transit, biking, and walkability, such as the following outlined below:

1. **Transit Passes**: Transit passes provide steady revenue to a transit agency, which can enable more service, which in turn feeds back into more riders and thus the transit service's success. Providing transit passes to all residents of a development is a direct investment in public transit and a measure that can be highly effective.

2. **Bicycle Facilities**: As the number of people biking increases, cities become a safer place for all cyclists.[45] The authors argue that bicycle parking, repair stations, and changing/shower facilities are key parts of TDM policy. New developments that prioritize bikes will pave the way for other residents and workers to make the shift to cycling.

3. **Walkability**: The authors also believe that new developments should create vibrant places. TDM policies to incentivize active ground floors with uses such as commercial/retail provide nearby neighborhood amenities that don't require a car. They make walking and cycling a more attractive, accessible option. Additionally, providing public seating, shading, bus stop amenities, and public space can improve an area's walkability.

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