

# City of San Diego Multi-Family Residential Parking Study



*Prepared for:*

**San Diego  
Housing Commission  
*and*  
City of San Diego  
Planning Department**

*Good Neighbors*



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## Executive Summary

### ***Objective of Study***

Providing parking spaces contributes significantly to the cost of developing housing. Reducing parking requirements for affordable projects decreases the cost of construction for developers, thus enabling them to provide more affordable units or deeper affordability. In order to determine if an appropriate reduction in parking requirements for San Diego projects is warranted, a five-part parking study was conducted. This study involved both research and survey components, including a literature search, Census and Nationwide Personal Transportation Survey data analysis, a survey of parking requirements in other cities, and a survey of parking demand and car ownership at multi-family projects in San Diego.

### ***Literature Search***

One of the documents discovered in the literature search was *Parking Requirements Impacts on Housing Affordability* written by Todd Litman in 1995. Litman contends that most existing parking requirements force developers to build more parking than is necessary, particularly for affordable projects. This in turn drives up the cost of developing affordable housing.

Another document found in the search was a report from the City of Seattle published in August 2001. The report contains proposed amendments to the City's minimum parking requirements for multi-family housing dedicated to very-low income households. These changes are based on academic research such as Litman's study of parking requirements' impacts on housing affordability, as well as case studies of very-low income projects in Seattle.

### ***Statistical Research***

The Nationwide Personal Transportation Survey is a travel survey that provides data on the amount and nature of personal travel in the United States. The survey collects data through surveys and interviews of all household members age five and older. This data clearly shows that a relationship between income and car ownership exists. According to the Nationwide Personal Transportation Survey data, as household income increases, so does the number of cars owned per household.

### ***Municipal Code Parking Requirements***

As part of this study, municipal codes throughout California and the United States were reviewed to determine what, if any, reductions in minimum parking requirements are allowed for multi-family affordable housing projects.

**Permitted Reductions:** Numerous cities surveyed allow a reduction in minimum parking requirements for affordable housing projects as an incentive to developers to construct affordable housing projects. Although a reduction in minimum parking requirements is *allowed* in many municipal codes, this reduction is not *required*, nor is it necessarily taken advantage of by developers. Some of the cities in San Diego County that allow a parking reduction for affordable developments include El Cajon, Escondido, Imperial Beach and Poway.

**Required Reductions:** A limited number of cities surveyed have reduced parking requirements for all affordable projects within their jurisdiction. These take place automatically and apply to all units within designated income levels. The City of Santa Monica reduces the number and type of parking spaces



required for all multi-family projects that serve low and moderate-income households. The City of Seattle reduces parking requirements for all multi-family units serving very-low and/or low-income households.

### ***Parking Demand Survey***

In order to determine an appropriate reduction in parking requirements for various housing categories in San Diego, a survey of multi-family housing projects was conducted. These projects were divided into four separate categories:

- Market-rate units within 1/4 mile of transit
- Market-rate units not within 1/4 mile of transit
- Affordable units within 1/4 mile of transit
- Affordable units not within 1/4 mile of transit

Following data collection, analysis was performed to discover existing parking demand rates for each project. The parking demand rate for each project was assumed to be the peak number of parking spaces occupied per occupied dwelling unit. Additionally, the existing parking demand rate for each housing category was determined. This rate was assumed to be the total number of peak occupied parking spaces per total occupied dwelling units for each housing category.

Next, a written survey was distributed to all residents of apartments that participated in the parking demand survey. As part of this survey, residents were asked to report the number of cars available to members of their household. Survey results were then compiled and analyzed to determine car ownership rates for each project, as well as rates for each housing category.

### ***Recommendations***

The current parking requirements for Multiple Dwelling Units can be found in Section 142.0525 of the City of San Diego Municipal Code. Based on the results of this study, the following is recommended:

- For the purposes of this study, “affordable” should be defined as any unit that is affordable to any very-low or low income families or individuals as determined by the U.S. Department of Housing and Urban Development, as compared to the existing code which allows an affordability discount only to those units serving very-low income families or individuals as defined in the Appendix for 2002.
- At least one parking space should be provided for each housing unit, regardless of transit or affordable status.
- Discounted parking rates should be applied to any units meeting affordability requirements.



**Table 1**  
**City of San Diego Parking Requirements (Existing/Proposed)\***

<i>Multiple Dwelling Unit Type</i>	<i>Automobile Spaces Required Per Dwelling Unit</i>		
	<i>Basic</i>	<i>Transit</i>	<i>Affordable**</i>
Studio under 400 square feet	1.25	1.0	1.0/ <b>0.75</b>
1 bedroom or studio over 400 square feet	1.5	1.25	1.25/ <b>1.0</b>
2 bedrooms	2.0	1.75	1.75/ <b>1.25</b>
3-4 bedrooms	2.25	2.0	2.0/ <b>1.5</b>
5+ bedrooms	2.25	2.0	2.0/ <b>1.5</b>

Notes:

\*No less than one space per unit should be provided for the entire project.

\*\* The existing code applies only to the very low income and the proposed code rates apply to any units meeting the affordable definition herein.



## Introduction

During the 1960s, as significant amounts of federal money began to be spent on rail transit systems in some of America's largest cities, a complex set of transportation behavior models was developed. One of the things learned from these models was that mobility and income were directly related. The more money a household had, the greater its likelihood of owning more autos and the greater its demand for parking spaces.

Despite these well-established relationships, the municipal codes that are available for implementing projects throughout the country tend to assume that a similar demand for automobile access exists citywide without regard for socioeconomic differences. However, some cities have begun to appreciate that low and moderate income housing projects may be unique in their levels of auto ownership and in their demand for parking spaces.

Providing parking spaces has the potential to contribute significantly to the cost of developing housing in larger projects. According to one study, the construction of one parking space can add 12.5 percent to the cost of a housing unit. Adding two spaces can increase unit cost by 25 percent<sup>1</sup>. Reducing parking requirements for affordable projects decreases the cost of construction for developers, thus encouraging them to provide more affordable units.

In order to determine an appropriate reduction in parking requirements for San Diego projects, a five-part parking study was performed. The first part of the study included a literature search. The purpose of the search was to discover the practices and research undertaken by others relative to the effect of income and transit accessibility on auto ownership and parking needs. The second part of the study included analysis of 1990 Census data for San Diego County and 1995 Nationwide Personal Transportation Survey data. This analysis was performed in order to determine if a relationship between income and car ownership existed locally and on a national level.

The third part of the study involved a search of municipal codes in California and nationally to discover how other jurisdictions address parking requirements for affordable projects. For the fourth part of the study, survey work was conducted to discover the parking demand for some of San Diego's affordable and market-rate projects, and to examine the impact that proximity to transit has on this demand. Finally, a short written survey was mailed to all those projects included in part three of this study. The written survey attempted to ascertain the actual levels of car ownership among those projects studied.

Katz, Okitsu & Associates was retained by the San Diego Housing Commission and the City of San Diego Planning Department to perform survey work and research associated with this study. The remainder of this report will describe the results of each part of the study.

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<sup>1</sup> Littman, T. "Parking Requirement Impacts on Housing Affordability." Victorian Transport Policy Institute, Victoria, B.C. Canada. 23 October, 1995.



## Literature Search

As part of this study, a literature search was conducted to discover research results, publications, articles and websites related to parking demand and car ownership. Appendix A contains an annotated bibliography that shows the results of this search. The following summarizes two of the most pertinent findings; one study was conducted in the United States and the other was conducted in Canada.

### *City of Seattle Parking Demand Study*

In August 2001 the City of Seattle Department of Design, Construction and Land Use and the Office of Housing proposed amendments to the City's minimum parking requirements for multi-family dedicated to very-low income households. Current requirements range from 1.1 to 1.5 spaces per unit with exceptions primarily for low-income units that serve the elderly or disabled. It is recommended that the code be modified as shown in Table 2.

**Table 2**  
**City of Seattle Proposed Amended Minimum Parking Requirements**

Unit Size (number of bedrooms)	Multi-family units for low-income households*		Multi-family units for very-low income households**
	Center City Neighborhoods	Outside Center City Neighborhoods	
Two bedrooms or fewer	0.5 spaces per dwelling unit	0.75 spaces per dwelling unit	0.5 spaces per dwelling unit
Three bedrooms or more	1.0 spaces per dwelling unit	No change	1.0 spaces per dwelling unit

\*Low-income is defined as those households earning 31-50 percent of the area median income

\*\*Very-low income is defined as those households earning 30 percent or less of the area median income

These changes were based on academic research such as Litman's study of parking requirements' impacts on housing affordability, as well as case studies of very-low income projects built in Seattle after 1996. Three of these case studies were summarized in the director's report on the proposed parking amendments.

The first case study was of a 19-unit residential project with street-level commercial use. The estimated cost per parking space for this project was \$22,500. Twenty-two parking spaces were provided as part of this project. Assuming the proposed minimum parking requirements had been applied to this project, 13 parking spaces could have been eliminated. This would have saved the developer approximately \$292,500. Had this money been devoted solely to unit construction costs, it would have allowed the developer to construct nearly three additional units.

The second case study was of the Seneca Apartments, which contains 32 units and 44 off-street parking spaces. Some of the parking spaces are located below grade and part of the spaces are located at grade. The developer estimated that each space cost approximately \$24,000 to construct. According to one development staff person involved in the project, about half of the existing parking spaces could have been eliminated while still meeting parking demand for the site. This would have allowed the developer to construct four additional units.



The final case study was of the Colwell Building that includes 126 dwelling units and street-level retail uses. Sixteen parking spaces were constructed for this project, 14 of which were assigned to residential tenants. The cost of providing parking spaces for this building was estimated at \$25,000 per space. Had this project been constructed according to existing City of Seattle parking requirements, 126 parking spaces would have been required. It is estimated that the additional cost of providing this parking would have prevented the developer from constructing 29 units.

### ***"Parking Requirements Impacts on Housing Affordability"***

The Canadian study *Parking Requirements Impacts on Housing Affordability* was written by Todd Litman and published by the Victoria Transport Policy Institute in 1999. Litman contends that most existing parking requirements force developers to build more parking than is necessary, particularly for affordable projects. This drives up the cost of developing affordable housing. Litman cites evidence showing that based on typical affordable housing development costs, providing one parking space per unit increases costs by 12.5 percent and providing two spaces per unit increase costs by over 25 percent. This in turn discourages developers from constructing affordable housing. Litman argues that by implementing flexible parking requirements, more affordable housing will be developed.

A case study of Mississauga, Ontario is included as part of Litman's study. Under the city zoning code, 2.0 parking spaces were required per condominium unit. A parking demand study of 34 condominium buildings was undertaken in 1990 to determine if this was an appropriate rate. As part of this study, survey questionnaires were mailed to all condominium residents and managers. The surveys asked for an evaluation of visitor and resident parking demand.

According to the results of this study, residents owned an average of 1.28 vehicles per unit, 35 percent lower than the required amount of spaces under the city code. The study results prompted Mississauga to revise its parking requirements for condominiums in 1994.



## Statistical Research On Auto Ownership

### *Nationwide Personal Transportation Survey*

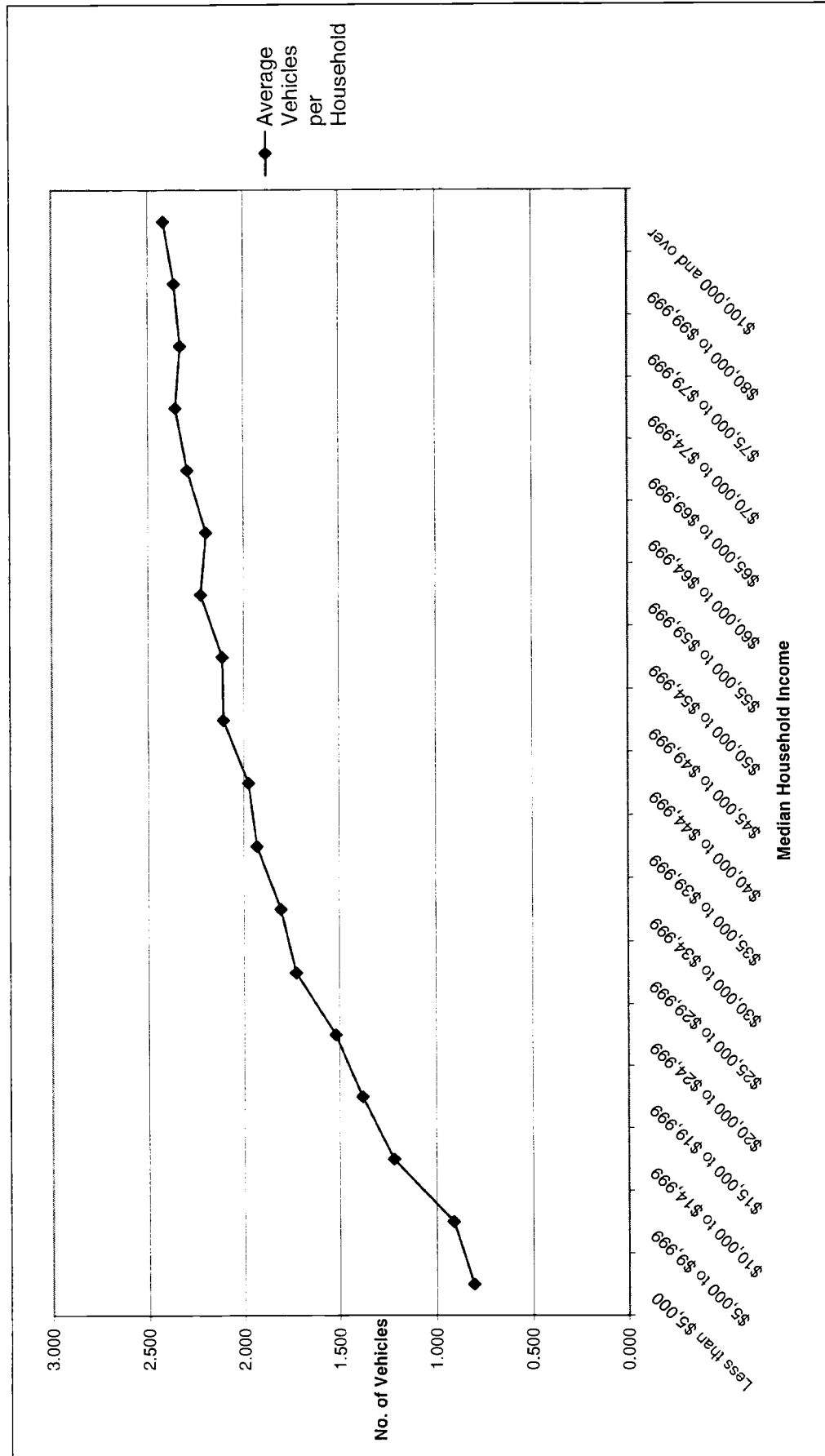
The Nationwide Personal Transportation Survey is a household travel survey that provides data on the amount and nature of personal travel in the United States. The Nationwide Personal Transportation Survey is sponsored by several federal agencies including the Federal Highway Administration, the Bureau of Transportation Statistics, the Federal Transit Administration and the National Highway Traffic Safety Administration.

As part of the Nationwide Personal Transportation Survey, data is collected from a sample of households throughout the country. The survey collects data through interviews of all household members age five and older. Household members are also required to keep detailed journals of all travel, including type, distance and trip purpose. This information is then given to Nationwide Personal Transportation Survey staff. Expansion factors are applied to obtain annual, national estimates of trips, miles of travel, household vehicles and other information.

For this study, 1995 Nationwide Personal Transportation Survey data on median household income and average number of cars owned per household was collected. Data analysis was then performed to determine what, if any, relationship existed between income and car ownership. This data clearly shows that a linear relationship between income and car ownership exists. According to the Nationwide Personal Transportation Survey data, as household income increases, so does the number of cars owned per household. It should be noted that data from the Nationwide Personal Transportation Survey represents national statistics, and may not correspond exactly to circumstances within the City of San Diego. Figure 1 graphically shows the results of this analysis. Appendix A contains the NPTS data used for this graphic.



**Figure 1**  
**Average Vehicles per Household by Income\***



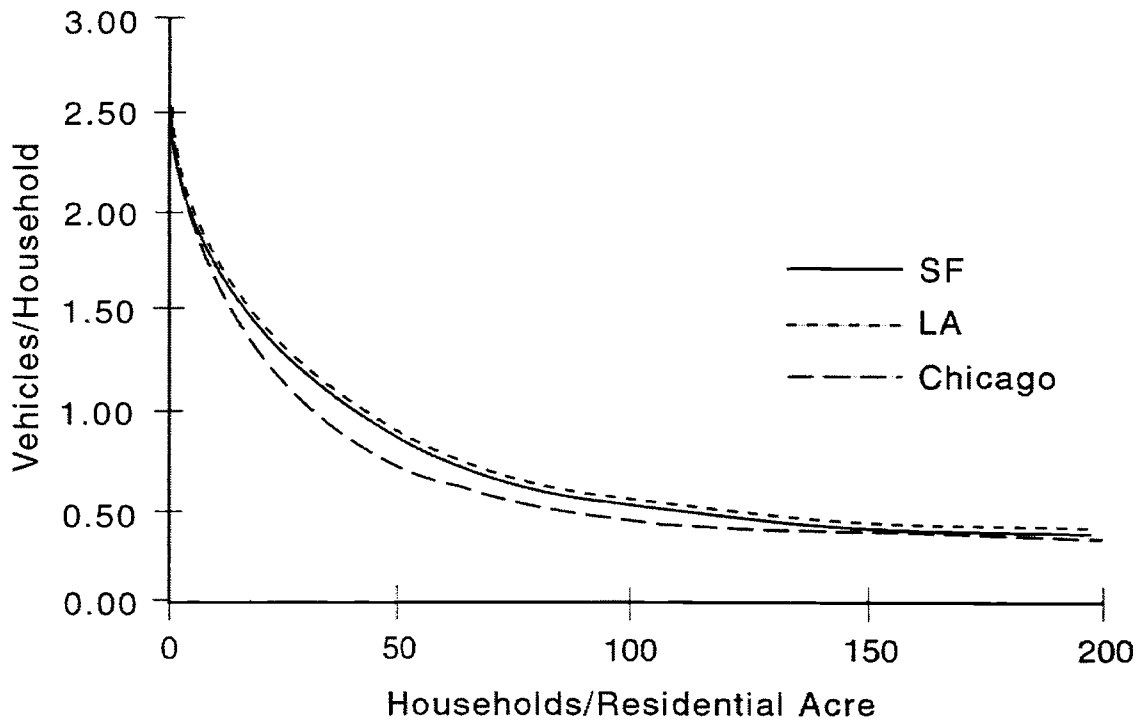
\*Source, 1995 Nationwide Personal Transportation Survey



### ***“Location Efficiency”***

In *Location Efficiency*, published by Taylor and Francis, Ltd. in 2002, John Holtzclaw et al demonstrate a correlation between auto ownership and residential density, based on studies conducted in various neighborhoods in Los Angeles, San Francisco, and Chicago. The studies found that for all three cities the number of vehicles per household is lowest where residential density is highest, and the highest rates of auto ownership occur where residential density is lowest. Figure 2 graphically displays the results of this analysis. The relationship between residential density and auto ownership appear to be consistent in all three cities, and the research suggests this relationship is consistent in cities throughout the United States. The studies also found that auto ownership rates are strongly influenced by other factors such as household income, household size, and accessibility to public transit.

**Figure 2**  
**Auto Ownership Versus Residential Density**





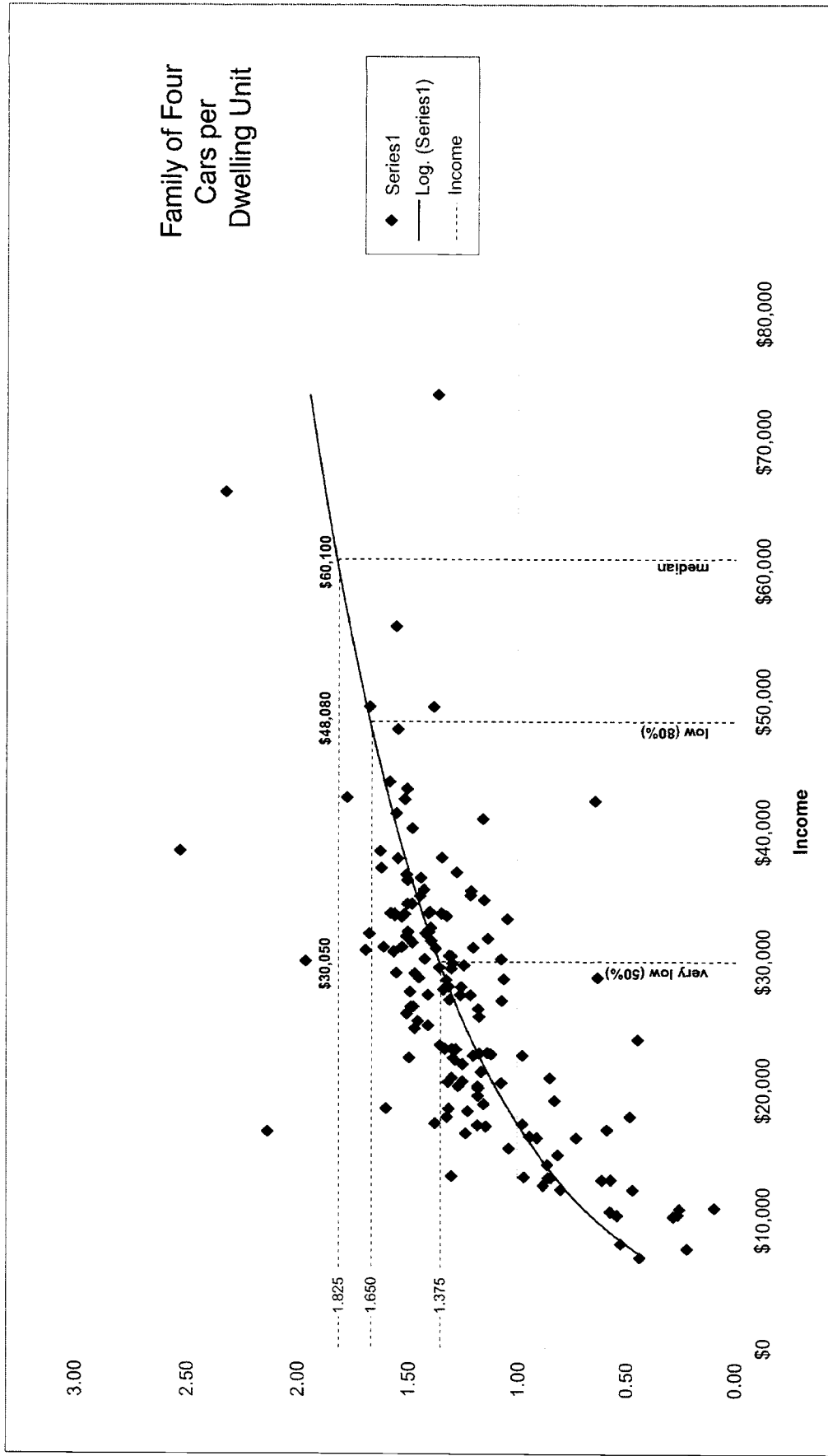
### ***1990 Census Data***

Census data on multi-family rented housing units collected in 1990 was also analyzed as part of this study. Multi-family rented units were chosen for analysis because they represent the type of housing to be studied as part of the parking survey element of this report. Information on median household income, vehicles per rented housing unit, and the number of and type of occupied housing units was gathered for each census block in San Diego County. From this data, the number and percent of multi-family units per block was determined. For the purposes of this study, all structures containing five or more units were considered multi-family. Then, the number of vehicles per rented housing unit was established for each block.

Next, median household income was determined for each census block. This income was assumed for all multi-family units in this analysis. However, it should be noted that median household income is only available at the block level, and cannot be broken down by housing unit type within the block. Therefore, the block-level median household income represents the median income for all housing categories (owned and rented), not just multi-family rented units. Only those blocks containing 80 percent or more multi-family rented units were analyzed in this study. This was done in order to both maintain an adequate sample size and to ensure that the income level used corresponded as closely as possible to the actual median income for multi-family rented units.

As with the Nationwide Personal Transportation Survey data, a distinct relationship between income level and number of cars owned was observed in San Diego County. As median household income increases, so does the number of cars per dwelling unit. Figure 3 shows the 1990 Census data. For example, typically households with 80% of the 2002 median income (the “low income” threshold) for San Diego have 10% fewer vehicles available per household than those households at the median income. Similarly, households with 50% of the median income (the “very low income” threshold) typically have 25% fewer vehicles at their disposal. If the comparison were made to income levels above the median, the percentages would be greater.

**Figure 3**  
**Cars per Multi-Family Rented Housing Unit\***



\* Source: 1990 Census, San Diego County. Census blocks used contain 80 percent or more multi-family rented housing units.



## Municipal Code Parking Requirements

### *San Diego Municipal Code*

The current parking requirements for Multiple Dwelling Units can be found in Section 142.0525 of the City of San Diego Municipal Code. Two parking reductions are allowed under the current municipal code. The code allows the minimum number of parking spaces to be reduced for those projects that fall at least partially within a designated transit area. A transit area is an area within a Transit Area Overlay Zone or an Urban Village Overlay Zone. Chapter 13, Article 2, Division 10 of the San Diego Municipal Code defines a Transit Area Overlay Zone. Chapter 13, Article 2, Division 11 of the San Diego Municipal Code defines an Urban Village Overlay Zone.

A reduction is also allowed for units whose residents meet very-low income requirements. "Very-low income" is defined as those residents earning less than 50 percent of the area median income. For Fiscal Year 2002 the Department of Housing and Urban Development defines the median family income for the San Diego area to be \$60,100 annually. For one person, "very-low income" is defined as \$21,050 per year. For a family of four, "very-low income" is defined as \$30,050 per year.

The very-low income parking reduction applies only to those dwelling units within a structure that are limited to occupancy by very-low income households. Other units within the same structure that do not meet the very-low income requirements are not allowed a parking reduction. Table 3 shows the current minimum parking requirements for the City of San Diego.

**Table 3**  
**Existing Parking Requirements**

<i>Multiple Dwelling Unit Type</i>	<i>Automobile Spaces Required Per Dwelling Unit</i>	
	<i>Basic</i>	<i>Transit area -and/or- very-low income unit</i>
Studio under 400 square feet	1.25	1.0
1 bedroom or studio over 400 square feet	1.5	1.25
2 bedrooms	2.0	1.75
3-4 bedrooms	2.25	2.0
5+ bedrooms	2.25	2.0

### *Parking Requirements in Other Cities*

As part of this study, municipal codes throughout California and the United States were reviewed to determine what, if any, reductions in minimum parking requirements were allowed for multi-family affordable housing projects. By no means was this a comprehensive review of all municipal codes in the state or country. However, focus was given to the municipal codes of other cities in San Diego County, particularly Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, National City, Poway, San Marcos, Santee, and Solana Beach. In many cases City staff was contacted to determine to



what extent developers take advantage of possible parking reductions. The following summarizes the results of this search. Table 4 shows parking requirements for various cities surveyed which allow for a parking reduction for affordable housing. Other cities surveyed that do not allow for a parking reduction for affordable housing include: Coronado, Del Mar, National City, and Solana Beach.

**Table 4**  
**Example Parking Requirements for Affordable Projects**

Location	Parking Rates				
	Studio	1 bedrm	2 bedrms	3 bedrms	4+ bedrms
<b>Project Reductions</b>					
<i>City of Anaheim</i>					
Base parking rates	1.25	2	2.25	3	3.5
Minimum reduced parking rates for affordable projects	0.94	1.5	1.7	2.25	2.6
<i>City of Escondido</i>					
Base parking rates	1	1.5	1.75	2	2
Minimum reduced parking rates for affordable projects	—*	1	1.25	1.5	—
<b>Base Rate Reductions</b>					
<i>City of San Diego (current code)</i>					
Base parking rates	1.5**	1.5	2	2.25	2.25
Minimum very-low income and/or transit parking rates	1.25	1.25	1.75	2	2
<i>City of Seattle</i>					
Base parking rates	Base parking rates based on number of units in project. Sites with 2-10 units: 1.1 spaces per DU, Sites with 11-30 units: 1.15 spaces per DU, Sites with 31-60 units: 1.2 spaces per DU, Sites with more than 60 units: 1.25 spaces per DU				
Minimum very-low income parking rates /low income parking rates in Center City neighborhoods	0.5	0.5	0.5	1	—
Minimum low income parking rates outside Center City	0.75	0.75	0.75	—	—
<i>City of Santa Monica</i>					
Base parking rates	1 covered space	1.5	2	2	2
Minimum affordable project parking rates	1	1	1.5	1.5	1.5

\* Not given.

\*\* City of San Diego rates for studios under 400 square feet are 1.25 (base rate) and 1.0 (required very-low income and/or transit parking rates.)

**Project Reductions**

Many cities encourage the creation of housing for low- and moderate-income households by allowing developers to choose one or more incentives from a pre-approved list. These incentives may include density bonuses, reductions in setbacks and/or lowered parking requirements. They are intended to make the construction of affordable housing financially viable and are not part of the cities' official parking requirements. Instead, these reductions are granted on a case-by-case basis.



Although affordable housing incentive programs allow reductions in minimum parking requirements, these reductions are not required for all affordable projects, nor are they necessarily taken advantage of by all developers. Some of the cities in San Diego County that permit a parking reduction for affordable developments include El Cajon, Escondido, Imperial Beach and Poway. According to city staff in El Cajon, Escondido and Poway, developers occasionally reduce parking for affordable projects. Imperial Beach city staff reported that developers are rarely motivated by parking reduction incentives to construct affordable housing projects.

### ***Base Rate Reductions***

A number of cities include affordable housing parking rates that are lower than parking rates for market-rate housing projects. These reduced parking rates are part of the off-street parking requirements defined in each cities' zoning code. In these cities, any project that meets the definition of affordability according to the Department of Housing and Urban Development is eligible to use reduced parking rates. While all developers in these cities have the option of reducing the amount of parking they provide for affordable projects, they are not required to do so. Unless a maximum parking requirement is in place, developers may choose to provide any amount of parking they want for a project.

One city that has lower parking requirements for affordable housing projects than for market-rate projects is the City of Santa Monica. Santa Monica reduces the number and type of parking spaces required for all multi-family projects that serve and low and moderate income households. Additionally, City of Seattle reduces parking requirements for all multi-family units serving very-low and/or low-income households.



## Parking Demand Survey

### *Methodology*

As part of this study, a survey of 20 multi-family rental housing projects was conducted. The number of cars parked in parking lots at each project site was counted to determine parking demand. Two variables were tested for this survey: affordability and proximity to transit. Project sites surveyed were divided into four separate categories: Market-rate units within 1/4 mile of transit, market-rate units not within 1/4 mile of transit, affordable units within 1/4 mile of transit and affordable units not within 1/4 mile of transit.

Because the focus of this study is affordable housing, the majority of sites surveyed were affordable projects. For the purpose of this survey, an affordable unit is considered to be any unit with an income restriction, regardless of the level of affordability (very-low income, low income, or moderate income). A limited amount of market-rate units were surveyed to serve as control sites. Fifteen affordable projects were surveyed. Seven of these were within 1/4 mile of transit and eight were not within 1/4 mile of transit. Six market-rate projects were surveyed. Three were within 1/4 mile of transit and three were not within 1/4 mile of transit.

Survey sites were selected from affordable and market-rate projects throughout the City of San Diego. Geographic Information Systems (GIS) software was used to ascertain which sites were near transit. In cases where the exact distance from transit was questionable, physical measurements were taken to determine the distance from the project's main entry to the nearest transit route or stop.

Those projects located in areas with large amounts of adjacent on-street parking were not typically used as part of this survey. It is believed that at these sites, the availability of nearby on-street parking might mask overflow parking problems. This in turn could incorrectly lead to the assumption that sufficient on-site parking was available when in reality residents were being forced to park on area streets.

Projects sites were also reviewed in order to find out which had gated or underground parking lots. Those sites with gated or underground lots would require the presence of a manager or other staff person to allow entry into to the lot for counting. Due to the early hours necessary to obtain accurate counts, coordinating access with a staff person was not deemed feasible. Therefore, these sites were not used for this survey.

Additional project data collected included total number of units, number of occupied units and mix of affordability levels within each project (very-low income, low income or market-rate). Those sites containing less than 10 units were considered too small for the purposes of this survey and were not used. The projects used range in size from 13 units to 310 units.

Projects that incorporated both market-rate and affordable units also were not used for this survey. At these sites it would not be possible to distinguish between parking demand generated by market-rate units and parking demand generated by affordable units. Therefore, any data collected would not accurately reflect parking demand for specific housing categories.

Table 5 contains information on each of the projects surveyed. Figure 4 shows the project locations.

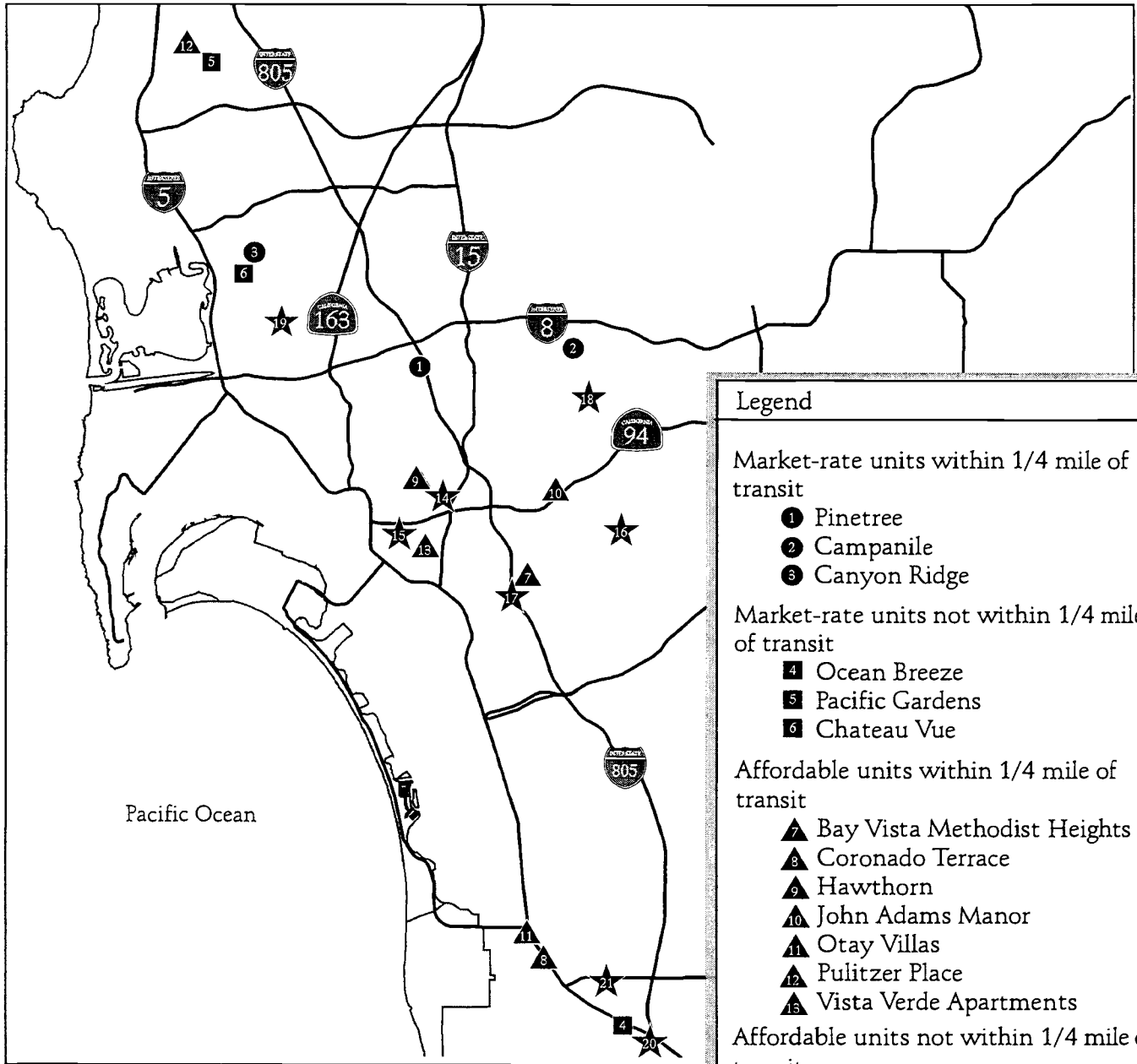
**Table 5**  
**Survey Project Information**

Project Name	Address	Affordability Level			Occupied Units				Total Occupied Units	
		Very-Low <sup>1</sup>	Low <sup>2</sup>	Moderate <sup>3</sup>	studio	one bedrm	two bedrms	three bedrms		four bedrms
<b>Market-rate units not within 1/4 mile of transit</b>										
Chateau Vue	2920 Clairemont Drive	0%	0%	0%		8	31			39
Ocean Breeze	561 W San Ysidro Blvd	0%	0%	0%		63	94	63		220
Pacific Gardens	8148 Genesee Ave	0%	0%	0%		136	20			156
<b>Market-rate units within 1/4 mile of transit</b>										
Canyon Ridge	3145 Cowley Way	0%	0%	0%		72	86			158
Pinetree	3030 Suncrest Drive	0%	0%	0%		107	30			137
<b>Affordable units not within 1/4 mile of transit</b>										
Golden Villas	3415 Elm Street	0%	100%	0%		8	8	8	8	32
Grant Heights Park	2651 J Street	100%	0%	0%		11	17			28
Imperial Villa	620 67th Street	97%	3%	0%		12	18	8		38
Logan Square Gardens	4742 Solola Ave	100%	0%	0%		52	92	24		168
Trojan Place	5222 Trojan Avenue	67%	33%	0%	5	15	30		1	51
University Canyon	2098 Via Las Cumbres	0%	100%	0%		24	88	8		120
Villas Primaras	178-190 Calle Primera	100%	0%	0%			47	22		69
Vista Terrace	1606 Del Sur Blvd	100%	0%	0%			209	45		254
<b>Affordable Units within 1/4 mile of transit</b>										
Bay Vista Methodist Heights	4888 Logan Ave	100%	0%	0%			100	168		268
Coronado Terrace	1183 25th Street	100%	0%	0%			266	44		310
Hawthorn 1 Apts	3051 Hawthorn Street	69%	31%	0%	4	8	1			13
John Adams Manor	5471 Bayview Heights Place	0%	100%	0%		44	205	47		296
Otay Villas	2085 Avenida Del Mexico	67%	33%	0%			57	12		69
Pulitzer Place	4055-83 Pulitzer Place	100%	0%	0%				50		50
Vista Verde Apartments	351 South 33 <sup>rd</sup> Street	100%	0%	0%			7	32		39

<sup>1</sup>Very-low income is defined as 50 percent or less of the area median income

<sup>2</sup>Low income is defined as 51 to 80 percent of the area median income

<sup>3</sup>Moderate income is defined as 81 to 120 percent of the area median income



**Legend**

Market-rate units within 1/4 mile of transit

- ① Pinetree
- ② Campanile
- ③ Canyon Ridge

Market-rate units not within 1/4 mile of transit

- 4 Ocean Breeze
- 5 Pacific Gardens
- 6 Chateau Vue

Affordable units within 1/4 mile of transit

- ▲ 7 Bay Vista Methodist Heights
- ▲ 8 Coronado Terrace
- ▲ 9 Hawthorn
- ▲ 10 John Adams Manor
- ▲ 11 Otoy Villas
- ▲ 12 Pulitzer Place
- ▲ 13 Vista Verde Apartments

Affordable units not within 1/4 mile of transit

- ★ 14 Golden Villas
- ★ 15 Grant Heights Park
- ★ 16 Imperial Villa
- ★ 17 Logan Square Gardens
- ★ 18 Trojan Place
- ★ 19 University Canyon
- ★ 20 Villas Primaras
- ★ Vista Terrace



Not To Scale

Last Revised: October 30, 2002

**Figure 4**  
**Project Locations**



## ***Data Collection***

Data on parking lot occupancy was collected on two weekdays between 12:00 a.m. and 7:00 a.m. According to the City of San Diego Municipal Code shared parking hourly accumulation rates (Section 142.0545) and the Urban Land Institute's shared parking analysis, these are the hours of peak occupancy for residential sites.

Additionally, weekend counts were collected to test weekend parking lot occupancy against weekday parking lot occupancy. This test was performed to ensure that weekends did not have a higher parking lot occupancy than weekdays. Seven of the project sites were counted a third time on a weekend between 6:00 a.m. and 8:00 a.m. According to the City of San Diego Municipal Code shared parking hourly accumulation rates, these are the hours of highest weekend occupancy for residential sites.

Some of the weekend counts were slightly higher than the weekday counts, and some were slightly lower. The highest parking lot occupancy count, regardless of the day on which it was taken, was used for analysis in this study. Appendix B shows the data and time of each parking count taken. Table 6 shows the parking lot occupancy counts for each project surveyed.





**Table 6**  
**Parking Lot Occupancy Counts**

Project	Total Occ. Units	Total Spaces	Spaces Occupied			Peak Occ. Spaces	Peak Occ. Sp. Per Occ. DU
			Count 1	Count 2	Count 3		
<b>Market-rate units not within 1/4 mile of transit</b>							
Chateau Vue	39	56	49	50	52	52	1.33
Ocean Breeze	220	278	253	242		253	1.15
Pacific Gardens	156	193	157	158	142	158	1.01
<b>Market-rate units within 1/4 mile of transit</b>							
Canyon Ridge	158	240	172	167	189	189	1.20
Pinetree	132*	167*	66	65	104*	104	0.79
<b>Affordable units not within 1/4 mile of transit</b>							
Golden Villas	32	66	40	43	44	44	1.38
Grant Heights Park	28	28*	12	12		12	0.43
Imperial Villa	38	51	41	37	41	41	1.08
Logan Square Gardens	168	200	140	127		140	0.83
Trojan Place	51	53	49	47		49	0.96
University Canyon	120	269	133	134		134	1.12
Villas Primeras	69	108	72	71		72	1.04
Vista Terrace	254	256	216	218		218	0.86
<b>Affordable Units within 1/4 mile of transit</b>							
Bay Vista Methodist Heights	268	266	159	162		162	0.60
Coronado Terrace	310	424	359	387		387	1.25
Hawthorn 1 Apts	13	18	12	11		12	0.92
John Adams Manor	288*	329*	151	159	197*	197	0.68
Otay Villas	69	116	67	73		73	1.06
Pulitzer Place	50	70	54	55	50	55	1.10
Vista Verde Apartments	39	97	69	31		69	1.77
<b>*Summer 2002 Data</b>							



**Analysis**

Following data collection, analysis was performed to determine existing parking demand rates for each project. The parking demand rate for each project was assumed to be the peak number of parking spaces occupied per occupied dwelling unit. Additionally, the existing parking demand rate for each housing category was determined. This rate was assumed to be the total number of peak occupied parking spaces per total occupied dwelling units for each housing category. It should be noted that only 6 market-rate units were surveyed as part of this study. Due to the limited number of market-rate survey sites, conclusions based on market-rate survey data should be used cautiously.

According to the results of the analysis, the parking demand for market-rate units is greater than the parking demand for affordable units. Additionally, the parking demand for units not within 1/4 mile of transit is greater than parking demand for units within 1/4 mile of transit. Table 7 shows the parking demand rates for each project and for each housing category.

**Table 7**  
**Parking Demand Rates by Housing Category**

<i>Project</i>	<i>Total Occupied Units</i>	<i>Peak Occupied Parking Spaces</i>	<i>Peak Occupied Parking Spaces per Occupied Dwelling Unit</i>
Market-rate units not within 1/4 mile of transit	415	463	1.12
Market-rate units within 1/4 mile of transit	290	293	1.01
<b>All market-rate units</b>	<b>705</b>	<b>756</b>	<b>1.07</b>
Affordable units not within 1/4 mile of transit	760	710	0.93
Affordable units within 1/4 mile of transit	1,037	955	0.92
<b>All affordable units</b>	<b>1,797</b>	<b>1,665</b>	<b>0.93</b>
Market-rate units not within 1/4 mile of transit	415	463	1.12
Affordable units not within 1/4 mile of transit	760	710	0.93
<b>All units not within 1/4 mile of transit</b>	<b>1,175</b>	<b>1,173</b>	<b>1.00</b>
Market-rate units within 1/4 mile of transit	290	293	1.01
Affordable Units within 1/4 mile of transit	1,037	955	0.92
<b>All units within 1/4 mile of transit</b>	<b>1,327</b>	<b>1,248</b>	<b>0.94</b>

Once parking demand rates had been determined for each housing category, these rates were compared to discover the impact of the study variables (affordability and proximity to transit) on parking demand. According to the survey results for transit impact and as shown in Table 7, market-rate units within 1/4 mile of transit have a parking demand rate that is 11 percent lower than market-rate units not within this



distance. Affordable units within 1/4 mile of transit have a parking demand rate that is 1 percent lower than affordable units not within 1/4 mile of transit. All units within 1/4 mile of transit have a parking demand rate that is 6 percent lower than all units not within 1/4 mile of transit.

According to the survey results shown in Table 7 for affordability impact, affordable units not within 1/4 mile of transit have a parking demand rate that is 18 percent lower than market-rate units not within 1/4 mile of transit. Affordable units within 1/4 mile of transit have a parking demand rate that is 8 percent lower than market-rate units within 1/4 mile of transit. All affordable units have a parking demand that is 13 percent lower than all market-rate units. Table 8 shows the results of this analysis.

**Table 8**  
**Impact of Study Variables on Parking Demand**

<i>Variable analyzed</i>	<i>Impact of variable</i>
<b><i>Transit</i></b>	
<ul style="list-style-type: none"> <li>Market-rate units within 1/4 mile of transit vs. market-rate units not within 1/4 mile of transit</li> </ul>	11 percent lower parking demand
<ul style="list-style-type: none"> <li>Affordable units within 1/4 mile of transit vs. affordable units not within 1/4 mile of transit</li> </ul>	1 percent lower parking demand
<ul style="list-style-type: none"> <li>All units within 1/4 mile of transit vs. all units not within 1/4 mile of transit</li> </ul>	6 percent lower parking demand
<b><i>Affordability</i></b>	
<ul style="list-style-type: none"> <li>Affordable units not within 1/4 mile of transit vs. market-rate units not within 1/4 mile of transit</li> </ul>	18 percent lower parking demand
<ul style="list-style-type: none"> <li>Affordable within 1/4 mile of transit vs. market-rate units within 1/4 mile of transit</li> </ul>	8 percent lower parking demand
<ul style="list-style-type: none"> <li>All affordable units vs. all market-rate units</li> </ul>	13 percent lower parking demand

The relationship of very-low income status to parking demand was also examined as part of this study. Under the existing City of San Diego Municipal Code, parking discounts are given only to those units that serve very-low income households. Units restricted to low-income households are considered affordable, but they do not receive a parking discount. It is assumed that, in most cases, only those households with the lowest income would have a car ownership rate low enough to justify a parking reduction.

The parking survey did not find a strong relationship between level of affordability and parking demand in affordable projects, but the data shows that the parking demand for affordable projects is lower than the parking demand for market-rate projects. However, within the restricted income levels the differences are less pronounced. Table 9 shows the level of affordability and parking demand rate for the affordable projects surveyed as part of this study.



**Table 9**  
**Impact of Affordability on Parking Demand**

<i>Project</i>	<i>Level of Income</i>		<i>Number of occupied parking spaces per occupied dwelling unit</i>
	<i>Very-low income</i>	<i>Low income</i>	
<b><i>Mixed Levels of Affordability</i></b>			
Golden Villas	0%	100%	1.38
John Adams Manor	0%	100%	0.68
University Canyon	0%	100%	1.12
Otay Villas	67%	33%	1.06
Trojan Place	67%	33%	0.96
Hawthorn 1 Apts	69%	31%	0.92
Imperial Villa	97%	3%	1.08
<b>Average:</b>			<b>0.90</b>
<b><i>100 Percent Very-low Income</i></b>			
Bay Vista Methodist Heights	100%	0%	0.60
Coronado Terrace	100%	0%	1.25
Grant Heights Park	100%	0%	0.43
Logan Square Gardens	100%	0%	0.83
Pulitzer Place	100%	0%	1.10
Villas Primeras	100%	0%	1.04
Vista Terrace	100%	0%	0.86
Vista Verde Apartments	100%	0%	1.77
<b>Average:</b>			<b>0.94</b>



## Car Ownership Survey

The final part of this study included a written survey of car ownership. The survey was given to each resident at the projects surveyed as part of the parking demand study. Approximately 2,600 surveys were mailed. As part of the survey, residents were asked to report the total number of vehicles available to members of their households. Completed surveys were received from 280 households, including households from market-rate projects within 1/4 mile of transit, affordable projects not within 1/4 mile of transit and affordable projects within 1/4 mile of transit. No surveys were received from market-rate projects not within 1/8 mile of transit. A copy of the survey can be found in Appendix C.

Information from the surveys was compiled and analyzed to find the average number of cars per household for each project. The average number of cars per household for each housing category was also determined. Because no information from market-rate projects not within 1/4 mile of transit was received as part of the survey, a complete comparison of cars per household for every housing category is not possible. However, the available data supports the premise that the number of vehicles available is less for households in affordable projects than households in market-rate projects. The information that is available from the survey is shown in Table 10.

**Table 10**  
**Car Ownership Survey Results**

<i>Project Location</i>	<i>Total Households Responding</i>	<i>Total Vehicles Available</i>	<i>Average Vehicles Available per Households Responding</i>
<b><i>Market Rate Projects within 1/4 Mile of Transit</i></b>			
Canyon Ridge	23	39	1.70
Pinetree	15	22	1.47
<b><i>Total For Housing Category</i></b>	<b>38</b>	<b>61</b>	<b>1.60</b>
<b><i>Affordable Projects not within 1/4 Mile of Transit</i></b>			
Imperial Villa	38	43	1.13
Golden Villas	31	49	1.58
Trojan Place	12	18	1.50
Vista Terrace	45	67	1.49
Villas Primeras	11	15	1.36
Logan Square Gardens	18	23	1.28
<b><i>Total for Housing Category</i></b>	<b>155</b>	<b>215</b>	<b>1.39</b>
<b><i>Affordable Projects within 1/4 Mile of Transit</i></b>			
Otay Villas	22	26	1.18
Vista Verde Apartments	5	6	1.20
John Adams Manor	35	36	1.03
Bay Vista Methodist Heights	17	21	1.24
<b><i>Total for Housing Category</i></b>	<b>79</b>	<b>89</b>	<b>1.13</b>
<b><i>Total for all Affordable Projects</i></b>	<b>234</b>	<b>304</b>	<b>1.30</b>



- As shown in Table 10, the average number of vehicles available per households responding for market rate projects within 1/4 mile of transit (1.60) is higher than the average number of vehicles available per households responding for affordable projects within 1/4 mile of transit (1.13).
- Additionally, the average number of vehicles available per households responding for affordable projects not within 1/4 mile of transit is higher (1.39) than the average number of vehicles available per households responding for affordable projects within 1/4 mile of transit (1.13).
- Similarly, the average number of vehicles available per households responding for all affordable projects (1.30) is lower than the average number of vehicles available per households responding for all market rate projects (1.60).



## Conclusions and Recommendations

Census data and Nationwide Personal Transportation Data indicate that a clear relationship exists between household income and number of cars owned. According to these sources, as income increases, the number of cars owned also increases. It is assumed that as the number of cars owned increase, demand for parking also increases. Literature and case studies on the subject also affirm that there is a relationship between income and car ownership, and therefore between income and parking demand.

The results of the parking demand survey show that affordable projects require less parking than market-rate projects. Additionally, the survey demonstrates that those projects that are both affordable and within 1/4 mile of transit require the least amount of parking of all the types of housing projects studied. In other words, the presence of both study variables (affordability and proximity to transit) has a greater impact on parking demand than either variable alone. Finally, the survey shows that in affordable projects, a clear relationship does not exist between the level of affordability (very low, low or moderate) and the parking demand rate.

Although only a limited number of responses were received from the car ownership survey, the data collected in this survey shows that the number of vehicles available for affordable projects is lower than the number of vehicles available for market-rate projects. Additionally, the number of vehicles available for affordable projects within 1/4 mile of transit is lower than the number of vehicles available for affordable projects not within 1/4 mile of transit according to the survey data. While the relatively low number of survey responses limits the validity of the car ownership survey data, the responses received support the Census, Nationwide Personal Transportation and parking demand survey data.

The current parking requirements for Multiple Dwelling Units can be found in Section 142.0525 of the City of San Diego Municipal Code. Based on the results of this study, the following changes are recommended:

- “Affordable” should be defined as any unit serving very low or low-income families or individuals as determined by the U.S. Department of Housing and Urban Development, as compared to the existing code which allows an affordability discount only to those units serving very-low income families or individuals.
- At least one parking space should be provided for each housing unit, regardless of transit or affordable status.
- Discounted parking rates should be applied to any units meeting transit or affordability requirements, as shown below in Table 11.



**Table 11**  
**City of San Diego Parking Requirements (Existing/Proposed)\***

Multiple Dwelling Unit Type	Automobile Spaces Required Per Dwelling Unit		
	Basic	Transit	Affordable**
Studio under 400 square feet	1.25	1.0	1.0/0.75
1 bedroom or studio over 400 square feet	1.5	1.25	1.25/1.0
2 bedrooms	2.0	1.75	1.75/1.25
3-4 bedrooms	2.25	2.0	2.0/1.5
5+ bedrooms	2.25	2.0	2.0/1.5

Notes:

\*No less than one space per unit should be provided for the entire project.

\*\* The existing code applies only to the very low income and the proposed code rates apply to any units meeting the affordable definition herein.

The following are examples of how this code would be applied to different projects. See Appendix D for the calculations.

***Example 1A: Mixed-income project not within a transit area***

A developer wants to construct a 100-unit project with 10 affordable units. Twenty of the units would have one bedroom and 80 would have two bedrooms. All of the affordable units would have two bedrooms. The affordable units would be restricted to low income households only.

Parking would be calculated at the basic rate of 1.5 spaces per one-bedroom market-rate unit and two spaces per two-bedroom market-rate unit and 1.75 spaces per two-bedroom affordable unit. According to the existing municipal code, this project would require 188 parking spaces.

Under the proposed municipal code, the 10 affordable units would receive a parking reduction for affordability. Parking would be calculated at a rate of 1.5 spaces per one-bedroom market-rate unit, 2.0 spaces per two-bedroom market-rate unit and 1.25 spaces per two-bedroom affordable unit. The total spaces required for this project under the proposed municipal code would be 183. This is 5 spaces less than the spaces required under the existing code.

***Example 1B: Mixed-income project within a transit area***

If the project above were going to be located within a transit area, then according to the current municipal code, all units would receive a parking reduction. Parking would be calculated at the transit rate of 1.25 spaces per one-bedroom market-rate unit and 1.75 spaces per two-bedroom market-rate and affordable unit. According to the existing municipal code, this project would require 165 parking spaces.

Under the proposed municipal code, the 10 affordable units would receive an additional parking reduction for affordability. Parking would be calculated at a rate of 1.25 spaces per one-bedroom market-rate unit, 1.75 spaces per two-bedroom market-rate unit, and 1.25 spaces per two-bedroom affordable unit. The total spaces required for this project under the proposed municipal code would be 160. This is 5 spaces less than the spaces required under the existing code.



***Example 2A: Affordable project not within a transit area***

A developer wants to construct a 150-unit project with 50 very low-income units, 50 low-income units and 50 moderate-income units. Thirty of the very low-income units would have one bedroom and 20 would have two bedrooms. Thirty of the low-income units would have one bedroom and 20 would have two bedrooms. Thirty of the moderate-income units would have one bedroom and 20 would have two bedrooms.

Under the current municipal code, for the very low and low-income units parking would be calculated at a reduced rate of 1.25 spaces per one-bedroom unit and 1.75 spaces per two-bedroom unit. For the moderate-income units parking would be calculated at the basic rate of 1.5 spaces per one-bedroom unit and 2.0 spaces per two-bedroom unit. According to the existing municipal code, 230 parking spaces would be required for this project.

Under the proposed municipal code, the very low and low-income units within this project would receive a parking reduction for affordability. The moderate-income units would not receive a deduction for affordability. For the very low and low-income units, parking would be calculated at a reduced rate of 1.0 space per one-bedroom unit and 1.25 spaces per two-bedroom unit, whereas for the moderate-income units parking would be calculated at the basic rate of 1.5 spaces per one-bedroom unit and 2.0 spaces per two-bedroom unit. According to the proposed municipal code rates, this project would require 195 parking spaces. This is 35 spaces less than this project would require under the existing municipal code.

***Example 2B: Affordable project within a transit area***

If the project above were going to be located within a transit area, then under the current municipal code all units would receive a parking reduction. Parking would be calculated at the transit rate of 1.25 spaces per one-bedroom unit and 1.75 spaces per two-bedroom unit for all housing categories. According to the existing municipal code, 218 parking spaces would be required for this project.

Under the proposed municipal code, the very low and low-income units within this project would receive a parking reduction for affordability. The moderate-income units would not receive a parking reduction for affordability. For the very low and low-income units, parking would be calculated at a reduced rate of 1.0 space per one-bedroom unit and 1.25 spaces per two-bedroom unit, whereas for the moderate-income units parking would be calculated at the transit rate of 1.25 spaces per one-bedroom unit and 1.75 spaces per two-bedroom unit. According to the proposed municipal code rates, this project would require 183 parking spaces. This is 35 spaces less than the spaces required under the existing code.



## **Next Steps**

According to the results of the parking demand survey done for this study, projects within a transit area require slightly less parking than projects not within a transit area. We also discovered published literature and research that reinforce the effect that transit has on parking demand. Based on the preliminary data collected for this study, the City of San Diego should consider further study of the effect of transit on the demand for parking at multi-family housing projects. Additional research should include:

- How the accessibility of different modes of transit (bus, commuter train, etc.) affect the rates of auto ownership among residents of multi-family housing projects.
- Investigate the parking demand for transit-oriented developments and consider applying parking reductions for such areas if feasible.



**APPENDIX A**  
**References**



Beamguard, Jim. "Packing Pavement." Tampa Tribune. 18 July 1999.

Also available at:

<[www.tampabayonline.net/bguard/home.htm](http://www.tampabayonline.net/bguard/home.htm)>

This paper describes the financial benefits for people that can access transit systems. This benefit comes from the fact that parking can add \$40,000 to the price of a housing unit that is passed on to the buyer. It states that 12 to 15 percent of the San Francisco population has been priced out of a home due to the added expense of a parking lot.

Daragay, Joyce and Dermot Gately. "Income's effect on car and vehicle ownership, worldwide: 1960-2015." Transportation Research Part A. Vol. 33. (1999): 101-138.

This paper establishes the historical relationship between the growth of per-capita income and growth of car and vehicle ownership. According to the paper's analysis, as per-capita income grows, so will car and vehicle ownership. The paper uses historical data from more than three decades and 26 countries, over a wide range of per-capita income levels and a range of growth rate experience.

Gardenhire, Alissa and William Sermons. "Understanding Automobile Ownership Behavior of Low-Income Households (How Behavioral Differences May Influence Transportation Policy)." Transportation Research Circular E-C026.

This paper is a study done on how low-income behavior is different than the average behavior with respect to the automobile. The findings were that influences of automobile ownership such as income and population density were more prominent in low-income households. Income being the top influence, low-income converts money into automobiles at twice the average rate while the presence of transit does not vary much from the average.

Kay, Jane Holtz. "The Asphalt Attack, Overheated Car Culture." In These Times. Summer 1999.

Also available at:

<[www.vtppi.org/depave.htm](http://www.vtppi.org/depave.htm)>

This paper describes the problems related to vehicle use such as environmental impact. It points out the relationship between income and vehicle ownership and travel magnitude. The working commute and work related travel accounts for 34% of all automotive travel in this paper and states that a good carpool may yield a greater gallon of fuel per passenger than most transit systems.

Income and Vehicle Ownership.

<[dcrp.ced.Berkeley.edu/students/russo/parking/Developer%20manual/data.../1\\_income.ht](http://dcrp.ced.Berkeley.edu/students/russo/parking/Developer%20manual/data.../1_income.ht)>

This paper and the ones attached describe relationships between income and automobile ownership. It includes statistical data as well as other relationships to ownership such as parking availability. The main



observation of the paper is that low-income households own fewer cars. Implications are stated as the minimum parking requirements may be lowered for housing intended for low-income families.

Kockelman, Kara Maria. "Travel Behavior as Function of Accessibility, Land Use Mixing, and Land Use Balance." Transportation Research Record 1607. pp. 116-125.

This paper describes a study of travel behavior based on variables such as accessibility, land mix and balance as well as household and traveler characteristics. The study found that accessibility to public transit, land mix and balance was more influential than a traveler's characteristics or household. Automobile ownership is also influenced by the built environment in which a person lives as well as the population density.

Litman, Todd. "Parking Requirement Impacts on Housing Affordability." Victoria Transport Policy Institute. 28 November 1999.

This paper shows how to best determine optimal parking requirements for housing projects. It examines the monetary and environmental costs of providing on-site parking in set ratios regardless of project type and location. The paper argues that it is more fair and efficient to provide flexibility in parking requirements, taking into account a project's proximity to transit, location (urban or suburban) and the household characteristics of its residents.

"Myths and Facts About Affordable and High-Density Housing" California Planning Roundtable,  
< [www.abag.ca.gov/services/finance/fan/housingmyths2.htm](http://www.abag.ca.gov/services/finance/fan/housingmyths2.htm) >

This paper deals with peoples misconceptions about low-cost housing. A relevant point in this paper is that low-income households own fewer cars and make less trips than the average. It is accompanied by statistical data and a graph.

"Community Makeup, The Eastside Transit Light Rail Project." MTA.  
< [www.mta.net/corporate/depts/cpd/eastside/makeup.htm](http://www.mta.net/corporate/depts/cpd/eastside/makeup.htm) >

This paper points out some of the benefits and bonuses received by transit station areas by the *Transportation and Land Use Policy*. It states that parking is a key feature for new transit stations. People should be able to only drive to the nearest transit station, park, and the rest of their travels are by the public transit systems. This reduces parking requirements overall by centralizing parking activity to a few specific areas.

Schimek, Paul. "Household Vehicle Ownership and Use: How much does Residential Density Matter?" Committee on Transportation and Land Development. Record 1552

This paper finds relationships between income and magnitude of travel as well as between density and magnitude of travel. The data showed that vehicle ownership was influenced mostly by income, household size, and number of workers per household. It was found that income and density affects



travel magnitude. Low-income or high-density areas lower travel magnitude. Income and density however have little relationship between each other.

“Reducing Housing Costs by Rethinking Parking Requirements, The San Francisco.”  
SPUR: Planning and Urban Research Association. <[www.spur.org](http://www.spur.org)>, 1998.

This paper makes suggestions for reducing parking requirements in the San Francisco area. It argues that by designing San Francisco along suburban lines (one parking space for each person and every location) with compromise the city’s walkable streetscape and damage its inherent character. As a solution, it suggests that housing should be available without parking or with a reduced number of spaces. It recommends support of car-sharing services and approval for housing projects which seek to take advantage of San Francisco’s transit and pedestrian accessibility.

“Highway Travel Forecasts.” TMIP. 23 Oct. 1998  
<[www.bts.gov/other/mfd\\_tmip/papers/general/hitf/ch3.htm](http://www.bts.gov/other/mfd_tmip/papers/general/hitf/ch3.htm)>, 2001

This paper sites many relationships between travel magnitude and various factors. These factors include population, licensed drivers, Income, auto ownership, fuel availability, and settlement patterns. These are accompanied by statistical graphs and charts.

“Transit Oriented Development: The Village at Overlake Station—Redmond, Washington.” King County, Washington Department of Transportation. 1 Aug 2001.

Also available at:  
<[www.metrokc.gov/kcdot/alts/tod/todoverlake.htm](http://www.metrokc.gov/kcdot/alts/tod/todoverlake.htm)>

This paper describes a project in the works in Redmond, Washington. The project calls for an integrated system of parking, low-cost rental housing, and public transit system. 536 parking stalls will be available for park-and-ride users as well as 308 residents within walking distance of the transit system.

George Street Research. “Why People Don’t Drive Cars.” Scottish Executive Central Research Unit. 75 (1999): 24 July, 2001

Also available at:  
<[www.scotland.gov.uk/cru/resfinds/drf75-00.htm](http://www.scotland.gov.uk/cru/resfinds/drf75-00.htm)>

This paper is a study done on the reasons people decide to use public transit as opposed to owning a car. The top reason was financial purposes given by 44% of those surveyed followed by personal preference with 43%. Other reasons included lack of access to a car, poor health, preference for public transit, and environmental concerns. The paper also made some advertising suggestions for public transit such as the cost of operation of a car for the elderly, or the health benefits of not using a car for younger people.

“Making Housing Work, One Parking Stall At A Time.” Seattle Times 5 July 2000.



Also available at:

[www.seattletimes.nwsourc.com/news/editorial/html98/rented01\\_20000705.html](http://www.seattletimes.nwsourc.com/news/editorial/html98/rented01_20000705.html).

This paper calls for parking needs to be evaluated on an area-by-area basis. An example is the Pike-Pine area in Seattle where car ownership was well below average, housing was low-cost where 75% of apartments are studios or 1 bedroom, and work and entertainment were well within walking distance. The Seattle City Counsel reduced parking requirements from 1.5 per unit housing to just 1. An area like Pike-Pine the paper says could be reduced to .5.

Whitely, Peyton. "Groundbreaking for housing experiment." Seattle Times 20 Oct 2000.

Also available at:

[archives.seattletimes.nwsourc.com/cgi-bin/texis/.../display?slug=over20e&date=2000102,2001](http://archives.seattletimes.nwsourc.com/cgi-bin/texis/.../display?slug=over20e&date=2000102,2001).

This paper describes the plans for an integrated housing, daycare, and park-and-ride project. The Seattle project will include 308 housing units, daycare, park-and-ride, and 150 reserved for commuters as well as additional parking for residents and daycare workers. The idea is to minimize the need for cars. It will also provide low-cost housing.




## APPENDIX B Parking Lot Occupancy Count Schedule

Project Name	Count 1		Count 2		Count 3	
	Date	Time	Date	Time	Date	Time
<b>Market-rate Units not within 1/4 Mile of Transit</b>						
Chateau Vue	8/28/01	6:20 AM	8/29/01	6:35 AM	8/25/01	7:00 AM
Ocean Breeze	8/28/01	4:53 AM	8/29/01	4:48 AM		
Pacific Gardens	8/28/01	6:00 AM	8/29/01	6:24 AM	8/25/01	8:00 AM
<b>Market-rate Units within 1/4 Mile of Transit</b>						
Canyon Ridge	8/28/01	6:30 AM	9/11/01	6:15 AM	9/9/01	2:30 AM
Pinetree	8/29/10	5:52 AM	8/31/01	6:20 AM	8/25/01	6:45 AM
<b>Affordable Units not within 1/4 Mile of Transit</b>						
Golden Villas	8/28/01	6:22 AM	8/31/01	6:18 AM	8/26/01	7:45 AM
Grant Heights Park	8/28/01	6:30 AM	8/30/01	6:00 AM		
Imperial Villa	8/28/01	5:45 AM	8/30/01	6:50 AM	8/26/01	8:00 AM
Logan Square Gardens	8/28/01	6:35 AM	8/30/01	6:30 AM		
Trojan Place	9/19/01	3:30 AM	9/20/01	3:30 AM		
University Canyon	8/29/01	6:20 AM	8/31/01	6:30 AM		
Villas Primeras	8/28/01	5:10 AM	8/29/01	5:05 AM		
Vista Terrace	8/28/01	4:37 AM	8/29/01	4:35 AM		
<b>Affordable Units within 1/4 Mile of Transit</b>						
Bay Vista Methodist Heights	8/28/01	6:20 AM	8/30/01	6:15 AM		
Coronado Terrace	8/28/01	4:17 AM	8/29/01	4:13 AM		
Hawthorn 1 Apts	8/28/01	6:15 AM	8/31/01	6:15 AM		
John Adams Manor	8/28/01	6:45 AM	8/31/01	6:40 AM		
Otay Villas	8/28/01	4:08 AM	8/29/01	4:00 AM		
Pulitzer Place	8/28/01	6:09 AM	8/29/01	6:18 AM	8/25/01	8:00 AM
Vista Verde Apartments	9/19/01	4:00 AM	9/20/01	4:00 AM		





**APPENDIX C**  
**Car Ownership Survey**




**NO POSTAGE STAMP NECESSARY  
POSTAGE HAS BEEN PREPAID BY**

**MYLES POMEROY - PLANNING  
CITY OF SAN DIEGO  
MS - B13  
202 C ST  
SAN DIEGO CA 92101-3860**





THE CITY OF SAN DIEGO



*Good Neighbors*  
**San Diego  
Housing Commission**


The City of San Diego and the San Diego Housing Commission are working to better serve the needs of San Diego residents. Please take a moment to help by answering and returning this simple survey. All answers are anonymous.

*For the purposes of this survey, "household" means all the people living in your apartment.*

**What is the name of your apartment complex** John Adams Manor  
*President*

**How many vehicles are kept at home for use by members of your household? (Please mark one)**     0     1     2     3     4     5

*"Thank you for your participation"*



**Katz, Okitsu & Associates**  
Traffic Engineers and Transportation Planners



## APPENDIX D Example Tables

**Table 1A: Not Within Transit Area**

Multiple Dwelling Unit Type	Affordable Units			Market-Rate Units		
	No. of Affordable Units	Municipal Code Existing/Proposed	No. of Parking Spaces Existing/Proposed	No. of Market-Rate Units	Municipal Code Existing/Proposed	No. of Parking Spaces Existing/Proposed
1 bedroom	0	~	~	20	1.5/1.5	30/30
2 bedrooms	10	1.75/1.25	17.5/12.5	70	2.0/2.0	140/140

<b>Total Units:</b>	100
<b>Total Parking Spaces: Existing/ Proposed</b>	188/183

**Table 1B: Within Transit Area**

Multiple Dwelling Unit Type	Affordable Units			Market-Rate Units		
	No. of Affordable Units	Municipal Code Existing/Proposed	No. of Parking Spaces Existing/Proposed	No. of Market-Rate Units	Municipal Code Existing/Proposed	No. of Parking Spaces Existing/Proposed
1 bedroom	0	~	~	20	1.25/1.25	25/25
2 bedrooms	10	1.75/1.25	17.5/12.5	70	1.75/1.75	122.5/122.5

<b>Total Units:</b>	100
<b>Total Parking Spaces: Existing/ Proposed</b>	165/160



**Table 2A: Not Within Transit Area**

Very Low & Low-Income Units						
Multiple Dwelling Unit Type	No. of Very Low Income Units	Municipal Code Existing/Proposed	No. of Parking Spaces Existing/Proposed	No. of Low Income Units	Municipal Code Existing/Proposed	No. of Parking Spaces Existing/Proposed
1 bedroom	30	1.25/1.0	37.5/30	30	1.25/1.0	37.5/30
2 bedrooms	20	1.75/1.25	35/25	20	1.75/1.25	35/25

Moderate-Income Units			
Multiple Dwelling Unit Type	No. of Moderate Income Units	Municipal Code Existing/Proposed	No. of Parking Spaces Existing/Proposed
1 bedroom	30	1.5/1.5	45/45
2 bedrooms	20	2.0/2.0	40/40

<b>Total Units:</b>	150
<b>Total Parking Spaces: Existing/Proposed</b>	230/195

**Table 2B: Within Transit Area**

Very Low & Low Income Units						
Multiple Dwelling Unit Type	No. of Very Low Income Units	Municipal Code Existing/Proposed	No. of Parking Spaces Existing/Proposed	No. of Low Income Units	Municipal Code Existing/Proposed	No. of Parking Spaces Existing/Proposed
1 bedroom	30	1.25/1.0	37.5/30	30	1.25/1.0	37.5/30
2 bedrooms	20	1.75/1.25	35/25	20	1.75/1.25	35/25

Moderate Income Units			
Multiple Dwelling Unit Type	No. of Moderate Income Units	Municipal Code Existing/Proposed	No. of Parking Spaces Existing/Proposed
1 bedroom	30	1.25/1.25	37.5/37.5
2 bedrooms	20	1.75/1.75	35/35

<b>Total Units:</b>	150
<b>Total Parking Spaces: Existing/Proposed</b>	218/183



**APPENDIX E**  
**Definition of Affordable Income Levels by Family Size**

### SAN DIEGO HOUSING COMMISSION INCOME AND RENT CALCULATIONS

EFFECTIVE: February 2002

U.S. Department of Housing and Urban Development  
2002 SAN DIEGO MEDIAN INCOME

\$60,100

Family Size	Unit Size	Example Utility*	30%			Very Very Low Income 35%			40%			Very Low Income 50%			HOME**
			INCOME	30%	RENT	INCOME	30%	RENT	INCOME	30%	RENT	INCOME	30%	RENT	
ONE	STUDIO	\$19	\$12,600	\$315	\$296	\$14,700	\$368	\$349	\$16,850	\$421	\$402	\$21,050	\$526	\$507	\$478
TWO	1-BR	\$26	\$14,400	\$360	\$334	\$16,850	\$421	\$395	\$19,250	\$481	\$455	\$24,050	\$601	\$575	\$507
THREE	2-BR	\$32	\$16,250	\$406	\$374	\$18,950	\$474	\$442	\$21,650	\$541	\$509	\$27,050	\$676	\$644	\$608
FOUR	3-BR	\$41	\$18,050	\$451	\$410	\$21,050	\$526	\$485	\$24,050	\$601	\$560	\$30,050	\$751	\$710	\$699
FIVE	4-BR	\$50	\$19,450	\$486	\$436	\$22,700	\$568	\$518	\$25,950	\$649	\$599	\$32,450	\$811	\$761	\$775
SIX	5-BR	\$58	\$20,900	\$523	\$465	\$24,400	\$610	\$552	\$27,900	\$698	\$640	\$34,850	\$871	\$813	\$852
SEVEN	6-BR	\$65	\$22,350	\$559	\$494	\$26,100	\$653	\$588	\$29,800	\$745	\$680	\$37,250	\$931	\$866	\$930
EIGHT			\$23,800			\$27,750			\$31,750			\$39,650			

Family Size	Unit Size	Example Utility*	60%			65%			HOME**	70%			Low Income 80%		
			INCOME	30%	RENT	INCOME	30%	RENT		INCOME	30%	RENT	INCOME	30%	RENT
ONE	STUDIO	\$19	\$25,260	\$632	\$613	\$27,350	\$684	\$665	\$608	\$29,450	\$736	\$717	\$33,650	\$841	\$822
TWO	1-BR	\$26	\$28,860	\$722	\$696	\$31,250	\$781	\$755	\$647	\$33,650	\$841	\$815	\$38,450	\$961	\$935
THREE	2-BR	\$32	\$32,460	\$812	\$780	\$35,150	\$879	\$847	\$778	\$37,850	\$946	\$914	\$43,250	\$1,081	\$1,049
FOUR	3-BR	\$41	\$36,060	\$902	\$861	\$39,050	\$976	\$935	\$886	\$42,050	\$1,051	\$1,010	\$48,100	\$1,203	\$1,162
FIVE	4-BR	\$50	\$38,940	\$974	\$924	\$42,200	\$1,055	\$1,005	\$965	\$45,450	\$1,136	\$1,086	\$51,950	\$1,299	\$1,249
SIX	5-BR	\$58	\$41,820	\$1,046	\$988	\$45,300	\$1,133	\$1,075	\$1,043	\$48,800	\$1,220	\$1,162	\$55,750	\$1,394	\$1,336
SEVEN	6-BR	\$65	\$44,700	\$1,118	\$1,053	\$48,450	\$1,211	\$1,146	\$1,124	\$52,150	\$1,304	\$1,239	\$59,600	\$1,490	\$1,425
EIGHT			\$47,580			\$51,550				\$55,550			\$63,450		



Family Size	Unit Size	Example Utility*	Moderate Income 90%			100%			110%			Moderate Income 120%		
			INCOME	30%	RENT	INCOME	30%	RENT	INCOME	30%	RENT	INCOME	30%	RENT
ONE	STUDIO	\$19	\$37,850	\$946	\$927	\$42,100	\$1,053	\$1,034	\$46,300	\$1,158	\$1,139	\$50,500	\$1,263	\$1,244
TWO	1-BR	\$26	\$43,250	\$1,081	\$1,055	\$48,100	\$1,203	\$1,177	\$52,900	\$1,323	\$1,297	\$57,700	\$1,443	\$1,417
THREE	2-BR	\$32	\$48,700	\$1,218	\$1,186	\$54,100	\$1,353	\$1,321	\$59,500	\$1,488	\$1,456	\$64,900	\$1,623	\$1,591
FOUR	3-BR	\$41	\$54,100	\$1,353	\$1,312	\$60,100	\$1,503	\$1,462	\$66,100	\$1,653	\$1,612	\$72,100	\$1,803	\$1,762
FIVE	4-BR	\$50	\$58,400	\$1,460	\$1,410	\$64,900	\$1,623	\$1,573	\$71,400	\$1,785	\$1,735	\$77,900	\$1,948	\$1,898
SIX	5-BR	\$58	\$62,750	\$1,569	\$1,511	\$69,700	\$1,743	\$1,685	\$76,700	\$1,918	\$1,860	\$83,650	\$2,091	\$2,033
SEVEN	6-BR	\$65	\$67,050	\$1,676	\$1,611	\$74,500	\$1,863	\$1,798	\$82,000	\$2,050	\$1,985	\$89,450	\$2,236	\$2,171
EIGHT			\$71,400			\$79,300			\$87,250			\$95,200		

\* Assumes apartment utilities consisting of electric heat, gas cooking, basic electricity and gas water heater. See the "San Diego Housing Commission Utility Allowance Schedule" on the reverse side in order to calculate the utility deduction based on the project's actual utilities minus HUD published Fair Market Rents for existing housing in the project's area after utility deduction, whichever is less. If HOME funds are used in combination with other programs, the more restrictive rent amounts apply.

- 1. Income = Gross annual income adjusted by family size.
- 2. 30% = The monthly amount of family income used for housing expenses. (Annual Income divided by 12 months minus 30%)
- 3. Rent = 30% of the family income (as calculated in 2. above) less the utility allowance.