

City of Brisbane

Planning Commission Agenda Report

TO: Planning Commission For the Meeting of 2/23/12

FROM: Tim Tune, Senior Planner, via John Swiecki, Community Development Director

SUBJECT: **Zoning Text Amendment RZ-5-11** to Amend Brisbane Municipal Code Title 17; Chapter 17.06, R-1 Residential District; Chapter 17.08, R-2 Residential District; Chapter 17.10, R-3 Residential District; Chapter 17.12, R-BA Brisbane Acres Residential District; Chapter 17.32, General Use Regulations; Chapter 17.34, Off-Street Parking; and Chapter 17.38, Nonconforming Uses and Structures; City of Brisbane, applicant.

UPDATE: For the February 9th public hearing, the attached written comments were received from Dana Dillworth, Barbara Ebel and Luc Bouchard (on behalf of himself, Ron Davis, Michael Glynn and Jerry Kuhel).

As suggested by Ms. Dillworth, staff has updated Section 17.06.040.B in the draft ordinance (attached) to delete the phrase “by a use permit granted” since Use Permits are no longer required for secondary dwelling units per BMC Chapter 17.43.

In response to the comments on garage setbacks from Ms. Dillworth and Luc Bouchard et al., it should be clarified for the record why setback changes are proposed in the draft ordinance. Currently, BMC Section 17.32.070.A.3.a allows garages, carports and parking decks anywhere within the front setback, provided “the garage is approved by the city engineer, based upon a finding that no traffic or safety hazard will be created.” The draft ordinance would reflect this exception in the front setback standards for the R-1, R-2 and R-3 Districts, with 10 ft. being specified as the default setback for garages/carports. To require a similar 10 ft. setback for garages/carports on corner lots that have a driveway accessing the side street (where the minimum standard side setback is 5 ft.), a similar requirement would be added to the side setback standards for the R-1, R-2, R-3 and R-BA Districts.

Note that no change was proposed to the current 10 ft. front setback in the R-BA District as specified in BMC Section 17.12.040.D.1; although, BMC Section 17.32.070.A.3.a could be cited to allow less than a 10 ft. front setback for garages/carports in the district. To avoid this potential conflict, staff recommends that BMC Section 17.32.070.A.3.a be amended so as to apply specifically to the R-1, R-2 and R-3 Districts only (see attached draft ordinance).

Mr. Bouchard pointed out that a 10 ft. front setback for a garage on a steep downslope site may result in the garage exceeding the 30 ft. height limit for the R-1, R-2 and R-3 Districts. One way

in which this could be addressed would be to revise the development regulations for height of structures in BMC Sections 17.06.040.G.2, 17.08.040.G.2 & 17.10.040.G.2 :

2. For a distance of fifteen (15) feet from the front lot line, the height of any structure shall not exceed twenty (20) feet as measured from finish grade; provided, however, garages *and carports* may be constructed to a height of fifteen (15) feet above the elevation of the center of the adjacent street when permitted by Section 17.32.070 of this title. *A garage or carport in compliance with this subsection may exceed a height of thirty (30) feet, but the height of and so long as the total height of the garage and* any permitted living area underneath *shall does* not exceed thirty (30) feet from finish grade.

In the R-BA District, this would be addressed be revising BMC Section 17.12.040.G.2.b:

2. For a distance of twenty (20) feet from the front lot line, the height of any structure shall not exceed twenty (20) feet as measured from finish grade; provided, however,

a. residential structures on sites sloping down from the adjacent street may be constructed to a height of twenty (20) feet above the elevation of the center of the street, so long as the height does not exceed thirty-five (35) feet from finish grade; and

b. garages *and carports* may be constructed to a height of fifteen (15) feet above the elevation of the center of the adjacent street when permitted by Section 17.32.070 of this Title. *A garage or carport in compliance with this subsection may exceed a height of thirty-five (35) feet, but the height of and so long as the total height of the garage and* any permitted living area underneath *shall does* not exceed thirty-five (35) feet from finish grade.

The Commission requested the data supporting the previously suggested parking standard of 1 space per 900 sq. ft. Although the 2010 U.S. Census and the 2006-2010 American Community Survey have not released square footage figures for dwelling units in Brisbane, staff was able to extrapolate average dwelling floor area per vehicle owned from the 1990 and 2000 U.S. Censuses.

According to the 1990 U.S. Census, all but 99 of the 1,300 total number of households in Brisbane had at least one car. Of the 1,687 employed persons in Brisbane 16 years or older, 1,283 (76.1%) drove alone to work and 238 (14.1%) carpooled. Of those who carpooled, 180 were in a 2-person carpool and the remainder where in larger carpools. Assuming that at least half of those persons in the 2-person carpools owned a car, the total number of cars owned by Brisbane residents who worked would have been 1,373. This would translate into an ownership rate of at least 0.8 cars per employed person 16 years or older.

At that time, 2,460 Brisbane residents out of a total of 2,952 were 16 years or older. If the same ownership rate were applied to the entire population 16 years or older (employed or not), excluding the at least 99 persons in households without cars, there would have been 1,889 vehicles owned by local residents, amounting to 1.45 per household. This would be quite an assumption, since it would probably exaggerate ownership rates for those who were at the upper and lower ends of the range of ages covered, particularly since those 65 years or older were specifically known to have a lower car ownership rate. For example, of the 99 households in Brisbane without any vehicles, 33% were headed by a householder at least 65 years old, while only 10% of the total households in Brisbane were headed by a householder at least that old. This exaggeration might compensate, though, for the lack of data on the number of persons owning multiple vehicles.

According to the 1990 U.S. Census, the average housing unit in Brisbane had 4.57 rooms, including 2.01 bedrooms. While there was no information on the average size of housing units in Brisbane, the nationwide median home at that time contained 5.4 rooms, including 2.6 bedrooms, and 1,688 sq. ft. Extrapolating from these figures, the average housing unit in Brisbane was 1,305-1,428.5 sq. ft. At 1.45 vehicles per unit, this would translate to 1 vehicle per 900-985 sq. ft. or 0.72 vehicles per bedroom.

BRISBANE VEHICLE OWNERSHIP RATES						
	Studio	1-BR	2-BR	3-BR	4-BR	5-BR
1990 U.S. Census:						
0.72 per BR	N/A	0.72	1.44	2.16	2.88	3.6
1 vehicle per 900-985 sq. ft.						
2000 U.S. Census:						
0.77 per BR	N/A	0.77	1.54	2.31	3.08	3.85
1 vehicle per 830-892 sq. ft.						
2010 U.S. Census:						
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A						

BR = Bedroom
 N/A Data not available

Data regarding vehicle ownership in Brisbane from the 2000 U.S. Census generally corroborates the conclusions drawn from the 1990 U.S. Census. In 2000, 72 households out of a total of 1,614 had no vehicles available, 621 had 1 vehicle, 701 had 2 vehicles and 220 had 3 or more. This translates into a total of at least 2,683 vehicles and an average of at least 1.66 vehicles per household. According to the 2000 U.S. Census, of the 2,079 employed persons in Brisbane 16 years or older, 1,498 drove alone to work (72.1%, down from 76.1% in 1990) and 273 carpooled (13.1%, down from 14.1% in 1990; additional details regarding carpool size are not available). Assuming that at least half of those persons in the 2-person carpools owned a car, the total number of cars owned by Brisbane residents who worked would be 1,635. This would translate

into an ownership rate of at least 0.8 cars per employed person 16 years or older (the same as in 1990).

In 2000, an estimated 3,031 Brisbane residents out of a total of 3,597 were 16 years or older (based upon extrapolation from data released to date that 3,065 were 15 years or older, 184 were 10 to 14 years old, and 160 were 15 to 19 years old). If the same ownership rate were applied to the entire population 16 years or older (employed or not), there would have been 2,425 vehicles owned by local residents, amounting to 0.67 vehicles per person (of any age) or 1.5 per household.

According to the U.S. Census, the median number of rooms per unit in Brisbane was 4.4 in 2000. While there was no information on the average size of housing units in Brisbane, the nationwide median home in 1990, as noted above, contained 5.4 rooms and 1,688 sq. ft. Extrapolating from these figures, the median housing unit in Brisbane in 1990 was approximately 1,305-1,428.5 sq. ft. According to the 2000 U.S. Census, 1,388 units were built before 1990. According to City records, 277 units were issued Certificates of Occupancy in Brisbane from 1990 through March 2000 (the 2000 U.S. Census counted 430 units, including the unoccupied units at The Ridge). These 277 units contained an estimated total of 482,707 gross sq. ft. of floor area. Thus, the average housing unit built in Brisbane from 1990 to the time of the 2000 U.S. Census was 1,743 sq. ft. The weighted average floor area per housing unit in Brisbane at the time of 2000 U.S. Census would then be estimated to be 1,378-1,481 sq. ft. With at least 1.66 vehicles per household, this would translate to 1 vehicle per 830-892 sq. ft. Although information on average number of bedrooms per unit was not collected in the 2000 U.S. Census, it could be extrapolated from the 1990 Census that a 4.4 room unit would have 1.94 bedrooms. At 1.5 vehicles per unit, this would translate to 0.77 vehicles per bedroom.

Parking counts taken at Altamar at the Ridge found a range of 233 to 277 parked vehicles on random Wednesday evenings, averaging 255. There is a total of 214 units at Altamar, ranging in size from 1 bedroom with den to 3 bedrooms. The total number of bedrooms is 436. Thus, the average number of parked vehicles per bedroom found was only 0.58. The average floor area found was 1,144 sq. ft. per parked vehicle.

ALTAMAR PARKING SURVEY	
DATE/TIME	PARKED VEHICLES
Wednesday, July 24, 2002, 7:00 p.m.	233
Wednesday, January 15, 2003, 7:15 p.m.	277
Wednesday, April 14, 2004, 7:00 p.m.	234
Wednesday, June 15, 2011, 7:15 p.m.	276
AVERAGE	255

ALTAMAR UNITS SIZES			
TYPE OF UNIT	NUMBER OF UNITS	SQ. FT.	TOTAL BEDROOMS
2-bedroom	51	1,070	102
2-bedroom	42	1,243	84
1-bedroom + den	21	1,280	21
2-bedroom + den	29	1,520	58
3-bedroom	29	1,520	87
2-bedroom + den	42	1,663	84
TOTAL	214	291,662	436

RECOMMENDATION: Recommend that the City Council adopt the draft ordinance, via adoption of Resolution RZ-5-11.

ATTACHMENTS:

- Letter from Dana Dillworth
- Presentation with Attachments from Barbara Ebel
- Powerpoint Presentation from Luc Bouchard, Ron Davis, Michael Glynn & Jerry Kuhel
- Draft Resolution RZ-5-11 with Revised Draft Ordinance
- Revised "Redline" Version of Parking Ordinance Amendments

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draft
RESOLUTION NO. RZ-5-11

RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF BRISBANE RECOMMENDING ZONING TEXT AMENDMENT RZ-5-11 TO THE CITY COUNCIL, SUCH TEXT AMENDMENTS PERTAINING TO CITY OF BRISBANE MUNICIPAL CODE TITLE 17, ZONING; CHAPTER 17.06, R-1 RESIDENTIAL DISTRICT; CHAPTER 17.08, R-2 RESIDENTIAL DISTRICT; CHAPTER 17.10, R-3 RESIDENTIAL DISTRICT; CHAPTER 17.12, R-BA BRISBANE ACRES RESIDENTIAL DISTRICT; CHAPTER 17.34, OFF-STREET PARKING; AND CHAPTER 17.38, NONCONFORMING USES AND STRUCTURES

WHEREAS, on January 18, 2011, the City Council adopted the 2007-2014 Housing Element; and

WHEREAS, the Planning Commission has determined that amending Municipal Code Chapter 17.34 to revise the residential parking requirements and adopt specific parking requirements for units designed and dedicated for use by seniors and persons with disabilities and for emergency shelters would be consistent with Housing Element Programs H.I.1.b, H.I.1.c, H.B.3.b, H.B.3.c and H.B.3.i, as well as General Plan Programs 22c and 253a; and

WHEREAS, the Planning Commission has determined that adopting parking design standards, parking use restrictions and parking requirement exemptions/exceptions/modifications would be consistent with General Plan Policies 6, 99 and 289 and Programs 22h, 32a, 32b, 46a, 56a and 56c.

WHEREAS, on December 8, 2011 and January 26, 2012, the Planning Commission held public hearings on the draft ordinance; and

WHEREAS, the minutes of the Planning Commission meetings of December 8, 2011, and January 26, 2012, are attached and incorporated by reference as part of this resolution; and

WHEREAS, a Negative Declaration was adopted by the City Council January 18, 2011, for the 2007-2014 Housing Element, portions of which the proposed ordinance would implement, and the additional minor zoning amendments recommended can be seen with certainty to have no possibility of having a significant effect on the environment and thus are not subject to the California Environmental Quality Act per the general rule is contained in State CEQA Guidelines Section 15061(b)(3).

NOW, THEREFORE, based upon the evidence presented, both written and oral, the Planning Commission of the City of Brisbane hereby RECOMMENDS that the City Council adopt the attached ordinance.

JAMEEL MUNIR
Chairman

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Resolution RZ-5-11
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I hereby certify that the foregoing Resolution No. RZ-5-11 was duly and regularly passed and adopted by the Brisbane Planning Commission at a regular meeting thereof held on January 26, 2012, by the following roll call vote:

AYES:
NOES:
ABSENT:

JOHN SWIECKI
Community Development Director

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draft
ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF BRISBANE AMENDING CHAPTER 17.06, R-1 RESIDENTIAL DISTRICT; CHAPTER 17.08, R-2 RESIDENTIAL DISTRICT; CHAPTER 17.10, R-3 RESIDENTIAL DISTRICT; CHAPTER 17.12, R-BA BRISBANE ACRES RESIDENTIAL DISTRICT; CHAPTER 17.32, GENERAL USE REGULATIONS; CHAPTER 17.34, OFF-STREET PARKING; AND CHAPTER 17.38, NONCONFORMING USES AND STRUCTURES; OF THE MUNICIPAL CODE

WHEREAS, pursuant to California Government Code Section 65852.2(e), the City Council finds that additional parking requirements for secondary dwelling units exceeding one parking space per unit or per bedroom are directly related to the use of the second unit and are consistent with neighborhood standards applicable to duplex and multi-family dwellings.

THE CITY COUNCIL OF THE CITY OF BRISBANE HEREBY ORDAINS AS FOLLOWS:

SECTION 1: Section 17.06.040 in Chapter 17.06 of the Municipal Code is amended to read as follows:

17.06.040 – Development Regulations. The following development regulations shall apply to any lot in the R-1 district:

- A. Lot Area.
 - 1. The minimum area of any lot shall be five thousand (5,000) square feet.
 - 2. A single-family dwelling may be constructed on a lot of record with an area of less than five thousand (5,000) square feet, subject to the provisions of this chapter and the limitations set forth in Section 17.32.100.
- B. Density of Development. Not more than one dwelling unit shall be located on each lot in the R-1 district, except for a secondary dwelling unit authorized pursuant to Chapter 17.43 of this title.

Width	Depth
50 feet	100 feet

- C. Lot Dimensions. The minimum dimensions of any lot shall be as follows:
- D. Setbacks. The minimum required setbacks for any lot shall be as follows:
 - 1. Front setback: fifteen (15) feet, with the following exceptions:
 - a. Where the lot has a slope of fifteen percent (15%) or greater, the minimum front setback may be reduced to ten (10) feet.
 - b. Where fifty percent (50%) or more of the lots of record in a block have been improved with single-family dwellings, the minimum front setback may be the average distance of the front outside wall of the single-family structures from the front lot line, if less than fifteen (15) feet. Notwithstanding the foregoing, the minimum front setback for

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garages or carports shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.

2. Side setback: five (5) feet, with the exception that a lot having a width of less than fifty (50) feet may have a side setback reduced to ten percent (10%) of the lot width, but in no event less than three (3) feet or the minimum setback required by the Uniform Building Code, whichever is greater. Notwithstanding the foregoing, the minimum side setback for garages or carports accessed from a street or alley along that side of the lot shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.

3. Rear setback: ten (10) feet.

E. Lot Coverage. The maximum coverage by all structures on any lot shall be forty percent (40%).

F. Floor Area Ratio. The maximum floor area ratio for all buildings on a lot shall be 0.72. Where the size of the lot is three thousand seven hundred (3,700) square feet or less, one covered parking space designed to accommodate a full-size automobile shall be excluded from the calculation of floor area ratio; provided, however, such exclusion shall not exceed a total area of two hundred (200) square feet.

G. Height of Structures.

1. Except as otherwise provided in subsection (G)(2) of this section, the maximum height of any structure shall be as follows:

a. Twenty-eight (28) feet, for lots having a slope of less than twenty percent (20%); or

b. Thirty (30) feet, for lots having a slope of twenty percent (20%) or more.

2. For a distance of fifteen (15) feet from the front lot line, the height of any structure shall not exceed twenty (20) feet as measured from finish grade; provided, however, garages may be constructed to a height of fifteen (15) feet above the elevation of the center of the adjacent street when permitted by Section 17.32.070 of this title and so long as the total height of the garage and any permitted living area underneath does not exceed thirty (30) feet from finish grade.

H. Articulation Requirements. Unless exempted, outside walls that are greater in size than twenty (20) feet in width and twenty (20) feet in height shall have a cumulative area of articulation as follows:

1. Front outside wall: Thirty percent (30%) articulation.

2. Side outside walls:

a. Interior side outside wall: No articulation requirement.

b. Exterior side outside wall: Where the structure is located on a lot having an average width of forty (40) feet or greater, the articulation requirement for the exterior side outside wall shall be twenty percent (20%). No articulation shall be required for the exterior side outside wall of structures located on lots having an average width of less than forty (40) feet.

3. Rear outside wall: Thirty percent (30%) articulation.

4. Exemptions: Single story two (2) car garages and accessory structures not exceeding a floor area of one hundred twenty (120) square feet shall be exempted from all articulation requirements.

I. Landscaping Requirements.

1. Front Setback. A minimum of fifteen percent (15%) of the front setback area shall be landscaped where the lot has a front lot line of thirty (30) feet or greater.

2. Downslope Lots. The rear of any newly constructed main structure on a downslope lot shall be screened with trees and shrubs in accordance with a landscape plan approved by the planning director.

3. New and replacement, irrigated landscapes of one thousand (1,000) square feet, or more, shall be subject to the water conservation in landscaping ordinance. Refer to Chapter 15.70.

J. Nonconforming Residential Structures and Uses. Nonconforming residential structures and nonconforming residential uses, as defined in Section 17.02.560, may be repaired, restored, reconstructed, enlarged or expanded in accordance with the provisions of Chapters 17.38 and 17.34 of this title.

K. Recycling Area Requirements. For new subdivisions containing an area where solid waste is collected and loaded in a location which serves five or more living units, adequate, accessible and convenient areas for depositing, collecting and loading recyclable materials in receptacles shall be provided to serve the needs of the living units which utilize the area. This requirement shall also apply to all institutional buildings and City facilities (including buildings, structures, and outdoor recreation areas owned by the City) where solid waste is collected and loaded. The area shall be located and fully enclosed so as to adequately protect neighboring uses from adverse impacts such as noise, odor, vectors, wind-blown litter or glare. The area shall be designed to prevent storm water run-on to the area and runoff from the area, and roofs shall be designed to drain away from neighboring properties. A sign clearly identifying all recycling and solid waste collection and loading areas and the materials accepted therein shall be posted adjacent to all points of direct access to the area.

SECTION 2: Section 17.08.040 in Chapter 17.08 of the Municipal Code is amended to read as follows:

17.08.040 – Development Regulations. The following development regulations shall apply to any lot in the R-2 district:

A. Lot Area.

1. The minimum area of any lot shall be five thousand (5,000) square feet, except as otherwise provided in Section 17.08.040(B).

2. A single-family dwelling may be constructed on a lot of record with an area of less than five thousand (5,000) square feet, subject to the provisions of this chapter and the limitations set forth in Section 17.32.100.

B. Density of Development. The minimum lot area for each dwelling unit on the site shall be two thousand five hundred (2,500) square feet; provided, however, a lot having an area of four thousand nine hundred fifty (4,950) square feet or greater shall be considered conforming for a development density of two (2) units.

Width	Depth
50 feet	100 feet

C. Lot Dimensions. The minimum dimensions of any lot shall be as follows:

D. Setbacks. The minimum required setbacks for any lot shall be as follows:

1. Front setback: fifteen (15) feet, with the following exceptions:

a. Where the lot has a slope of fifteen percent (15%) or greater, the minimum front setback may be reduced to ten (10) feet.

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b. Where fifty percent (50%) or more of the lots of record in a block have been improved with single-family dwellings, duplexes or multiple-family dwellings, or any combination thereof, the minimum front setback for single-family dwellings may be the average distance of the front outside wall of the residential structures from the front lot line, if less than fifteen (15) feet. Notwithstanding the foregoing, the minimum front setback for garages or carports shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.

2. Side setbacks: Side setbacks shall be five (5) feet, with the exception that a lot having a width of less than fifty (50) feet may have a side setback reduced to ten percent (10%) of the lot width, but in no event less than three (3) feet or the minimum setback required by the Uniform Building Code, whichever is greater. Notwithstanding the foregoing, the minimum side setback for garages or carports accessed from a street or alley along that side of the lot shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.

3. Rear setback: ten (10) feet.

E. Lot Coverage. The maximum coverage by all structures on any lot shall be fifty percent (50%).

F. Floor Area Ratio. The maximum floor area ratio for all buildings on a lot shall be 0.72, subject to the following exclusions:

1. In the case of single-family dwellings, where the size of the lot is three thousand seven hundred (3,700) square feet or less, one covered parking space designed to accommodate a full-size automobile shall be excluded from the calculation of floor area ratio; provided, however, such exclusion shall not exceed a total area of two hundred (200) square feet.

2. In the case of duplexes and multiple-family dwellings, the area of all covered parking spaces required to be provided for the site shall be excluded from the calculation of floor area ratio; provided, however, such exclusion shall not exceed a total area of four hundred (400) square feet per unit.

G. Height of Structures.

1. Except as otherwise provided in subsection (G)(2) of this section, the maximum height of any structure shall be as follows:

a. Twenty-eight (28) feet, for lots having a slope of less than twenty percent (20%); or

b. Thirty (30) feet, for lots having a slope of twenty percent (20%) or more.

2. For a distance of fifteen (15) feet from the front lot line, the height of any structure shall not exceed twenty (20) feet as measured from finish grade; provided, however, garages may be constructed to a height of fifteen (15) feet above the elevation of the center of the adjacent street when permitted by Section 17.32.070 of this title and so long as the total height of the garage and any permitted living area underneath does not exceed thirty (30) feet from finish grade.

H. Articulation Requirements. Unless exempted, outside walls that are greater in size than twenty (20) feet in width and twenty (20) feet in height shall have a cumulative area of articulation as follows:

1. Front outside wall: Thirty percent (30%) articulation.

2. Side outside walls:

a. Interior side outside wall: No articulation requirement.

b. Exterior side outside wall: Where the structure is located on a lot having an average width of forty (40) feet or greater, the articulation requirement for the exterior

side outside wall shall be twenty percent (20%). No articulation shall be required for the exterior side outside wall of structures located on lots having an average width of less than forty (40) feet.

3. Rear outside wall: Thirty percent (30%) articulation.

4. Exemptions: Single story two car garages and accessory structures not exceeding a floor area of one hundred twenty (120) square feet shall be exempted from all articulation requirements.

I. Landscaping Requirements.

1. Front Setback. A minimum of fifteen percent (15%) of the front setback area shall be landscaped where the lot has a front lot line of thirty (30) feet or greater.

2. Downslope Lots. The rear of any newly constructed main structure on a downslope lot shall be screened with trees and shrubs in accordance with a landscape plan approved by the planning director.

3. Sites with Three (3) or More Units. Not less than ten percent (10%) of the lot area shall be improved with landscaping where three (3) or more dwelling units are located on the same site.

4. New and replacement, irrigated landscapes of one thousand (1,000) square feet, or more, shall be subject to the water conservation in landscaping ordinance. Refer to Chapter 15.70.

J. Nonconforming Residential Structures and Uses. Nonconforming residential structures and nonconforming residential uses, as defined in Section 17.02.560, may be repaired, restored, reconstructed, enlarged or expanded in accordance with the provisions of Chapters 17.38 and 17.34 of this title.

K. Recycling Area Requirements:

1. Adequate, accessible and convenient areas for depositing, collecting and loading recyclable materials in receptacles shall be provided. The area shall be located and fully enclosed so as to adequately protect neighboring uses from adverse impacts such as noise, odor, vectors, wind-blown litter or glare. The area shall be designed to prevent storm water run-on to the area and runoff from the area, and roofs shall be designed to drain away from neighboring properties. A sign clearly identifying all recycling and solid waste collection and loading areas and the materials accepted therein shall be posted adjacent to all points of direct access to the area.

2. This requirement shall apply to all new residential buildings having five or more living units, institutional buildings and City facilities (including buildings, structures, and outdoor recreation areas owned by the City) where solid waste is collected and loaded. This requirement shall also apply to such existing developments for which building permit applications are submitted within a 12-month period collectively adding 30 percent or more to the existing floor area of the development project.

SECTION 3: Section 17.10.040 in Chapter 17.10 of the Municipal Code is amended to read as follows:

17.10.040 – Development Regulations. The following development regulations shall apply to any lot in the R-3 district:

A. Lot Area.

1. The minimum area of any lot shall be five thousand (5,000) square feet, except as otherwise provided in subsection B of this section.

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2. A single-family dwelling may be constructed on a lot of record with an area of less than five thousand (5,000) square feet, subject to the provisions of this chapter and the limitations set forth in Section 17.32.100.

B. Density of Development. The minimum lot area for each dwelling unit on the site shall be one thousand (1,500) square feet; provided, however, a lot having an area of four thousand nine hundred fifty (4,950) square feet or greater shall be considered conforming for a development density of three (3) units.

Width	Depth
50 feet	100 feet

C. Lot Dimensions. The minimum dimensions of any lot shall be as follows:

D. Setbacks. The minimum required setbacks for any lot shall be as follows:

1. Front setback: fifteen (15) feet, with the following exceptions:

a. Where the lot has a slope of fifteen percent (15%) or greater, the minimum front setback may be reduced to ten (10) feet.

b. Where fifty percent (50%) or more of the lots of record in a block have been improved with single-family dwellings, duplexes or multiple-family dwellings, or any combination thereof, the minimum front setback for single-family dwellings may be the average distance of the front outside wall of the residential structures from the front lot line, if less than fifteen (15) feet. Notwithstanding the foregoing, the minimum front setback for garages or carports shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.

2. Side setbacks: Side setbacks shall be five (5) feet, with the exception that a lot having a width of less than fifty (50) feet may have a side setback reduced to ten percent (10%) of the lot width, but in no event less than three (3) feet or the minimum setback required by the Uniform Building Code, whichever is greater. Notwithstanding the foregoing, the minimum side setback for garages or carports accessed from a street or alley along that side of the lot shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.

3. Rear setback: ten (10) feet.

E. Lot Coverage. The maximum coverage by all structures on any lot shall be sixty percent (60%).

F. Floor Area Ratio. The maximum floor area ratio for all buildings on a lot shall be 0.72, subject to the following exclusions:

1. In the case of single-family dwellings, where the size of the lot is three thousand seven hundred (3,700) square feet or less, one covered parking space designed to accommodate a full-size automobile shall be excluded from the calculation of floor area ratio; provided, however, such exclusion shall not exceed a total area of two hundred (200) square feet.

2. In the case of duplexes and multiple-family dwellings, the area of all covered parking spaces required to be provided for the site, shall be excluded from the calculation of floor area ratio; provided, however, such exclusion shall not exceed a total area of four hundred (400) square feet per unit.

G. Height of Structures.

1. Except as otherwise provided in subsection (G)(2) of this section, the maximum height of any structure shall be as follows:

a. Twenty-eight (28) feet, for lots having a slope of less than twenty percent (20%); or
b. Thirty (30) feet, for lots having a slope of twenty percent (20%) or more.

2. For a distance of fifteen (15) feet from the front lot line, the height of any structure shall not exceed twenty (20) feet as measured from finish grade; provided, however, garages may be constructed to a height of fifteen (15) feet above the elevation of the center of the adjacent street when permitted by Section 17.32.070 of this title and so long as the total height of the garage and any permitted living area underneath does not exceed thirty (30) feet from finish grade.

H. Articulation Requirements. Unless exempted, outside walls that are greater in size than twenty (20) feet in width and twenty (20) feet in height shall have a cumulative area of articulation as follows:

1. Front outside wall: Thirty percent (30%) articulation.
2. Side outside walls:
 - a. Interior side outside wall: No articulation requirement.
 - b. Exterior side outside wall: Where the structure is located on a lot having an average width of forty (40) feet or greater, the articulation requirement for the exterior side outside wall shall be twenty percent (20%). No articulation shall be required for the exterior side outside wall of structures located on lots having an average width of less than forty (40) feet.
3. Rear outside wall: Thirty percent (30%) articulation.
4. Exemptions: Single story two (2) car garages and accessory structures not exceeding a floor area of one hundred twenty (120) square feet shall be exempted from all articulation requirements.

I. Landscaping Requirements.

1. Front Setback. A minimum of fifteen percent (15%) of the front setback area shall be landscaped where the lot has a front lot line of thirty (30) feet or greater.
2. Downslope Lots. The rear of any newly constructed main structure on a downslope lot shall be screened with trees and shrubs in accordance with a landscape plan approved by the planning director.
3. Sites with Three (3) or More Units. Not less than ten percent (10%) of the lot area shall be improved with landscaping where three (3) or more dwelling units are located on the same site.
4. New and replacement, irrigated landscapes of one thousand (1,000) square feet, or more, shall be subject to the water conservation in landscaping ordinance. Refer to Chapter 15.70.

J. Nonconforming Residential Structures and Uses. Nonconforming residential structures and nonconforming residential uses, as defined in Section 17.02.560, may be repaired, restored, reconstructed, enlarged or expanded in accordance with the provisions of Chapters 17.38 and 17.34 of this title.

K. Recycling Area Requirements:

1. Adequate, accessible and convenient areas for depositing, collecting and loading recyclable materials in receptacles shall be provided. The area shall be located and fully enclosed so as to adequately protect neighboring uses from adverse impacts such as noise, odor, vectors, wind-blown litter or glare. The area shall be designed to prevent storm water run-on to the area and runoff from the area, and roofs shall be designed to drain away from neighboring properties. A sign clearly identifying all recycling and solid waste collection and loading areas

and the materials accepted therein shall be posted adjacent to all points of direct access to the area.

2. This requirement shall apply to all new residential buildings having five or more living units, institutional buildings and City facilities (including buildings, structures, and outdoor recreation areas owned by the City) where solid waste is collected and loaded. This requirement shall also apply to such existing developments for which building permit applications are submitted within a 12-month period collectively adding 30 percent or more to the existing floor area of the development project.

SECTION 4: Section 17.12.040 in Chapter 17.12 of the Municipal Code is amended to read as follows:

17.12.040 – Development Regulations. The following development regulations shall apply to any lot in the R-BA District:

A. Lot Area.

1. The minimum area of any lot shall be twenty thousand (20,000) square feet, except as otherwise provided in Section 17.12.050, Density transfer, and Section 17.12.055, Clustered development, of this Chapter.

2. A single-family dwelling may be constructed on a lot of record with an area of less than twenty thousand (20,000) square feet, subject to the provisions of this Chapter and the limitations set forth in Section 17.32.100.

B. Density of Development. Not more than one dwelling unit shall be located on each lot in the R-BA District, except for a secondary dwelling unit authorized by a permit granted pursuant to Chapter 17.43 of this Title.

C. Lot Dimensions.

1. In addition to the minimum lot area standard per Section 17.12.040.A, the

Width	Depth
110 feet	140 feet

minimum dimensions of any lot shall be as follows:

2. Exceptions may be approved as part of the use permit required for density transfer in Section 17.12.050 or clustered development in Section 17.12.055 of this Chapter.

D. Setbacks. The minimum required setbacks for any lot shall be as follows:

1. Front setback: Ten (10) feet.

2. Side setback: Ten percent (10%) of the lot width, but in no event more than fifteen (15) feet or less than five (5) feet. Notwithstanding the foregoing, the minimum side setback for garages or carports accessed from a street along that side of the lot shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.

3. Rear setback: ten (10) feet

E. Lot Coverage. The maximum coverage by all structures on any lot shall be twenty five percent (25%).

F. Floor Area Ratio. The maximum floor area ratio of all buildings on a lot shall be 0.72; provided, however, that in no event shall the floor area of all buildings on a lot exceed five thousand five hundred (5,500) square feet.

G. Height of Structures.

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1. Except as otherwise provided in subsection (G)(2) of this section, the maximum height of any structure shall be thirty-five (35) feet.

2. For a distance of twenty (20) feet from the front lot line, the height of any structure shall not exceed twenty (20) feet as measured from finish grade; provided, however,

a. residential structures on sites sloping down from the adjacent street may be constructed to a height of twenty (20) feet above the elevation of the center of the street, so long as the height does not exceed thirty-five (35) feet from finish grade; and

b. garages may be constructed to a height of fifteen (15) feet above the elevation of the center of the adjacent street when permitted by Section 17.32.070 of this Title and so long as the total height of the garage and any permitted living area underneath does not exceed thirty-five (35) feet from finish grade.

H. Wildland Interface. The development shall incorporate such measures as the Fire Chief may deem necessary to protect against the spread of fire between the site and the adjacent wildland.

I. HCP Compliance. All development within the R-BA District shall comply with the requirements of the San Bruno Mountain Area Habitat Conservation Plan (HCP), including site activity review, environmental assessments, and operating programs for planned management units, consistent with the objectives and obligations set forth in the HCP.

J. Articulation Requirements. Unless exempted, outside walls that are greater in size than twenty (20) feet in width and twenty (20) feet in height shall have a cumulative area of articulation as follows:

1. Front outside wall: Thirty percent (30%) articulation.

2. Side outside walls:

a. Interior side outside wall: No articulation requirement.

b. Exterior side outside wall: Where the structure is located on a lot having an average width of forty (40) feet or greater, the articulation requirement for the exterior side outside wall shall be twenty percent (20%). No articulation shall be required for the exterior side outside wall of structures located on lots having an average width of less than forty (40) feet

3. Rear outside wall: Thirty percent (30%) articulation.

4. Exemptions: Single story two car garages and accessory structures not exceeding a floor area of one hundred twenty (120) square feet shall be exempted from all articulation requirements.

K. Landscaping Requirements.

1. Landscape Plan. All development proposals shall include a landscape plan to be approved by the Planning Director in consultation with the HCP Plan Operator. The plan shall show all proposed landscaping and the location of all protected trees and rare plants. The landscape plan shall be consistent with all of the following objectives:

a. Preservation of protected trees and rare plants to the greatest extent possible;

b. Use of plants that are compatible with the natural flora and fauna, and are not invasive to the HCP area;

c. Use of water conserving plants;

d. Use of plants that will effectively screen structures and blend with the natural landscape; and

e. Use of landscaping that is fire resistant.

2. Irrigated Landscapes. New and replacement, irrigated landscapes of 1,000 square feet, or more, shall be subject to the Water Conservation in Landscaping Ordinance. Refer to Chapter 15.70.

G.2.16

L. Ridgeline. Development on any site through which a ridgeline runs as identified in Figure 17.02.695, Ridgelines, shall be subject to design permit approval.

1. In addition to the required contents of application for design permit set forth in Section 17.42.020.A, story poles certified by a licensed architect, surveyor, civil engineer or contractor to represent the height of the proposed building shall be erected at the locations of its outer corners and roof peaks according to a plan pre-approved by the Community Development Director. The upper one foot length of each pole shall be painted OSHA yellow so as to be clearly visible from a distance.

2. In addition to the findings required for issuance of design permits set forth in Section 17.42.040, the Planning Commission shall find that the building's placement, height, bulk and landscaping will preserve those public views of the San Bruno Mountain State and County Park as seen from the Community Park and from the Bay Trail along the Brisbane Lagoon and Sierra Point shorelines that are found to be of community-wide value. Methods to accomplish this may include varying the building's roofline to reflect the ridgeline's topography, orienting the building to minimize the impact of its profile upon public views, locating the building on the lower elevations of the site, and reducing the building's height below the maximum permitted in the district.

3. An existing structure may be repaired or replaced in accordance with Section 17.38.090 without design permit approval, but any alteration or expansion which raises any portion of the roofline or increases the building's lot coverage shall be subject to design permit approval under this section.

M. Canyon Watercourses and Wetlands. Development of the site, including any temporary disturbance, shall be set back thirty (30) feet in each direction from the center line of any watercourse, and twenty (20) feet from the boundary of any wetlands. The specific location of watercourse center lines and wetland boundaries shall be determined by qualified personnel under the City's direction.

N. Trails. The development shall incorporate public access trails to the extent feasible given the environmental sensitivities of the site.

O. Nonconforming Residential Structures and Uses. Nonconforming residential structures and nonconforming residential uses, as defined in Section 17.02.560, may be repaired, restored, reconstructed, enlarged or expanded in accordance with the provisions of Section 17.12.040.L.3 and Chapters 17.38 and 17.34 of this Title.

P. Recycling Area Requirements. For new subdivisions containing an area where solid waste is collected and loaded in a location which serves five or more living units, adequate, accessible and convenient areas for depositing, collecting and loading recyclable materials in receptacles shall be provided to serve the needs of the living units which utilize the area. This requirement shall also apply to all institutional buildings and City facilities (including buildings, structures, and outdoor recreation areas owned by the City) where solid waste is collected and loaded. The area shall be located and fully enclosed so as to adequately protect neighboring uses from adverse impacts such as noise, odor, vectors, wind-blown litter or glare. The area shall be designed to prevent storm water run-on to the area and runoff from the area, and roofs shall be designed to drain away from neighboring properties. A sign clearly identifying all recycling and solid waste collection and loading areas and the materials accepted therein shall be posted adjacent to all points of direct access to the area.

SECTION 5: Section 17.32.070 in Chapter 17.32 of the Municipal Code is amended to read as follows:

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17.32.070 – Exceptions—Setback requirements.

A. Notwithstanding any other provision of this title, certain structures or portions thereof may extend into a front, rear or side setback area to the extent permitted by the following chart:

1. Projections from a Building.

a. Overhanging Architectural Features (Such as Eaves, Cornices Canopies, Rain Gutters and Downspouts).

Front setback area:	May extend three (3) feet from the building into the front setback area, but no closer than five (5) feet from the front lot line.
Rear setback area:	May extend three (3) feet from the building into the rear setback area, but no closer than seven (7) feet from the rear lot line.
Side setback area:	May extend three (3) feet from the building into the side setback area, but no closer than two and one-half (2½) feet from the side lot line. Rain gutters and downspouts may extend no closer than two (2) feet from the side lot line. In the R-1 district, a noncombustible awning over the main entrance to a residence located at the side of the structure may extend four (4) feet from the building into any portion of the side setback area, but shall not extend over or drain onto the abutting property.

b. Cantilevered Windows No Greater Than Ten (10) Feet in Length that Do Not Include Any Floor Area (Such as Bay, Box, Bow, and Greenhouse Windows).

Front setback area:	May extend three (3) feet from the building into the front setback area, but no closer than five (5) feet from the front lot line.
Rear setback area:	May extend three (3) feet from the building into the rear setback area, but no closer than seven (7) feet from the rear lot line.
Side setback area:	May extend two (2) feet into the side setback area, but no closer than three (3) feet from the side lot line.

c. Supported Decks, Cantilevered Decks and Balconies.

Front setback area:	May extend five (5) feet from the building into the front setback area, but no closer than five (5) feet from the front lot line. Decks may be located atop a garage or carport approved under Section 17.32.070(A)(3)(a) and may extend to the front of the garage, but the railings of such deck may not exceed fifteen (15) feet in height above the elevation of the center of the adjacent street or four (4) feet from the surface of the deck, whichever is less, while at the same time maintaining the minimum railing height required by the building code.
Rear setback area:	May extend five (5) feet from the building into the rear setback area, but no closer than five (5) feet from the rear lot line. This exception shall not apply to the NCRO district.
Side setback area:	No exception permitted.

Modifications. The planning commission may approve a modification to the foregoing exceptions if there are not more than two (2) units on the site and the planning commission is able to make all of the following findings:

- i. The modification is necessary in order to gain access to the property or to the dwelling unit on the property.
- ii. The modification is necessary because of unusual or special circumstances relating to the configuration of the property.
- iii. The visual impacts of the modification have been minimized.

d. Deck Railings within Setback Areas.

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Front setback area:	May not be higher than four (4) feet from the surface of the deck.
Rear setback area:	May not be higher than four (4) feet from the surface of the deck.
Side setback area:	No exception permitted.

e. Stairs, Ramps and Landings (That Are Open and Uncovered and Serve Buildings with No More Than Two Units).

Front setback area:	No more than one set of stairs per dwelling unit may extend from the building into the front setback area. Each set of stairs must lead to the front entrance of the unit. The height of the stairway within the front setback area shall not exceed twenty (20) feet. Stairs on grade, sidewalks, and other flatwork constructed of noncombustible materials may be located anywhere within the front setback area.
Rear setback area:	No more than one set of stairs per dwelling unit may extend from the building into the rear setback area, but no closer than five (5) feet from the rear lot line. Stairs on grade, sidewalks, and other flatwork constructed of noncombustible materials may be located anywhere within the rear setback area.
Side setback area:	No more than one set of stairs per dwelling unit may extend from the building into the side setback area, but no closer than three (3) feet from the side lot line. Stairs on grade, sidewalks, and other flatwork constructed of noncombustible materials may be located anywhere within the side setback area.

Modifications. The planning commission may approve a modification to the foregoing exceptions for stairs, ramps and landings if there are not more than two units on the site and the planning commission is able to make all of the following findings:

- i. The modification is necessary in order to gain access to the property or to the dwelling unit on the property.
- ii. The modification is necessary because of unusual or special circumstances relating to the configuration of the property.
- iii. The visual impacts of the modification have been minimized.

The planning commission may also approve a modification to the foregoing exceptions as part of a design permit being granted for three (3) or more units on the site, if the commission is able to make all of the findings listed above.

f. Accessibility Improvements (Such as Ramps, Elevators, and Lifts).

All Setback Areas. Accessibility improvements, such as ramps, elevators and lifts, may be allowed within any front, rear or side area setback upon the granting of an accessibility improvement permit by the zoning administrator, following the conduct of a hearing with ten (10) days notice thereof being given to the owners of all adjacent properties. The zoning administrator may issue the accessibility improvement permit if he or she finds and determines that:

- i. The exception is necessary to meet special needs for accessibility of a person having a physical handicap which impairs his or her ability to access the property and cannot be addressed through the standard exceptions to the setback area requirements under this Section 17.32.070.
- ii. Visual impacts of the accessibility improvements located within a setback area have been minimized.
- iii. The accessibility improvements will not create any significant adverse impacts upon adjacent properties in terms of loss of privacy, noise or glare.
- iv. The accessibility improvements will be constructed in a sound and workmanlike manner, in compliance with all applicable provisions of the building and fire codes.

2. Small Free-Standing Structures.

a. Small Accessory Buildings and Roofed Structures (Such as Gazebos, Greenhouses, Garden and Utility Sheds).

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Front setback area:	No exception permitted.
Rear setback area:	May be placed at any location within the rear setback area which is not less than five (5) feet from the rear lot line or three (3) feet from the interior side lot line, provided the building or structure, or portion thereof, within the rear setback area does not exceed eight (8) feet in height and does not have a floor area in excess of one hundred twenty (120) square feet.
Side setback area:	May be placed at any location within the interior side setback area which is not less than three (3) feet from the interior side lot line, provided the building or structure, or portion thereof, within the interior side setback area does not exceed eight (8) feet in height and does not have a floor area in excess of one hundred twenty (120) square feet. No exception is permitted for an exterior side setback area.

Modifications. The zoning administrator may approve a modification to the foregoing exceptions for small accessory buildings and roofed structures, following the conduct of a hearing with ten (10) days notice thereof being given to the owners of all adjacent properties, if the zoning administrator is able to make all of the following findings:

- i. The modification will not result in overbuilding the site or result in the removal of significant greenscape.
- ii. The modification will not create any significant adverse impacts upon adjacent properties in terms of loss of privacy, noise, or glare.
- iii. The accessory structure is designed to be compatible with the primary dwelling(s) on the site.

A building permit shall be required to construct or install any accessory structure for which a modification has been granted under this subsection.

- b. Unroofed and Openwork Roofed Garden Structures (Such as Arbors, Porticos, Trellises and Lath Houses).

Front setback area:	May not exceed eight (8) feet in height or cover more than fifteen percent (15%) of the front setback area.
Rear setback area:	May be placed at any location within the rear setback area which is not less than five (5) feet from the rear lot line, provided the structure, or portion thereof, within the rear setback area does not exceed eight (8) feet in height and does not cover more than fifteen percent (15%) of the rear setback area.
Side setback area:	May be placed at any location within the side setback area which is not less than three (3) feet from the side lot line, provided the structure, or portion thereof, within the side setback area does not exceed eight (8) feet in height and does not cover more than fifteen percent (15%) of the side setback area.

Modifications. The zoning administrator may approve a modification to the foregoing exceptions for unroofed and openwork roofed garden structures, following the conduct of a hearing with ten (10) days notice thereof being given to the owners of all adjacent properties, if the zoning administrator is able to make all of the following findings:

- i. The modification will not result in overbuilding the site or result in the removal of significant greenscape.
- ii. The modification will not create any significant adverse impacts upon adjacent properties in terms of loss of privacy, noise, or glare.
- iii. The accessory structure is designed to be compatible with the primary dwelling(s) on the site.

3. Miscellaneous Improvements.

- a. Garages and Carports and Parking Decks on Slopes of Fifteen Percent (15%) or Greater.

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Front setback area:	Garages, carports and parking decks not more than fifteen (15) feet in height above the elevation of the center of the adjacent street in the R-1, R-2 and R-3 Districts may be placed at any location within the front setback area provided: (i) there is no encroachment into any side setback area, and (ii) the garage is approved by the city engineer, based upon a finding that no traffic or safety hazard will be created.
Rear setback area:	On through lots, garages, carports and parking decks not more than fifteen (15) feet in height above the elevation of the center of the adjacent street may be placed at any location within the rear setback area provided: (i) there is no encroachment into any side setback area, and (ii) the garage is approved by the city engineer, based upon a finding that no traffic or safety hazard will be created.
Side setback area:	No exception permitted.

b. Decorative Artwork, Ponds, Fountains and Similar Water Features, Not More Than Six (6) Feet in Height.

Front setback area:	May be placed at any location within the front setback area.
Rear setback area:	May be placed at any location within the rear setback area.
Side setback area:	No exception permitted.

B. The exceptions set forth in subsection 17.32.070(A) of this section shall not be construed to include chimney boxes, swimming pools and spas, exposed plumbing, or mechanical equipment such as heating and air conditioning units or pool pumps, and no exceptions to the setback requirements shall be permitted for any of these structures.

C. Any structure, architectural feature, wall, or other improvement lawfully constructed within a setback area and constituting a nonconforming structure as defined in Section 17.02.560, may be allowed to continue in accordance with the provisions of Chapter 17.38 of this title.

SECTION 6: Chapter 17.34 of the Municipal Code is amended in its entirety to read as follows:

**Chapter 17.34
OFF-STREET PARKING**

Sections:

- 17.34.010 Purposes of Chapter.
- 17.34.020 Minimum requirements.
- 17.34.030 Use restrictions.
- 17.34.040 Design standards.
- 17.34.050 Exemptions, exceptions and modifications.

17.34.010 Purposes of Chapter.

In addition to the objectives set forth in Section 17.01.030, the off-street parking requirements are included in the Zoning Ordinance to achieve the following purposes:

A. To provide for adequate off-street parking facilities by establishing clear relationships between building size and the off-street parking required, so as to minimize the parking impacts of development upon surrounding properties.

B. To encourage housing designed for residents with special needs, including persons with disabilities.

C. To facilitate the maintenance and improvement of the existing building stock.

D. To provide for parking lot landscaping and permeable paving alternatives to reduce air and stormwater pollution.

E. To minimize dependence on automobile travel by encouraging transportation alternatives in project design where appropriate.

F. To implement and promote the goals and policies of the General Plan so as to guide and manage development in the city in accordance with such plan.

17.34.020 Minimum requirements.

A. The following minimum off-street parking requirements shall apply to all buildings erected, new uses commenced, and to the area of extended uses commenced after the effective date of this Chapter. For any use not specifically mentioned in this Chapter, the planning commission shall determine the amount of parking required. All required off-street parking facilities shall be on-site unless specified differently in this Chapter or as permitted under Title 12 of this Code. Required off-street parking facilities need not be provided as covered parking unless specified differently in this chapter:

<u>Uses:</u>	<u>Parking Requirements:</u>
<p>Single-family dwellings; group care homes</p> <p> Studio or 1-bedroom</p> <p> 2-bedrooms</p> <p> 3-bedrooms</p> <p> 4-bedrooms</p> <p> 5-bedrooms or larger</p>	<p>2 spaces (1 covered), except only 1 (uncovered) space if not more than 900 sq. ft. in floor area.</p> <p>3 spaces (2 covered), plus 1 space if over 2,700 sq. ft. in floor area.</p> <p>4 spaces (2 covered), plus 1 space if over 3,600 sq. ft. in floor area.</p> <p>5 spaces (2 covered), plus 1 space if over 4,500 sq. ft. in floor area.</p> <p>6 spaces (2 covered).</p> <p>See Section 17.34.020.B.1 regarding garage and carport exclusions from the floor area calculation.</p> <p>Additional guest parking spaces shall be provided for all residential subdivisions of 5 (five) or more single-family residences, at the rate of 1 parking space for every 5 (five) units, with no parking spaces required for any fractional remainders. Any accessible parking spaces required per Section 17.34.040.D shall count as guest parking spaces.</p>
<p>Secondary dwelling units</p>	<p>1 (uncovered) space, plus 1 (uncovered) space if over 900 sq. ft. in floor area and/or if more than 1 bedroom.</p>

	See Section 17.34.020.B.1 regarding garage and carport exclusions from the floor area calculation.
Duplex or multiple family dwelling units; Mobilehome park units	
Studios	1 (uncovered) space per unit.
1-bedroom units	1 ½ spaces (1 covered) per unit; only 1 (covered) space required for units not over 900 sq. ft. in floor area.
2-bedroom units	1 ½ spaces (1 covered) per unit.
3-bedroom units or larger	2 spaces (1 covered) per unit, plus 1 (uncovered) space for units over 2,700 sq. ft.
	See Section 17.34.020.B.1 regarding garage and carport exclusions from the floor area calculation. Additional guest parking spaces shall be provided for all developments of 5 (five) or more units at the rate of 1 parking space for every 5 (five) units, with no parking spaces required for any fractional remainders. The accessible parking spaces required per Section 17.34.040.D shall count as guest parking spaces.
Emergency shelters	0.35 space per bed plus 1 space per staff member on the largest shift.
Hotels, motels	1 space per unit, plus applicable requirements for restaurants, bars and meeting halls.
Cultural facilities, meeting halls and places of worship	1 space for each 50 square feet of assembly area or 1 space for each 4 fixed seats, whichever is greater, plus 1 space for each 300 square feet of the remaining floor area of the building (meeting rooms not exceeding 750 square feet and ancillary to an office use shall be included with the floor area of the office in calculating the parking requirement for the office use).
Commercial recreation	3 spaces per ball court; 2.5 spaces per batting cage; 4 spaces per lane for bowling alleys; 2 spaces per tee for golf courses; 20 spaces per playing field;

	<p>2 spaces per shooting range; 2 spaces per horse stall for stables; 1 space per 100 square feet of water area for swimming pools.</p> <p>For commercial recreation uses that do not fall within the above categories, 1 parking space shall be required for every 4 fixed seats for spectators, 1 parking space per each 200 square feet of floor area used for indoor commercial recreation, and 1 parking space per each 1,000 square feet of site area used for outdoor commercial recreation.</p>
Marinas	1 space per 0.75 berths.
Schools - public private or commercial	1 space for each classroom and office.
Hospitals	1 space per bed plus 1 space for each 2 employees on the largest shift.
Financial services	1 space for each 200 square feet of gross floor area.
Administrative office	1 space for each 300 square feet of gross floor area.
Professional office	1 space for each 250 square feet of gross floor area.
Retail stores, restaurants, bars, offices	1 space for each 300 square feet of gross floor area.
Service stations	2 spaces for each working bay plus 1 space for each employee on the largest shift.
Warehousing, light fabrication, food production, media studios, printing	1 space for each 1,000 square feet of gross floor area.
Convalescent hospitals, sanitariums, rest homes	1 space for each 7 beds plus 1 space for each 2 employees on the largest shift.

B. The minimum off-street parking requirements shall be calculated according to the following:

1. All references to square feet shall be in regards to floor area as defined in Chapter 17.02. The floor area of garages and carports shall not be included in measuring floor area to calculate the parking requirements, except for any floor area exceeding 400 square feet within a garage or carport exclusively for the use of a single residential unit.

2. When more than one use subject to the parking requirements occupies a site, the requirements for each use shall be calculated separately. The floor area occupied by accessory uses, such as hallways, bathrooms, breakrooms, utility rooms and storage closets, shall be included in the calculation of the parking requirements for the associated primary use.

3. No parking shall be required for accessory structures 200 square feet or less in floor area.

4. When application of the parking requirements results in a fractional number, all fractions shall be rounded up from 0.5 to the next whole number, except when

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specified otherwise. No parking shall be required for uses for which the requirement is less than 0.5 space.

17.34.030 Use restrictions.

A. Required parking spaces, whether in a garage, carport or open area, shall not be used or converted for any other use that would impair their basic use as storage for motor vehicles.

B. All off-street parking spaces, whether in a garage, carport or open area, shall be so located as to be accessible to the use which they are intended to serve and to be usable for the parking of motor vehicles.

C. The required parking for each unit of a residential use shall be independently accessible from that required for any other unit. The property owner shall assign each unit the exclusive use of at least one standard-size parking space, which shall be a covered parking space, if such is required for the unit. If tandem parking is provided, the two spaces in tandem shall be assigned together.

D. Guest parking spaces shall be posted by the property owner as available for 72-hour maximum use by the guests only of all residential units for which they are required.

17.34.040 Design standards.

A. Tables. Off-street parking facilities shall comply with the design standards as set forth in Table 1, applicable to standard-size vehicles, and Table 2, applicable to compact vehicles, which appear immediately following this section. Variations to these tables may be approved by the city engineer, consistent with professionally accepted standards, where no more than two forward turning movements would be necessary to enter or exit any parking space.

B. Surfacing and striping.

1. Any off-street parking area shall be surfaced with a minimum of five (5) inches of imported base material and a double application of asphalt and gravel to the city engineer's approval, so as to provide a durable and dustless surface and shall be so graded and drained as to dispose of all surface water accumulated within the area and shall be so arranged and marked as to provide for safe loading and unloading and parking of vehicles.

2. Parking spaces shall be striped in compliance with the design standards in this chapter, except that parking spaces for residential uses of no more than 2 units need not be striped. Plans for striping or restriping of required parking spaces shall be submitted for approval by the Community Development Department in compliance with these standards prior to any work done.

3. Permeable paving alternatives for parking spaces and low-traffic driveways may be approved by the City Engineer to reduce the discharge of pollutants into storm sewers, in which case the means of delineating the parking spaces shall be subject to the approval of the Community Development Department.

C. Compact cars. Up to fifty percent (50%) of the required parking spaces may be compact. For sites with two or more residential dwelling units, at least one standard-size parking space shall be provided for each unit. Compact parking spaces shall be labeled as such on the pavement, except for residential uses of not more than 2 units.

D. Handicapped parking. Parking designated as accessible by persons with disabilities shall be provided as required by State law.

E. Parallel parking. Parallel parking spaces shall be subject to the following standards: Spaces that are accessible from at least one end shall be eight (8) feet wide by twenty (20) feet long. Spaces located between other spaces or any obstruction shall be eight (8) feet

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wide by twenty-four (24) feet long. An additional one (1) foot width shall be provided where the parking space would be located next to any obstruction more than six (6) inches tall.

F. Tandem parking. Tandem parking where no more than one parking space need be vacant to access another parking space shall be recognized as meeting the parking requirements for residential uses, as long as the parking spaces for each unit are accessible independently from those for any other unit.

G. Garage design.

1. Garages constructed after __ [the date this section takes effect], excluding those rebuilt subject to Section 17.38.080 or 17.38.090, shall comply with the following:

<u>Garage Type</u>	<u>Minimum Width</u>	<u>Minimum Depth</u>
Single-car garage	10 ft.	20 ft.
Two-car garage		
On lots < 27 ft. wide	18 ft.	20 ft.
All other sites	20 ft.	20 ft.
2-in-tandem garage	10 ft.	40 ft.

No washing machines, driers, water heaters, work benches, support posts and similar obstructions shall be located within the area of minimum width by minimum depth.

2. For garages constructed after __ [the date this section takes effect], excluding those rebuilt subject to Section 17.38.080 or 17.38.090, garage doors shall be of a roll-up sectional design and shall be equipped with automatic garage door openers.

3. Garages existing as of __ [the date this section takes effect], constructed in compliance with applicable standards then in effect, shall be considered conforming until such time as they are substantially modified or replaced, except that Section 17.38.090 shall apply in the event that they are damaged or destroyed by fire, flood, wind, earthquake, or other calamity.

H. Driveway grades. Driveway grades shall not exceed twenty percent (20%) unless approved by the city engineer. The grade of driveways required as fire apparatus access roads shall be as approved by the fire chief.

I. On-site turnaround. 1. Off-street parking facilities shall be designed to provide on-site turnaround capability, with the following exceptions:

a. The parking spaces for a single-family residence, secondary dwelling unit or duplex may be designed to back into a non-arterial street.

b. The parking spaces for a complex of three or more units may be designed to back into a local street that is not an arterial or a collector.

2. On-site turnaround capability shall be designed so as not to conflict with required parking spaces, including any recognized tandem spaces.

J. Parking lot landscaping. 1. For any open parking area containing ten (10) or more parking spaces subject to design permit approval, landscape plans shall be submitted to provide trees, shrubs and ground cover, as appropriate. The landscape plans shall provide at least one tree for every ten (10) parking spaces, which may be planted in diamond-shaped tree-wells or parkway strips, located so as to break up expanses of paved area.

2. The landscape plans shall use water conserving plants, plants that are not invasive, and plants and other landscape features that are appropriate to the context. New and replacement irrigated landscapes of one thousand (1,000) square feet or more shall be subject to the water conservation requirements in Chapter 15.70.

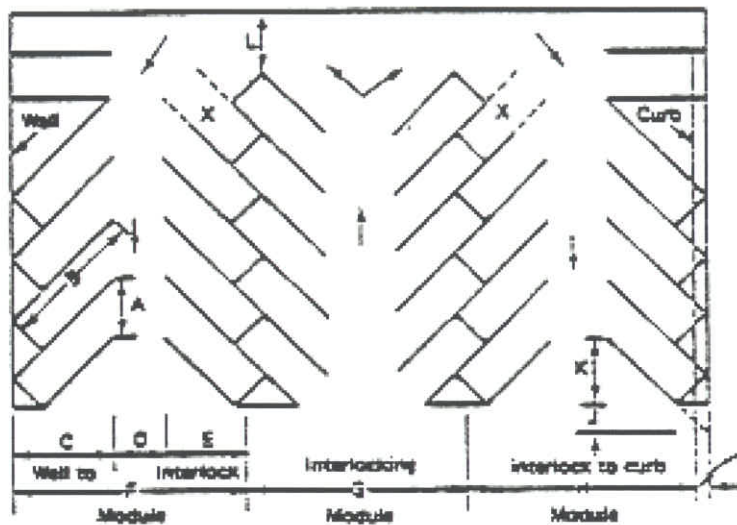
3. The landscape plans shall comply with the requirements of the federal Clean Water Act and acts amendatory thereof or supplementary thereto, applicable implementing

regulations, and NPDES Permit No. CAS612008 and any amendment, revision or reissuance thereof.

K Bumper overhangs. Off-street parking facilities may be designed to accommodate bumper overhangs of not more than two and one-half (2 ½) feet length for standard size parking spaces and two (2) feet for compact parking spaces. Bumper overhangs shall not block any required pedestrian accessway. Wheelstops, curbs and landscaping within the area of any bumper overhang shall not exceed five (5) inches in height above the pavement.

Table 1

Design Requirements for Standard Sized Vehicles



X = Stall not accessible in certain layouts

Parking layout dimensions (in ft) for 9-ft stalls at various angles

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Table 1.
Design Requirements for Standard-Size Vehicles

Dimension	On Diagram	Parking Angle			
		45°	60°	75°	90°
Stall width, parallel to aisle	A	12.7 ft.	10.4 ft.	9.3 ft.	9.0 ft.
Stall length of line	B	25.0 ft.	22.0 ft.	20.0 ft.	18 ft.
Stall depth to wall	C	17.5 ft.	19.0 ft.	19.5 ft.	18
Aisle width between stall lines	D	12.0 ft.	16.0	23.0 ft.	26.0 ft.
Stall depth to interlock	E	15.3 ft.	17.5 ft.	18.8 ft.	18.5 ft.
Module, wall to interlock	F	44.8	52.5	61.3	63.0
Module, interlocking	G	42.6	51.0	61.0	63.0
Module, interlock to curb face	H	42.8	50.2	58.8	60.5
Bumper overhang (typical)	I	2.0	2.3	2.5	2.5
Offset	J	6.3	2.7	0.5	0.0
Setback	K	11.0	8.3	5.0	0.0
Cross aisle, one-way	L	14.0	14.0	14.0	14.0
Cross aisle, two-way	L	24.0	24.0	24.0	24.0

Table 2.
Design Requirements for Compact Vehicles

Parking Angle	Stall Width	Aisle Length Per Stall	Depth of Stalls at Right Angle to Aisle	Bumper Overhang	Aisle Width	Wall to Wall Module
45°	8.0 ft.	10.5 ft.	17.0 ft.	1.7 ft.	11.0 ft.	45.0 ft.
60°	8.0 ft.	8.7 ft.	16.7 ft.	1.8 ft.	14.0 ft.	49.4 ft.
75°	8.0 ft.	7.8 ft.	16.3 ft.	1.9 ft.	17.4 ft.	52.0 ft.
90°	8.0 ft.	7.5 ft.	16.0 ft.	2 ft.	20.0 ft.	52.0 ft.

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17.34.050 Exemptions, exceptions and modifications.

A. Dwelling units existing as of ___ [the date this section takes effect], constructed in compliance with applicable standards then in effect, shall be considered conforming in terms of the parking required by this chapter until such time as they are expanded or replaced, except that Section 17.38.090 shall apply in the event that they are damaged or destroyed by fire, flood, wind, earthquake, or other calamity.

B. An existing single-family dwelling or mobilehome which does not have off-street parking facilities that conform with the requirements of this chapter may be expanded by a cumulative total of not more than four hundred (400) square feet without the need to bring the parking facilities into conformance or to obtain a use permit under Section 17.34.050.I of this chapter, subject to the following restrictions and requirements:

1. The structure to be expanded shall constitute the principal structure and the only dwelling unit located on the site or mobilehome park space.

2. The square footage permitted by this section shall be reduced by the square footage of any prior expansion of the same structure that was made since January 1, 1986, regardless of whether an exception, use permit, variance, or other approval was granted for such prior expansion.

3. The square footage permitted by this section shall be reduced by the square footage of any prior permitted expansion of the same structure which resulted in the loss of required parking spaces, such as the conversion of a garage to living area.

4. The expansion shall not result in the loss of any existing off-street parking spaces, or the conversion of a covered parking space to an uncovered parking space, or otherwise increase the nonconformity of the existing off-street parking facilities.

5. The proposed development shall comply with the requirements of Section 17.01.060 of this title, unless: (a) the structure to be expanded is located upon a lot of record, and (b) a public street abutting such lot of record provides the principal means of access to that lot.

6. In determining the cumulative size of prior or proposed expansions of an existing single-family dwelling or mobilehome, the square footage of any newly created garage or carport shall not be counted as part of the four hundred (400) square foot limitation.

C. Storefront uses in the NCRO-2 District shall be exempt from the requirements of this Chapter.

D. For residential units designed and dedicated for use by persons with disabilities, subject to restrictions approved by the City and recorded with the County of San Mateo, the parking requirement shall be 1 assigned van-accessible parking space (either covered or uncovered at the discretion of the applicant) per dedicated unit. Such spaces shall be conveniently located along an accessible path of travel to the dedicated unit, but shall not count as or conflict with the parking required to be reserved for persons with disabilities per Title 24 (Section 17.34.040.D).

E. For a residential unit occupied by a person with a disability, the Zoning Administrator shall have authority to grant an Accessibility Improvement Permit authorizing a modification to any of the parking requirements prescribed by this Chapter, following the conduct of a hearing with 10 days notice thereof being given to the owners of all adjacent properties. The Zoning Administrator may issue the Accessibility Improvement Permit if he or she finds and determines that:

1. The modification is necessary to meet special needs for a person having a disability;

2. The modification will not create any significant adverse impacts upon adjacent properties;

3. Any construction resulting from the modification will be done in a sound and workmanlike manner, in compliance with all applicable provisions of the building and fire codes;

4. Strict enforcement of the specified regulation is not required by either present or anticipated future traffic volume or traffic circulation on the site; and

5. The granting of the modification will not create or intensify a shortage of on-street parking spaces.

F. For residential units designed and dedicated for use by households with one or more members who are 62 years of age or older, subject to restrictions approved by the City and recorded with the County of San Mateo, the minimum parking requirement shall be two-thirds (67%) of the standard requirement based upon unit size as set forth in Section 17.34.020. This minimum parking requirement may be further reduced as an “additional incentive” required for projects that comply with the California “density bonus” law (California Government Code Sections 65915 and 65915.5).

G. For residential units dedicated to be affordable to households with very-low, low, or moderate incomes, subject to restrictions approved by the City and recorded with the County of San Mateo, the minimum parking requirement may be reduced as an “additional incentive” required for projects that comply with the California “density bonus” law (California Government Code Sections 65915 and 65915.5). This reduction shall be in addition to any exception that may be applicable under Sections 17.34.050.D or 17.34.050.E. Affordable housing projects that do not qualify for a density bonus and additional incentives may obtain a reduction in the minimum parking requirement through application for a modification under Section 17.34.050.I.

H. Off-street parking facilities within the public right-of-way at the property’s frontage may be recognized administratively subject to the city engineer’s approval only for single-family residences, secondary dwelling units and duplexes, subject to the following requirements:

1. The parking space shall not be located within a portion of the right-of-way that could be required for lanes of traffic per Section 12.24.010.B.1.

2. The parking space shall not block any portion of a required sidewalk.

3. The parking space shall be located so as to minimize its impact upon any existing on-street parking.

4. The parking space shall comply with Sections 12.05.020 and 12.24.015, as applicable.

5. The parking space is at an angle to the street and has clearance behind the space equivalent to the minimum aisle width in Table 1 (for standard-size spaces) or Table 2 (or compact spaces).

6. The parking space is parallel to the street, in compliance with Section 17.34.040.E, and is located within a driveway to a garage or carport or is provided as the guest parking required for a residential subdivision of 5 (five) or more single-family residences per Section 17.34.020.A.

I. The planning commission shall have authority to grant a use permit authorizing a modification to any of the parking regulations prescribed by this Chapter. The provisions of Chapter 17.40 of this Title shall govern the filing and processing of the application for a use permit pursuant to this Section; provided, however, that in addition to the findings required for the granting of a use permit, as set forth in Section 17.40.060, no use permit shall be granted for a modification to a parking regulation unless the planning commission also finds and determines that:

1. Strict enforcement of the specified regulation is not required by either present or anticipated future traffic volume or traffic circulation on the site; and

2. The granting of the use permit will not create or intensify a shortage of on-street parking spaces, given, for example, the availability of existing or improved on/off-street parking which may not fully meet the requirements of this chapter.

3. Full compliance with the parking requirements is not reasonably feasible due to existing structural or site constraints. This finding shall not be required for residential units dedicated to be affordable to households with very-low, low, or moderate incomes or designed and dedicated for use by households with one or more members who are 62 years of age or older, subject to restrictions approved by the City and recorded with the County of San Mateo.

J. The planning commission shall have authority to grant a parking variance for nonresidential development to allow required parking to be located off-site. The provisions of Chapter 17.46 of this Title shall govern the filing and processing of the application for a variance pursuant to this Section; provided, however, that instead of the findings required for the granting of a variance, as set forth in Section 17.46.010, no such parking variance shall be granted unless the planning commission finds and determines that:

1. The variance would be an incentive to, and a benefit for, the nonresidential development; and

2. The variance will facilitate access to the nonresidential development by patrons of public transit facilities.

17.34.085. Parking for Designated for Clean Air Vehicles. Parking spaces designated for low-emitting, fuel-efficient and carpool/van pool vehicles, as defined in Section 5.102 of the California Green Building Standards Code, shall be provided for newly constructed non-residential buildings according to the following schedule:

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED SPACES
0-9	0
10-25	1
26-50	3
51-75	6
76-100	8
101-150	11
151-200	16
201 and over	At least 8 percent of total

The designated spaces shall be marked "CLEAN AIR VEHICLE" with stall-striping paint, such that the lower edge of the last word aligns with the end of the stall striping so it will be visible beneath a parked vehicle.

17.34.095. Bicycle Parking. Short-term and long-term parking for bicycles shall be provided for newly-constructed non-residential buildings as follows:

A. Short Term Parking. One or more permanently anchored bicycle racks shall be provided within 200 feet of the visitors' entrance and readily visible to passers-by. The required bicycle parking capacity shall be set as follows:

1. 1 bike rack space per 10,000 sq. ft. of retail floor area;
2. 1 bike rack space per 150,000 sq. ft. of office floor area;

3. Other non-residential uses: five percent (5%) of visitor motorized vehicle parking capacity.

4. Any fractional result shall be rounded up.

5. For all non-residential buildings, the minimum capacity shall be for two bicycles.

B. Long Term Parking. Permanently anchored bike racks inside covered, lockable enclosures or bicycle rooms or permanently anchored bicycle lockers shall be provided at convenient locations from the street. The required bicycle parking capacity shall be set as follows:

1. 1 space per 20,000 sq. ft. of warehouse floor area;

2. 1 space per 6,000 sq. ft. of retail floor area;

3. 1 space per 6,000 sq. ft. of office floor area;

4. Other non-residential uses: five percent (5%) of motorized vehicle parking capacity.

5. Any fractional result shall be rounded up.

6. For all non-residential buildings, the minimum capacity shall be for one bicycle.

SECTION 7: Section 17.38.080 in Chapter 17.38 of the Municipal Code is amended to read as follows:

17.38.080. Alteration or expansion of nonconforming structures.

A. A nonconforming structure shall not be altered, enlarged, or expanded so as to increase the degree of noncompliance or otherwise increase the discrepancy between existing conditions and the requirements of this Title.

B. Structural alterations may be permitted when necessary to comply with the requirements of law.

C. The prohibitions of this Section shall not apply to any alteration, enlargement or expansion for which a variance is granted pursuant to Chapter 17.46 or a use permit is granted pursuant to Chapter 17.34 of this Title.

SECTION 8: Where a use permit, design permit or variance approval has been issued through final action by the City prior to the effective date of this Ordinance, or where such planning permit approval is not required and a complete building permit application has been submitted prior to the effective date of this Ordinance, the holder of such use permit, design permit or variance approval or complete building permit application may proceed to construct the improvements or establish the use authorized by such permit or approval and the same shall be exempted from any conflicting regulations that may be contained in this Ordinance.

SECTION 9: If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held by a court of competent jurisdiction to be invalid or unconstitutional, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council of the City of Brisbane hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause and phrase thereof, irrespective of the fact that one or more sections, subsections, sentences, clauses or phrases may be held invalid or unconstitutional.

SECTION 10: This Ordinance shall be in full force and effect thirty days after its passage and adoption.

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* * *

The above and foregoing Ordinance was regularly introduced and after the waiting time required by law, was thereafter passed and adopted at a regular meeting of the City Council of the City of Brisbane held on the _____ day of _____, 2012, by the following vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:

City Attorney

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“REDLINE” VERSION OF PARKING ORDINANCE AMENDMENTS

Proposed changes in the current Municipal Code are indicated ~~by striking through~~ the existing language to be deleted and putting the new language *in italics*. Further description of the changes is shown in **CAPITAL LETTERS**. Note that the amendments adding Sections 17.34.085 and 17.34.095 that were adopted in 2011 per Ordinance No. 556 are included in this version of the recommended ordinance, as is Section 17.12.040.D as amended per Ordinance No. 562.

Title 17

ZONING

Chapter 17.06

R-1 RESIDENTIAL DISTRICT

THE FOLLOWING ARE REVISIONS TO PORTIONS OF SECTION 17.06.040 OF THE R-1 RESIDENTIAL DISTRICT:

17.06.040 – Development Regulations. The following development regulations shall apply to any lot in the R-1 district:

A. Lot Area.

1. The minimum area of any lot shall be five thousand (5,000) square feet.
2. A single-family dwelling may be constructed on a lot of record with an area of less than five thousand (5,000) square feet, subject to the provisions of this chapter and the limitations set forth in Section 17.32.100.

B. Density of Development. Not more than one dwelling unit shall be located on each lot in the R-1 district, except for a secondary dwelling unit authorized ~~by a use permit granted~~ pursuant to Chapter 17.43 of this title.

Width	Depth
50 feet	100 feet

C. Lot Dimensions. The minimum dimensions of any lot shall be as follows:

D. Setbacks. The minimum required setbacks for any lot shall be as follows:

1. Front setback: fifteen (15) feet, with the following exceptions:
 - a. Where the lot has a slope of fifteen percent (15%) or greater, the minimum front setback may be reduced to ten (10) feet.
 - b. Where fifty percent (50%) or more of the lots of record in a block have been improved with single-family dwellings, the minimum front setback may be the average distance of the front outside wall of the single-family structures from the front lot line, if less than fifteen (15) feet. *Notwithstanding the foregoing, the minimum front setback for garages or carports shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.*
2. Side setback: five (5) feet, with the exception that a lot having a width of less than fifty (50) feet may have a side setback reduced to ten percent (10%) of the lot width, but in no event less than three (3) feet or the minimum setback required by the Uniform Building

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Code, whichever is greater. *Notwithstanding the foregoing, the minimum side setback for garages or carports accessed from a street or alley along that side of the lot shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.*

3. Rear setback: ten (10) feet

Chapter 17.08

R-2 RESIDENTIAL DISTRICT

THE FOLLOWING IS A REVISION TO SECTION 17.08.040 OF THE R-2 RESIDENTIAL DISTRICT:

- D. Setbacks. The minimum required setbacks for any lot shall be as follows:
 1. Front setback: fifteen (15) feet, with the following exceptions:
 - a. Where the lot has a slope of fifteen percent (15%) or greater, the minimum front setback may be reduced to ten (10) feet.
 - b. Where fifty percent (50%) or more of the lots of record in a block have been improved with single-family dwellings, duplexes or multiple-family dwellings, or any combination thereof, the minimum front setback for single-family dwellings may be the average distance of the front outside wall of the residential structures from the front lot line, if less than fifteen (15) feet. *Notwithstanding the foregoing, the minimum front setback for garages or carports shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.*
 2. Side setbacks: Side setbacks shall be five (5) feet, with the exception that a lot having a width of less than fifty (50) feet may have a side setback reduced to ten percent (10%) of the lot width, but in no event less than three (3) feet or the minimum setback required by the Uniform Building Code, whichever is greater. *Notwithstanding the foregoing, the minimum side setback for garages or carports accessed from a street or alley along that side of the lot shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.*
 3. Rear setback: ten (10) feet.

Chapter 17.10

R-3 RESIDENTIAL DISTRICT

THE FOLLOWING IS A REVISION TO SECTION 17.10.040 OF THE R-3 RESIDENTIAL DISTRICT:

- D. Setbacks. The minimum required setbacks for any lot shall be as follows:
 1. Front setback: fifteen (15) feet, with the following exceptions:
 - a. Where the lot has a slope of fifteen percent (15%) or greater, the minimum front setback may be reduced to ten (10) feet.
 - b. Where fifty percent (50%) or more of the lots of record in a block have been improved with single-family dwellings, duplexes or multiple-family dwellings, or any combination thereof, the minimum front setback for single-family dwellings may be the average

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distance of the front outside wall of the residential structures from the front lot line, if less than fifteen (15) feet. *Notwithstanding the foregoing, the minimum front setback for garages or carports shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.*

2. Side setbacks: Side setbacks shall be five (5) feet, with the exception that a lot having a width of less than fifty (50) feet may have a side setback reduced to ten percent (10%) of the lot width, but in no event less than three (3) feet or the minimum setback required by the Uniform Building Code, whichever is greater. *Notwithstanding the foregoing, the minimum side setback for garages or carports accessed from a street or alley along that side of the lot shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.*

3. Rear setback: ten (10) feet.

Chapter 17.12

R-BA BRISBANE ACRES RESIDENTIAL DISTRICT

THE FOLLOWING IS A REVISION TO SECTION 17.12.040.D OF THE R-BA RESIDENTIAL DISTRICT:

D. Setbacks. The minimum required setbacks for any lot shall be as follows:

1. Front setback: Ten (10) feet.

2. Side setback: Ten percent (10%) of the lot width, but in no event more than fifteen (15) feet or less than five (5) feet. *Notwithstanding the foregoing, the minimum side setback for garages or carports accessed from a street along that side of the lot shall be ten (10) feet, except where a lesser distance is determined by the city engineer to be safe in terms of pedestrian and vehicular traffic.*

3. Rear setback: ten (10) feet

Chapter 17.32

GENERAL USE REGULATIONS

THE FOLLOWING IS A REVISION TO SECTION 17.32.070.A OF THE EXCEPTIONS TO THE SETBACK REQUIREMENTS:

3. Miscellaneous Improvements.

a. Garages and Carports and Parking Decks on Slopes of Fifteen Percent (15%) or Greater.

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Front setback area:	Garages, carports and parking decks not more than fifteen (15) feet in height above the elevation of the center of the adjacent street <i>in the R-1, R-2 and R-3 Districts</i> may be placed at any location within the front setback area provided: (i) there is no encroachment into any side setback area, and (ii) the garage is approved by the city engineer, based upon a finding that no traffic or safety hazard will be created.
Rear setback area:	On through lots, garages, carports and parking decks not more than fifteen (15) feet in height above the elevation of the center of the adjacent street may be placed at any location within the rear setback area provided: (i) there is no encroachment into any side setback area, and (ii) the garage is approved by the city engineer, based upon a finding that no traffic or safety hazard will be created.
Side setback area:	No exception permitted.

Chapter 17.34

OFF-STREET PARKING

Sections:

- 17.34.010 *Purposes of chapter.*
- ~~17.34.020~~ Minimum requirements.
- ~~17.34.020~~ ~~Garages and carports~~
- 17.34.030 *Use restrictions. Hillside lot improvement plans.*
- 17.34.040 *Design standards. On-site parking requirements.*
- 17.34.050 *Exemptions, exceptions and modifications. Joint use of parking facilities.*
- ~~17.34.060~~ ~~C-2 or H-1 district requirements.~~
- ~~17.34.070~~ ~~Surfacing.~~
- ~~17.34.080~~ ~~Handicapped parking.~~
- ~~17.34.090~~ ~~Compact cars.~~
- ~~17.34.100~~ ~~Parking lot landscaping.~~
- ~~17.34.110~~ ~~Exemption for minor expansion of single-family dwelling.~~
- ~~17.34.120~~ ~~Driveway grades.~~
- ~~17.34.130~~ ~~Tables.~~

17.34.010 *Purposes of Chapter.*

In addition to the objectives set forth in Section 17.01.030, the off-street parking requirements are included in the Zoning Ordinance to achieve the following purposes:

A. To provide for adequate off-street parking facilities by establishing clear relationships between building size and the off-street parking required, so as to minimize the parking impacts of development upon surrounding properties.

B. To encourage housing designed for residents with special needs, including persons with disabilities.

C. To facilitate the maintenance and improvement of the existing building stock.

D. To provide for parking lot landscaping and permeable paving alternatives to reduce air and stormwater pollution.

E. To minimize dependence on automobile travel by encouraging transportation alternatives in project design where appropriate.

F. To implement and promote the goals and policies of the General Plan so as to guide and manage development in the city in accordance with such plan.

17.34.020 Minimum requirements.

A. The following minimum off-street parking requirements shall apply to all buildings erected, new uses commenced, and to the area of extended uses commenced after the effective date of this Chapter. For any use not specifically mentioned in this Chapter, the planning commission shall determine the amount of parking required. All *required off-street parking* facilities shall be on-site unless specified differently *in this Chapter or as permitted under Title 12 of this Code. Required off-street parking facilities need not be provided as covered parking unless specified differently in this chapter:*

<u>Uses:</u>	<u>Parking Requirements:</u>
<p>Single-family homes—<i>dwelling</i>s; <i>group care homes</i></p> <p><i>Studio or 1-bedroom</i></p> <p><i>2-bedrooms</i></p> <p><i>3-bedrooms</i></p> <p><i>4-bedrooms</i></p> <p><i>5-bedrooms or larger</i></p> <p>Single-family homes on 25-foot lots</p>	<p><i>2 spaces (1 covered), except only 1 (uncovered) space if not more than 900 sq. ft. in floor area.</i></p> <p><i>3 spaces (2 covered), plus 1 space if over 2,700 sq. ft. in floor area.</i></p> <p><i>4 spaces (2 covered), plus 1 space if over 3,600 sq. ft. in floor area.</i></p> <p><i>5 spaces (2 covered), plus 1 space if over 4,500 sq. ft. in floor area.</i></p> <p><i>6 spaces (2 covered).</i></p> <p><i>See Section 17.34.020.B.1 regarding garage and carport exclusions from the floor area calculation.</i></p> <p>2 garages or carports per living unit plus two on-street or off-street parking spaces for lots of 37.5 feet frontage or greater and one such space for lots less than 37.5 feet in frontage</p> <p><i>Additional guest parking spaces shall be provided for all residential subdivisions of 5 (five) or more single-family residences, at the rate of 1 parking space for every 5 (five) units, with no parking spaces required for any fractional remainders. Any accessible parking spaces required per Section 17.34.040.D shall count as guest parking spaces.</i></p> <p>2 off-street parking spaces one (1) of which shall be in a garage or carport</p>
<p>Secondary dwelling units</p>	<p><i>1 (uncovered) space, plus 1 (uncovered) space if over 900 sq. ft. in floor area and/or if more than 1 bedroom.</i></p>

	<p><i>See Section 17.34.020.B.1 regarding garage and carport exclusions from the floor area calculation.</i></p> <p>2 standard on-site parking spaces</p>
<p>Duplex or multiple family dwelling units; <i>Mobilehome park units</i></p> <p><i>Studios</i> 0 bedroom or bachelor apartments <i>1-bedroom units</i></p> <p><i>2-bedroom units</i> 1 and 2 bedroom units <i>3-bedroom units or larger</i> Over 2 bedrooms</p>	<p><i>1 (uncovered) space per unit.</i> 1 off-street parking space.</p> <p><i>1 ½ spaces (1 covered) per unit; only 1 (covered) space required for units not over 900 sq. ft. in floor area.</i></p> <p><i>1 ½ spaces (1 covered) per unit.</i> 1 ½ garage per living unit <i>2 spaces (1 covered) per unit, plus 1 (uncovered) space for units over 2,700 sq. ft.</i> 2 garages per living unit.</p> <p><i>See Section 17.34.020.B.1 regarding garage and carport exclusions from the floor area calculation.</i></p> <p><i>Additional guest parking spaces shall be provided for all developments of 5 (five) or more units at the rate of 1 parking space for every 5 (five) units, with no parking spaces required for any fractional remainders. The accessible parking spaces required per Section 17.34.040.D shall count as guest parking spaces.</i></p>
<i>Emergency shelters</i>	<i>0.35 space per bed plus 1 space per staff member on the largest shift.</i>
<i>Hotels, motels</i>	As determined by use permit. <i>1 space per unit, plus applicable requirements for restaurants, bars and meeting halls.</i>
<i>Motels</i>	1 space per unit, plus applicable requirements for eating, drinking and assembly space.
<i>Trailer courts</i>	1 parking space per unit.
<i>Rooming houses and boardinghouses</i>	1 parking space per adult guest
<i>Cultural facilities, meeting halls and places of worship</i> <i>Churches, lodges, clubs, community centers, chapels</i>	<i>1 space for each 50 square feet of assembly area or 1 space for each 4 fixed seats, whichever is greater, plus 1 space for each 300 square feet of the remaining floor area of the building (meeting rooms not exceeding 750 square feet and ancillary to an office use shall be included with the floor area of the office in calculating the parking requirement for the</i>

	<p><i>office use).</i></p> <p>1 parking space for each 4 person capacity, but not less than one space for each 15 square feet of the largest meeting hall</p>
Commercial recreation	<p><i>3 spaces per ball court;</i></p> <p><i>2.5 spaces per batting cage;</i></p> <p><i>4 spaces per lane for bowling alleys;</i></p> <p><i>2 spaces per tee for golf courses;</i></p> <p><i>20 spaces per playing field;</i></p> <p><i>2 spaces per shooting range;</i></p> <p><i>2 spaces per horse stall for stables;</i></p> <p><i>1 space per 100 square feet of water area for swimming pools.</i></p> <p><i>For commercial recreation uses that do not fall within the above categories, 1 parking space shall be required for every 4 fixed seats for spectators, 1 parking space per each 200 square feet of floor area used for indoor commercial recreation, and 1 parking space per each 1,000 square feet of site area used for outdoor commercial recreation.</i></p>
<i>Marinas</i>	<i>1 space per 0.75 berths.</i>
Schools - public private or commercial	1 space for each classroom and office.
Hospitals	1 space per bed plus 1 space for each 2 employees on the largest shift.
Financial services	1 space for each 200 square feet of gross floor area.
Administrative office	1 space for each 300 square feet of gross floor area.
Professional office	1 space for each 250 square feet of gross floor area.
Retail stores, restaurants, bars, offices	1 space for each 300 square feet of gross floor area.
Service stations	2 spaces for each working bay plus 1 space for each employee on the largest shift.
Bowling alley, billiard parlor	5 spaces per lane; 2 spaces per table, plus 1 space for each employee on the largest shift
Warehousing, light fabrication, food production, media studios, printing wholesale stores, manufacturing, industrial uses, highway commercial uses	Minimum of 2 spaces for every 3 employees on the largest shift, but not less than 1 space for each 1,000 square feet of gross floor area. Parking may be off-site within 300 feet upon approval of the planning commission.
Convalescent hospitals, sanitariums, rest homes	1 space for each 7 beds plus 1 space for each 2 employees on the largest shift.

B. The minimum off-street parking requirements shall be calculated according to the following:

1. All references to square feet shall be in regards to floor area as defined in

G.2.40

Chapter 17.02. The floor area of garages and carports shall not be included in measuring floor area to calculate the parking requirements, except for any floor area exceeding 400 square feet within a garage or carport exclusively for the use of a single residential unit.

2. When more than one use subject to the parking requirements occupies a site, the requirements for each use shall be calculated separately. The floor area occupied by accessory uses, such as hallways, bathrooms, breakrooms, utility rooms and storage closets, shall be included in the calculation of the parking requirements for the associated primary use.

3. No parking shall be required for accessory structures 200 square feet or less in floor area.

4. When application of the parking requirements results in a fractional number, all fractions shall be rounded up from 0.5 to the next whole number, except when specified otherwise. No parking shall be required for uses for which the requirement is less than 0.5 space.

17.34.020 Garages and carports 17.34.030 Use restrictions.

A. Required parking spaces, whether in a garage, carport or open area, ~~Garages and carports~~ shall not be used or converted for any other use that would impair their basic use as storage for motor vehicles.

B. ~~Garages or carports shall not be located closer than twenty (20) feet to the far side of an improved street.~~

~~C. All off-street parking spaces, whether in a garage, carport or open area, shall be so located as to be accessible to the use which they are intended to serve and to be usable for the parking of motor vehicles. Except as provided in subsection E of Section 17.32.070, garage or carport openings shall be located not less than twenty (20) feet from the property line facing the opening.~~

C. The required parking for each unit of a residential use shall be independently accessible from that required for any other unit. The property owner shall assign each unit the exclusive use of at least one standard-size parking space, which shall be a covered parking space, if such is required for the unit. If tandem parking is provided, the two spaces in tandem shall be assigned together.

D. Guest parking spaces shall be posted by the property owner as available for 72-hour maximum use by the guests only of all residential units for which they are required.

A PORTION OF THE FOLLOWING SECTION WAS MOVED TO BMC SECTION 15.12.075:

17.34.030 Hillside lot improvement plans.

~~A. On any hillside lot which is on an unimproved street or on a street on which, in the opinion of the city engineer, additional or future street improvements can be anticipated, the following information shall be provided for any application for a building permit:~~

~~1. A precise plot plan showing existing topography, boundary, house, finished grades and utility services;~~

~~2. A street improvement plan prepared by a registered civil engineer, showing grades and dimensions, and indicating that the driveway will function properly, and adequately tie into the existing roadbed, based on the vertical and horizontal alignment as approved by the city engineer;~~

~~3. Prior to the issuance of the occupancy permit, the civil engineer responsible for the street plan shall certify as to the "as-built" plan. Prior to beginning any construction, the~~

applicant for a building permit shall submit a certification by a registered engineer or licensed land surveyor that the property corners have been set.

~~—— B. When, in the opinion of the city engineer, proposed parking facilities are unusable or present a potentially unsafe condition, the plans shall not be approved.~~

THE FOLLOWING SECTION HAS BEEN MOVED TO SECTION 17.34.020:

~~**17.34.040 On-site parking requirements.**~~

~~Parking required in any district must be on-site except as provided in this chapter. (Ord. 324 §5(part), 1987; Ord. 298 §7.1 (F), 1984).~~

THE FOLLOWING SECTION IS REPLACED BY SECTION 17.34.020.B.4:

~~**17.34.050 Joint use of parking facilities.**~~

~~Joint use of parking facilities will be allowed under the following conditions:~~

- ~~A. Where there is no conflict at time of use;~~
- ~~B. When there is sufficient parking for all uses.~~

SINCE THE C-2 & H-1 DISTRICTS NO LONGER EXIST (SEE SECTION 17.34.050.C REGARDING THE NCRO-2 DISTRICT), THE FOLLOWING SECTION HAS BEEN DELETED:

~~**17.34.060 C-2 or H-1 district requirements.** Parking required in any C-2 or H-1 district may be reduced below the stated requirements in any portion of such district included within a public parking district or assessment district for financing off-street parking facilities in proportion to the amount of assessment on each property owner. Cost of each parking space provided by the district shall be computed by dividing the number of such spaces into the total of the assessment levied against the property within the district. The assessment against individual property shall be divided by this cost per space, to determine the nearest whole number by which the parking requirements on the property may be reduced.~~

THIS SECTION IS MOVED FROM SECTION 17.34.130:

~~**17.34.040 Design standards.**~~

~~A. Tables. Off-street parking Parking facilities shall comply with the design requirements standards as set forth in Table 1, applicable to standard-size vehicles, and Table 2, applicable to small-size compact vehicles, which appear immediately following this chapter and are incorporated herein by reference and made a part hereof. section. Variations to these tables may be approved by the city engineer, consistent with professionally accepted standards, where no more than two forward turning movements would be necessary to enter or exit any parking space.~~

~~**17.34.070 B Surfacing and striping.**~~

~~1. Any off-street parking area shall be surfaced with a minimum of five (5) inches of imported base material and a double application of asphalt and gravel to the city engineer's approval, so as to provide a durable and dustless surface and shall be so graded and drained as to dispose of all surface water accumulated within the area and shall be so arranged and marked as to provide for safe loading and unloading and parking of vehicles.~~

2. *Parking spaces shall be striped in compliance with the design standards in this chapter, except that parking spaces for residential uses of no more than 2 units need not be striped. Plans for striping or restriping of required parking spaces shall be submitted for approval by the Community Development Department in compliance with these standards prior to any work done.*

3. *Permeable paving alternatives for parking spaces and low-traffic driveways may be approved by the City Engineer to reduce the discharge of pollutants into storm sewers, in which case the means of delineating the parking spaces shall be subject to the approval of the Community Development Department.*

17.34.090 C. Compact cars. *Up to fifty percent (50%) of the required parking spaces may be designed for small-sized vehicles compact. For sites with two or more residential dwelling units, at least one standard-size parking space shall be provided for each unit. Compact parking spaces shall be labeled as such on the pavement, except for residential uses of not more than 2 units.*

17.34.080 D. Handicapped parking. *Parking designated as accessible by persons with disabilities shall be provided as required by State law. Parking spaces specifically designed, located and reserved for vehicles licensed by the state for use by the handicapped shall be provided in each parking facility of twenty-five (25) or more spaces according to the following schedule:*

Total Spaces Required	Minimum Number of Handicapped Spaces Required
1-24	0
25-99	1
100-199	2
200 or greater	4

E. Parallel parking. *Parallel parking spaces shall be subject to the following standards: Spaces that are accessible from at least one end shall be eight (8) feet wide by twenty (20) feet long. Spaces located between other spaces or any obstruction shall be eight (8) feet wide by twenty-four (24) feet long. An additional one (1) foot width shall be provided where the parking space would be located next to any obstruction more than six (6) inches tall.*

F. Tandem parking. *Tandem parking where no more than one parking space need be vacant to access another parking space shall be recognized as meeting the parking requirements for residential uses, as long as the parking spaces for each unit are accessible independently from those for any other unit.*

G. Garage design.

1. *Garages constructed after _____ [the date this section takes effect], excluding those rebuilt subject to Section 17.38.080 or 17.38.090, shall comply with the following:*

<u>Garage Type</u>	<u>Minimum Width</u>	<u>Minimum Depth</u>
Single-car garage	10 ft.	20 ft.
Two-car garage		
On lots < 27 ft. wide	18 ft.	20 ft.

All other sites	20 ft.	20 ft.
2-in-tandem garage	10 ft.	40 ft.

No washing machines, driers, water heaters, work benches, support posts and similar obstructions shall be located within the area of minimum width by minimum depth.

2. For garages constructed after ____ [the date this section takes effect], excluding those rebuilt subject to Section 17.38.080 or 17.38.090, garage doors shall be of a roll-up sectional design and shall be equipped with automatic garage door openers.

3. Garages existing as of ____ [the date this section takes effect], constructed in compliance with applicable standards then in effect, shall be considered conforming until such time as they are substantially modified or replaced, except that Section 17.38.090 shall apply in the event that they are damaged or destroyed by fire, flood, wind, earthquake, or other calamity.

H. Driveway grades. Driveway grades shall not exceed twenty percent (20%) unless approved by the city engineer. The grade of driveways required as fire apparatus access roads shall be as approved by the fire chief.

I. On-site turnaround. 1. Off-street parking facilities shall be designed to provide on-site turnaround capability, with the following exceptions:

a. The parking spaces for a single-family residence, secondary dwelling unit or duplex may be designed to back into a non-arterial street.

b. The parking spaces for a complex of three or more units may be designed to back into a local street that is not an arterial or a collector.

2. On-site turnaround capability shall be designed so as not to conflict with required parking spaces, including any recognized tandem spaces.

17.34.100 J. Parking lot landscaping. 1. ~~Parking lots shall be landscaped with~~ For any open parking area containing ten (10) or more parking spaces subject to design permit approval, landscape plans shall be submitted to provide trees, shrubs and ground cover, as appropriate according to approved design permit. The landscape plans shall provide at least one tree for every ten (10) parking spaces, which may be planted in diamond-shaped tree-wells or parkway strips, located so as to break up expanses of paved area.

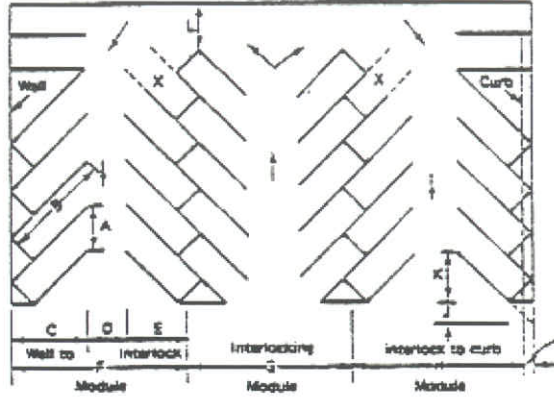
2. The landscape plans shall use water conserving plants, plants that are not invasive, and plants and other landscape features that are appropriate to the context. New and replacement irrigated landscapes of one thousand (1,000) square feet or more shall be subject to the water conservation requirements in Chapter 15.70.

3. The landscape plans shall comply with the requirements of the federal Clean Water Act and acts amendatory thereof or supplementary thereto, applicable implementing regulations, and NPDES Permit No. CAS612008 and any amendment, revision or reissuance thereof.

K Bumper overhangs. Off-street parking facilities may be designed to accommodate bumper overhangs of not more than two and one-half (2 ½) feet length for standard size parking spaces and two (2) feet for compact parking spaces. Bumper overhangs shall not block any required pedestrian accessway. Wheelstops, curbs and landscaping within the area of any bumper overhang shall not exceed five (5) inches in height above the pavement.

Table 1

Design Requirements for Standard Sized Vehicles



X = Stall not accessible in certain layouts
Parking layout dimensions (in ft) for 9-ft stalls
at various angles

G.2.45

			FEET Parking Angle			
Dimension	On Diagram	45°	60°	75°	90°	
Stall width, parallel to aisle	A	12.7	10.4	9.3	9.0	
Stall length of line	B	25.0	22.0	20.0	18	
Stall depth to wall	C	17.5	19.0	19.5	18	
Aisle width between stall lines	D	12.0	16.0	23.0	26.0	
Stall depth to interlock	E	15.3	17.5	18.8	18.5	
Module, wall to interlock	F	44.8	52.5	61.3	63.0	
Module, interlocking	G	42.6	51.0	61.0	63.0	
Module, interlock to curb face	H	42.8	50.2	58.8	60.5	
Bumper overhang (typical)	I	2.0	2.3	2.5	2.5	
Offset	J	6.3	2.7	0.5	0.0	
Setback	K	11.0	8.3	5.0	0.0	
Cross aisle, one-way	L	14.0	14.0	14.0	14.0	
Cross aisle, two-way	L	24.0	24.0	24.0	24.0	

Table 2
Design Requirements for *Compact Small-Sized* Vehicles

Parking Dimensions, FEET						
Parking Angle	Stall Width	Aisle Length Per Stall	Depth of Stalls at Right Angle to Aisle	<i>Bumper Overhang</i>	Aisle Width	Wall to Wall Module
45°	8.0	10.5	17.0	<i>1.7</i>	11.0	45.0
60°	8.0	8.7	17.7 16.7	<i>1.8</i>	14.0	49.4
75°	8.0	7.8	17.3 16.3	<i>1.9</i>	17.4	52.0
90°	8.0	7.5	16.0	<i>2</i>	20.0	52.0

G.2.44

17.34.050 Exemptions, exceptions and modifications.

~~17.34.110 Exemption for minor expansion of single-family dwelling.~~

A. ~~Dwelling units existing as of ___ [the date this section takes effect], constructed in compliance with applicable standards then in effect, shall be considered conforming in terms of the parking required by this chapter until such time as they are expanded or replaced, except that Section 17.38.090 shall apply in the event that they are damaged or destroyed by fire, flood, wind, earthquake, or other calamity.~~

~~A. B.~~ An existing single-family dwelling *or mobilehome* which does not have *off-street* parking facilities that conform with the requirements of this chapter may be expanded by a cumulative total of not more than four hundred (400) square feet without the need to bring the parking facilities into conformance or to obtain a use permit under Section ~~17.34.115~~ 17.34.050.1 of this chapter, subject to the following restrictions and requirements:

1. The structure to be expanded shall constitute the principal structure and the only dwelling unit located on the site *or mobilehome park space*.

2. The square footage permitted by this section shall be reduced by the square footage of any prior expansion of the same structure that was made since January 1, 1986, regardless of whether an exception, use permit, variance, or other approval was granted for such prior expansion.

3. The square footage permitted by this section shall be reduced by the square footage of any prior permitted expansion of the same structure which resulted in the loss of required parking spaces, such as the conversion of a garage to living area.

4. The expansion shall not result in the loss of any existing off-street parking spaces, or the conversion of a covered parking space to an uncovered parking space, or otherwise increase the nonconformity of the existing *off-street* parking facilities.

5. The proposed development shall comply with the requirements of Section 17.01.060 of this title, unless: ~~(1)-(a)~~ the structure to be expanded is located upon a lot of record, and ~~(2)-(b)~~ a public street abutting such lot of record provides the principal means of access to that lot.

~~B. 6.~~ In determining the cumulative size of prior or proposed expansions of an existing single-family dwelling *or mobilehome*, the square footage of any newly created garage or carport shall not be counted as part of the four hundred (400) square foot limitation.

C. ~~Storefront uses in the NCRO-2 District shall be exempt from the requirements of this Chapter.~~

D. ~~For residential units designed and dedicated for use by persons with disabilities, subject to restrictions approved by the City and recorded with the County of San Mateo, the parking requirement shall be 1 assigned van-accessible parking space (either covered or uncovered at the discretion of the applicant) per dedicated unit. Such spaces shall be conveniently located along an accessible path of travel to the dedicated unit, but shall not count as or conflict with the parking required to be reserved for persons with disabilities per Title 24 (Section 17.34.040.D).~~

E. ~~For a residential unit occupied by a person with a disability, the Zoning Administrator shall have authority to grant an Accessibility Improvement Permit authorizing a modification to any of the parking requirements prescribed by this Chapter, following the conduct of a hearing with 10 days notice thereof being given to the owners of all adjacent properties. The Zoning Administrator may issue the Accessibility Improvement Permit if he or she finds and determines that:~~

1. ~~The modification is necessary to meet special needs for a person having a disability;~~

2. The modification will not create any significant adverse impacts upon adjacent properties;

3. Any construction resulting from the modification will be done in a sound and workmanlike manner, in compliance with all applicable provisions of the building and fire codes;

4. Strict enforcement of the specified regulation is not required by either present or anticipated future traffic volume or traffic circulation on the site; and

5. The granting of the modification will not create or intensify a shortage of on-street parking spaces.

F. For residential units designed and dedicated for use by households with one or more members who are 62 years of age or older, subject to restrictions approved by the City and recorded with the County of San Mateo, the minimum parking requirement shall be two-thirds (67%) of the standard requirement based upon unit size as set forth in Section 17.34.020. This minimum parking requirement may be further reduced as an "additional incentive" required for projects that comply with the California "density bonus" law (California Government Code Sections 65915 and 65915.5).

G. For residential units dedicated to be affordable to households with very-low, low, or moderate incomes, subject to restrictions approved by the City and recorded with the County of San Mateo, the minimum parking requirement may be reduced as an "additional incentive" required for projects that comply with the California "density bonus" law (California Government Code Sections 65915 and 65915.5). This reduction shall be in addition to any exception that may be applicable under Sections 17.34.050.D or 17.34.050.E. Affordable housing projects that do not qualify for a density bonus and additional incentives may obtain a reduction in the minimum parking requirement through application for a modification under Section 17.34.050.I.

H. Off-street parking facilities within the public right-of-way at the property's frontage may be recognized administratively subject to the city engineer's approval only for single-family residences, secondary dwelling units and duplexes, subject to the following requirements:

1. The parking space shall not be located within a portion of the right-of-way that could be required for lanes of traffic per Section 12.24.010.B.1.

2. The parking space shall not block any portion of a required sidewalk.

3. The parking space shall be located so as to minimize its impact upon any existing on-street parking.

4. The parking space shall comply with Sections 12.05.020 and 12.24.015, as applicable.

5. The parking space is at an angle to the street and has clearance behind the space equivalent to the minimum aisle width in Table 1 (for standard-size spaces) or Table 2 (or compact spaces).

6. The parking space is parallel to the street, in compliance with Section 17.34.040.E, and is located within a driveway to a garage or carport or is provided as the guest parking required for a residential subdivision of 5 (five) or more single-family residences per Section 17.34.020.A.

~~17.34.115 Modifications to parking regulations.~~ I. The planning commission shall have authority to grant a use permit authorizing a modification to any of the parking regulations prescribed by this Chapter. The provisions of Chapter 17.40 of this Title shall govern the filing and processing of the application for a use permit pursuant to this Section; provided, however, that in addition to the findings required for the granting of a use permit, as

set forth in Section 17.40.060, no use permit shall be granted for a modification to a parking regulation unless the planning commission also finds and determines that:

A. 1. Strict enforcement of the specified regulation is not required by either present or anticipated future traffic volume or traffic circulation on the site; and

~~B. 2. The granting of the use permit will not result in the parking of vehicles on public streets in such manner as to interfere with the free flow of traffic on the streets or~~ create or intensify a shortage of on-street parking spaces, given, for example, the availability of existing or improved on/off-street parking which may not fully meet the requirements of this chapter.

3. Full compliance with the parking requirements is not reasonably feasible due to existing structural or site constraints. This finding shall not be required for residential units dedicated to be affordable to households with very-low, low, or moderate incomes or designed and dedicated for use by households with one or more members who are 62 years of age or older, subject to restrictions approved by the City and recorded with the County of San Mateo.

J. The planning commission shall have authority to grant a parking variance for nonresidential development to allow required parking to be located off-site. The provisions of Chapter 17.46 of this Title shall govern the filing and processing of the application for a variance pursuant to this Section; provided, however, that instead of the findings required for the granting of a variance, as set forth in Section 17.46.010, no such parking variance shall be granted unless the planning commission finds and determines that:

1. The variance would be an incentive to, and a benefit for, the nonresidential development; and

2. The variance will facilitate access to the nonresidential development by patrons of public transit facilities.

Section 17.34.085. Parking for Designated for Clean Air Vehicles. Parking spaces designated for low-emitting, fuel-efficient and carpool/van pool vehicles, as defined in Section 5.102 of the California Green Building Standards Code, shall be provided for newly constructed non-residential buildings according to the following schedule:

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED SPACES
0-9	0
10-25	1
26-50	3
51-75	6
76-100	8
101-150	11
151-200	16
201 and over	At least 8 percent of total

The designated spaces shall be marked "CLEAN AIR VEHICLE" with stall-striping paint, such that the lower edge of the last word aligns with the end of the stall striping so it will be visible beneath a parked vehicle.

Section 17.34.095. Bicycle Parking. Short-term and long-term parking for bicycles shall be provided for newly-constructed non-residential buildings as follows:

A. Short Term Parking. One or more permanently anchored bicycle racks shall be provided within 200 feet of the visitors' entrance and readily visible to passers-by. The required bicycle parking capacity shall be set as follows:

1. 1 bike rack space per 10,000 sq. ft. of retail floor area;
2. 1 bike rack space per 150,000 sq. ft. of office floor area;
3. Other non-residential uses: five percent (5%) of visitor motorized vehicle parking capacity.
4. Any fractional result shall be rounded up.
5. For all non-residential buildings, the minimum capacity shall be for two bicycles.

B. Long Term Parking. Permanently anchored bike racks inside covered, lockable enclosures or bicycle rooms or permanently anchored bicycle lockers shall be provided at convenient locations from the street. The required bicycle parking capacity shall be set as follows:

1. 1 space per 20,000 sq. ft. of warehouse floor area;
2. 1 space per 6,000 sq. ft. of retail floor area;
3. 1 space per 6,000 sq. ft. of office floor area;
4. Other non-residential uses: five percent (5%) of motorized vehicle parking capacity.
5. Any fractional result shall be rounded up.
6. For all non-residential buildings, the minimum capacity shall be for one bicycle.

Section 17.38.080. Alteration or expansion of nonconforming structures.

A. A nonconforming structure shall not be altered, enlarged, or expanded so as to increase the degree of noncompliance or otherwise increase the discrepancy between existing conditions and the requirements of this Title.

B. Structural alterations may be permitted when necessary to comply with the requirements of law.

C. The prohibitions of this Section shall not apply to any alteration, enlargement or expansion for which a variance is granted pursuant to Chapter 17.46 *or a use permit is granted pursuant to Chapter 17.34* of this Title.

TO: The Planning Commission
FROM: Dana Dillworth
RE: RZ-5-11
February 9, 2012

I am not able to come to a meeting tonight, but would like the following information in the public record and to be considered in your deliberations tonight.

Is the city making this intentionally difficult to understand? You have strikethroughs that deal with issues more than parking.

You have language in here (pg H.1.9) that says a secondary dwelling unit is permitted by a use permit, when that had been changed a while back to not require a permit.

Throughout this document you are now including the city engineer in the role of zoning administrator, but not calling it as such. Therefore what is in essence a variance or modification to the zoning is not being required to be posted or neighbors informed. This is an egregious omission and prevents due process to a well-informed citizenry.

A day in the life observation of Tulare Street parking may be an indication of just that: a day in the life. There is a problem of using numbers of bedrooms to determine numbers of parking spaces. Many people construct homes with family rooms, offices, media rooms, etc., all of which can be converted to living/sleeping quarters. A bedroom in a mobile home will be considerably smaller than in a built unit. It is better to require parking based on the square footage of the home. When I lived on a 2500 square foot lot, 600 square foot house, my neighbor's similar two-bedroom house had four cars and business vehicles in addition to multiple visitors. In the proposed regulations, they would only be required to provide 3 spaces.

For the Brisbane Acres--- R-BA these are half acre lots. They should be required to make setbacks, which can act as habitat corridors. There is no mention about an environmental consultant and this is not the kind of zoning variance that a city engineer should be in charge of. There is no reason to allow modifications on lots this size and due to the sensitivity of the land, it would be best for any variance, modification to come before the Planning Commission. Please strike all language that allows the city engineer to re-design our Brisbane Acres independent of public review.

Another thing that doesn't make sense is the language around 37 foot lots requiring 18 foot garage openings. (17.34.040 G) That leaves two 4.5 foot setbacks, making it instantly non-conforming.

You have missed the opportunity to speak to parking lot bio-swales in Parking Lot Landscaping (17.34.040 J) and bicycle parking, shared vehicle parking, commercial parking etc.

In 17.34.050 G, there should be a caveat that if affordable housing units that have been granted "incentives" are converted to market-rate, that future improvements/upgrades fully comply with the current parking regulations.

Dana Dillworth

G.2.51

First off I would like to apologize for not addressing the commission earlier in the process. I didnt find out about this until days before the previous session. I hope that this time you will find me better composed. I also want to correct my misuse of terms. I often referred to garages when I meant off street parking. I used these terms interchangeably but they are not interchangeable.

From the Victoria Transport Policy Institute

"A paradigm shift. . . is occurring in transportation planning. The old paradigm relied primarily on supply-oriented solutions. . . It assumed that parking problems should generally be solved by increasing parking supply, usually by raising the minimum parking requirements for new development. From this perspective, parking demand is an unchangeable force that must be satisfied. . .

The new paradigm places more emphasis on management solutions. . . It recognizes the need to provide adequate parking, but values strategies which result in more efficient use of parking resources and reduce the amount of parking needed in a particular location. From this perspective, too much parking supply is as harmful as too little. With this approach, parking demand can often be managed in ways that reduce costs. . . ."

To some degree we have to build the world we want to live in. Attempting to provided 1.5 off street residential parking spaces for every car in Brisbane is not the answer. Austerity is the new road that lays ahead of us. Learning to do more with less, use our space and resources to the best advantages and to accept that we cannot have it all and that no street, home or person is ideal.

Although this proposal has the most noble of intentions, new construction is so limited, that it can little positive effect. What is can do is beleaguer those who build homes and destroy precious open space and disrupt ecology.

What does parking cost us?

Dark roof tops and asphalt paved parking alters the Earths albedo or the amount of light the earth reflects and contribute to the heat island effect. Asphalt contains heavy metals which should be of particular concern to us since Brisbane has so much ground water. It reduces the space available for plants and other living things as well as the space available for housing. Unless expensive permeable surfaces are used, it creates problems with run off. All of these things take away from some where else or someone else. There is no such thing as free parking.

I wasnt able to track down the carbon foot print of building a garage but I did find some data. Building a small 2 bedroom home costs about 80 tonnes of CO2. Our home is approximately 950 sqft and has 2 bedrooms. $80 \text{ tonnes} / 950 \text{ sqft} = 168 \text{ lbs of carbon dioxide per square foot}$. I reduced this by 21% (the amount assigned in the article read to plumbing, fixtures, flooring, etc.) = $133 \text{ lbs of carbon dioxide per square foot}$. A two car garage could then have a carbon foot print of roughly 53 thousand pounds or 26.5 tonnes. This says nothing about toxicity, deforestation or any of the other issues associated with the built environment. It makes sense to spend resources to improve housing for people, it doesnt make sense to spend resources to house cars.

From a purely money aspect "Current parking practices are comparable to about a 10% tax on development, and much more for lower priced housing in areas with high land costs."-Todd Litman

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Comm. Dev. Dept. Brisbane
from Barbara Ebel

G. 2. 52

Parking Requirement Impacts on Housing Affordability
Victoria Transport Policy Institute

Table 4 Typical Parking Facility Financial Costs ("Parking Evaluation," VTPI, 2005)

Type of Facility	Land Costs	Land Costs	Construction Costs	O & M Costs	Annual Cost	Monthly Cost
	Per Space	Per Space	Per Space	Per Space	Per Space	Per Space
Suburban, On-Street	\$50,000	\$200	\$2,000	\$200	\$408	\$34
Suburban, Surface, Free Land	\$0	\$0	\$2,000	\$200	\$389	\$32
Suburban, Surface	\$50,000	\$455	\$2,000	\$200	\$432	\$36
Suburban, 2-Level Structure	\$50,000	\$227	\$10,000	\$300	\$1,265	\$105
Urban, On-Street	\$250,000	\$1,000	\$3,000	\$200	\$578	\$48
Urban, Surface	\$250,000	\$2,083	\$3,000	\$300	\$780	\$65
Urban, 3-Level Structure	\$250,000	\$694	\$12,000	\$400	\$1,598	\$133
Urban, Underground	\$250,000	\$0	\$20,000	\$400	\$2,288	\$191
CBD, Surface	\$2,000,000	\$15,385	\$3,000	\$300	\$2,035	\$170
CBD, 4-Level Structure	\$2,000,000	\$3,846	\$15,000	\$400	\$2,179	\$182
CBD, Underground	\$2,000,000	\$0	\$25,000	\$500	\$2,645	\$220

This table illustrates the costs of providing a parking space under various conditions. (CBD = Central Business District; Assumes 7% annual interest rate, amortized over 20 years)

What could we better do with our resources?

The loss of open space is of particular concern in Brisbane since we are already facing a localized housing shortage.

More specifically, using the purposed city of Brisbane building codes, a 2,750 sqft home with three bedrooms will be required to include 5 parking spaces. 5 parking spaces at 200 sqft each = 1000 sqft of parking to 2750 sqft of living space. Cars should not occupy 27% of a new home. A cars should not occupy slightly 1/3 the space that is allotted to 4 people for living, sleeping, eating, bathing and relaxation.

Ultimately, what do we want to do with our land? House cars or house people? Store cars or preserve open space?

According to Todd Litman of the Victoria Transit Policy Institute, "Current practices of requiring generous. . . residential parking contradict society's goals to provide affordable housing, reduce environmental impacts, conserve resources and develop a more efficient and diverse transportation system." Mr. Litman's study mostly refers to the large parking lots attached to apartment buildings, but his statements still holds true. There is such a thing as over doing it.

Are there better alternatives to building more garages?

YES!

- Public Transportation
- Brisbane needs new businesses. How about a car share like Zip Cars?*
- Ordinance requiring a permit to park on the street. Number cars minus the number of off street parking spaces = number of free permits. Each additional permit costs \$\$\$ per year.
- Local car storage spaces for lease.
- Greater police enforcement of the 72 hour limit.
- Better bike lanes.
- Local carpool/car share network
- More local services reducing the need for people to drive
- Sponsor a clean out your garage day

*"Carsharing (vehicle rental services designed to substitute for private vehicle ownership) tends to reduce vehicle ownership and parking demand (Filosa, 2006). Cervero and Tsai (2003) found that when people join a San Francisco car sharing organization, nearly 30% reduce their household vehicle ownership and two-thirds avoided purchasing another car, indicating that each car share vehicle in that program substitutes for 5-10 private vehicles." -from Victoria Transit Policy Institute Study.

What should our goals be? How do we want things to change?

In looking at 13 past emails on Brisnet pertaining to parking, 1 called for a public parking lot for boats, RVS etc to get them out of residential areas, 5 complained about the lack of parking down town, 2 complained about the loss of street parking during the re-stripping, 1 said there is no problem and 4 complained about the lack of enforcement. If we use this metric, then the most pressing parking issue is in the commercial areas and the lack of general enforcement. Enforcement, designating a place for public storage of vehicles and car sharing are all solutions that could be implemented much faster and more broadly than altering building stock.

What is the basis for residential parking requirements being so high? Why are the number of assumed occupants so high?

These high numbers are in part based on the assumption that due to the economic downturn and large number of children returning home, more and more homes will house extended families. According to the 2006-2010 American Community Survey, 6.4% of households contain an adult child living with his or her parents. Even if this number was to double to 12.8% this will reduce the average number of cars per household since rate of car ownership does not rise as quickly as the number of occupants. Using the bar graph provided by the 2006-2010 American Community Survey, if a 3 person household becomes a 4 person household the rate of car ownership actually drops rather than raises as adults pool their resources.

For the last 30 years, the rate of young persons getting drivers licenses has been steadily dropping nation wide. It has dropped from 92% to 77% between 1978 and 2008. If a person isn't licensed to drive a car, then they are unlikely to own a car. Only about three out of four potential boomerang children will be licensed to drive and even fewer will own cars and bring them home so it is unlikely that boomerang children will

have a large impact on parking. Perhaps they will even improve the parking situation by taking the cars off the street and driving them elsewhere.

I couldn't find any data on the rate of car ownership among senior citizens, what ages or the rates of elderly parents moving in with adult children. However if it follows the general trend of fewer cars with increasing household size, then we can expect that this shift could actually lower the rate of car ownership as adults share cars within the household and senior citizens age beyond their driving years.

Use of bedrooms to house 1-2 people: Given the character of Brisbane with its strong artists community it is safe to surmise that the rate of bedrooms being used as accessory rooms is rather high. I feel that we all can be certain that the use of bedrooms as bedrooms is not 100%. Choosing to presume that there are 5 people between the ages of 16-80 with drivers licenses in a 4 bedroom home is an extreme case and not what we should plan for. Instead we should expect that the number of unused bedrooms might counter balance the number of bedroom with two drivers.

Why have car ownership rates risen within Brisbane?

This is simple. The median income of Brisbane is in the top 10% and home ownership is at 67% but Brisbane lacks any reasonable public transportation options. One of my good friends chose to live in Hunters Point rather than buy a home here in Brisbane ~because~ of the lack of public transportation. 17.34.010 E states one of the purposes of the chapter as being "To minimize dependence on automobile travel by encouraging transportation alternative in project design where appropriate." In Mr. Litman's study from the Victoria Transport Policy Institute, he indicates that increasing parking increases the desirability of car ownership and that goes against this chapter. In the current climate of limited resources, we much decided which side of the scales to press down upon. The side that elevates the car or the side that rejects cars? In San Francisco just over the mountain 30% of households do not own cars.

The price of gasoline and economic status are both better predictor of the number of cars a household will own than the number of bedrooms or the number of people in the household. I understand it is unreasonable to tie building codes to the variable price of gasoline or the fluctuating economic climate, however I think we can all be certain the price of gas is going to continue to rise over the next decades. We should therefore expect the rates of car ownership to fall just as we have seen with the rate of new licenses among young adults.

Tulare St. Case Study

Garages in current stock of housing

Current rate of garages to homes on Tulare st. 56 units / 80 garages or an average of 1.42 garages per unit. The survey says Brisbane has an average of 2.31 bedrooms per home (129 bedrooms total). If we assume this holds true on Tulare St. that would be an average of 0.6 garage space per bedroom which I agree is too low.

New construction.

The new standards would have 1.2-2 parking spaces per bedroom meaning that the new stock would have twice the parking capacity of the old stock but how many major projects will be built on any Brisbane St.?

G-2.55

I would like to propose a different solution. It would be better to hold a lower rate of garages and instead mandate a dedicated storage area for new home or homes undergoing substantial improvements. The dedicated storage areas would be smaller than a parking space reducing the amount of built environment. In some cases it could mean improving and retrofitting an existing space in these cases the increase in the building foot print would be zero. A friend of mine once said the greatest loss known to the American home is the loss of the attic.

If we accept that there is not currently enough parking, how much parking is actually needed?

According to the survey cited Brisbane homes average 2.3 bedrooms and 1.76 cars meaning that to provide 100% off street parking the home must have 0.76 parking spaces per bedroom not the 1.2-2 parking spaces per bedroom that is purposed. This is supported by the 2006-2010 American Survey of Vehicle Availability Rates.

0.76 garages per bedroom would look something like this,

- 1 bedroom = 1-2 off street parking space + ?? sqft of dedicated storage
- 2 bedrooms = 2 off street parking space + ?? sqft of dedicated storage
- 3 bedrooms = 3 off street parking space + ?? sqft of dedicated storage
- 4 bedrooms = 3 off street parking space + ?? sqft of dedicated storage
- 5 bedrooms = 4 off street parking space + ?? sqft of dedicated storage
- 6 bedrooms = 4 off street parking space + ?? sqft of dedicated storage

Misc Items.

17.34.030 J. Parking lot landscaping. For any open parking area containing ten (10) or more parking spaces subject to design permit approval, landscape plans shall be submitted to provide trees, shrubs and ground cover, as appropriate. The landscape plans shall provide at least one tree for every 10 parking spaces, which may be planted in diamond shape tree-wells or parkway strips, located as to break up the expanse of paved area.

17.34.030 J. Parking lot landscaping. For any open parking area containing ten (10) or more parking spaces subject to design permit approval, landscape plans shall be submitted to provide shade trees, or shade trees with ground cover, as appropriate. The landscape plans shall provide at least one tree for every 5 parking spaces, which may be planted in diamond shape tree-wells or parkway strips, located to mitigate the heat island effect and provide shade.

A possible parking permit system.

A parking permit system would probably need to be implemented from the top down. Neighborhoods are unlikely to form agreements themselves and I believe this is due to a natural resistance to engendering ill will.

A household with 2 operable cars and 2 off street parking would get 0 free permits but could purchase any number of permits. A household with 2 operable cars and 1 off street parking space would be issued 1 free parking permit but could buy additional permits. In this way, people are not taxed for owning cars but only for cars they cannot house. This system would not differentiate between garages and other types of off street parking so people would be free to use their garage as storage only so long as they had other off street parking available. This would provide an incentive to remove non-operable vehicles.

Guest Parking. Short term guest staying less than 72 hours would not be subject to any restriction. Residents can obtain a fixed term guest permit for guests visiting for longer durations.

Fees. Fees should be set higher than the marginal cost of issuing the permits and enforcement all the way up to mildly punitive.

Green Parking Lot Resource Guide



G.2.58

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A parking lot effect?

By Mark Clayton, Staff writer of The Christian Science Monitor / February 5, 2004

Spewing from factory stacks and car tail pipes, carbon dioxide is the poster child of "greenhouse gases." Most scientists long ago concluded that CO₂ is the single biggest cause of climate change and that cutting its output is the best way to slow global warming.

So why are a tiny but growing number of atmospheric scientists taking a hard look at parking lots? Because, they say, land-use changes have at least as much, and perhaps even greater, impact on climate change than CO₂. It's a radical idea that has heated up the scientific community and is prompting a wider look at the forces behind climate change. The effect on public policy could be enormous.

Do massive asphalt and concrete "urban heat islands" like Houston or Atlanta really help ratchet up the global thermostat? What about huge tracts of farmland like those that span the Midwest?

Eugenia Kalnay thinks so. Her research into the impact of land-use changes on global temperature is getting attention from other scientists, even if this debate hasn't exactly leaped into the public arena yet.

Earth's surface temperatures have risen about 1 degree F. in the past century with faster warming in the past two decades, the National Academy of Sciences reports. The 20th century's 10 warmest years all occurred in the last 15 years of the century.

But according to Dr. Kalnay's study, published in the journal *Nature* last spring, urbanization, agriculture, and other human changes to landscapes in the US - quite aside from CO₂ - account for as much as 40 percent of the temperature rise over the past 40 years - much larger than previously believed. That could make it a contender for CO₂'s crown.

Kalnay, a University of Maryland researcher, was director of environmental modeling at the National Weather Service from 1987 to 1997. She oversaw development of computer models for the now ubiquitous three- to five-day forecasts.

But it is her recent research that struck a chord with the scientific community. Kalnay and coauthor Ming Cai have received a huge amount of both praise and criticism. "We were both taken aback that instead of the paper going quietly, we got hundreds and hundreds of comments and questions," she says.

Now Kalnay's research, joined by the work of a growing number of other scientists, has intensified debate over the relative strength of "climate forcing" factors.

Recent studies show that deforestation in parts of Africa is curbing rainfall in the once-vital Sahel zone bordering the Sahara desert. Changes in forest cover have also been shown to affect rainfall and climate far beyond the Amazon Basin. Still others have shown that planting trees can actually increase the planet's temperature if done in the wrong climate zones.

"Impacts of human-caused land changes on climate are at least as important, and possibly even more important, than those of carbon dioxide," says Roger Pielke Sr., professor of atmospheric science at Colorado State University and past president of the American Association of State Climatologists. His group voted in 2002 to issue a statement almost unanimously concurring that climate changes are more complex than CO2 changes and include land use. By contrast, the American Geophysical Union issued a statement last month maintaining CO2 as the key factor.

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New Study Reveals the Hidden Environmental Cost of Parking

Posted on Wednesday January 12th by Eric Jaffe



The price of free parking keeps going up. One cost is painful urban congestion, which is made worse by [drastically under-priced street parking](#). Another is a relative cost to the environment, which occurs when the near-certain prospect of free (or cheap) parking entices people into their cars and away from alternative forms of transportation. Recently a team of researchers from the University of California at Berkeley, writing in a [recent issue of Environmental Research Letters](#), described a previously unknown cost

— energy and emissions that come from building America's vast parking infrastructure:

The environmental effects of parking are not just from encouraging the use of the automobile over public transit or walking and biking (thus favoring the often more energy-intensive and polluting mode), but also from the material and process requirements in direct, indirect, and supply chain activities related to building and maintaining the infrastructure.

To estimate just how great this toll is, the researchers first had to estimate exactly how many parking spots exist in the United States. Turns out that's no easy task; in fact, according to the authors, no such "nationwide inventory" has ever been done. "It's kind of like dark matter in the universe," Donald Shoup, the so-called ["prophet of parking"](#) (and not part of the study), told [Inside Science](#). "We know it's there, but we don't have any idea how much there is." When the Berkeley researchers crunched the numbers, they came up with five scenarios of available U.S. parking that ranged from 105 million spots to 2 billion. Give or take, I guess.

The most likely estimate points to [roughly 800 million spaces](#) across the country, and the construction and maintenance of those spaces do, in fact, take a large cumulative toll on the environment. When parking spots are taken into account, an average car's per-mile carbon emissions go up as much as 10 percent, the authors conclude. They also report that, over the course of a car's lifetime, emissions of sulfur dioxide and soot rise 24 percent and 89 percent, respectively, once parking is properly considered.

Those are just part of a broad "suite of impacts" that includes previously studied costs like the "heat island effect" — the term for when dark pavement raises the temperature of a city, leading to additional energy demands for cooling. And atmospheric costs are only part of the suite. According to the paper's lead author, Mikhail Chester, there may be a larger infrastructure for parking than for roadways. If that's the case, there would seem to be another great cost to all this parking: the relative cost of useful space.

Image: [add1sun](#)

The Daily Dig: Death to High-Speed Rail...Maybe

Posted on Friday November 18th by Ysabel

Yates

THE DAILY DIG

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Sorry. No data so far.

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Aom Brian Nicole

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NEWS

Aug 30, 2010

Insight: how do parking lots affect the environment?

Automobiles are parked for roughly 95% of their lifetimes yet we know little about how parking spaces affect the environment. Using five different approaches, researchers at the University of California, Berkeley, US, determined that there are between 105 million and 2 billion parking spaces in the US for roughly 300 million vehicles. The energy consumed and polluting gases emitted when constructing and maintaining these infrastructures, as well as by roadside paved areas, becomes important when considered along with the environmental impact of vehicles themselves.



(<http://images.iop.org/objects/erw/news/5/8/45>

/lots.jpg)

Mikhail Chester and Arpad Horvath (<http://images.iop.org/objects/erw/news/5/8/45/lots.jpg>)

While regional surveys of parking spaces exist, estimates of the number of US parking spaces are important for understanding the total cost and environmental impact of travelling by road.

Mikhail Chester and colleagues created five scenarios that include: accounting for the number of metered spaces; building code requirements; home and work car spaces; parking garage structures; surface lots; and roadside parking areas. Starting with a conservative inventory of 105 million metered spaces, each subsequent scenario builds on the previous one.

Scenario one takes into account the 105 million pay-for-parking spaces reported by the International Parking Institute. Scenario two evaluates the paid spaces from scenario one, plus square foot commercial estimates, a home space, and a work space for each vehicle. Scenario two does not take into account estimates of on-street non-metered parking. Scenario three adds urban on-street parking to scenario two based on AASHTO (American Association of State Highway and Transportation Officials) roadway design specifications. Scenario four uses a 3.4 to 1 spaces per car ratio from survey data. Scenario five evaluates the extreme upper limit of 8 to 1 spaces per car ratio, which implies that both designated and non-designated parking spaces are included – so taking into account all potential parking areas.

The middle three scenarios result in 730–840 million spaces taking up 51–58 m² of parking area space per 100 m² of roadway paved area, and the upper bound fifth scenario at two billion spaces shows that there are more parking areas than roadway areas.

The total amount of energy consumed and emissions produced when constructing and maintaining these infrastructures reveals the true environmental impact of parking. The Californian researchers calculated the real costs of building parking spaces by taking into account how expensive it is to mine and process the construction materials needed, such as asphalt and concrete. Each year, the US consumes 110–1800 PJ of energy to build parking, which results in 10–150 Tg carbon dioxide-equivalent (CO₂e) and significant quantities of CO, SO₂, NO_x, VOCs and PM being emitted. Including parking within the overall "life-cycle" inventory means that light-duty vehicle energy consumption goes up from 3.1 to 4.8 MJ by 0.1–0.3 MJ and greenhouse-gas emissions increase from 230 to 380 g CO₂e by 6–23 g CO₂e per passenger kilometre travelled. Life-cycle automobile SO₂ and PM₁₀ emissions show some of the largest increases, by as much as 24% and 89% from the baseline inventory.

We conclude that transport planning could benefit from a more comprehensive understanding of how parking infrastructures impact the environment by calculating how much they really cost in terms of energy consumption and pollution emitted during their construction and maintenance, says team member Mikhail Chester.

About the author

Mikhail Chester, Arpad Horvath, and Samer Madanat study the environmental effects of

transportation in the Department of Civil and Environmental Engineering at the University of California, Berkeley, US. Chester and Horvath have focused several recent studies on expanding the life-cycle assessment framework of passenger transportation systems (see [Californian high-speed rail \(http://iopscience.iop.org/1748-9326/5/1/014003/fulltext\)](http://iopscience.iop.org/1748-9326/5/1/014003/fulltext) and [Including infrastructure and supply chains \(http://iopscience.iop.org/1748-9326/4/2/024008/fulltext\)](http://iopscience.iop.org/1748-9326/4/2/024008/fulltext)).

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5 Reasons Why Local Display Ads Are Rock Stars

[Read Now!](#) **neustar**

DIGITAL

Is Digital Revolution Driving Decline in U.S. Car Culture?

Shift Toward Fewer Young Drivers Could Have Repercussions for All Marketers

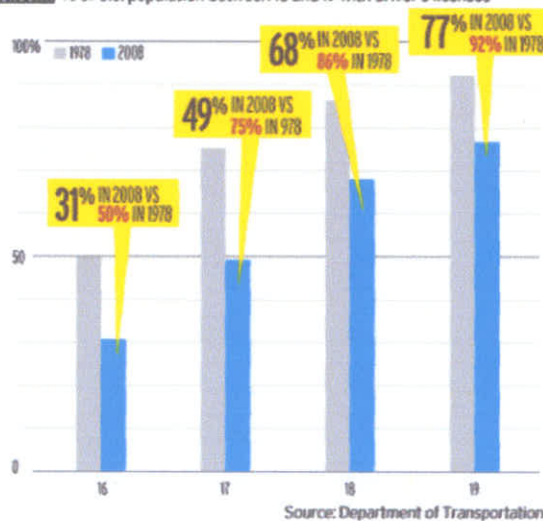
By: Jack Neff Published: May 31, 2010



NEW YORK (AdAge.com) – The internet has wreaked havoc on the music industry, airlines and media, but it just may be doing the same thing to automobiles.

It's a rarely acknowledged transformational shift that's been going on under the noses of marketers for as long as 15 years: The automobile, once a rite of passage for American youth, is becoming less relevant to a growing number of people under 30. And that could have broad implications for marketers in industries far beyond insurance, gasoline and retail.

SLOWDOWN % of U.S. population between 16 and 19 with driver's licenses



Certainly it's hard to believe for anyone stuck in traffic on the way to O'Hare airport in Chicago, a bridge or tunnel into Manhattan, any freeway in Los Angeles, or the newly repaved four-lane highway to a suburban Walmart. But look around, and the people in the other cars are likely to be in their 40s or older.

In 1978, nearly half of 16-year-olds and three-quarters of 17-year-olds in the U.S. had their driver's licenses, according to Department of Transportation data. By 2008, the most recent year data was available, only 31% of 16-year-olds and 49% of 17-year-olds had licenses, with the decline accelerating rapidly

since 1998. Of course, many states have raised the minimum age for driver's licenses or tightened restrictions; still, the downward trend holds true for 18- and 19-year-olds as well (see chart) and those in their 20s.

It's not just new drivers driving less. The share of automobile miles driven by people aged 21 to 30 in the U.S. fell to 13.7% in 2009 from 18.3% in 2001 and 20.8% in 1995, according to data from the Federal Highway Administration's National Household Travel Survey released earlier this year.

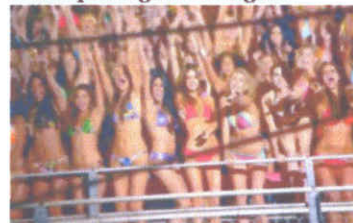
Meanwhile, Census data show the proportion of people aged 21-30 increased from 13.3% to 13.9%, so 20-somethings actually went from driving a disproportionate amount of the nation's highway miles in 1995 to under-indexing for driving in 2009.

5 Reasons Why Local Display Ads Are Rock Stars

[Read Now!](#) **neustar**

2012 SUPER BOWL COVERAGE

Instant Replay: See All the Super Bowl Spots Again and Again



Whether you're one of the few in a land who hadn't seen 75% of the spots before the game, ran off to the powder room during a commercial break, or just want to see the spots you loved (or hated) one more time, here's your chance.

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- Bourbon Boom Overseas Fuels Record Spirits Sales

G.2.607

William Draves blames the internet. Mr. Draves, president of Lern, a consulting firm which focuses mainly on higher education, and co-author of "Nine Shift," maintains that the digital age is reshaping the U.S. and world early in this century, much like the automobile reshaped American life early in the last century.

His theory is that almost everything about digital media and technology makes cars less desirable or useful and public transportation a lot more relevant. Texting while driving is dangerous and increasingly illegal, as is watching mobile TV or working on your laptop. All, at least under favorable wireless circumstances, work fine on the train. The internet and mobile devices also have made telecommuting increasingly common, displacing both cars and public transit.

Blame environment

The environment is the reason Gen Y-ers most often give for wanting to drive less, Mr. Draves said. But he sees the fundamental economic transformation wrought by the internet (and, apparently on the internet; research firm J.D. Power & Associates found that Gen Y-ers don't talk about cars nearly as much as their elders in social media). This demographic will be working on "intangibles" in professional jobs, not on tangible things that require physical presence, Mr. Draves said. "Time becomes really valuable to them," he said. "You can work on a train. You can't work in a car. And the difference is two to three hours a day, or about 25% of one's productive time."

Ford Motor Co. sees the trend as well, which is why it has introduced features such as Sync in its cars. "I don't think the car symbolizes freedom to Gen Y to the extent it did baby boomers, or to a lesser extent, Gen X-ers," said Sheryl Connelly, global trends and futuring manager. "Part of it is that there are a lot more toys out there competing for the hard-earned dollars of older teens and young adults."

Digital technology "allows teens to transcend time and place," she said, "so they can feel connected to their friends virtually." New options like Zipcar also make it easier to do without permanent car ownership, she said.

Millennials "are an important customer to us," said Ford's Ms. Connelly. "But we also understand the context in which they use cars has changed. ... It has nothing to do with performance or getting you from point A to point B. It's just a change in what people expect to be delivered."

The economy, rather than any longer-term secular trend, has impacted driving and licensing among younger people, said Paul Taylor, chief economist with the National Automobile Dealers Association. Unemployment has led some younger consumers to drive less, and the cost of insuring a 16-to-19-year-old driver alone can discourage cash-strapped parents from allowing them to get licenses. State licensing requirements and restrictions by many high schools and colleges on driving are also a factor.

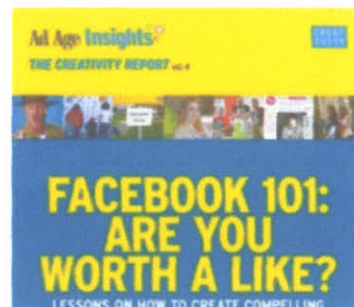
Mr. Draves, however, notes that the shift began well before the recession or the preceding run-up in gas prices. The real-estate markets most profoundly affected by the bursting housing bubble — such as Las Vegas and other Sunbelt metro areas — are boom towns built around highways with no substantial train transportation. Real-estate markets that have been less affected or quicker to recover include Boston and San Francisco, which have strong urban rail systems. In New Jersey, Connecticut, Boston, Denver and Chicago, housing prices near new or existing train stations have either been among the first to recover or have seen less depreciation during the bursting of the housing bubble.

In fact, Mr. Draves predicts a resurgence of urban living in denser housing surrounding train stations. As a result, suburban shopping malls and big-box stores such as Walmart, Target and club stores that rely on people hauling big purchases away in cars stand to suffer.

Before you scoff, consider Walmart. Few, if any, retailers are quite as dependent on the car. Walmart has yet to find a highly profitable small-store concept that fits densely packed urban areas; it's disproportionately strong in rural and suburban areas and has had trouble penetrating big cities with mass transit.

When gas prices dropped sharply in late 2007, Walmart started posting its best same-store sales results in years. The rebound in gas prices was just as tough on Walmart as the drop was favorable. The retailer's year-over-year customer traffic turned negative last year just as gas prices shot past

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their 2008 levels, U.S. Chief Operating Officer Bill Simon said in a March speech to analysts.

E-commerce wins

Gen Y's driving-behavior shift, however, won't just be about helping main streets return as big-box retailers fade, Mr. Draves said. E-commerce is likely to benefit, too, as categories at first resistant to e-commerce take another serious crack at it. Alice.com, which is providing the platform and fulfillment now for more than 60 mainly package-goods e-stores, is seeing a growing share of its business, which drew close to 700,000 visitors in April from Gen Y shoppers, according to Compete.com, said CEO Brian Wiegand.

"This new generation, their first thought is not 'let's drive to the store to get these things,'" he said, "but 'let's get them the easiest, fastest, cheapest way.' We call them internet-first people. We think that's an important segment for us, and it's also the biggest segment for our iPhone app, which is almost all Gen Y."

Of course, the trend is mainly bad news for an auto industry struggling to recover from its steepest downturn since the Great Depression. The combination of Millennials driving less and boomers retiring led Carlos Gomes, economist with ScotiaBank in Toronto, to issue a downbeat forecast for long-term vehicle sales in North America in February. He projects growth in U.S. new vehicle sales of only around 0.6% annually over the next decade, cutting nearly by half the 1.1% growth rate of the prior decade.

While the need to replace a fleet that averages 9.4 years old in the U.S. favors the auto industry short-term, demographics and driving trends argue against a robust recovery, he said. Citing his own teenage children and their friends in Toronto, Mr. Gomes said, "they just prefer taking the train."

But some argue it's not a permanent shift in preferences away from driving – rather a shift toward driving later.

'Delayed, not denied'

Driving is more likely "delayed than denied," argued NADA's Mr. Taylor. "That age cohort may eventually get married and have children. Living near work is something you do when you're young and single, and when you start picking out schools and amenities you want for your children's development, people are less willing to live near the office."

According to DOT data, it costs \$8,000 a year to operate a car based on the average 15,000 annual miles driven. In all, Americans spend \$1 trillion to \$2 trillion annually on automobiles, Mr. Draves said, including everything from the cars themselves to the roads they run on, the gas they need and the \$100 billion spent insuring them.

The trend of Gen Y driving less is definitely on the radar of State Farm, said Tim Van Hoof, director-marketing communications at the No. 1 insurer, and it's changing how it goes to market. The company just launched a new campaign targeted at younger customers that "tries to start a broader conversation," about life, renters and homeowners policies, rather than just auto, he said. Of course, cars won't disappear, nor will the changes happen overnight. Mr. Draves predicts that by 2020, the combination of younger people driving less and boomers retiring will cut mileage driven in the U.S. by half.

Today, only 30 of the 100 metropolitan areas that account for three quarters of U.S. population have trains, but Mr. Draves said pressure is building to build more. Denver, Charlotte, N.C., and Portland, Ore., are among those with systems under development, and Cincinnati is debating the development of a streetcar system that would link its downtown with uptown neighborhoods increasingly popular with young professionals.

NADA's Mr. Taylor acknowledged that telecommuting is growing, but not as fast as pundits predicted five or 10 years ago. And while there is a train line being built in front of NADA's McLean, Va., offices, it's been a difficult process for which funding was tough, he said. "If job prospects improve," he said, "people will want the personal freedom and mobility that owning a car provides."

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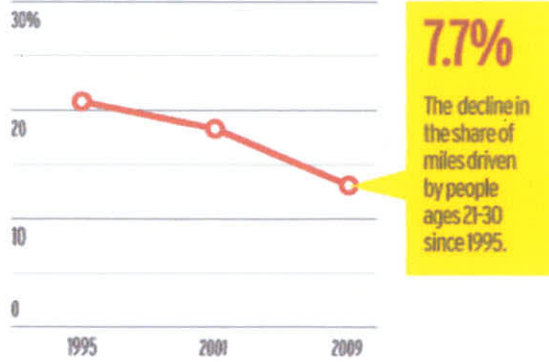
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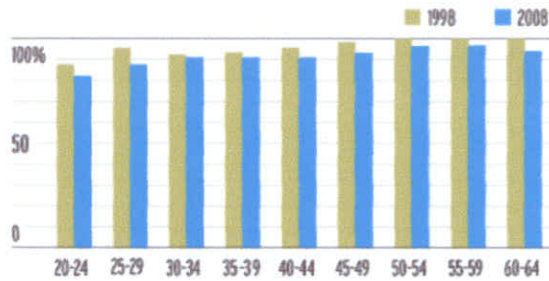
Percentage of all automobile miles driven by people ages 21-30



Source: LERNNine Shift Institute, based on data from the National Household Travel Survey from the Federal Highway Administration of the U.S. Department of Transportation, validated with the FHA and Duke University statistician Laura Taylor.

NEW AGE FOR DRIVERS

Percentage of U.S. population with driver's licenses, by age



Source: U.S. Department of Transportation

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Contributing: *Jeremy Mullman*

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|-------------------------------------|--------|----|------------------------------------------------------------|
| Median Income (\$)                  | 65,658 | 91 | <span style="background-color: #90EE90;">TOP 10%</span>    |
| Cost Of Living Index                | 422.0  | 98 | <span style="background-color: #90EE90;">TOP 10%</span>    |
| Median Mortgage To Income Ratio (%) | 27.3   | 96 | <span style="background-color: #90EE90;">TOP 10%</span>    |
| Owner Occupied Homes (%)            | 67.6   | 24 |                                                            |
| Median Rooms In Home                | 4.3    | 5  | <span style="background-color: #FF6347;">BOTTOM 10%</span> |
| College Degree (%)                  | 39.5   | 88 |                                                            |
| Professional (%)                    | 47.0   | 90 | <span style="background-color: #90EE90;">TOP 10%</span>    |
| Population                          | 3,600  | 29 |                                                            |
| Average Household Size              | 2.2    | 6  | <span style="background-color: #FF6347;">BOTTOM 10%</span> |
| Median Age                          | 40.3   | 80 |                                                            |
| Male To Female Ratio (%)            | 111.5  | 95 | <span style="background-color: #90EE90;">TOP 10%</span>    |
| Married (%)                         | 53.6   | 19 |                                                            |
| Divorced (%)                        | 12.3   | 85 |                                                            |
| White (%)                           | 64.3   | 20 |                                                            |
| Black (%)                           | 0.1    | 17 |                                                            |
| Asian (%)                           | 15.0   | 97 | <span style="background-color: #90EE90;">TOP 10%</span>    |
| Hispanic Ethnicity (%)              | 14.7   | 86 |                                                            |

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**Table 8**  
**Distribution of Households by Vehicle Availability: 1960-1990**  
**1960, 1970, 1980 & 1990 Decennial Censuses**

| County        | Year | No Vehicle | % of Total | One Vehicle | % of Total | Two Vehicles | % of Total | Three-Plus Vehicles | % of Total | Total Households |
|---------------|------|------------|------------|-------------|------------|--------------|------------|---------------------|------------|------------------|
| San Francisco | 1960 | 122,847    | 42.1%      | 136,689     | 46.8%      | 27,263       | 9.3%       | 5,171               | 1.8%       | 291,970          |
|               | 1970 | 116,816    | 39.6%      | 133,633     | 45.3%      | 38,371       | 13.0%      | 6,354               | 2.2%       | 295,174          |
|               | 1980 | 103,462    | 34.6%      | 127,131     | 42.5%      | 51,869       | 17.4%      | 16,494              | 5.5%       | 298,956          |
|               | 1990 | 93,806     | 30.7%      | 127,271     | 41.6%      | 64,379       | 21.1%      | 20,128              | 6.6%       | 305,584          |
| San Mateo     | 1960 | 10,723     | 7.9%       | 75,382      | 55.8%      | 43,807       | 32.4%      | 5,259               | 3.9%       | 135,171          |
|               | 1970 | 13,871     | 7.5%       | 83,622      | 45.2%      | 71,859       | 38.8%      | 15,676              | 8.5%       | 185,028          |
|               | 1980 | 14,338     | 6.4%       | 82,065      | 36.4%      | 82,946       | 36.8%      | 45,852              | 20.4%      | 225,201          |
|               | 1990 | 14,683     | 6.1%       | 78,396      | 32.4%      | 93,527       | 38.7%      | 55,308              | 22.9%      | 241,914          |
| Santa Clara   | 1960 | 16,216     | 8.8%       | 99,770      | 54.0%      | 59,952       | 32.4%      | 8,976               | 4.9%       | 184,914          |
|               | 1970 | 22,224     | 6.9%       | 129,631     | 40.2%      | 139,888      | 43.3%      | 31,039              | 9.6%       | 322,782          |
|               | 1980 | 25,213     | 5.5%       | 146,886     | 32.0%      | 171,326      | 37.4%      | 115,094             | 25.1%      | 458,519          |
|               | 1990 | 27,326     | 5.3%       | 147,789     | 28.4%      | 210,612      | 40.5%      | 134,453             | 25.8%      | 520,180          |
| Alameda       | 1960 | 54,827     | 18.6%      | 162,752     | 55.1%      | 68,373       | 23.1%      | 9,415               | 3.2%       | 295,367          |
|               | 1970 | 60,997     | 16.7%      | 170,535     | 46.7%      | 111,578      | 30.6%      | 21,983              | 6.0%       | 365,093          |
|               | 1980 | 60,955     | 14.3%      | 161,652     | 37.9%      | 129,851      | 30.5%      | 73,634              | 17.3%      | 426,092          |
|               | 1990 | 58,711     | 12.2%      | 165,050     | 34.4%      | 165,918      | 34.6%      | 89,839              | 18.7%      | 479,518          |
| Contra Costa  | 1960 | 10,262     | 8.7%       | 63,862      | 54.2%      | 38,885       | 33.0%      | 4,849               | 4.1%       | 117,858          |
|               | 1970 | 13,116     | 7.6%       | 72,007      | 41.6%      | 71,768       | 41.5%      | 16,060              | 9.3%       | 172,951          |
|               | 1980 | 16,271     | 6.7%       | 77,498      | 32.1%      | 91,406       | 37.8%      | 56,359              | 23.3%      | 241,534          |
|               | 1990 | 19,129     | 6.4%       | 87,817      | 29.2%      | 123,621      | 41.2%      | 69,721              | 23.2%      | 300,288          |
| Solano        | 1960 | 4,260      | 11.1%      | 24,238      | 63.0%      | 8,776        | 22.8%      | 1,179               | 3.1%       | 38,453           |
|               | 1970 | 4,505      | 8.8%       | 25,602      | 50.1%      | 17,588       | 34.4%      | 3,425               | 6.7%       | 51,120           |
|               | 1980 | 5,398      | 6.7%       | 26,915      | 33.5%      | 29,148       | 36.2%      | 18,965              | 23.6%      | 80,426           |
|               | 1990 | 6,516      | 5.7%       | 32,190      | 28.4%      | 47,208       | 41.6%      | 27,515              | 24.3%      | 113,429          |
| Napa          | 1960 | 1,819      | 9.6%       | 11,029      | 58.5%      | 5,465        | 29.0%      | 554                 | 2.9%       | 18,867           |
|               | 1970 | 2,550      | 10.2%      | 10,938      | 43.6%      | 9,313        | 37.1%      | 2,297               | 9.2%       | 25,098           |
|               | 1980 | 2,564      | 7.0%       | 11,744      | 32.1%      | 12,374       | 33.8%      | 9,942               | 27.1%      | 36,624           |
|               | 1990 | 2,741      | 6.6%       | 12,780      | 30.9%      | 16,366       | 39.6%      | 9,425               | 22.8%      | 41,312           |
| Sonoma        | 1960 | 6,832      | 14.5%      | 25,732      | 54.5%      | 12,767       | 27.1%      | 1,860               | 3.9%       | 47,191           |
|               | 1970 | 7,189      | 10.6%      | 32,183      | 47.4%      | 23,094       | 34.0%      | 5,395               | 8.0%       | 67,861           |
|               | 1980 | 7,725      | 6.7%       | 38,997      | 34.1%      | 39,039       | 34.1%      | 28,713              | 25.1%      | 114,474          |
|               | 1990 | 8,741      | 5.9%       | 46,602      | 31.3%      | 59,959       | 40.2%      | 33,709              | 22.6%      | 149,011          |
| Marin         | 1960 | 3,967      | 9.0%       | 24,877      | 56.3%      | 14,083       | 31.9%      | 1,268               | 2.9%       | 44,195           |
|               | 1970 | 4,619      | 6.9%       | 29,647      | 44.1%      | 27,780       | 41.3%      | 5,220               | 7.8%       | 67,266           |
|               | 1980 | 4,819      | 5.4%       | 32,722      | 36.9%      | 34,063       | 38.4%      | 17,119              | 19.3%      | 88,723           |
|               | 1990 | 4,879      | 5.1%       | 31,404      | 33.1%      | 39,311       | 41.4%      | 19,412              | 20.4%      | 95,006           |
| Region        | 1960 | 231,753    | 19.7%      | 624,331     | 53.2%      | 279,371      | 23.8%      | 38,531              | 3.3%       | 1,173,986        |
|               | 1970 | 245,887    | 15.8%      | 687,798     | 44.3%      | 511,239      | 32.9%      | 107,449             | 6.9%       | 1,552,373        |

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|      |         |       |         |       |         |       |         |       |           |
|------|---------|-------|---------|-------|---------|-------|---------|-------|-----------|
| 1980 | 240,745 | 12.2% | 705,610 | 35.8% | 642,022 | 32.6% | 382,172 | 19.4% | 1,970,549 |
| 1990 | 236,532 | 10.5% | 729,299 | 32.5% | 820,901 | 36.5% | 459,510 | 20.5% | 2,246,242 |

**Sources:**

U.S. Bureau of the Census, Decennial Censuses - 1960-1990

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## Parking Requirement Impacts on Housing Affordability

18 February 2011

Todd Litman

*Victoria Transport Policy Institute*



*Current development practices result in generous parking supply at most destinations, which reduces housing affordability, increases vehicle ownership and stimulates sprawl. This is regressive, since lower-income households tend to own fewer than average vehicles, and unfair, because it forces residents to pay for parking they don't need. Alternative policies can increase housing affordability and help achieve other transportation and land use planning objectives.*

### Abstract

Current zoning laws and development standards require generous parking supply at most destinations, forcing people who purchase or rent housing to pay for parking regardless of their needs. Generous parking requirements reduce housing affordability and impose various economic and environmental costs on society. Based on typical affordable housing development costs, one parking space per unit increases costs by about 12.5%, and two parking spaces increase costs by about 25%. Since parking costs increase as a percentage of rent for lower priced housing, housing represents a larger portion of household expenditures for poorer households, and vehicle ownership increases with income, parking costs are regressive and unfair to many lower-income households that own fewer than average cars. Current parking standards are an ineffective mechanism for matching parking supply with demand because the number of vehicles per housing unit varies significantly between households and over time. Various parking management strategies can increase affordability, economic efficiency and equity.

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## Preface

*Hey, I've got a terrific idea! Let's pass a law requiring all residential buildings to have gasoline pumps that provide free fuel to residents and their guests. Fuel costs would be incorporated into residential rents. Think of the benefits! No more worry about money to pay for gas. No delays at gas stations. Everybody would be better off, especially poor folks. Great idea, right?*

Wrong. It's a foolish idea. Somebody would have to pay for the pump and gasoline. It would increase everybody's housing costs. It would be unfair to anybody who drives less than average, who would be forced to subsidize their neighbors' gasoline consumption.

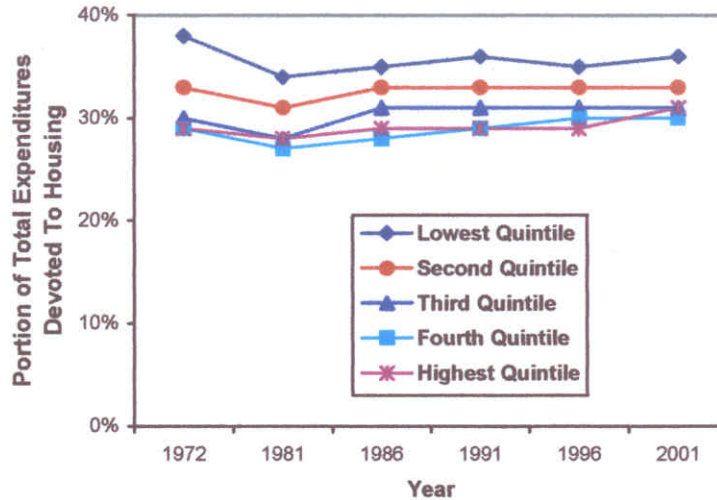
Free gasoline would also encourage wasteful habits. It would increase motor vehicle use, leading to more congestion, pollution, accidents, and sprawl, and it would continue the decline in non-automotive transportation choices, leaving non-drivers worse off. The gasoline tanks would take up space. Gasoline spilled from the pumps would degrade the environment.

Although requiring free gasoline is obviously unfair, wasteful and foolish, it is economically little different from current residential parking standards. Both residential parking and gasoline typically cost about \$50 per month per automobile. Current practices of requiring generous free residential parking contradict society's goals to provide affordable housing, reduce environmental impacts, conserve resources and develop a more efficient and diverse transportation system.

## Introduction

Adequate housing is essential for individual and community welfare. There are few trends more tragic than the growing housing problems many people face. An unacceptable number of people are homeless, and many lower-income households devote an excessive portion of their income to housing.

**Figure 1** Housing Portion of Consumer Expenditures (BLS, Various Years)



*This figure shows the portion of household expenditures devoted to housing by income quintile. Housing averages more than a third of expenditures for the lowest income quintile households.*

This report examines the impacts of residential parking requirements (the number of off-street parking spaces mandated at a particular location) on housing affordability. Increasing parking requirements increase housing development costs, which has reduced the supply of lower priced housing and raised costs to consumer. This report does not question the need for some off-street parking. The question issue is how best to determine parking requirements and manage available parking supply. It describes more efficient and equitable strategies that support social and environmental goals.

The parking problem is ultimately simple. Motorists have come to expect generous amounts of free parking at most destinations, and planning practices attempt to provide this. The result is more-than-adequate parking supply at most destinations, but high costs in terms of resources consumed and distortions to development patterns. Current parking practices are comparable to about a 10% tax on development, and much more for lower-priced housing in areas with high land costs. These practices are regressive because lower-income people tend to own fewer than average vehicles: we force five lower-income households to purchase more parking than they need, to insure that one higher income household can park all of its vehicles with no extra cost. Described more positively, more efficient parking practices can provide large savings, increased affordability and improved community design.

**Current Residential Parking Requirements**

Automobiles typically spend 95% of their existence parked, using either on-street parking supplied free by the community or privately supplied off-street parking. Since on-street parking is an expensive and limited public resource it seems fair to mandate off-street parking. Most local governments require building owners to provide a certain minimum amount of parking based on the assumption that buildings create parking demand. Building owners are forced to include parking costs when selling or renting housing.

**Table 1** Typical Parking Standards (“Parking Evaluation,” VTPI, 2005)

| Housing Type              | Spaces Per Unit |
|---------------------------|-----------------|
| Single family             | 2.0             |
| “Efficiency” apartments   | 1.0             |
| 1 to 2 bedroom apartments | 1.5             |
| 3+ bedroom apartments     | 2.0             |
| Condominiums              | 1.4             |

*These standards are considered sufficient to meet typical residential parking*

These parking requirements are based on recommended standards published by professional organizations such as the *Institute of Transportation Engineers* ([www.ite.org](http://www.ite.org)) and the *American Planning Association* ([www.planning.org](http://www.planning.org)). Table 1 shows typical recommended off-street standards. Many municipalities impose even higher parking requirements than these recommended standards, as illustrated in Table 2. These standards tend to be excessive in many situations, resulting in parking facilities that are seldom or never fully used, particularly in areas where per capita vehicle ownership and use tends to be low (Shoup, 1999).

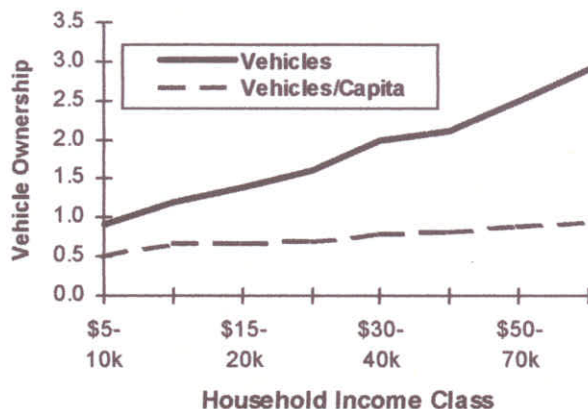
**Table 2** Typical Residential Off-Street Parking Standards (Stover & Koepke, 2002)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Multifamily, Studio</i><br/>                     “One space per dwelling unit.” (Orange Co., CA)<br/>                     “1.2 spaces per unit.” (Bellevue, WA)<br/>                     “1.25 per dwelling unit.” (Savannah, GA)</p> <p><i>Multifamily, One Bedroom</i><br/>                     “One space for each dwelling.” (Bay City, MI)<br/>                     “1.5 spaces for efficiency units.” (Schaumburg, IL)</p> <p><i>Multifamily, Two Bedrooms</i><br/>                     “1.6 spaces per unit.” (Bellevue, WA)<br/>                     “1.75 spaces per dwelling unit.” (Savannah, GA)<br/>                     “Two spaces per dwelling unit.” (Hillsborough, FL)</p> <p><i>Multifamily, Three Bedrooms</i><br/>                     “1.8 spaces per unit.” (Bellevue, WA)<br/>                     “2.33 spaces per unit.” (Lake Forest, IL)</p> <p><i>Multifamily, Four Bedrooms</i><br/>                     “Two spaces per unit.” (Albany, OR)</p> | <p><i>Manufactured Housing</i><br/>                     “One space per unit.” (Fairbanks, AK)<br/>                     “1.25 spaces per mobile home site.” (Durham, NC)<br/>                     “1.5 spaces per unit.” (Albemarle Co. VA)<br/>                     “Two spaces per unit, plus one per five units for guest parking.” (Prescott, AZ)</p> <p><i>Townhouse</i><br/>                     “1.5 spaces per dwelling unit.” (Clifton Forge, VA)<br/>                     “Two spaces per dwelling unit.” (Lexington Co. SC)<br/>                     “2.25 spaces for each dwelling unit.” (Plano, TX)</p> <p><i>Single Family</i><br/>                     Nearly all codes require two off-street spaces per unit.<br/><br/>                     “Detached two spaces per dwelling if access to the lot is on a public street; 2.5 spaces per dwelling if access to the lot is from a private street, common drive, or common parking court.” (Leesburg, VA)</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Parking Demand by Households

Automobile ownership varies significantly, and is affected by demographic, geographic and management factors (“Parking Evaluation,” VTPI, 2005; Litman, 2006). Twelve percent of U.S. households do not own a motor vehicle, with higher rates of zero-vehicle households in larger cities and lower-income communities (BLS, 2003). Motor vehicle ownership rates tend to increase with income and household size, as indicated in figures 2 through 5 (also see Rice, 2004; CNU, 2008).

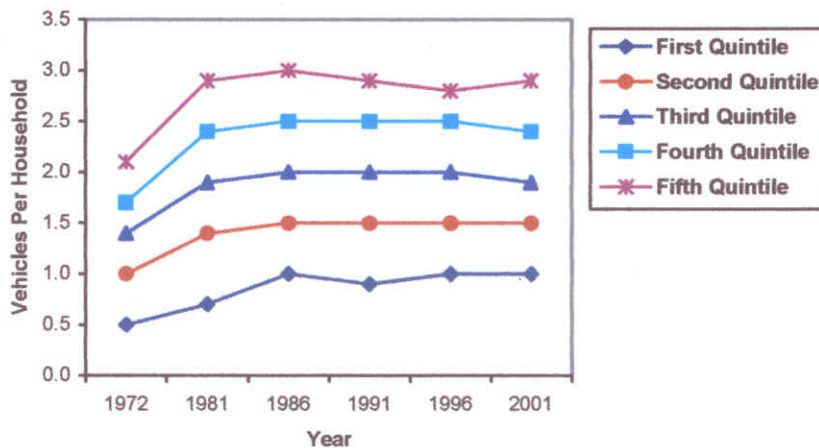
**Figure 2** Vehicle Ownership by Household Income (BLS, 2003)



*Lower income households own fewer automobiles than wealthier households.*

Figure 3 shows how per household vehicle ownership varies by income class and over time. Average vehicle ownership rates grew during the 1970s and 1980s, but this leveled off and even declined in some classes during the 1990s.

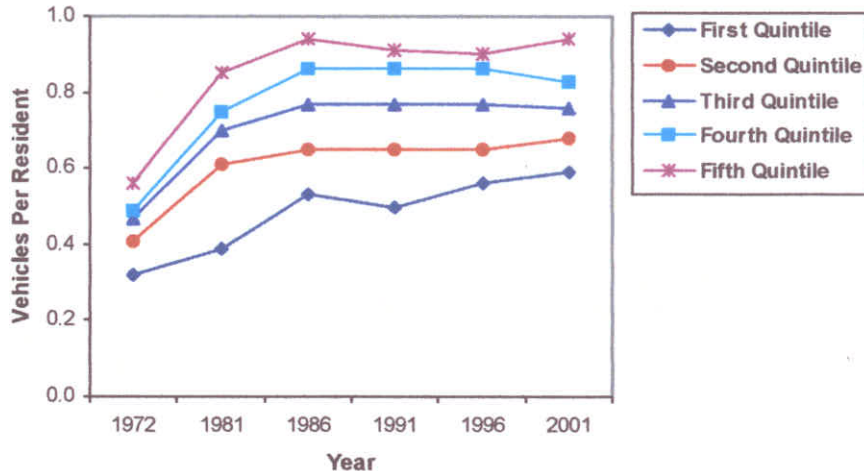
**Figure 3** Vehicles Per Household By Income Class (BLS, Various Years)



*This figure shows how household vehicle ownership varies by income. Vehicle ownership grew during the 1970s, but has since leveled off and even declined for some income groups.*

Differences in vehicle ownership between different income classes results, in part, from differences in household size, since household population increases with income. Figure 4 compared vehicle per household resident.

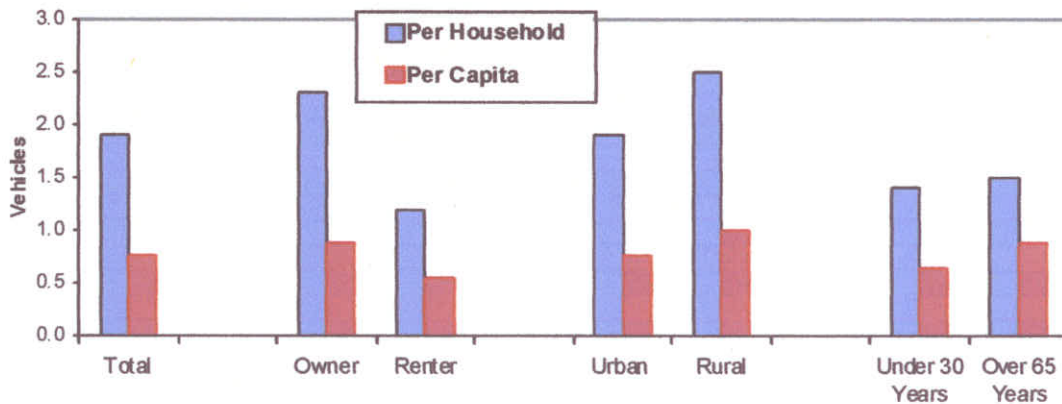
**Figure 4** Vehicles Per Resident By Income Class (BLS, Various Years)



This figure shows the average number of vehicles per capita by income quintile.

Figure 5 illustrates how factors such as home tenure, location and age affect vehicle ownership and therefore parking demand.

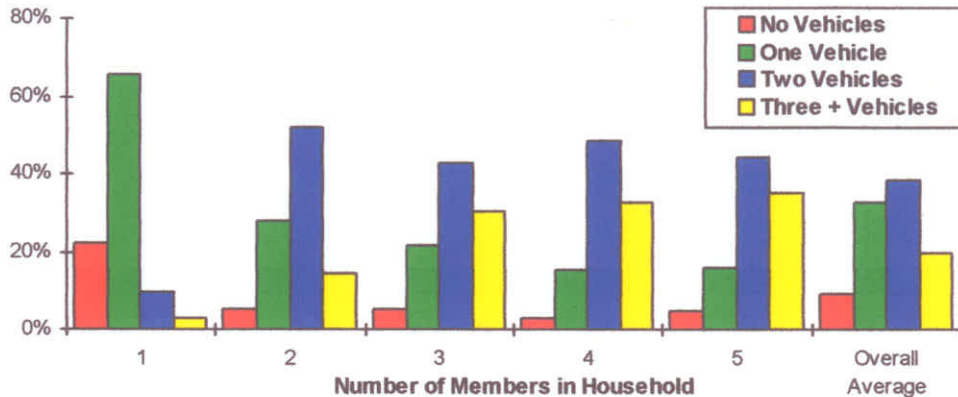
**Figure 5** Vehicles Per Household (BLS, 2002)



Household vehicle ownership rates vary depending on factors such as home tenure, location and resident age.

Vehicle ownership varies with household size, as illustrated in Figure 6. Even a two or three bedroom home may only require one parking space because it is occupied by an adult who uses an extra bedroom as a study, a single parent with children, or two or three adults who share a vehicle.

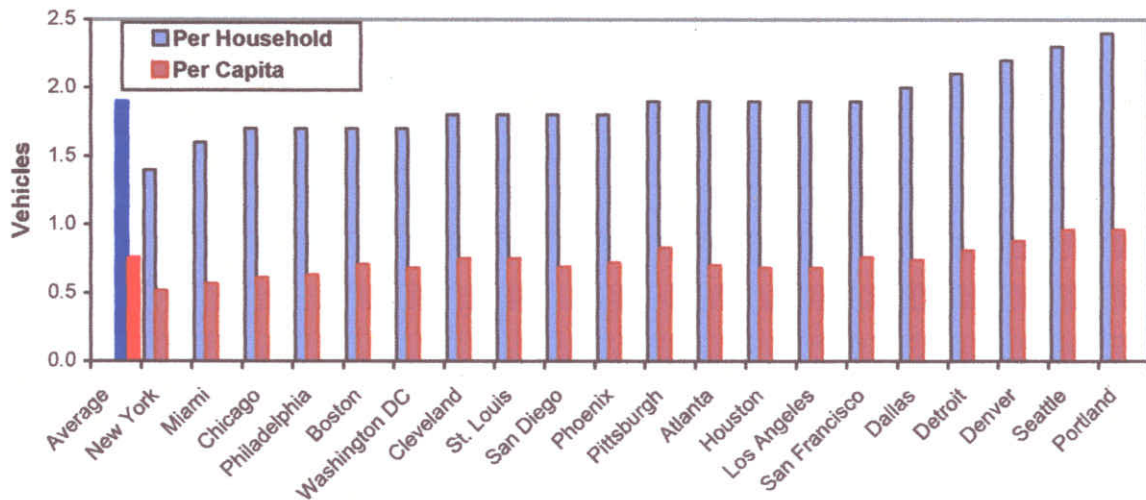
**Figure 6** Vehicle Ownership by Household Size (Hu and Young, 1993, Table 3.17)



*Smaller households tend to own fewer vehicles than larger households.*

Automobile ownership is also affected by geographic factors such as city size, population density and transit service quality (“Land Use Impacts On Transportation,” VTPI, 2005). Figure 7 shows how vehicle ownership rates vary between different U.S. cities. Figure 8 shows how vehicle ownership is affected by population density.

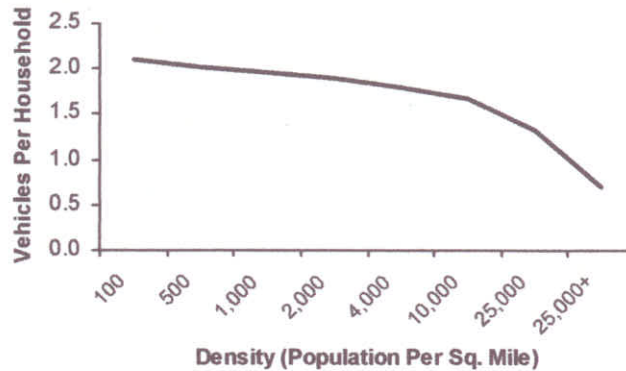
**Figure 7** Vehicles Per Household For Various U.S. Cities (BLS, 2002)



*Vehicle ownership varies from one city to another. Even greater variations exist within an urban region, such as between central and suburban neighborhoods.*



Figure 8 Vehicles Per Household by Population Density (NPTS, 1995)



Vehicle ownership rates decline with population density.

Residents of communities with more diverse transport systems tend to own fewer cars and take fewer vehicle trips than in more automobile-dependent areas (Litman, 2005). Holtzclaw (1994) developed a model for predicting how density and transit service availability affect vehicle ownership and use, summarized in the box below. This formula is incorporated in the *This View of Density Calculator* ([www.sflcv.org/density](http://www.sflcv.org/density)).

**Household Vehicle Ownership and Use By Land Use Formula** (Holtzclaw, 1994)

Household Vehicle Ownership =  $2.702 * (\text{Density})^{-0.25}$

Household Annual Vehicle Miles Traveled =  $34,270 * (\text{Density})^{-0.25} * (\text{TAI})^{-0.076}$

*Density* = households per residential acre.

*TAI (Transit Accessibility Index)* = 50 transit vehicle seats per hour (about one bus) within ¼-mile (½-mile for rail and ferries) averaged over 24 hours.

Bunt and Joyce (1998) surveyed parking demand around the city of Vancouver's SkyTrain stations. They found:

- Nearly a quarter of households living near transit stations own no vehicles.
- Households located within 300 metres of a station owned about 10% fewer vehicles on average than households located more than 1,000 meters from the station.
- Average household vehicle ownership is 31% lower within the SkyTrain corridor than at suburban locations a few miles away.

*Carsharing* (vehicle rental services designed to substitute for private vehicle ownership) tends to reduce vehicle ownership and parking demand (Filosa, 2006). Cervero and Tsai (2003) found that when people join a San Francisco carsharing organization, nearly 30% reduce their household vehicle ownership and two-thirds avoided purchasing another car, indicating that each carshare vehicle in that program substitutes for 5-10 private vehicles.

The elasticity of vehicle ownership with respect to price is typically -0.4 to -1.0, so a 10% increase in total vehicle costs reduces vehicle ownership 4-10% (“Transportation Elasticities,” VTPI, 2005). Table 3 and Figure 9 indicate the reduction in vehicle ownership that can be expected from various residential parking fees and unbundling. Unbundling allows residents to choose how much parking to rent with building space, rather than automatically including a set number of parking spaces. For example, rather than renting an apartment with two parking spaces for \$1,000 per month, the apartment could rent for \$850 per month, plus \$75 per month for each parking space the renter chooses. This is more equitable and efficient, since occupants are not forced to pay for parking they do not need. It allows consumers to adjust their parking supply to reflect their needs.

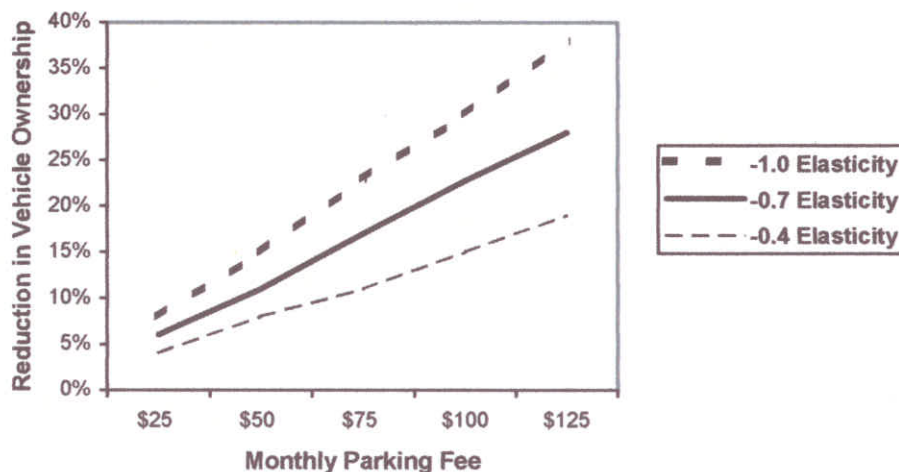
For example, a \$600 annual residential parking fee is likely to reduce vehicle ownership by 8-15%, and a \$1,200 annual fee reduces vehicle ownership 15-30%, assuming free parking is unavailable nearby.

**Table 3 Vehicle Ownership Reductions From Residential Parking Pricing**

| Annual (Monthly) Fee | -0.4 Elasticity | -0.7 Elasticity | -1.0 Elasticity |
|----------------------|-----------------|-----------------|-----------------|
| \$300 (\$25)         | 4%              | 6%              | 8%              |
| \$600 (\$50)         | 8%              | 11%             | 15%             |
| \$900 (\$75)         | 11%             | 17%             | 23%             |
| \$1,200 (\$100)      | 15%             | 23%             | 30%             |
| \$1,500 (\$125)      | 19%             | 28%             | 38%             |

*This table indicates reductions in vehicle ownership resulting from various residential parking fees, assuming that total vehicle ownership costs average \$4,000 per year.*

**Figure 9 Reduction in Vehicle Ownership From Residential Parking Prices**



*This figure illustrates typical vehicle ownership reductions due to residential parking pricing, assuming that the fee is unavoidable (free parking is unavailable nearby). Based on Table 3.*

## **Parking Facility Costs**

If a municipal government doubled residential property taxes to finance free public parking there would surely be considerable debate about the efficiency and equity of such a tax. At least some critics would probably suggest that such taxes are inefficient and unfair, and there would surely be arguments over the facilities' aesthetic and environmental design features. A 2-space per residence parking standard imposes similar costs yet there is often little discussion when city officials set such requirements. Parking requirements are a large but nearly invisible cost that is seldom evaluated as a separate expense. The total cost of parking consists of several components.

### **1. Land**

Each off-street parking space requires about 300 square feet of surface area (including access lanes). One acre of land can hold about 125 spaces, fewer if major landscaping and screening are provided ("Parking Evaluation," VTPI, 2005). Land costs are about \$4,200 per space, assuming 120 parking spaces and \$500,000 per acre. Parking consumes a major portion of developed land, typically equal to or exceeding the land devoted to the buildings it serves. Expenses that occur early during project development, such as increased land acquisition and preparation costs, add construction financing costs, so parking facility expenses tend to incur higher financing costs than expenses incurred later in the development process.

Residential parking standards are calculated per unit, so parking land costs are a greater percentage of total costs for smaller units. For example, increasing parking from one to two spaces per unit increases land requirements for a small 1,000 square foot, two-story apartment or condominium from 800 to 1,100 square feet per unit, a 37% increase, resulting in more land devoted to parking than to housing. The same doubling of parking requirements only increases the land requirement for a 2,400 square foot one story house by 12.5%.

### **3. Construction and Maintenance**

Paving costs average about \$1,600 per parking space in 1994 dollars, excluding land costs. Parking structure costs average approximately \$10,000 per space, and underground parking \$15,000 to \$20,000 per space, which makes these options uneconomic except where land prices are very high. Annual maintenance costs range from about \$20 to \$100 per year.

Table 4 illustrates the total cost per space for parking facilities in various conditions. Typical off-street residential parking costs range from about \$400 annually in suburban locations where land is considered to have no opportunity cost, to more than \$2,000 per year where underground parking is provided. Annual costs of \$800 to \$1,200 per space is probably typical for urban residential parking.

**Table 4** Typical Parking Facility Financial Costs ("Parking Evaluation," VTPI, 2005)

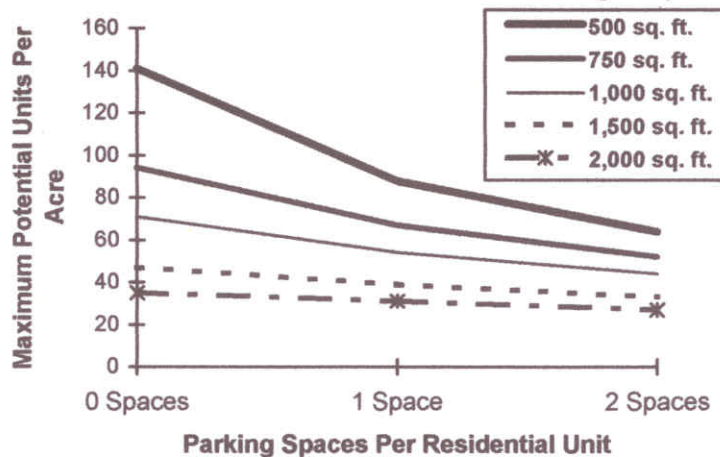
| Type of Facility             | Land Costs  |           | Construction Costs | O & M Costs      | Annual Cost      | Monthly Cost      |
|------------------------------|-------------|-----------|--------------------|------------------|------------------|-------------------|
|                              | Per Acre    | Per Space | Per Space          | Annual Per Space | Annual Per Space | Monthly Per Space |
| Suburban, On-Street          | \$50,000    | \$200     | \$2,000            | \$200            | \$408            | \$34              |
| Suburban, Surface, Free Land | \$0         | \$0       | \$2,000            | \$200            | \$389            | \$32              |
| Suburban, Surface            | \$50,000    | \$455     | \$2,000            | \$200            | \$432            | \$36              |
| Suburban, 2-Level Structure  | \$50,000    | \$227     | \$10,000           | \$300            | \$1,265          | \$105             |
| Urban, On-Street             | \$250,000   | \$1,000   | \$3,000            | \$200            | \$578            | \$48              |
| Urban, Surface               | \$250,000   | \$2,083   | \$3,000            | \$300            | \$780            | \$65              |
| Urban, 3-Level Structure     | \$250,000   | \$694     | \$12,000           | \$400            | \$1,598          | \$133             |
| Urban, Underground           | \$250,000   | \$0       | \$20,000           | \$400            | \$2,288          | \$191             |
| CBD, Surface                 | \$2,000,000 | \$15,385  | \$3,000            | \$300            | \$2,035          | \$170             |
| CBD, 4-Level Structure       | \$2,000,000 | \$3,846   | \$15,000           | \$400            | \$2,179          | \$182             |
| CBD, Underground             | \$2,000,000 | \$0       | \$25,000           | \$500            | \$2,645          | \$220             |

*This table illustrates the costs of providing a parking space under various conditions. (CBD = Central Business District; Assumes 7% annual interest rate, amortized over 20 years)*

#### 4. Reduced Development Density

By increasing the land needed per residential unit, increased surface parking reduces the maximum potential development density (units per acre). In other words, parking squeezes out housing. This impact is proportionally greatest for smaller units. For example, increasing parking requirements from one to two spaces per unit reduces the maximum potential density for two story, 500 square foot bachelor apartments from 88 to 64 units per acre, representing a 37% decline, but only causes a 13% reduction in maximum density for 2,000 square foot townhouses. Figure 10 illustrates this impact.

**Figure 10** Maximum Units Per Acre With Different Parking Requirements



*Maximum potential density declines as the number of surface parking spaces increases. This impact is proportionally largest for smaller units. (Assumes 300 sq. ft. per parking space, 90% land coverage, 10% common areas, 2 story buildings.)*

#### **5. Higher Retail Price Targets**

Construction financing agencies often require that new building retail prices be at least 3 times original land costs. Each additional dollar of land costs for parking therefore increases housing prices by three dollars. Developers cannot afford to build a simple, lower priced housing when their land costs increase, so they target higher end markets.

#### **6. Environmental and Aesthetic Costs.**

Undeveloped land, farmland and urban landscaping (greenspace) provide a variety of environmental and aesthetic benefits, both to the land's owners and to society in general (Litman, 1997). Paved land, biologically barren and unattractive, tends to reduce adjacent property values, increases water pollution and stormwater flooding, reduces visual and acoustic privacy, and causes urban heat island (increased local temperatures).

#### **7. Urban Sprawl and Increased Automobile Dependency.**

Increased parking requirements increase land costs per area of developed floor space, making development at the urban periphery relatively more attractive due to lower land costs (Willson, 1995). Some studies suggest that such regulations discourage urban infill development (Burby, 2000). Increased parking also creates lower density urban and suburban land use patterns that are unsuitable for walking, bicycling and transit. Development densities under about 12 units per acre cannot effectively support public transit service and neighborhood amenities such as small shops within walking distance that substitute for driving. Since off-street parking is a fixed cost (households must pay it whether or not they own a car), fixed parking standards encourage automobile ownership and use.

Each of these impacts contributes to urban sprawl and automobile dependency (defined as increased automobile ownership and use, reducing travel choices, and increasing disadvantage of non-drivers compared with drivers. See "Automobile Dependency," VTPI, 2005). These exacerbate problems such as congestion, accidents, and pollution. Automobile dependency is highly inequitable to non-drivers.

#### **8. Increased Curb Cuts**

Offstreet parking requires curb cuts. This imposes at least two specific costs. It degrades the pedestrian environment (and therefore the retail environment in commercial areas) by causing vehicles to cross sidewalks, and it reduces capacity for on-street parking. A typical curb cut uses almost the same amount of curb space as a parked car, so a single-vehicle off-street parking space provides no net increase in parking capacity if it eliminates an on-street parking space. A double off-street parking space provides a net gain of one space.

**Development Cost Example**

Each increment of increased parking increases all of the costs described above as demonstrated by the following example: A developer wishes to construct 2 bedroom, 1,250 square foot, two-story, wood frame multi-family housing with \$100,000 per unit construction costs on a \$500,000, 1 acre parcel. Her costs are summarized in Table 5.

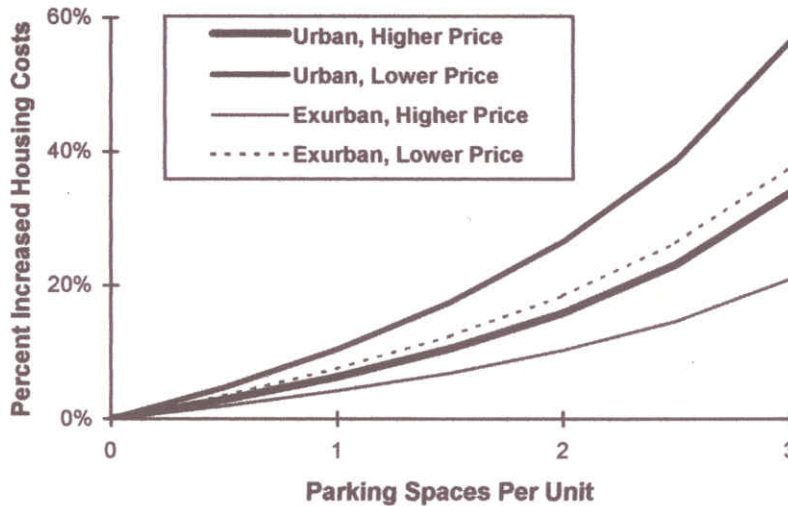
**Table 5 Parking Impacts on Development Costs**

| Parking Spaces Per Unit:               | 0         | 1         | 2         | 3         |
|----------------------------------------|-----------|-----------|-----------|-----------|
| Units / Acre                           | 20        | 16        | 12        | 8         |
| Land Cost / Unit                       | \$25,000  | \$31,250  | \$41,667  | \$62,500  |
| Paving costs.                          | \$0       | \$1,600   | \$3,200   | \$4,800   |
| Housing construction costs / Unit.     | \$100,000 | \$100,000 | \$100,000 | \$100,000 |
| Land, parking & construction costs.    | \$125,000 | \$132,850 | \$144,867 | \$167,300 |
| Construction financing (12%).          | \$15,000  | \$15,942  | \$17,384  | \$20,076  |
| Total construction costs.              | \$140,000 | \$148,792 | \$162,251 | \$187,376 |
| Developer's profit (10%).              | \$14,000  | \$14,879  | \$16,225  | \$18,738  |
| Retail price per unit.                 | \$154,000 | \$163,671 | \$178,476 | \$206,114 |
| Parking as percentage of retail price. | 0%        | 6.3%      | 15.9%     | 33.8%     |
| Developers' profit per acre.           | \$280,000 | \$238,067 | \$194,701 | \$149,901 |

(Assuming Two-Story, 1,200 Square Foot, Multi-Family Housing)

Requiring one off-street parking space adds about 6% to the unit cost, two spaces add about 16%, and 3 spaces adds about 34% compared with no parking. These percentages vary depending on construction and land costs. Figure 11 illustrates incremental costs of parking for standard and affordable housing (\$100,000 and \$50,000 per unit construction costs), with urban and suburban land costs (\$500,000 and \$250,000 per acre).

**Figure 11 Increased Per Unit Housing Price Due to Parking Costs**



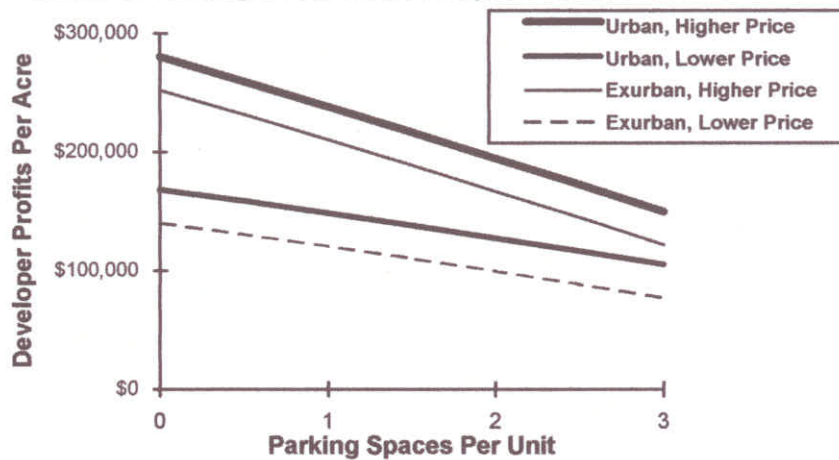
*This shows parking costs as a percentage of housing costs for different construction and land costs. The percentage is greatest for lower price urban housing. This does not include additional indirect costs and non-market, such as reduced greenspace.*

G-2.86

This shows that generous minimum parking requirements significantly increase housing costs, especially when land prices are high and housing construction costs are relatively low, such as affordable, urban infill housing. Based on typical affordable urban housing development costs, one parking space per unit increases total development costs by about 12.5%, and two parking spaces increase costs by about 25%.

Parking requirements reduce developers' profits per acre, as illustrated in Figure 12. In this case, a developer is equally rewarded for producing 10 high priced housing units with 3 parking spaces per unit or 20 affordable housing units with no parking spaces, but has 30% less profit for lower priced housing with 3 parking spaces. Parking requirements reduce developers' incentive to produce affordable housing.

**Figure 12** Effect of Parking Costs on Developer Profits Per Acre



*Developer profits per acre decline with increasing parking due to increased costs and reduced units. This reduces developers' incentive to build affordable housing.*

According to a study by Shoup, these generous parking requirements are the largest of all regulatory burdens placed on developers, about four times greater than all other development fees combined, such as levies for schools, parks and roads (Shoup, 1999).

Developers' most common response to the high incremental costs of increased parking is to stop building affordable urban housing. One case study from the early 1960's found that requiring one off-street parking space per unit reduced dwelling units per acre in new multi-family developments by 30%, and increased construction costs by 18% (Smith, 1964). This significantly reduced the amount of urban land available for infill housing and gave developers an incentive to develop fewer, larger and lower quality units. The resulting reduction in affordable housing construction increased local rents (Shoup, 2005 contains more examples of parking requirement cost impacts).

Parking imposes similar costs for non-profit developments. To provide housing that can be purchased at \$80,000 per unit (for a monthly mortgage of about \$700, the maximum recommended house payment for a family earning \$30,000 annually), a subsidy of only \$4,000 would be needed if no parking is required, a \$12,792 subsidy is required for one parking space per unit, \$26,251 for two parking spaces, and \$51,376 for three (based on Table 5 values). In this case a given housing budget could benefit about 6.5 times as many households that don't have parking spaces compared with 2 spaces per unit.

A study found that San Francisco housing prices increased significantly (an average of \$39,000 or 13% for condominiums, and \$46,000, or 12% for single-family units) if they include off-street parking (Jia and Wachs 1998). Only unit size and number of bathrooms have a greater effect on sales price. Based on standard mortgage requirements, a typical household would need to earn \$76,000 annually to purchase a single-family home with off-street parking, compared with \$67,000 for the same housing without parking.

Similarly, Jung (2009) used hedonic pricing to estimate the marginal effect of an additional parkade-style parking space on condominium prices. His results indicate that the value of a parking space is statistically significant but substantially less than the typical cost of supplying that space. The results suggest that if the retail price is increased to include the costs of additional parking spaces, the higher price does not fully reflect the cost to the developer of providing those parking spaces. This adversely affects housing affordability because developers must charge more per unit, and to the degree that the additional parking costs cannot be recovered by higher prices, are likely to provide less housing, leading to a higher market-clearing price, particularly in lower price ranges.

### **Impacts on Lower Income Households**

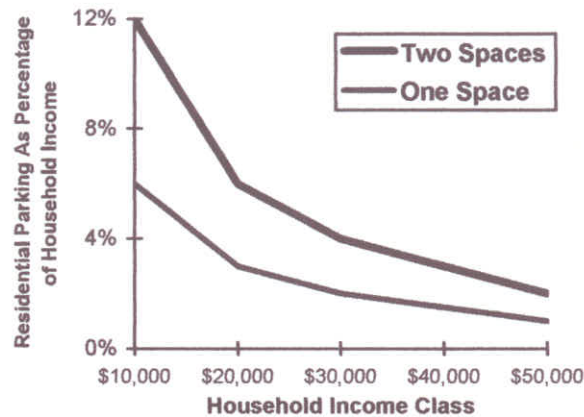
Who is disadvantaged most by generous parking requirements? Since they are based on average parking demand they represent approximately what middle income, able-bodied households would choose. Various groups tend to own fewer than average automobiles, value the potential savings that result from reduced parking requirements, and live in higher-density, multi-family housing, including low-income households, young adults, single parents, first time home buyers, older people, and people with disabilities.

As discussed earlier, vehicle ownership and use tends to increase with income. Lower-income households are directly harmed by generous off-street parking requirements, since they tend to own fewer vehicles and pay more for parking as a percentage of housing costs. For example, the \$100 per month direct cost of two parking spaces represents only 5% of a \$2,000 per month luxury condominium rent, but 20% of the \$500 per month rent of a basic apartment. Poor households also spend a greater share of their income on housing than wealthier households, as shown in Figure 1.

Since parking is a relatively fixed expense, it represents a proportionally greater burden for lower income households. Figure 13 illustrates parking costs as a percentage of household expenditures, showing a much greater impact on poor families.



Figure 13 Residential Parking Costs as a Percentage of Household Income



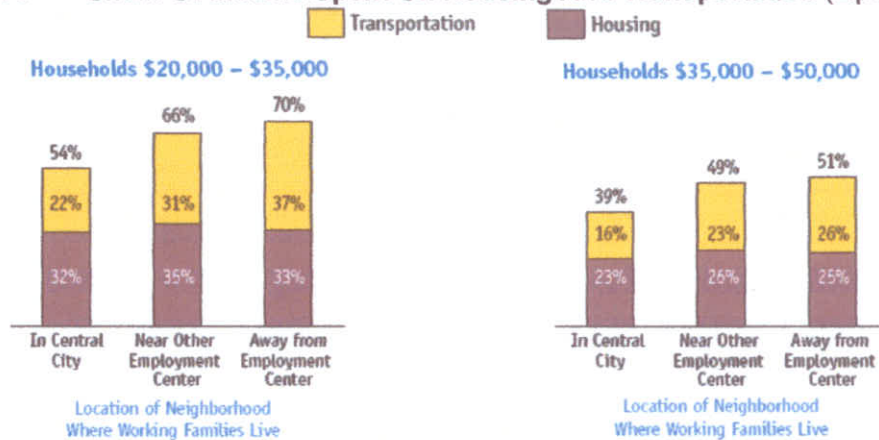
*Parking costs typically constitute a greater portion of household expenditures for poor than for wealthier households, indicating they are regressive. (Based on \$50 monthly parking space cost.)*

Dense development has a bad reputation, so some reductions in density caused by increased parking requirements could be considered an benefit to poor households. But an amenity that consumers only buy due to an external requirement is seldom a true benefit. In practice, paved surfaces, such as parking lots, provide few of the amenities that make lower densities desirable, such as privacy, noise reduction, aesthetics and access to greenspace. Thus, increased parking results in the worst of all worlds: lower density, automobile oriented communities with degraded environments.

Some communities use restrictive zoning laws to exclude lower-income households, because they are considered “undesirable” neighbors. This is inequitable. As researcher Jonathan Levine concludes, “Land use controls enforcing low-density, large-lot, automobile dependent development styles are a subsidy for those who choose to and can afford to live in the housing produced; by reducing the prevalence of other forms of residential development, they increase the supply of the standardized product. Those who pay the cost of this subsidy are those who would have chosen to – and might have afforded to – reside in those locales if more alternative housing forms had been allowed there,” (Levine, 1998, p. 147).

Current housing markets harm lower-income households by forcing them to choose between urban residential locations, which tend to be either in undesirable neighborhoods or have high prices, and suburban or exurban residential locations, which have lower housing costs but much higher transportation costs (CTOD and CNT, 2006; Lipman, 2006). Many lower income households would be financially better off if affordable housing were available in more accessible, multi-modal urban locations where their combined housing and transportation costs were lower. More flexible parking requirements can help provide such housing by reducing housing development costs in areas with higher land prices.

Figure 14 Share Of Income Spent On Housing And Transportation (Lipman, 2006)



Lower income households often choose more distant residential locations to find affordable housing, but but bear higher transport costs as a result. More flexible parking requirements can help increase overall affordability.

### Impacts on Automobile Ownership and Use

Forcing households to pay for residential parking increases vehicle ownership rates. Average income households spend an average of \$3,800 annually per vehicle, and lower-income households spend an average of \$3,000 annually per vehicle (BLS, 2002). Assuming that residential parking spaces cost \$800 per year, parking costs add 21% to vehicle costs for an average income household, and 27% to the cost of a lower-income household. Assuming a vehicle price elasticity of  $-0.7$  for average income households and  $-0.1$  lower income households (Table 3), generous minimum parking requirements increase urban vehicle ownership about 14% overall and about 25% among lower-income urban residents. The resulting increase in vehicle ownership and use increases various external costs such as congestion, traffic accidents and pollution.

Some people might conclude that poor households are better off owning these cars. This is a misreading of the analysis. The additional automobiles owned as a result of parking requirements are marginal vehicles that the owners would give up if they had the option. It is comparable to a law forbidding the sale hamburger, forcing poor families to eat more steak. Steak may taste better than hamburger, but its higher cost means that households must forego other goods that it values more. If poor families really valued steak that much they would not have bought hamburger in the first place, so no law would be needed. From a household's perspective, minimum residential parking requirements remove flexibility and choices that can make the family overall better off. This constraint is experienced most by lower income households that tend to own fewer than average automobiles, and value highly potential savings in housing and transportation costs.

### **Possible Mitigating Factors**

Some people may be skeptical of this analysis. After all, most low-income families do own vehicles and most do find housing. Are there mitigating factors that reduce the impacts described here? Yes, but they create their own set of problems.

1. Even poor families, *can* afford \$500 to \$1,500 per year to pay for residential parking, but it significantly reduces their wealth and options.
2. Urban decay reduces property values in some locations, which creates virtually no-cost parking. Poor households can therefore afford to meet generous parking requirements provided they live in undesirable neighborhoods. But such “throw-away” land use patterns impose tremendous costs. They force poor households to live in dangerous and hopeless neighborhoods, creating class and racial segregation.
3. Public agencies subsidize some housing to maintain affordability. But this creates significant financial and social costs. Few communities can afford to provide good housing to all low-income households. Generous parking requirements reduce the amount of affordable housing that can be provided with a given budget.
4. An abundance of used automobiles and low fuel prices in North America allow even low-income families to buy an “old beater” and live in the suburbs where land values (and therefore parking costs as an increment of housing expenses) remain low. This, however, exacerbates various problems, including increased environmental impacts, a lack of travel options for non-drivers, and household dependency on unreliable private transportation. Poor drivers often have no insurance, imposing financial and legal costs on other road users.

Although these mitigating factors reduce some impacts of parking requirements on housing costs, they are economically inefficient and inequitable. They fail to actually reduce the cost and increase the productivity with which housing is provided, and they exacerbate social and environmental problems.

## **Solutions**

*There is much that can be done to manage parking to increase housing affordability. For more information see Arigoni, 2001; Russo, 2001; SPUR, 2002; VTPI, 2005; CTOD, 2008.*

A paradigm shift (a change in the way problems are defined and solutions evaluated) is occurring in transportation planning. The old paradigm relied primarily on supply-oriented solutions (expanding road and parking facility capacity). It assumed that parking problems should generally be solved by increasing parking supply, usually by raising the minimum parking requirements for new development. From this perspective, parking demand is an unchangeable force that must be satisfied, and parking should generally be provided free, with costs incorporated in building and roadway construction budgets.

The new paradigm places more emphasis on management solutions (“Parking Management,” VTPI, 2005). It recognizes the need to provide adequate parking, but values strategies which result in more efficient use of parking resources and reduce the amount of parking needed at a particular location. From this perspective, too much parking supply is as harmful as too little. With this approach, parking demand can often be managed in ways that reduce costs and the need to subsidize parking facilities.

Rather than establishing generous parking requirements to satisfy the maximum potential demand that may occur during the lifetime of a facility, parking management allows contingency-based planning, which means that various solutions are identified which can be deployed if needed. For example, rather than providing 150 parking spaces at a 100 unit apartment building, as required by conventional standards, the developer might initially supply 80 spaces, along with various parking management strategies, and perhaps some land banked for constructing additional parking if needed. This approach saves costs and is more responsive to community needs.

Parking management involves both government agencies (which allow more accurate and flexible minimum parking requirements, and enforce parking management agreements) and building developers and managers (which develop and implement parking management programs). An effective parking management plan usually involves several components. Examples of parking management strategies are described below. For more information see VTPI, 2005.

### ***More Accurate and Flexible Requirements***

Minimum parking requirements can be more accurate and flexible to better reflect the demand at a particular location and time. Standards can be adjusted to reflect demographic, geographic and management factors. For example, standards can be reduced for housing that serves lower-income people, students and elderly; for housing in more accessible locations (such as near transit stations and in mixed-use neighborhoods); in buildings that have carshare services, and where parking is priced. This gives developers and building operators an incentive to use parking management solutions, by allowing them to save money when they reduce parking demand.

### **Shared Parking**

It is often possible for motorists and buildings to share parking facilities, to increase efficiency and flexibility. For example, 100 residents or employees can often share 70-80 parking spaces, since at any period in time some are likely to be away. Similarly, an apartment and an office building can share parking facilities, since the office peak demand occurs during weekdays, while the apartment's peak occurs during evenings and weekends.

Local governments can allow developers to pay "in lieu" fees, which help fund off-site municipal parking facilities, as an alternative to providing on-site parking (Shoup, 1999). This gives developers more flexibility (allowing better site design and preservation of unique and historic resources that cannot otherwise accommodate on-site parking), allows parking facilities to be located where they most optimal for the sake of urban design, and results in more efficient and cost effective shared parking facilities.

### **Unbundling**

Rather than automatically including a certain amount of parking with building space, parking costs can be borne directly by users by "unbundling," which means that parking is rented or sold separately. For example, rather than renting an apartment with two parking spaces for \$1,000 per month, the apartment could rent for \$850 per month, plus \$75 per month for each parking space. This is more equitable and efficient, since occupants are not forced to pay for parking they do not need, and allows consumers to adjust their parking supply to reflect their needs.

Parking can be unbundled in several ways:

- Facility managers can unbundle parking when renting building space.
- Developers can make some or all parking optional when selling buildings. For example, a condominium can be sold with no parking or just one space, with additional spaces available for purchase or rent if desired.
- In some cases it may be easier to offer a discount to renters who use fewer than average parking spaces, rather than charging an additional fee. For example, an office or apartment might rent for \$1,000 per month with two "free" parking spaces, but renters who only use one space receive a \$75 monthly discount.
- Lease agreements can itemize parking costs. To facilitate unbundling some communities require that parking be a separate line-item in lease contracts, even if spaces are automatically included. Once renters become aware of what they pay for parking they may decide to negotiate changes, perhaps renting fewer spaces or trading parking spaces with other residents.
- Minimum parking requirements can be reduced for developments with unbundled parking, which recognizes that, given a choice, many residents will reduce their parking demand.
- An informal approach to unbundling parking is to help create a secondary market for available spaces. For example, office, apartment and condominium managers can maintain a list of residents who have excess parking spaces that are available for rent.

### **Location Efficient Development**

Current lending policies mistakenly treat automobiles owned by a household as financial assets rather than liabilities, which encourages home buyers to choose automobile-dependent suburban location over urban locations. Owning one less vehicle saves a household an estimated \$3,000 annually in vehicle costs and \$50 per month in parking costs (Hare, 1993). "Location Efficient Mortgages" recognize these savings in housing loans, eliminating a bias that makes suburban housing appear more affordable than urban housing, despite greater total (transport and housing) expenses. Cervero (1996) finds that there is unmet market demand for such housing, particularly near transit stations. CTOD (2008) describe various ways to maximize the value of transit-oriented, infill development.

### **Carsharing**

*Carsharing* refers to automobile rental services intended to substitute for private vehicle ownership. It makes occasional use of a vehicle affordable, even for low-income households, while providing an incentive to minimize driving and rely on alternative travel options as much as possible. Where carsharing services are available, some households reduce their vehicle ownership, either shifting from two to one vehicle, or from one to zero vehicles. Residential developers and building operators can encourage carsharing by providing free or discounted parking for carshare vehicles, or by offering subsidized memberships in carshare organizations to residents.

### **Carfree Planning ("Car-Free Planning," VTPI, 2005)**

Some planners are experimenting with "car free" housing developments specifically designed to accommodate households that do not own a motor vehicle and take advantage of community benefits of reduced vehicle traffic (such as using land that would be needed for parking in an automobile-dependent area for common greenspace).

### **Overflow Parking**

It is often possible to reduce parking requirements by identifying ways to manage occasional peak demands. For example, a building operator may provide information to residents on "overflow" parking options for guests (for example, when they have a party), or for residents who purchase additional vehicles, such as a trailer or collector car. This may involve sharing agreements with other buildings nearby, or information on commercial parking and storage facilities in the area.

### **Transportation Management Associations**

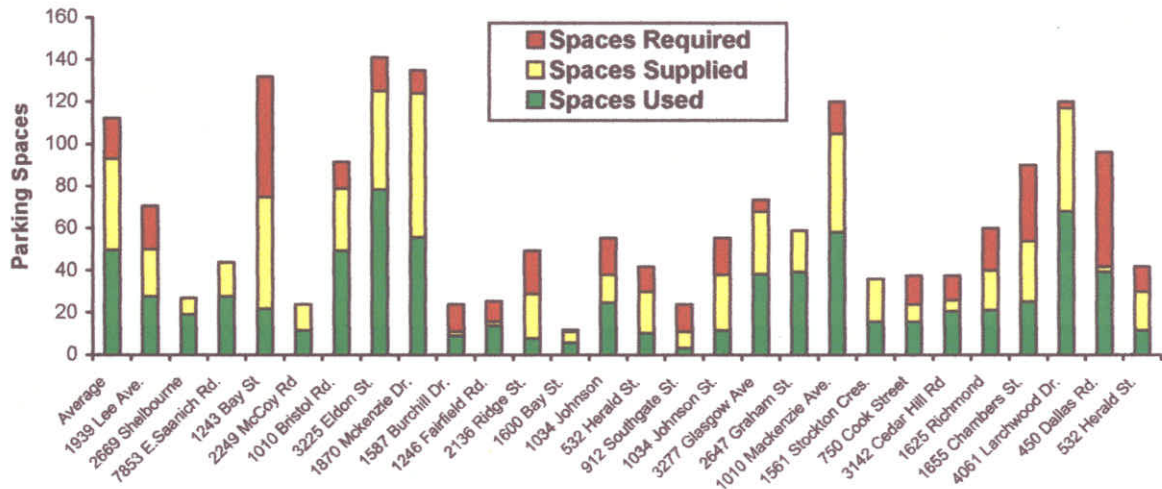
*Transportation Management Associations* (TMAs) are private, non-profit, member-controlled organizations that provide transportation services in a particular area. TMAs provide an institutional framework for transportation and parking management programs, including parking brokerage services which help building operators share, trade, lease and rent parking facilities. They are usually more cost effective than programs managed by individual businesses.

### Parking Utilization Studies

To evaluate the appropriateness of current parking requirements it is useful to perform parking utilization studies, that is, surveys of parking facilities to determine how many spaces are occupied during peak demand periods. For information on such studies see *Parking Generation* (ITE, 2004). For residential uses, peak demand occurs during weekday evenings or on weekends.

Students in a University of Victoria planning course performed residential utilization studies of multi-family residential buildings as an assignment (this was easy since most lived in such buildings or had friends that did). These surveys indicate that, for the 33 buildings studied, only 54% of the available parking spaces were occupied during peak periods, and if these buildings had the number of parking spaces required by current minimum parking requirements (based on a standard of 1.5 parking spaces per unit), only 46% of those parking spaces would be occupied. Figure 15 illustrates the results.

**Figure 15** Parking Utilization Versus Supply and Requirements



*This figure shows the number of parking spaces used, currently supplied, and required for new construction at various multi-family residential buildings in Victoria, British Columbia.*

Several sites have peak-period parking utilization below 50%, and many parking facilities have spaces that are obviously never used. Investigators reported that some motorists park on the street to avoid using less convenient spaces behind buildings. Only five of the 33 sites report frequent conflicts over parking, and these often involve particular spaces (i.e., those considered most convenient or safe), not overall parking supply. Some investigators reported, based on their own or friends' experiences, that some residents will use a parking space if it is supplied with the unit, but if a fee is charged they will reduce their vehicle ownership or storing their vehicle at their family home during the school year.

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**Affordable Housing Opportunities**

There are many possible ways to make housing more affordable, including direct housing subsidies for lower-income people, indirect subsidies such as rent controls, and various ways of reducing housing production costs. Some of these strategies are more efficient and equitable than others. Subsidies by themselves tend to be unfair and inadequate. In a typical community 10-20% of households face housing affordability problems, including those who are working poor or on a fixed income. It is unrealistic to provide full subsidies to all who want and deserve more affordable housing. As a result, such programs are often arbitrary, favoring some disadvantaged groups but not others.

A much more effective way to provide affordable housing is to reduce construction costs for moderately-priced new units. This increases housing affordability both directly (by reducing the costs of new housing) and indirectly by increasing affordable housing supply. The added units do not all need to be “affordable” themselves, but they free up the older stock of housing to be truly affordable. In urban area where land costs are high, the best way to increase affordability is to minimize land requirements per unit by increasing density and reducing parking facility requirements. Table 6 illustrates how density and parking affect the amount of land required per unit and the number of units per acre for various number of floors, with and without surface parking. This shows how even modest increases in density (say, from two to three or four stories) and reductions in surface parking can significantly reduce land requirements.

**Table 6 Land Area Per Unit**

| Housing Type            | Without Surface Parking |                | With Surface Parking |                |
|-------------------------|-------------------------|----------------|----------------------|----------------|
|                         | Sq. Feet                | Units Per Acre | Sq. Feet             | Units Per Acre |
| 1/2 Acre Single-family  | 21,780                  | 2              | 21,780               | 2              |
| 1/4 Acre Single-family  | 10,890                  | 4              | 10,890               | 4              |
| Small-lot Single-family | 5,445                   | 8              | 5,445                | 8              |
| Two-Story Duplex        | 3,630                   | 12             | 3,630                | 12             |
| Three-Story Townhouse   | 1,000                   | 44             | 1,333                | 33             |
| Four-story Condominium  | 450                     | 97             | 783                  | 56             |
| Medium-Rise Condominium | 225                     | 194            | 558                  | 78             |
| High-Rise Condominium   | 113                     | 387            | 446                  | 98             |

*Increased density and reduced parking requirements significantly reduce unit land requirements. This assumes that one-third of parcel is devoted to setback, and 333 square feet per surface parking space.*

Table 7 illustrates the cost of providing these units and the number that could be subsidized with a \$10 million budget, assuming land costs average \$1,000,000 per acre and each units costs \$100,000 to construct. The number of units that can be provided with a given subsidy increases more than five hundred percent with increased density and reduced parking. The largest cost reductions occur with shifts from low- to medium-density, indicating that affordability does not require high-density, high-rise housing.



*Parking Requirement Impacts on Housing Affordability*  
**Victoria Transport Policy Institute**

**Table 7**      **Costs Per Unit and Subsidized Households**

| Housing Type            | With Surface Parking |                  | Without Surface Parking |                  |
|-------------------------|----------------------|------------------|-------------------------|------------------|
|                         | Cost Per Unit        | Subsidized Units | Cost Per Unit           | Subsidized Units |
| 1/2 Acre Single-family  | \$1,100,000          | 17               | \$1,100,000             | 17               |
| 1/4 Acre Single-family  | \$600,000            | 29               | \$600,000               | 29               |
| Small-lot Single-family | \$350,000            | 44               | \$350,000               | 44               |
| Two-Story Duplex        | \$266,667            | 55               | \$266,667               | 55               |
| Three-Story Townhouse   | \$161,203            | 77               | \$145,914               | 81               |
| Four-story Condominium  | \$135,950            | 85               | \$120,661               | 91               |
| Medium-Rise Condominium | \$125,620            | 89               | \$110,331               | 95               |
| High-Rise Condominium   | \$120,455            | 91               | \$105,165               | 97               |

*Increased density and reduced parking requirements significantly reduce the costs of producing housing and the number of units that can be produced for a given subsidy.*

These benefits increase further if subsidy is distributed as a match grant. For example, if we ask occupants to pay \$100,000, either toward purchasing the unit or about \$400 per month in rent, the number of units that can be provided by the subsidy increases to many hundreds.

**Table 8**      **Subsidized Household With Matching Grants**

| Housing Type            | With Surface Parking |                  | Without Surface Parking |                  |
|-------------------------|----------------------|------------------|-------------------------|------------------|
|                         | Subsidy Per Unit     | Subsidized Units | Subsidy Per Unit        | Subsidized Units |
| 1/2 Acre Single-family  | \$1,000,000          | 20               | \$1,000,000             | 20               |
| 1/4 Acre Single-family  | \$500,000            | 40               | \$500,000               | 40               |
| Small-lot Single-family | \$250,000            | 80               | \$250,000               | 80               |
| Two-Story Duplex        | \$166,667            | 120              | \$166,667               | 120              |
| Three-Story Townhouse   | \$61,203             | 327              | \$45,914                | 436              |
| Four-story Condominium  | \$35,950             | 556              | \$20,661                | 968              |
| Medium-Rise Condominium | \$25,620             | 781              | \$10,331                | 1,936            |
| High-Rise Condominium   | \$20,455             | 978              | \$5,165                 | 3,872            |

*Increased density and reduced parking requirements significantly increase the number of households that can benefit, assuming that lower-income residents pay a share of costs. ("Sub. Units" = Subsidized Units)*

The benefits of infill, density and reduced parking costs become even larger and more logical if we evaluate affordability in terms of combined housing and transportation costs. Location decisions often involve trade-offs between housing and transportation costs: land and therefore housing costs are often lower at the urban fringe where transportation costs are highest. Residents of such locations typically pay several thousand dollars a year in vehicle expenses. Increased density and reduced parking requirements allow more moderate- and low-income households to choose homes in accessible locations where their transportation costs are minimized, saving thousands of dollars. True affordability is therefore where housing is affordable and automobile ownership and use can be reduced.

Current, generous levels of parking supply in growing urban areas provide an unintended land bank that, with more efficient management could be used to create location-efficient housing (Shoup, 2005). With improved design and management many retail malls, commercial districts and other urban centers could reduce the amount of land devoted to parking facilities by 20-40%, or even more (“Parking Management,” VTPI, 2005). Parking lots are often the largest single largest land use in such areas, typically using 30-50% of land area. In many situations, more efficient management would allow many acres of land to be developed within or near these urban centers, which is ideal for location-efficient, truly affordable housing, that is, housing located in accessible, multi-modal areas where residents can minimize their transportation costs by relying on walking, cycling, public transit, taxi and carsharing. Such locations are also appropriate for people with disabilities or other constraints on their ability to drive. Similarly, land currently used for urban parking may be appropriate for mixed-use residential, commercial and institutional development, allowing more compact retail and employment centers that are more accessible by walking and public transit. This type of infill development reflects *Smart Growth* and *New Urbanist* planning principles (“Smart Growth” and “New Urbanism,” VTPI, 2005; King, 2008).

**Figure 16** Urban Land Devoted To Parking



*With better design and management, much of the urban land currently devoted to parking could be used for other purposes. It is ideal for location-efficient infill residential and mixed-use development, creating truly affordable housing where residents can minimize their transport costs. People with limited mobility can particularly benefit by living close to public services.*

**Examples and Case Studies**

*Examples of parking management for residential affordability are described below.*

**Condominium Parking Requirements (Energy Pathways, 1994)**

Mississauga, Ontario is a major suburb of Toronto. Since 1979 the city zoning code required 2.0 parking spaces per condominium unit, of which 1.75 were for residents and 0.25 were for visitors. This is estimated to represent 7-17% of the total housing costs. A detailed parking demand study conducted at 34 typical condominium buildings tracked the type of parking (surface or underground), number and size of housing units, proximity to public transit, surrounding land uses, residents' and managers' concerns about parking, and building vacancy rates. Questionnaires were mailed to all 5,600 residents, of which 800 were returned, and all building managers, of which 16 were returned. Resident and visitor parking demand were surveyed. It found that residents had relatively low average vehicle ownership (1.28 vehicles per unit). Current parking supply was 20% higher, and the existing standard was 35% higher, than residents' vehicle ownership. The study recommended revised parking standards for condominiums as illustrated in Table 9. Revised standards were adopted by the city in 1994.

**Table 9 Recommended Parking Standards**

| Unit Type            | Resident Spaces | Visitor Spaces | Total Spaces |
|----------------------|-----------------|----------------|--------------|
| Studio               | 1.0             | 0.25           | 1.25         |
| Bachelor             | 1.0             | 0.25           | 1.25         |
| One Bedroom          | 1.16            | 0.25           | 1.41         |
| One Bedroom Plus Den | 1.3             | 0.25           | 1.55         |
| Two Bedroom          | 1.5             | 0.25           | 1.75         |
| Two Bedroom Plus Den | 1.70            | 0.25           | 1.95         |
| Three Bedroom        | 1.75            | 0.25           | 2.0          |

**Affordable Residential Development (SPUR, 1998)**

Table 10 illustrates how tradeoffs between housing and parking affect the costs of medium-rise (four stories maximum) housing on a 3-acre parcel in an urban neighborhood. As the number of surface parking spaces increases, the number of housing units declines and costs rise. Using underground parking reduces land requirements but significantly increases construction costs. As a result, it is impossible to provide affordable rents while meeting conventional parking requirements.

**Table 10 Residential Development Options**

|               | Option 1     | Option 2     | Option 3     | Option 4         |
|---------------|--------------|--------------|--------------|------------------|
| Housing Units | 50           | 40           | 30           | 50               |
| Parking       | 25 (surface) | 40 (surface) | 40 (surface) | 50 (underground) |
| Cost Per Unit | \$50,000     | \$60,000     | \$75,000     | \$80,000         |
| Monthly Rent  | \$312        | \$375        | \$468        | \$500            |

Generous minimum parking requirements also impose costs on non-profit developments (Nelson/Nygaard, 2002). To provide housing priced at \$80,000 per unit (for a monthly mortgage of about \$700), a subsidy of only \$4,000 would be needed if no parking is required, a \$12,792 subsidy would be required for one parking space per unit, and a \$26,251 subsidy for two parking spaces. A given housing subsidy fund can benefit about 6.5 times as many households with no parking spaces compared with 2 spaces per unit.

***Harris Green Redevelopment ([www.city.victoria.bc.ca](http://www.city.victoria.bc.ca))***

In 1997 the city of Victoria, BC sponsored a community planning project to encourage redevelopment in the Harris Green neighborhood near downtown. Minimum parking requirements were eliminated there. In subsequent years numerous condominiums and apartments were constructed. To minimize costs and accommodate the large portion of residents who own no vehicles, most units are sold or rented without parking. Residents rent parking spaces if they need them. Developers find that they need only about 0.5 parking spaces per unit, as opposed to 1.0 to 2.0 in conventional multi-family buildings.

***Soma Studios and Apartments ([www.dbarchitect.com](http://www.dbarchitect.com))***

The new five-story building at 8th and Howard in San Francisco combines 74 affordable family apartments and 88 small studios, a child care center and a market, providing 246 bedrooms and 24,000 square feet of commercial space on one acre. The building contains a 66-space parking garage, 0.38 spaces per unit, with parking rented separately from housing units. Unbundled parking freed up space for the childcare center and neighborhood retail, and significantly reduced apartment rents.

***Redeveloping Transit-Station Area Parking Lots (CNT, 2006)***

The study, *Payed Over: Surface Parking Lots or Opportunities for Tax-Generating, Sustainable Development?* ([www.cnt.org/repository/PavedOver-Final.pdf](http://www.cnt.org/repository/PavedOver-Final.pdf)), evaluates the potential economic and social benefits if surface parking lots around rail transit stations were developed into mixed-use, pedestrian friendly, transit-oriented developments. The analysis concludes that such development could help to meet the region's growing demand for affordable, workforce, senior, and market rate housing near transit, and provide a variety of benefits including increased tax revenues and reduced per capita vehicle travel. The parking lots in nine case studies are estimated to be able to generate 1,188 new residential units and at least 167,000 square feet of new commercial space, providing additional tax revenues, plus significant reductions in trip generation and transportation costs compared with more conventional development.

***Residential Garage Conversions ([www.ci.santa-cruz.ca.us/pl/hcd/ADU/adu.html](http://www.ci.santa-cruz.ca.us/pl/hcd/ADU/adu.html))***

Santa Cruz, CA has a special program to encourage development of *Accessory Dwelling Units* (ADUs, also known as *mother-in-law* or *granny* units), which often consist of converted or expanded garages, to increase housing affordability and urban infill. The city has ordinances, design guidelines and information materials for such conversions. *Smallworks* (<http://smallworks.ca>) is a Vancouver, BC construction firm that specializes in small lane-way (alley) housing, which are often converted garages.

**Parking Management for More Affordable Housing**  
**([www.huduser.org/rbc/newsletter/vol7iss2more.html](http://www.huduser.org/rbc/newsletter/vol7iss2more.html))**

A variety of parking management strategies are being adopted to increase housing affordability and help achieve other planning objectives. These strategies include reduction or elimination of minimum parking requirements based on density, car ownership rates, and availability of public transit; allowing shared parking; and unbundling parking from housing. Specific examples are discussed below.

**San Francisco, California**

San Francisco is a transit-friendly city that has retained its historic character and walkable neighborhoods. According to the 2000 Census, 30% of total San Francisco households, and more than 50% of households in transit-rich areas, are car-free. A 1997 University of California [study](#) found that single-family housing without off-street parking sold for an average of \$46,391 less than housing with off-street parking — affordable to 24% more area households. The city revised its parking requirements to help reduce traffic congestion and increase affordable housing in downtown area districts. Revisions eliminated minimum parking requirements for downtown housing, and established maximum parking of [one space for four units](#). Other strategies include car-sharing programs and requiring developers to unbundle parking from housing costs. Reduced parking requirements for Rich Sorro Commons, a [mixed-use project](#) with 100 affordable units for low-income families, resulted in additional space for a childcare center and retail stores, generating about \$132,000 in additional revenue. The childcare center is especially beneficial to low-income families, and the additional revenue makes housing units more affordable.

**Seattle, WA**

Half the households in [Press Apartments](#) on Capitol Hill's Pine Street in Seattle, WA own no vehicles, leaving 60% of its parking spots unoccupied. In 2006, Seattle reduced parking required in mixed-use neighborhoods, and eliminated minimum parking requirements in downtown areas to increase housing opportunities and encourage pedestrian-friendly neighborhoods. Minimum parking required for affordable housing was reduced to 0.33 – 1.0 space per unit, depending on location and unit size. The city maximum parking requirements for downtown offices, allows reduced parking for elderly and disabled housing, and for multifamily developments with car-sharing programs.

**Portland, Oregon**

Portland, Oregon has implemented various parking management strategies designed to increase housing density, promote transit-oriented neighborhoods, and support existing and new economic development. Portland [eliminated minimum parking requirements](#) in the central city district and for sites located within 500 feet of a high-capacity transit station. The city's zoning ordinance specifies maximum parking requirements for areas outside the central city district, which vary depending on the use and the distance from a light rail station. Other parking measures include shared parking, and reduction from minimum requirements for car sharing, transit access, and availability of bicycle parking. Two mixed-use projects located outside Portland's central city, [Buckman Heights and Buckman Terrace](#), were able to keep development costs low and increase the number of affordable housing units by utilizing the city's reduced parking requirements.

## **Conclusions**

This report indicates that generous, inflexible parking requirements are inefficient and inequitable, since they fail to provide an expensive resource (parking) in proportion to need (vehicle ownership). Parking demand varies between households, between neighborhoods, and over time for individual households. Smaller, lower income households located in accessible areas tend to own fewer cars. A typical house or apartment unit may at various times house residents with zero, one, two or three vehicles.

Parking is a costly resource. Parking typically represents 10-20% of the cost of housing. This cost may be acceptable to most middle and upper income households, which tend to own multiple vehicles and can afford the extra expense, but for lower income families generous parking requirements impose significant financial burdens.

Excessive parking requirements impose several costs on society. They increase development costs of lower-priced housing, reducing housing affordability. Minimum parking requirements are regressive because they force residents to pay for parking facilities, even if they do not own a vehicle. They increase vehicle ownership, and therefore problems such as traffic congestion, accidents and pollution emissions. Generous parking requirements discourage infill development and increase sprawl, increasing impervious surface coverage and per capita vehicle travel. They shift lower-income households to suburban and exurban areas where land prices are low but transport and public service costs are high.

For typical affordable housing in urban locations, where parking represents 20% of residential build costs and parking demand is less than 50% of conventional parking standards, applying more accurate and flexible parking requirements can reduce housing costs by 10%, and even more if additional parking management strategies are implemented. For households that do not own an automobile, more accurate parking requirements and unbundling parking costs can reduce rents by 10-20%.

Most households, including those with low incomes, own at least one vehicle and therefore need residential parking. Even non-drivers want parking for visitors. It is therefore important that parking policy reforms be realistic and avoid creating new problems. Better parking management practices have proven successful at reducing residential parking costs, increasing housing affordability and supporting other strategic land use objectives, such as supporting infill development, improving community accessibility and reducing sprawl. This involves creating more accurate and flexible parking standards, unbundling parking from building space so residents pay for parking facilities based on the number of spaces they actually use, and appropriate enforcement to minimize spillover problems.

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- *Parking Solutions* (130 pages) includes six documents that describe modern approaches to parking management.
- *Shared Parking* (133 pages) includes more than thirty documents concerning shared parking, parking in-lieu fees, parking requirement reductions and exemptions, and downtown district special parking requirements.
- *Green Parking Lot Design* (66 pages) includes three documents that describe ways to improve parking lot environmental performance including landscaping, stormwater management and reduced heat island effects.
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# CITY OF BRISBANE, CA PARKING ORDINANCE AMENDMENTS

Comments & Suggestions offered to the planning commission  
9 February 2012

Luc Bouchard, Brisbane Resident  
Ron Davis, Brisbane Resident, Ron Davis & Co.  
Michael Glynn, Brisbane Resident, MG Construction Services  
Jerry Kuhel, Brisbane Resident, Kuhel Design

Comm. Dev. Dept. Brisbane

FEB - 9 2012

RECEIVED

# GOAL

- The parking ordinance should satisfy the requirements of the 2007-2014 housing element, specifically:
  - “Goal H.I.: **Avoid unreasonable constraints** to the provision of housing.”
  - “Policy H.I.1. Seek to **reduce regulatory constraints** on the development of new housing, **especially infill housing** and housing that adds to the mix of types, size, tenure and **affordability.**”

# PROPOSED CHANGES

## SUMMARY

### current

- Requirement based on lot frontage
- On-street parking recognized
- Garage setback based on neighboring structures
- For a 4BR house on compliant 5000ft<sup>2</sup> lot, 2 off-street + 2 on/off-street: 4 total

### proposed

- Requirement based on bedroom quantity
- All parking off-street
- Garage setback fixed at 15ft. (flat lot) and 10ft. (sloped lot)
- For a 4BR house on any size lot, 5 off-street, + potential un-recognized on-street parking



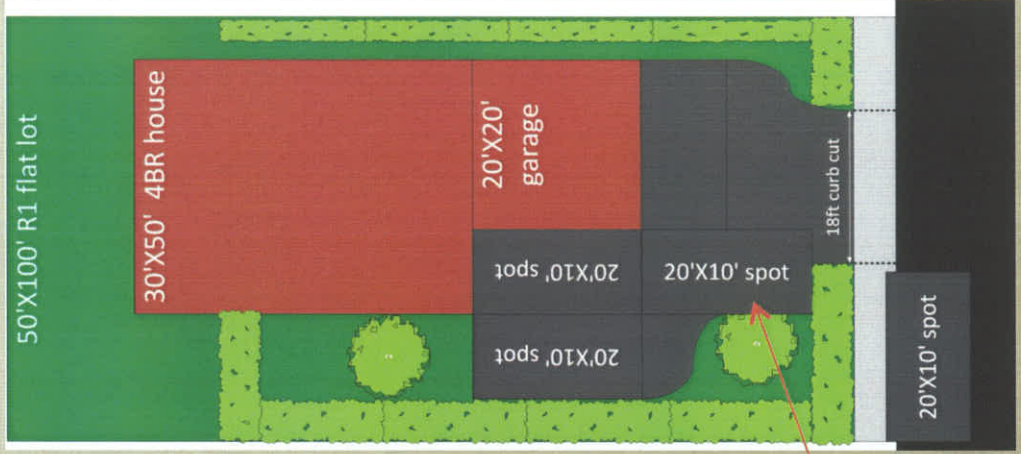
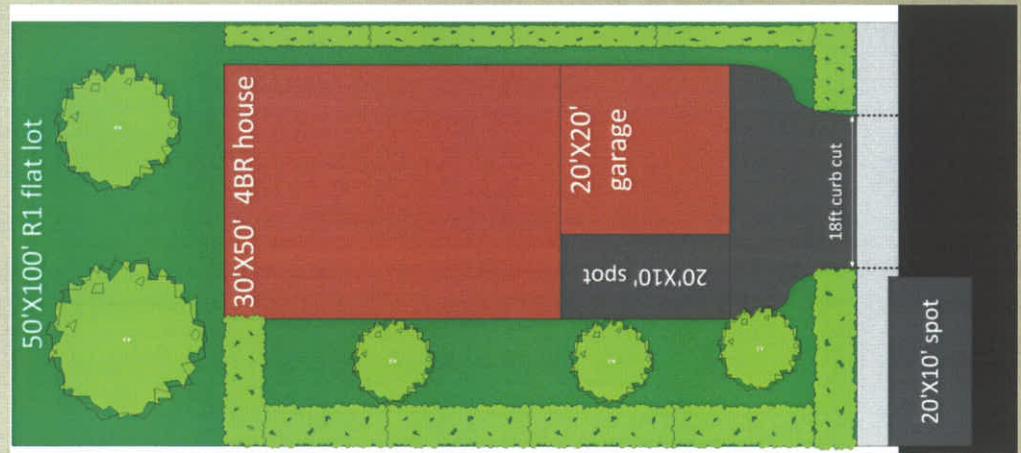
# PROPOSED CHANGES

## IMPACTS

A parking spot can represent up to 75 cubic yards of material!!!

- Remove on-street recognition
- Add one more space

Can anyone fit 5 parking spaces here? Let alone 6?



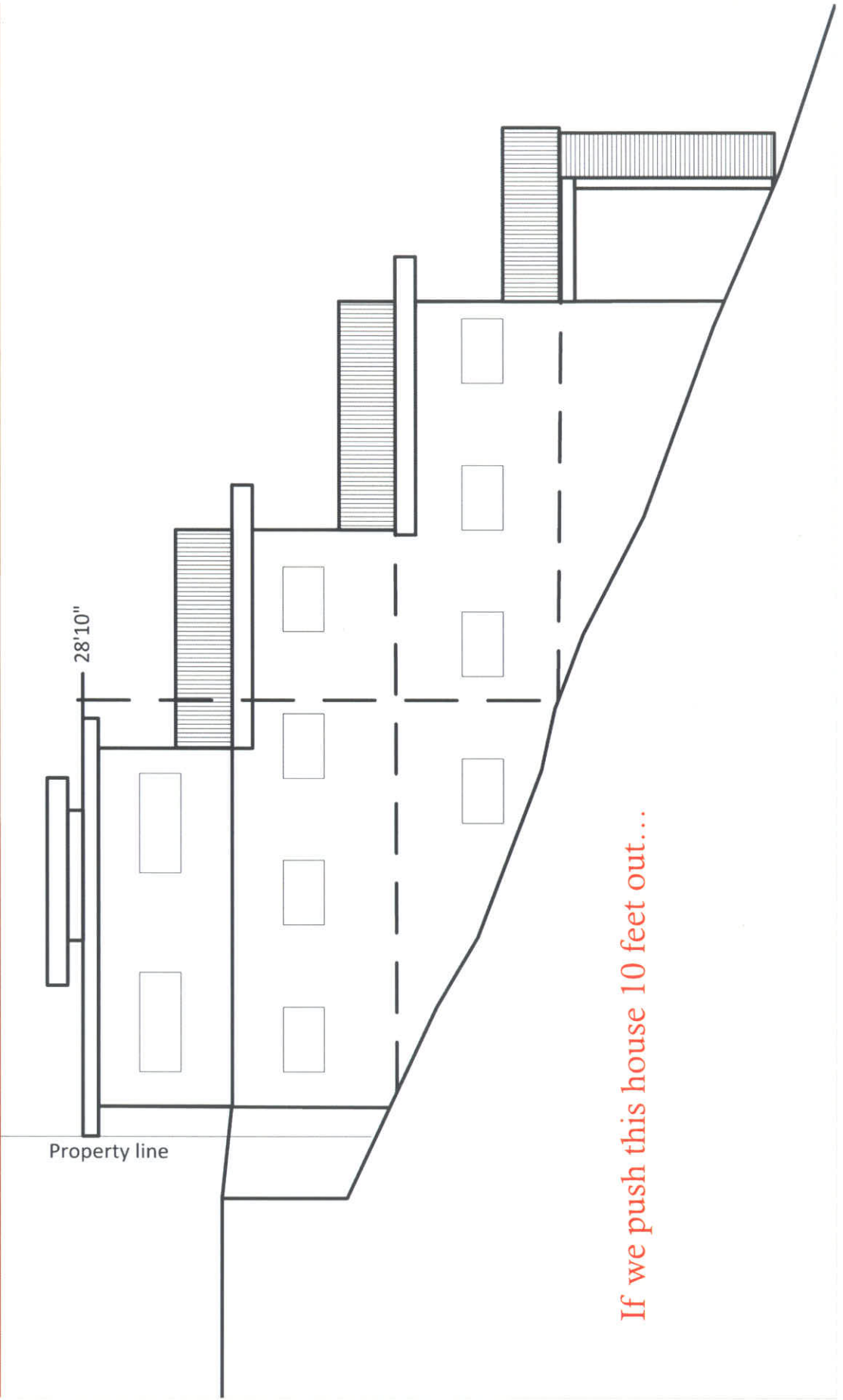
# PROPOSED CHANGES

## IMPACTS

| Grading Permit - Inspection fees |             |                 |         |
|----------------------------------|-------------|-----------------|---------|
| Volume                           | Fee         | Cost/Yard range |         |
|                                  |             | bottom          | top     |
| 0-5 cubic yards                  | \$0.00      | n/a             | n/a     |
| 6-50 cubic yards                 | \$315.00    | \$52.50         | \$6.30  |
| 51-100 cubic yards               | \$628.00    | \$12.31         | \$6.28  |
| 101-1000 cubic yards             | \$11,273.00 | \$111.61        | \$11.27 |
| 1001-10000 cubic yards           | \$16,911.00 | \$16.89         | \$1.69  |
| 10001 cubic yards and above      | actual cost | ???             | ???     |

# PROPOSED CHANGES

## IMPACTS

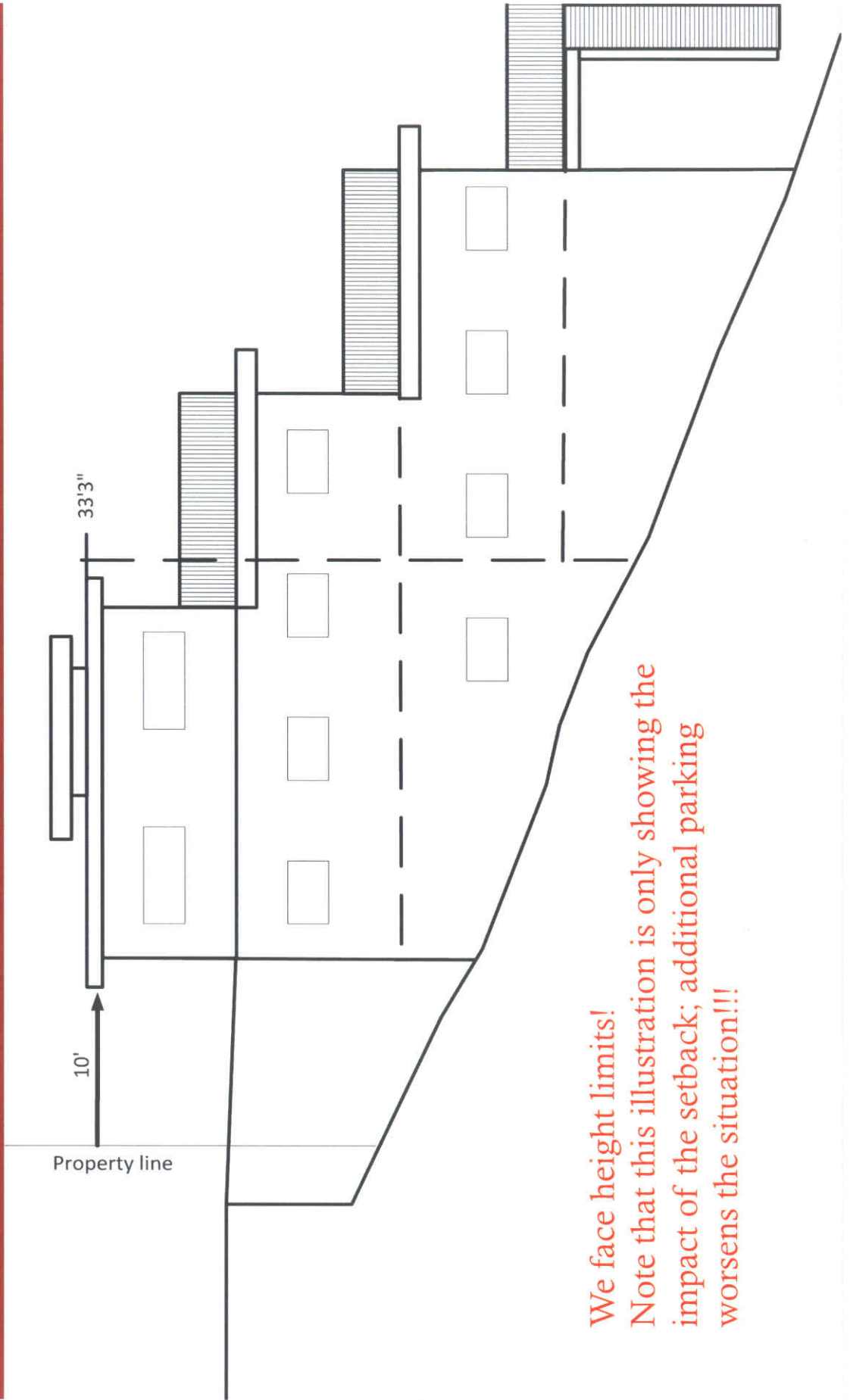


If we push this house 10 feet out....

G-2.115

# PROPOSED CHANGES

## IMPACTS



Gr. 2.116

# IMPACTS OF CURRENT PROPOSAL

- Places additional constraints on development of infill housing:
- **More of lot surface now dedicated to parking rather than living space or green space.** E.g.: 5 parking spaces represents 20% of compliant R1 lot, not counting driveway access. Increases building costs, reduces resulting housing value. Increases hardscape, reduces landscape.
- **Hill degradation on uphill lots**, due to both garage setback and quantity of additional parking.
- **Increases excavation costs, size and scope of retaining walls.**
- On downhill lots, garage setback pushes building against **height restriction**.
- Bedrooms are not an accurate measure of parking requirements:
- **None** of the data provided supports any parking requirements above 4 spaces for any size house, with any qty of bedrooms.

# IMPACTS OF CURRENT PROPOSAL

- **Not all lots are created equal.** The topography may prevent the creation of parking. On a steep uphill lot the living areas would be almost underground if the parking was off street . That's assuming the owner had the fortune to pay for the excavation.
- **Promotes Hardscape over Landscape**
- **Increases storm water problems**
- **Increases costs**
- **Is ineffective at addressing the parking situation, based on vacant lot development alone; for existing, developed lots, will be a hindrance to home improvements, and will not help the parking situation.**

# SUGGESTED CHANGES

| Current amendment                                                                                                                                                                                                                                                                     | Suggested amendment                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Requirement based on bedrooms quantity</li><li>• All parking off-street</li><li>• Garage setback fixed at 10ft on slopped lots</li><li>• For a 4BR house on any size lot, 5 off-street, + potential un-recognized on-street parking</li></ul> | <ul style="list-style-type: none"><li>• 1 parking space + 1 per 900ft<sup>2</sup> increments of habitable space above 900ft<sup>2</sup></li><li>• Maintain current on-street recognition</li><li>• Maintain existing 0ft setback on sloped lots</li><li>• For a 1800ft<sup>2</sup> + house, 3 parking spots</li></ul> |

# SUGGESTED CHANGES

## Current regulations

- Grading inspection fees are based on the top of the range, are not linear, and are too high!

## Suggested amendment

- Reduce them to actual costs, based on a nominal number of inspection visits.