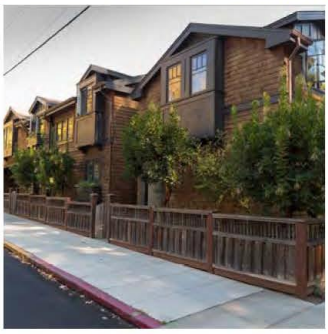
Appendix C

Floor Area Ratio (FAR) in Single Family Zoning

The following is a report on the use of floor area ratios (FARs) in single family zones, prepared by Dyett & Bhatia, Urban and Regional Planners, June 2016.



City of Portland Residential Infill Project

Use of Floor Area Ratios (FARs) in Single Family Zoning

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June 2016

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1 Introduction

As part of Dyett & Bhatia's work on Portland's Residential Infill Project, City staff requested a written report of research analyzing different cities' codification of square footage limits through floor area ratios (FARs) in single-family zoning districts. FARs have been used in Portland's downtown and in commercial and mixed-use zones in the City, and they may be an appropriate tool to control bulk and mass in the single-family neighborhoods. However, in SAC meetings, some questions have been raised about how they would be implemented and whether they might not be too complicated. City staff noted that FARs are well understood when they apply to box-shaped buildings on flat sites, but shifting to an FAR approach in the single dwelling zones raises some implementation concerns because of the wide variety of house forms and lot topography.

Of particular interest to the Bureau of Planning & Sustainability are the specific zoning code provisions and implementation approaches as they relate to describing the measurement of FAR in single dwelling house proposals. Topics that were called out as warranted specific attention included:

- Area within roof forms when or if they are counted (attics, under gables, dormers);
- Basements (especially daylight basements or basements on sloping lots);
- Garages (when or if they are counted, tuck-under garages vs. at grade vs. detached);
- Porches, balconies, and decks (how are they defined or distinguished from other floor area);
- Double height rooms (foyers, cathedral ceilings);
- Bay windows; and
- Stairwells.

Nine cities were selected for the FAR analysis, with a pre-condition being that they had set an FAR for single-family homes. We sought a range of planning climates, geographies and perspectives on regulations. We also wanted to include some cities that have recently fine-tuned their FAR regulations or are in the process of doing so. Key characteristics of the case study cities and their 2015 population follow:

- **Atlanta (pop. 464,000):** This southern city has a strong planning tradition in a community committed to preserving the City neighborhoods' identity by preserving the unique character of established neighborhoods and supporting revitalization efforts that will increase housing opportunities and neighborhood stability. The City also is committed to preserving single-family residential neighborhoods and ensuring infill development that preserves neighborhood character. Atlanta has a diverse population,

which is aging in place, supportive state planning, and strong environmental protection policies. Its approach to single family FAR controls is fairly traditional, cleanly drafted, and effective. Its controls are straight-forward and easily administered, with no discretionary review and a well-conceived set of exemptions – items excluded from FAR calculations.

- **Beverly Hills (pop. 35,000):** The City has dealt with mansionization at a different scale, in that the "target" house size is now 10,000 square feet for a family to feel they have "arrived" and can be recognized in Beverly Hills society. The City Council, being fairly conservative, has not wanted to reduce its FARs to control house size, but instead adopted standards for architectural modulation, setbacks, and upper-story stepbacks to reduce visible mass. Basement space and light wells also have been big planning issues and are addressed in the zoning controls. Their regulations are instructive in showing how a community deals with bulk and mass at the high end of the price scale.
- **Boston (pop. 667,000):** Under the aegis of the Boston Redevelopment Authority, planning in Boston is very neighborhood oriented; the City deals with gentrification in its older single family neighborhoods with a "light touch", and been fairy conservative in its zoning. Their FAR controls are another example of a clean, straightforward approach to controlling single family home size without discretionary review or design standards.
- **Burbank (pop. 105,000):** Home to the entertainment and high tech industries, Burbank was a fairly sleepy community until it began to face pushback from neighborhoods dealing with teardowns and large homes in established neighborhoods as "new money" moved in. An Interim Development Control Ordinance was adopted to reduce FARs and set some other limits on new houses while permanent zoning is being put in place. How this interim zoning was structured and what some of the changes in FAR controls are may provide some lessons for Portland.
- **Chicago (pop. 2.7 million):** Mayor Dailey initiated a comprehensive zoning reform program about 15 years ago, which included a complete overhaul of the residential regulations and resulted in adoption of FAR controls for single family homes. This ordinance represents "best practices" in doing zoning for a large and diverse city with a strong tradition of residential architecture and limited support for design review and discretionary development controls on new homes. It also represents a "light touch" that has been quite effective.
- **Los Angeles (pop. 3.9 million):** The City Council adopted a Base Mansionization Ordinance in 2008, which was followed by a Base Hillside Ordinance shortly thereafter. Technical guidance materials also were prepared that may be instructive for Portland's coding efforts. These ordinances were effective in dealing with bulk and mass through FAR controls and other standards, but loopholes and some generous exceptions prompted the City Council to initiate a set of amendments to the FAR controls that are now under public review.
- **Mill Valley (pop. 14,400):** A smaller Bay Area community with limited land, beautiful hillsides, and a tradition of craftsmen architecture. Their zoning has long regulated single family houses with FARs and recent Code amendments initiated because of community concerns about big houses in the hills may offer some insights, particularly in dealing

with defining "covered" floor area, basements and garages, cathedral ceilings, and grading.

- **Minneapolis (pop. 411,000):** A city with a history of strong neighborhood planning and innovative zoning; older single family housing stock, and a well-developed process for design review. Minneapolis also has a long tradition of small area planning, stemming from the work in the 1960s on interconnected urban villages. The planning initiatives in recent years have focused on infill and transit-oriented development, urban gardens, live work/shared space, urban design, and zoning. The FAR controls for single-family homes are clean and straight-forward, involving minimal discretion. They are effective in doing the job they were designed to do.
- **New York City (pop. 8.6 million):** The Mayor's recently adopted affordable housing program included an extensive set of far-reaching Code amendments (1,000+ pages), including minor adjustment to FAR controls for single-family homes. New York City is known for its fine-grained zoning that deals with social issues as well as economic and environmental considerations. How the new zoning has responded to the pressures in the diverse neighborhoods facing gentrification seemed worthy of study.

Our findings are presented in three sections:

- Defining floor are and measuring FAR
- Base FARs and FAR Bonuses
- Special situations (hillsides and large lots)

The appendix to this report includes relevant code language from the zoning regulations adopted for each on these cities. In a couple of instances, we also found summary materials and guidelines, but in most of the cities surveyed, such guidance was not readily available. We also interviewed planning staff in some of the cities to explore how the regulations have worked and refinements under consideration. Their observations helped us draft our findings and suggestions for Portland to consider as it movers forward with this project.

2 Defining Floor Area & Measuring FAR

DEFINING FLOOR AREA

Based on our review of zoning codes in the selected jurisdictions, the "best practice" is to have an inclusive definition of floor area based on total visible building mass. Do not use the definition to make policy about what to include or exclude in calculating the floor area ratio (FAR), as these clarifications then are buried in the ordinance. Having a separate set of rules for measurement, as Portland does, is preferable. The simplest definition is just to say:

Floor Area. The total horizontal enclosed area of all the floors below the roof and within the outer surface of the walls of a building or other enclosed structure.

Chicago among others is more inclusive in defining floor area and specifically lists what is included, as follows:

- Floor area of any floor located below *grade* or partially below *grade* when more than one-half the floor-to-ceiling height of the below-*grade* (or partially-below-*grade*) floor is above *grade* level, provided that below-*grade* or partially below-*grade* floors with a clear height of less than 6 feet 9 inches are not counted as floor area;
- Elevator shafts and stairwells on each floor;
- Floor area used for mechanical equipment, except equipment located on the roof and mechanical equipment within the building that occupies a commonly owned contiguous area of 5,000 square feet or more;
- Those portions of an *attic* having clear height (head-room) of 6 feet 9 inches or more;
- Mezzanines;
- Enclosed porches;
- Floor area devoted to *non-accessory parking*;
- Parking provided in excess of the maximum *accessory parking* limits, provided that each such parking space will be counted as 350 square feet of floor area; and
- Floor area within a *principal building* that is occupied by *accessory uses*.

Delving more deeply into the codes in each of the jurisdictions reveals some specific differences in approach, such as how to deal with attic space, basements, covered porches, and high ceilings. Some of these are highlighted below with our recommendations; details are in the appendix.

Area within roof forms when or if they are counted

Most jurisdictions include floor area in attics, under peak roofs, whether or not it is habitable, meaning does the attic have the minimum floor to ceiling clearance set by the Uniform Building Code (UBC) for a habitable room. The Senior Planner in Los Angeles pointed out that dormers are easily added, and they do not want to track whether this would put a house over an FAR limit. So they ignore ceiling height.

- Chicago sets a minimum height of 6 feet 9 inches to be counted, but no minimum area. This is less than the current UBC standard of 7 feet, down from a previous 7.5 foot standard.
- Mill Valley is more specific: if attic space has 7 foot headroom with minimum horizontal dimensions of 6 feet by 8 feet, then it is counted toward FAR.
- Minneapolis refers to headroom clearance as set by the building code in determining whether to count attic space, but does not include a specific number in the zoning regulations.
- New York City is more nuanced, counting some attics with only 5 feet of headroom (in R2A and R2X zoning districts, among others) and others with 8 feet of headroom (R1 and R2 zoning districts).

Mill Valley's approach might be worth a closer look, as it recognizes the value of attic space and sets out specific parameters on when to count it; they have gone a bit further than Chicago.

Basements

Most jurisdictions exclude basements from FAR calculations based on a Building Code definition or something similar. Usually this translates to a rule that the basement has to be below a finished first floor that is no more than 2.5 or 3 feet above grade for at least 50 percent of its perimeter (or for the whole perimeter, as in Beverly Hills, Burbank and Mill Valley, among others).

- Burbank and New York City includes basement space within the definition of floor area because it is used. However, in hillsides, you get the "walk-in" basement problem, and are really giving away space that contributes to overall building mass.
- New York City has a separate definition for cellar space and allows that space to be excluded unless it's used for dwelling purposes.
- The Burbank Assistant Director cautioned against using the term "habitable space" for basements as it invites arguments about whether a below grade interior space, such as an unfinished room below a garage slab, should be excluded or included.
- The Mill Valley Senior Planner said that when they had the basement exclusion and only required a portion of the perimeter to be completely underground, "it was a real nightmare". Since changing the rule, Mill Valley is much happier with the results as building bulk in the hillsides has been reduced.
- Mill Valley also allows "raw space" as found under a garage or carport in a hillside home to be converted to habitable space with the following rule: " *During the improvement of an*

existing single-family dwelling, any enclosed but undeveloped volumes may be converted to habitable space and shall not be restricted to the maximum adjusted floor area as determined by Section 20.16.040(A)(2); provided that the conversion of the existing space does not change the existing height, bulk, mass or footprint of the structure and only if minimal excavation or modification of the existing grade is required."

- Los Angeles specifically addresses the issue of daylight access to basements and allows the basement exclusion from floor area even with 2 light wells, provided they are not visible from a public right-of-way, they do not project more than 3 feet from the exterior walls of the basement, and they are not wider than 6 feet. This is similar to rules adopted in upper-income communities on the San Francisco Peninsula where tight FAR controls may the option of a family room that is below grade a viable alternative.
- Los Angeles also excludes basement space only if the upper surface of the floor or roof above does not exceed 2 feet in height above natural or finished grade, whichever is lower.

Burbank's approach – count everything, but deal with garage space separately – may make sense as a starting point because such space does contribute to overall mass, even is partially below-grade.

Garages

Most jurisdictions exclude garage space for required parking; some do this with a general rule, while others state a specific amount of floor area that is excluded (300 square feet in New York City, 400 square feet in Beverly Hills, Burbank and Los Angeles, and 500 square feet in Mill Valley and in New York City if two spaces are provided).

- Boston exempts all garage space, whether at grade or underground.
- Chicago counts garage space if it's for parking more than the minimum number of required spaces. This was intended in part to be a disincentive for the three-and four-car garages being built.
- Minneapolis counts garage space if attached to single family and two-family homes.
- Beverly Hills has the most developed concepts for garage entrance locations (see Section 10-3-114) and, notably, does not allow sloped garage entries to tuck-under or partially below-grade or subterranean garages in the front yard setback area. The idea being to move the entry to a below-grade garage back into the lot. Limits on garage width also are set (40 percent of the lot width or 24 feet, whichever is less).

On balance, we think some for of exemption for garage space may make sense, with additional attention to underground and tuck-under garages. Burbank is currently considering not only a garage proscenium width, but also restrictions on apron width and curbcuts for drives, along with a rule that a garage door for a third space be offset at least two feet from the front of a two-garage garage entrance.

Porches, balconies, and decks

If porches, balconies, and decks are generally open, they are typically excluded, but if they are enclosed on two or three sides, then the floor area is counted in a FAR calculation.

- Burbank counts all covered porches as floor area.
- Chicago counts enclosed porches.
- Los Angles exempts porches and breezeways with an open lattice roof, and gives a partial exemption (250 square feet) for porches, patios and breezeways with a solid roof if they are open on two sides.
- New York City excludes floor space in open or roofed porches and breezeways provided not more than 50 percent of the space is enclosed.

Of the cities surveyed, Los Angles may be the best model, with its partial exemption.

Double height rooms

The issue of cathedral ceilings for family rooms and foyers has been approached in several ways:

- **Allow an Unlimited Exemption**. Beverly Hills does not limit interior space with high floor to ceiling heights.
- **Allow a Limited Exemption.** Los Angles has allowed an exemption for only a certain amount of space (100 square feet) to have floor-to-ceiling heights over 14 feet.
- **Requiring Double-Counting.** Burbank requires interior space greater than 12 feet to count as a second story, meaning the floor area is double-counted. Los Angeles is considering a similar rule in its amendments to the Base Mansionization Ordinance, but they would set an allowable ceiling height of 14 feet.
- **Assign a 50% Premium to Foyer or Cathedral Ceiling Space.** Mill Valley uses this option, meaning the floor area in rooms where the interior space exceeds 14 feet is multiplied by 1.5. Mill Valley also has some specific rules for top floor space related to roof pitch.

Mill Valley offers a good model, with its 50 percent premium, but if there is SAC support, you could require double-counting as this is more-effective in controlling overall building bulk.

Bay windows

In generally, floor area created by a bay window only is counted if it is a floor-to-ceiling bay, but not if it is a traditional bay window with a shelf or bench for seating. The best way to do this is to set a minimum vertical distance for the bay window to be above the floor, such as 30 inches. However, many of the zoning ordinances reviewed did not address this topic explicitly.

Stairwells

Stairwells usually are counted once, not twice, but some jurisdictions do count this space at each level.

ESTABLISHING AN "ADJUSTED" FLOOR AREA FOR FAR CALCULATIONS

Several jurisdictions establish specific rules for determining floor area as the basis for determining compliance with FAR standards. This is done by stating, first, that the floor area of a building is the sum of the gross horizontal areas of all floors of a home and other enclosed structures, measured from the outside perimeter of the exterior walls and/or the centerline of interior walls, and then listing what is included and excluded in these calculations.

Interestingly, Mill Valley allows exclusion for enclosed but undeveloped volumes, which could be utilized in the future as floor area if they have minimum horizontal dimensions of 8 feet by 10 feet and 7 foot headroom. The Burbank Assistant Planning Director cautions against this approach, preferring to count all interior floor area, whether or not it is habitable and be a bit more generous with the FAR (Mill Valley sets a 0.35 base FAR, while Burbank's is 0.40, which can go up to 0.45 if certain features are included in the home design (e.g. wider side yards, upper-story stepbacks, so the second floor is smaller than the ground floor).

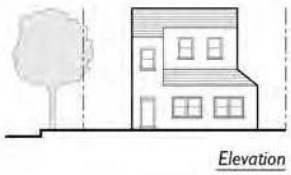
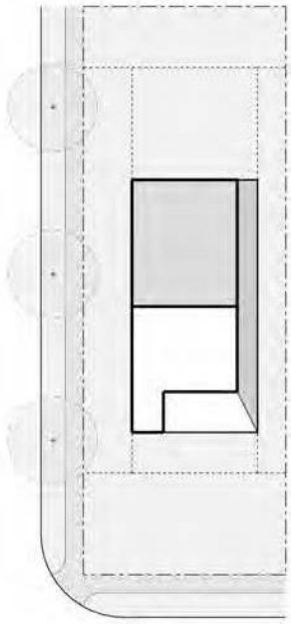
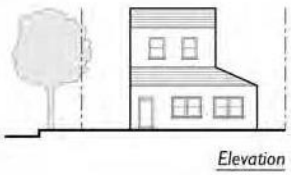
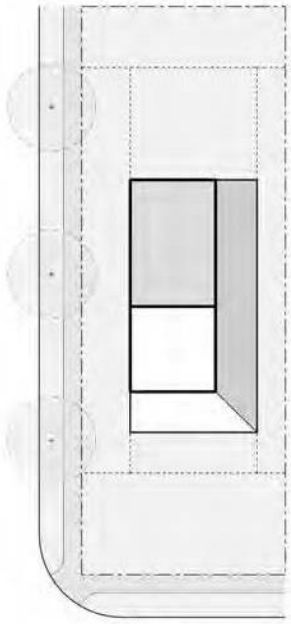
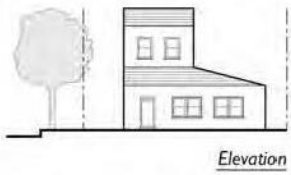
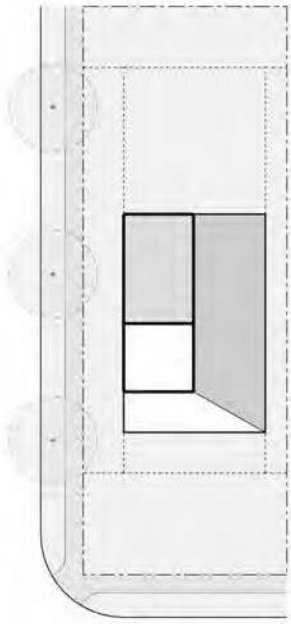
DETERMINING THE FLOOR AREA RATIO

The floor area ratio (FAR) is the ratio of the floor area, excluding areas specifically noted, of all principal and accessory buildings on a site to the site area. To calculate the FAR, floor area is divided by site area, and typically expressed as a decimal. For example, if the floor area of all buildings on a site totals 20,000 square feet, and the site area is 10,000 square feet, the FAR is expressed as 2.0.

The diagram on the following page shows how Burbank illustrates different FARs in combination with standards intended to reduce visible bulk.

VERFICATION OF EXISTING CONDITIONS

Los Angeles has a counter handout on procedures they follow for verification of existing residential floor area, including when "as-built" plans are required (any project involving more that 1,000 square feet of construction or demolition of more than 50 percent of perimeter walls).

Comparison of FAR on a Typical Burbank Lot (50' x 150')		
 	 	 
FAR = 0.45	FAR = 0.40	FAR = 0.35
Total Floor Area = 3,375 sf	Total Floor Area = 3,000 sf	Total Floor Area = 2,625 sf
2nd Story Floor Area = 75% of 1st Story Floor Area	2nd Story Floor Area = 56% of 1st Story Floor Area	2nd Story Floor Area = 56% of 1st Story Floor Area
Conforms to section 10-1-803 of the current Zoning Code with the eight feature listed to achieve a 0.45 FAR.	Reduces 2nd story floor plate by 375 square feet.	Further reduces the 1st and 2nd story floor plate to yield an FAR of 0.35.

3 Base FARs and FAR Bonuses

BASE FARS IN SURVEYED CITIES

The table below summarizes the base FAR in the cities studied, with notes on the right-hand column about typical lots size and some other notable provisions. These FARs are substantially less than the typical FARs calculated for the SAC discussions by DECA.

City	*Base FAR in Single Family Zones*	*Comments*
Atlanta	R-4A: 0.50 R-4B: 0.75	R-4A zone has 7,500 sq. ft. lots R-4B zone has 2,800 sq. ft. lots
Beverly Hills	Central Area: 1,500 sq. ft. plus 0.40	Additional floor area allowed with a Central Area Permit
Boston	R-5: 0.50 S-3: 0.30	R-5 zone has 5,000 sq. ft. lots S-3 zone has 9,000 sq. ft. lots
Burbank	R-1: 0.40	Typical lot: 7,500 sq. ft. Bonus of 0.05 for lots over 10,000 sq. ft. for certain features
Los Angeles	R-1: 0.50 R-S: 0.45	R-1 zone has 5,000 sq. ft. lots R-S zones has 7,500 sq. ft. lots
Mill Valley	RS: 0.35 if under 8,000 sq.ft.	If lot is 8-12,000 sq.ft.: house size is 2,000 sq. ft. plus 0.10; over 12,000 sq.ft. 3,000 sq.ft. plus 0.5 up to maximum of 7,000 sq.ft. gross floor area. One-time allowance of 100 sq. ft. for existing homes.
Minneapolis	R-1: 0.5	May be increased to match FARs of 50% of the homes within 100 feet of the lot; one time allowance of 500 sq. ft. for existing homes
New York City	R1: 0.50	Minimum lot area: 5,700 to 9,500 sq. ft.

Interestingly, in Atlanta, the R-4B zoning district is intended specifically as an alternative single-family zone for affordable housing that is centrally located and accessible to public transit, jobs and social services. Areas with this zoning were formally zoned for multi-family residential uses and the City's objective is to transit these areas to single-family development pattern meeting the affordability goals specified.

FAR BONUSES

Nonresidential FAR bonuses are often granted for affordable housing, community benefits, dedication of right-of-way or other off-site improvements, urban gardens and green roofs, but for single family home, there are fewer bonuses that make sense. Bonuses that have been offered in the cities studied include:

- **Single story homes.** Los Angeles gives a 20 percent floor area bonus for home that stay within an 18-foot height "envelope". As an alternative, in Studio City, Los Angeles gives an FAR bonus if the maximum height is reduced by 20 percent under a "menu" approach to FAR options.
- **Reduced second story size and stepbacks.** Burbank allows up 0.05 additional FAR with a second story setback 10 feet at the front elevation for 75 percent of the width and 5 feet on at least one side elevation. The second story floor area cannot exceed 75 percent of the floor area of the first floor.
- **Front façade stepbacks.** Los Angeles allows a 20 percent floor area bonus for an upper-story front stepback that is at least 20 percent of the building depth.
- **Increased side yards.** Los Angeles allows a 20 percent floor area bonus when the combined width of the side yards is 25 percent of the lot width, provided no single yard is less than 10 percent of the lot width.
- **Minimal grading.** Los Angeles offer a 20 percent floor area bonus if the grading does not exceed 10 percent of the lot area, expressed in cubic yards, or 1,0000 cubic yards, whichever is less. By contrast, Mill Valley just sets a 300 cubic yard standard.
- **Green building.** Los Angeles offers a 20 percent floor area bonus (30 percent if the lot is less than 5,000 square feet), for a home that substantially complies with the "certified" level or higher, as set by the U.S. Green Building Council LEED program. The City Council has proposed eliminating this bonus, as they would prefer to see green building requirements established for all homes.
- **General Articulation Option.** For Studio City, Los Angeles offers a floor area bonus if all sides of a building façade are relieved by one or more variations that, in total, are no less than 20 percent of the façade and have a minimum average depth of 9 inches. These may include façade details, such as recessed windows, insets, pop-outs, or window trim. For existing homes and additions, only new exterior walls and existing walls that are altered are required to have the articulation. The precise FAR bonus is determined by a "menu" approach, with different FAR bonus increments for specific zoning districts.

The Burbank FAR bonus for larger lots is being reconsidered by the City Council because of concerns about house size.

4 Special Situations

HILLSIDES

Hillsides present a special situation for FAR controls because of bulk and mass is more visible. Larger homes on upslope lots also can loom over downslope lots and intrude into a neighbor's privacy. Increasing side setbacks and decreasing front setbacks also can help, as can height limits that distinguish an upslope from a downslope condition. The easiest way to regulate bulk though may be to establish a rule for reduced FAR as a function of slope.

- In Los Angeles, for example, the maximum FAR in the RS zoning district (0.45) drop to 0.4 in the 15-30 percent slope band, 0.35 in the 30-45 percent slope band, 0.30 in the 45-60 percent slope band, and 0.25 percent for lots with a slope band of 60+ percent.
- Burbank is considering a similar rule in its Neighborhood Compatibility Project.

LARGE LOTS

Two jurisdictions have "bent line" rules to address FAR on larger lots. The concept is straightforward: the amount of floor area that can be added on larger lots is proportionally less than on a standard-size lot. This rule also does not reward lot mergers, the purchase of an adjacent lot with a "teardown", for example, with twice the floor area of the standard lot.

In Burbank, the bent line rule is presented in a table format:

Maximum Residential Floor Area Based on Lot Size and Allowable Floor Area Ratio (FAR)		
Lot Size (Sq. Ft.)	*Maximum FAR*	*Maximum Residential Floor Area (Sq. Ft.)*
7,500 or less	0.4	3,000
7,501 – 15,000	0.4 for lot area up to 7,500; 0.3 for lot area over 7,500	3,000 to 4,350
Over 15,000	0.4 for lot area up to 7,500; 0.3 for lot area over 7,500 but less than 15,000; and 0.2 for lot area over 15,000	Over 4,350, as determined by the applicable maximum FARs

In Mill Valley, the maximum floor area is determined as follows:

- Lots with less than 8,000 square feet of effective lot area: 35% of the effective lot area.
- Lots with 8,000 to 20,000 square feet of effective lot area: 10% of the effective lot area plus 2,000 square feet.
- Lots with more than 20,000 square feet of effective lot area: five percent of the effective lot area plus 3,000 square feet, to a maximum of 7,000 square feet.