

Density

In the context of planning, density is the amount of development within a given area. As part of a long-range planning process, stakeholders often discuss the most desirable densities for different areas of their communities. On a day-to-day basis, planners often have to determine the minimum and maximum density for a particular development site as allowed under the zoning ordinance. Planners typically use density limits to control development intensity (e.g., height, bulk, setbacks). Excessive density, particularly if poorly designed, can result in inadequate daylight, reduced open space, increased parking demand, and even a lack of privacy.

On the other hand, insufficient density can lead to problems in supporting neighborhood-serving retail and services, difficulties in offering a wider range of housing options, and an inability to provide the critical mass necessary to support public transportation. In recent years, planners have been asked to set minimum densities to ensure that sufficient development intensity exists to meet these and other planning goals.

CALCULATING DENSITY

Residential Density. When planners refer to density for residential areas, they usually express it as dwelling units per acre (du/acre). Gross density is the number of units divided by the acreage of the entire area and net density is the number of units divided the acreage of residential land. Portland, Oregon, uses both gross and net density to determine the intensity of development on a residential site. Portland determines the allowed density for a site by dividing the net area of the site by the minimum lot area required per dwelling unit.

Nonresidential Density. The allowable density for nonresidential development is most often calculated as a measurement of floor area ratio (FAR). APA's A Planner's Dictionary defines FAR as the total floor

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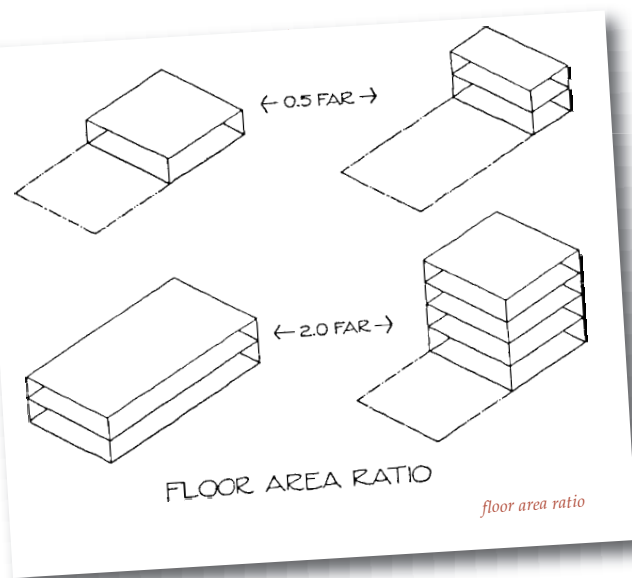
area of all buildings or structures on a zoning lot divided by the total square footage of said lot. The maximum allowable FAR is represented as a number (e.g., 0.20, 0.50, or 3.0) that is multiplied by the total lot area to determine the total built square footage permissible on that site. It may also be represented by a ratio (2:1 for example), with the first number representing the amount of total built square footage allowed on the site in proportion to the lot area. A 2:1 FAR allows for two times the lot area to be built; however, this may be a two-story building that covers the entire lot or a four-story building that covers 50 percent of the lot. Setback requirements, height restrictions, and other controls often affect a developer's ability to construct alternative FAR configurations on a site.

Lot Area. The maximum number of dwelling units possible on a site is determined by the lot area, which is the amount of area necessary to support a type of residential development. The lot area is determined by first excluding those areas already dedicated to other uses. These typically include streets and parking but may include other uses, such as parks and playgrounds. Environmentally sensitive areas (e.g. wetlands, floodplains, steep slopes, groundwater recharge areas, habitat conservation areas, and geologic hazard areas) may also be deducted from the site's lot area to determine the buildable area for a site.

DENSITY BONUSES

Definition. A density bonus is an increase in the number of residential units or nonresidential square footage on a parcel beyond what the zoning ordinance allows. One example is when high-rise developments receive an increased FAR in exchange for creating public plazas as part of the project. Through density bonuses, developers gain the potential for a higher return on their land investment, and communities reap the

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An example of Floor Area Ratio

benefits of more compact development. Density bonuses have become increasingly popular in recent years as municipal governments are increasingly unable to fund public amenities, such as parks and libraries. In granting these incentives, it is important to conduct planning and urban design studies to ensure that the bonuses would represent appropriate levels of development intensity when considering proximity to public transportation, neighborhood character, and housing demand. A key consideration in using density bonuses to achieve community goals is the base density in a given district. The developer of a parcel in a district with a high-density standard will have little interest in seeking additional density.

Affordable Housing. Density bonuses are an effective means for overcoming financial barriers in the development of affordable housing. Local legislatures can enact provisions giving developers additional height, an increased number of units, or other bonuses if they maintain a certain percentage of affordable units on the site or make a donation to a local housing trust fund. In King County, Washington, a coalition of suburban municipalities and the county government pooled their affordable housing trust monies and density bonus capability to develop 100 affordable rental units on a 20-acre county-owned parcel.

Open Space. Density bonuses may also be given to developers who set aside land as protected open space within the development area. Communities may also allow for increased development through a transfer of development rights, which is a method for preserving open space while encouraging more compact development at select locations. Development rights are transferred to an "urban service area": a location identified as suitable for high-density development. In the King County example above, in addition to receiving a density bonus for affordability, the project conserved open space by using a transfer of development rights to move the allowable density from the site's wetlands to the developable area and permitting attached units in a zone reserved for single-family development. Local or county governments may also offer density "points" for the protection of open space networks as parklands and nature preserves, or relate them to the length of protected shorelands, ridgelines, or public road frontage.

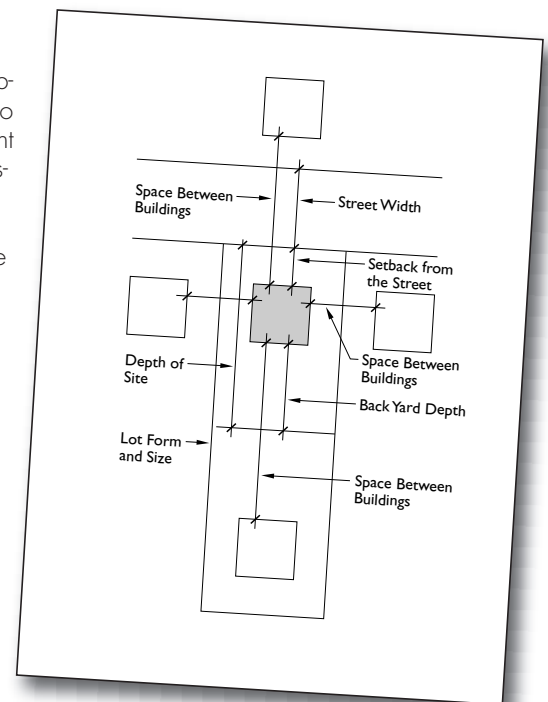
Calculating a Density Bonus. The value gained from a density bonus should be proportionate to the cost of providing the community amenity. According to Zoning and Land Use Controls, municipalities in the U.S. have adopted four approaches to calculating the value of a density bonus to a developer:

- Equivalent Land Cost: The cost to purchase sufficient additional land to achieve the same total density as with the density bonus.
- Equivalent Development Rights: The cost to purchase additional development space or rights to achieve the same total density as with the density bonus.
- Return on Investment: The combined net revenues and costs for both the bonus FAR received and the amenity provided.
- Marginal Cost-to-Profit: The marginal profits from the bonus FAR compared to the cost of the amenity.

Local governments should anticipate potential complexities in administering density bonuses. New York City, for example, uses three different approaches to award density bonuses, depending on the location of the proposed development: what is allowed under the zoning ordinance, by approval of the planning commission, or by special permit with a public hearing.

DENSITY DIVIDENDS

In neighborhoods and at the regional level, planners and elected officials find that encouraging high-density development in appropriate locations can promote community goals established by a community visioning process. Some benefits realized through increased density are: capitalizing on existing infrastructure to reduce the cost of providing public services; reducing traffic congestion and supporting transit by developing at higher densities around transit stations; and using transfer of development rights ordinances to encourage the preservation of rural character and agricultural land uses. Higher density areas can more easily include walkable commercial and employment centers, and are better served by local and regional transit. ■



Site coverage of a building, also referred to as the building footprint, is a factor of the setback distances from adjacent structures, lot lines and streets, and the lot form and size. Combinations of different structure sizes and heights can result in a variety of densities with the same overall lot coverage.

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