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Abstract

This paper addresses the following question: how frequently do cities use government regulation of land use to coerce environmentally friendly development? In particular, the paper focuses on minimum density requirements, maximum parking requirements, and laws requiring “green” building (usually buildings that include a variety of energy-conserving features). The article concludes that the first type of regulation is rare, while the latter two are somewhat more frequent.

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How Often Do Cities Mandate Smart Growth or Green Building?

Michael Lewyn and Kristoffer Jackson

Much has been written about the role of government regulation in facilitating automobile-oriented sprawl. Zoning codes reduce walkability by artificially segregating housing from commerce, forcing businesses and multifamily landlords to surround their buildings with parking, and artificially reducing density.[1] As a result, cities have become more car-oriented over the past several decades, resulting in increased greenhouse gas emissions and other forms of pollution. The "smart growth" and "green building" movements seek to make cities more environmentally friendly, both through regulation and through more libertarian, deregulatory policies. The purpose of this paper is to examine the extent to which cities have in fact chosen the more regulation-oriented path, and to discuss the possible negative and positive side effects of prescriptive smart growth and green building regulations. In particular, we focused on attempts to make cities more pedestrian-friendly, as opposed to smart growth policies designed to restrict the location of suburban development.[2]

To do so, we examined the zoning regulations of twenty-four medium-sized cities (cities with between 500,000 and 1 million residents). We chose this sample because it is large enough to reflect the policies of a reasonably diverse number of cities, yet small enough to be manageable. In addition, we focused on three types of regulation: parking, density, and "green building."

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[1] *See generally* MICHAEL LEWYN, A LIBERTARIAN SMART GROWTH AGENDA 16–33 (2012).

[2] However, we do briefly address such "urban containment" later in this paper, as it is indirectly relevant to the issues discussed herein. *See* Part II-D *infra* (discussing issue generally); Michael Lewyn, *Sprawl, Growth Boundaries and the Rehnquist Court*, 2002 UTAH L. REV. 1 (2002) (focusing on Oregon's "urban growth boundary" system, and citing numerous other papers on point).

Because these regulations have received very little scholarly attention, it is too early to draw firm conclusions about their effect. But in theory, these regulations could have both positive and negative effects. Such regulations could make cities more pedestrian-friendly and encourage developers to build more environmentally friendly housing, thus reducing driving and pollution arising therefrom. Conversely, these regulations could make cities more difficult and expensive places to do business, thus driving developers to car-oriented suburbs. The weight of these benefits and costs is not yet clear.

I. Parking

A. The Status Quo

Since the 1940s, local governments have generally required owners of commercial and multifamily structures to build off-street parking for customers and visitors.[3] The primary purpose of these regulations is to prevent "cruising"—that is, drivers creating congestion and pollution while searching for scarce parking spaces.[4] These regulations may also prevent "spillover parking"—the risk that if a business's customers are not accommodated by a parking lot, those customers and their vehicles may "spill over" into adjacent residential neighborhoods, antagonizing those areas' residents.[5]

Numerous commentators have criticized these regulations, pointing out that minimum parking requirements have a variety of negative side effects:

[3] *See* DONALD C. SHOUP, THE HIGH COST OF FREE PARKING 22, 25 (2005).
[4] *See* Stroud v. City of Aspen, 532 P.2d 720, 723 (Colo. 1975) (justifying requirements on this basis).
[5] Michael Lewyn, *What Would Coase Do? (About Parking Regulation)*, 22 FORDHAM ENVTL. L. REV. 89, 94 (2012).

- These regulations force landowners to subsidize driving by requiring them to spend thousands of dollars on parking spaces.[6] These costs are usually not passed on to drivers because minimum parking requirements artificially increase the supply of parking (thus reducing the market price of parking, usually to zero).[7] Instead, costs are passed on to society as a whole, forcing all society to subsidize parking and, therefore, to subsidize driving. And by encouraging driving, parking requirements increase the traffic congestion and pollution they were designed to prevent.
- Because developers pass the cost of parking on to tenants and homebuyers, parking requirements for housing increase the cost of housing—according to one study, by $85,000 per unit.[8]
- Minimum parking requirements reduce population density, as land used for parking cannot be used for housing, shops, or offices. For example, a city requiring one parking space per one-bedroom apartment reduces the number of apartments by about 30 percent.[9] Low-density areas tend to be highly automobile-dependent; if only a few houses can be built on a block near public transit, that means only a few people can walk to such transit. Similarly, if only a few houses can be built on a block near a commercial street, only a few people can walk to the commercial street.
- Minimum parking requirements reduce economic activity, at least in highly urbanized places. In suburbs where land is cheap, a landowner can build what it wants and comply

[6] *See* SHOUP, *supra* note 3, at 185–92 (discussing subsidization of parking caused by minimum parking requirements); Lewyn, *supra* note 5, at 97 n.44 (costs range from $2000 per parking space to $20,000 per space; costs are generally higher in urban locations).
[7] *Id.* at 97 ("ninety-nine percent of driving trips end at a destination with free parking").
[8] *Id.* at 98. Many cities have mitigated this effect by building an extensive highway system to open more suburban land for development, thus driving down land costs. However, such policies impose significant transportation costs on the intended beneficiaries by shifting development beyond the reach of public transit, effectively forcing most of the region's workers to own cars.
[9] *Id.* at 101; SHOUP, *supra* note 3, at 143–44 (discussing impact on density).

with the law by purchasing additional land for parking. But in an already-developed area, a landowner may be hemmed in by other landowners, and thus may not be able to redevelop property while still complying with parking requirements.[10]

By contrast, when Los Angeles enacted an "adaptive re-use" ordinance exempting downtown developers seeking to turn vacant and nonresidential buildings into housing from minimum parking requirements,[11] development increased significantly. Between 1999 (when the ordinance was enacted) and 2008, developers built 7300 housing units covered by the ordinance—more than had been built in all of downtown over the preceding thirty years.[12]

Even had those developers built housing downtown without the ordinance, they might not have been able to reuse historic buildings unless those buildings had built-in parking. Instead, they would either have (1) built in areas of downtown without historic buildings, thus leaving the buildings vacant forever, or (2) razed the buildings and built entirely new structures in order to create additional space for parking—structures which presumably would have been more expensive.[13]

- Minimum parking requirements make walking undesirable by encouraging landowners to place additional parking in front of buildings. Zoning laws often require buildings to be set back far behind a sidewalk, and where landowners are forced to place something

[10] *See* Michael Manville, *Parking Requirements as a Barrier to Housing Development: Regulation and Reform in Los Angeles*, 3, 6–7 (2010), *available at* http://www.uctc.net/research/papers/UCTC-FR-2010-03.pdf (describing examples of reduced housing supply due to minimum parking requirements).
[11] *Id.* at 4 (describing details of ordinance).
[12] *Id.* at 12, 23–26.
[13] *Id.* at 24. Note that urban parking tends to be more expensive than suburban parking, especially if it is underground. *See* Transp. Res. Bd., *Economic Impact Analysis of Transit Investments: Guidebook for Practitioners* 9-17 and 9-23 (1998), *available at* http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_35.pdf (comparing urban parking costs with suburban parking costs, and noting that underground parking costs between $38,800 and $99,300 per stall, while surface lots cost less than half that much).

between sidewalks and buildings, that something usually is parking, since by installing a parking lot landowners may comply with parking and setback regulations at the same time.[14] Where this is the case, pedestrians must cross a moat of parking to reach their destination, which encourages people to drive rather than walk, for three reasons: First, walking across a parking lot adds time to a pedestrian's commute, making driving faster than walking. Second, parking lots create a monotonous, aesthetically unappealing "dead zone" that makes walking unattractive.[15] Third, parking lots may impair pedestrian safety, because a pedestrian crossing a parking lot is at some risk of a collision with cars going through the parking lot.[16] In these ways, minimum parking requirements not only increase driving, but decrease walking.

B. Parking Maximums as an Alternative

Almost every American municipality has minimum parking requirements for many neighborhoods.[17] Parking maximums, however, are less frequent. Fifteen out of the twenty-four cities surveyed have some sort of parking maximums. These fifteen cities follow one or more of three strategies: (1) maximum parking requirements for nearly all uses, (2) maximums for

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[14] In addition, customers may find it more convenient to park in front of stores, so if a landowner has to spend money on parking, it may be better off placing the parking in front regardless of setback rules. *See* LEWYN, *supra* note 5, at 104.

[15] *See* Douglas G. French, *Cities Without Soul: Standards for Architectural Controls with Growth Management Objectives*, 71 U. DET. MERCY L. REV. 267, 280 (1994) (suggesting that pedestrians find places where shops are in front of sidewalks to be more aesthetically appealing because "small setbacks and shop-front windows provide more interesting scenery for pedestrians, and create a feeling of connection between the buildings and the public spaces bordering them" compared to places where pedestrians must walk through parking lots to reach shops).

[16] *Cf.* Jil McIntosh, *It's No Cakewalk Being a Pedestrian*, TORONTO STAR, July 18, 2009, at W2, *available at* 2009 WLNR 13724302 (parking lots are "dangerous" because drivers are "busy looking for spots or avoiding cars backing out, making pedestrians vulnerable").

[17] For a comparison of various cities' minimum parking requirements, *see Graphing Parking*, www.graphing parking.com (charting minimums for various land uses). However, a few cities have abolished minimum parking requirements for downtown neighborhoods or neighborhoods especially well served by public transit. *See* Lewyn, *supra* note 5, at 112–13.

specified uses, and (3) maximums for specified parts of the city. See the Appendix for lists of which cities follow each strategy.

1. Universal rules. Only three of the cities we surveyed impose maximum parking requirements for all or nearly all land uses: Fort Worth, Texas; San Francisco; and Louisville, Kentucky.

Fort Worth imposes a variety of minimum parking requirements, adding simply that the "maximum number of parking spaces shall not exceed 125% of the minimum parking requirement."[18] For example, the city requires one parking space per bedroom for multifamily housing,[19] which means the maximum parking requirement is 1.25 spaces per bedroom. Because the difference between Fort Worth's minimum and maximum parking requirements is so small, it appears that almost all parking that is not prohibited is compulsory.

San Francisco also consistently caps parking, but gives landowners more discretion. As a general rule, San Francisco's city code caps parking at "three spaces where one space is required by this Code; four spaces where two spaces are required by this Code; 150 percent of the required number of spaces where three or more spaces are required by this Code; and, in all districts other than [neighborhood commercial], 15 spaces or seven percent of the total gross floor area of the structure or development, whichever is greater, or in [such] Districts, three spaces, where no off-street parking spaces are required by this Code."[20] In addition, the city imposes a variety of stricter requirements for some individual zoning districts.[21]

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[18] *See* Fort Worth Municipal Code, § 6.201(b)(2).
[19] *Id.* § 6.201(B). In addition, the city requires one parking space per 250 square feet of common areas, offices and recreation.
[20] SAN FRANCISCO MUNICIPAL CODE, § 204.5(c).
[21] *See id.* § 151.1(b) (in certain specified parts of the city, the maximum parking allowed is between 50 and 100 percent of what would otherwise be the minimum amount required, depending on the district).

Louisville lists both minimum and maximum requirements for almost every conceivable land use.[22] Generally, its maximums are approximately twice its minimums. For example, the city requires a minimum of 1.5 parking spaces per dwelling unit in most districts, and a maximum of 3 spaces per dwelling unit. For most offices, the city requires a minimum of between 2 and 2.8 spaces (depending on the zoning district) per 1000 square feet, and a maximum of 5 spaces.[23]

2. Maximums for a few uses. Seven cities impose maximum parking requirements for some or all commercial uses, but not for residential uses. El Paso, Texas, imposes both minimums and maximums for businesses, but only imposes minimum parking requirements for apartments and other housing. Its maximums tend to be only slightly higher than its minimums; for example, an office must supply a minimum of one space per 480 square feet (or 2.1 per 1000) and a maximum of one per 400 square feet (or 2.5 per 1000).[24]

The rules are similar in Portland, Oregon: the city imposes no maximum parking requirements for most residential uses, but imposes both minimums and maximums for most commercial uses.[25] However, Portland's maximums tend to be a bit more generous than those of El Paso. For office uses, Portland typically requires about the same minimum number of parking spaces as El Paso (two per 1000 square feet) but sets a higher maximum (one per 294 square feet, or about 3.4 per 1000). In addition, the city imposes a variety of requirements for individual neighborhoods. For example, in areas near light rail stations, a nonresidential land

[22] *See* LOUISVILLE, KY., LAND DEVELOPMENT CODE, TABLE 9.1.2A.
[23] *Id.*
[24] *See* EL PASO MUNICIPAL CODE, § 20.14.040, APP. C, TABLE 4.09.
[25] *See generally* PORTLAND ZONING CODE, TABLES 266-1 AND 266-2 ("PORTLAND CODE").

user may not create more than 150 percent of the minimum number of parking spaces required for most zones.[26]

Seattle's code similarly sets forth a maximum in its commercial zones, providing that in most commercial zones, businesses may provide no more than 145 spaces per parking lot.[27] In addition, businesses in multifamily zones may provide no more than ten parking spaces per establishment.[28]

Jacksonville, Florida, imposes parking maximums for most businesses, providing that offices and businesses (other than those such as restaurants with specified parking requirements of their own) have a minimum of three parking spaces per 1000 square feet of floor area, and a maximum of six per 1000 square feet.[29]

Columbus, Ohio, follows a similar strategy: it imposes minimum parking requirements only for residential, industrial and institutional uses, but both minimum and maximum requirements for offices, retail shops, and restaurants. Columbus's lawmakers expect somewhat less parking than Jacksonville's: its minimum requirement for offices is one parking space per 450 square feet (or just over two per 1000 square feet), and its maximum requirement is one space per 250 square feet (or four per 1000).[30]

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[26] *Id.* § 33.450.420(B). *See also* Tables 510-6, 510-10, 510-16, 536-1, and §§ 33.532.110(C)(2), 33.536.290(C), 33.555.280(B) (setting forth special rules for certain neighborhoods).
[27] *See* SEATTLE MUNICIPAL CODE, § 23.54.015(C)(2) (applying rule to "all commercial zones, except C2 zones outside of urban villages") ("SEATTLE CODE").
[28] *Id.* § (C)(3). In addition, Seattle creates special requirements for certain zones. *Id.* §§ 23.48.032(B) (special rules for mixed-use zone); 23.54.015(C)(1) (special rules for overlay zone near stadium); 23.71.016, Table A (special rules for Northgate Overlay District); 23.75.180 (special rules for Yesler Terrace community).
[29] *See* JACKSONVILLE MUNICIPAL CODE, §§ 656.604(e)(1) and (f)(1) ("JACKSONVILLE CODE").
[30] *See* COLUMBUS MUNICIPAL CODE, § 3312.49, TABLE 2 ("COLUMBUS CODE").

Milwaukee, Wisconsin, imposes maximum parking requirements for only a few uses: retail establishments are subject to a maximum of 3.5 parking spaces per 1000 square feet, and single-family homes and duplexes are limited to four parking spaces per dwelling unit.[31]

San Jose, California, regulates commercial parking much more narrowly. As in Columbus and Jacksonville, its parking minimums are virtually universal; however, it imposes maximums only for printing and warehouses.[32]

3. Maximums for a few districts. Another common policy is to impose parking maximums, but only in certain parts of a city. For example,

- Austin, Texas, imposes parking maximums for two downtown zoning districts, the Central Business District (CBD) and Downtown Mixed Use (DMU) district.[33] In these districts, the maximum parking allowed is sixty percent of the minimum parking requirement in a non-downtown neighborhood.[34]
- Boston limits residential parking in one downtown zone to 0.75 spaces per unit.[35]
- San Jose creates a "pedestrian-oriented district" overlay zone. In that zone, multifamily dwellings may create a minimum of 1.25 spaces per dwelling unit and a maximum of 2 spaces.[36]

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[31] *See* MILWAUKEE MUNICIPAL CODE, Table 295-403-2-A.
[32] *See* SAN JOSE MUNICIPAL CODE, Table 20-190 (following § 20.90.060).
[33] *See* AUSTIN MUNICIPAL CODE, 25-2-100 and 101 (describing districts).
[34] *Id.* § 25-6-591(B)(3). Note that a landowner may apply to build a higher number of spaces. *Id.* § (C). In addition, the minimum parking requirements is one-third of the maximum. *Id.* § (B)(2)(a)(i).
[35] *See* BOSTON ZONING CODE, § 27D-8(6)(B)(2) ("BOSTON CODE").
[36] *Id.*, Table 20-211. Memphis has a similar rule that is essentially voluntary, since it only applies to landowners who choose to have their property zoned for a "sustainable subdivision." *See* MEMPHIS AND SHELBY COUNTY UNIFIED DEVELOPMENT CODE, § 3.8.6(A)(6) (only twenty percent of surface may be used for surface parking) ("MEMPHIS CODE"). However, other Memphis developments are governed by conventional minimum parking requirements. *Id.* § 4.6.3.

- Denver limits parking, but only within a quarter mile of light rail stations.[37] In these areas, surface parking may not exceed 110 percent of minimum parking requirements.[38]
- Albuquerque, New Mexico, has created an "East Gateway Development Plan" for one part of the city.[39] In this area, the maximum parking allowed is the minimum parking requirement plus ten percent.[40]

C. Side Effects

A rational basis exists for maximum parking requirements, especially where (as in Denver) these requirements are limited to surface parking. As noted above, surface parking makes walking less convenient; where pedestrians must walk through a sea of parking to reach a destination, walking becomes more monotonous, more time-consuming, and less safe. It follows that where large surface parking lots separate shops and housing from streets and sidewalks, people who might otherwise walk to those destinations will instead drive. And to the extent drivers are aware that a destination will have ample parking (surface or otherwise), they are more likely to drive, thus creating traffic congestion and pollution.[41]

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[37] *See* DENVER ZONING CODE, § 10.4.3.2(B)(1)(a).
[38] *Id.* § 10.4.3.2(B)(2). However, underground or aboveground spaces are not affected by the parking maximum; thus, a landowner may choose to build an infinite number of such spaces. *Id.* § 10.4.3.2(B)(2)(b).
[39] *See* CITY OF ALBUQUERQUE, EAST GATEWAY SECTOR DEVELOPMENT PLAN, at http://www.cabq.gov/planning /documents/EastGatewayFINwFAs08092012.pdf.
[40] *Id.* § 5.6.2(A)(2).
[41] It can be argued that in an unregulated world, landowners are unlikely to provide more surface parking lots than customers actually demand, since motorists likely will avoid visually unappealing parking lots. This claim assumes, however, that drivers prefer pretty but expensive underground parking to ugly but cheap and convenient surface parking. It is unclear whether this is in fact the case. Moreover, one argument for maximum parking requirements may be that, even if a free market in parking gives motorists as much parking as they want, such parking should be limited because an ample parking supply may increase driving and thus increase pollution and congestion.

Because maximum parking requirements are somewhat new in the United States, there is little evidence about the practical effects of such requirements.[42] But if planners set parking caps that are lower than the market demand for parking, they create a variety of potential problems. First, if a landowner cannot supply enough parking to meet the demands of its tenants or customers, those tenants and customers may do their business elsewhere—perhaps in suburbs with more permissive parking regulations.[43] To quote one commentator, "If a maximum actually reduces the number of spaces that are built, it must also reduce the value of the properties that could be built there. If not, [in the absence of minimum parking requirements,] entrepreneurial builders themselves would build at those rates, once they understood the demand was there."[44] So, if a maximum parking requirement actually did reduce parking below what customers demanded, urban housing and businesses might become less desirable.

Moreover, there is some empirical evidence that people and businesses do value parking in location decisions. One British study showed that fifteen percent of businesses consider staff parking to be a "key influence" in locational choice (more than all but one of eleven factors listed), and eleven percent described customer or visitor parking as a "key influence" (more than four of the factors).[45] Another survey showed that when residents of southeast London were

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[42] *See* DONALD ELLIOTT, A BETTER WAY TO ZONE 180 (2008) (stating that "relatively few" cities use parking caps, and those that do "generally limit them to downtown or special focus areas"). However, one study shows that maximum parking requirements in London, England, have had little effect, because developers typically build far less than the maximum number of spaces. *Cf.* Fei Li & Zhan Guo, *Do Parking Standards Matter?* 11, 16 at http://www.embarq.org/research/publication/do-parking-standards-matter (discussing the impact of the abolition of minimum parking standards, and imposition of maximum parking standards, in London; finding that new developments typically "provide parking well below the standard level" and in fact "60% of the post-reform developments in central London are car-free").

[43] *See* Georgina Stylianou, *Parking Squeeze in CBD Annoys*, PRESS, Oct. 3, 2013 at 1 (discussing developer's complaints about maximum parking requirements in Christchurch, New Zealand).

[44] Ben Woolsey, *Why We Don't Need a Parking Maximum*, Jan. 8, 2009, http://seattletransitblog.com/2009/01/08/why-we-dont-need-a-parking-maximum.

[45] *See* Greg Marsden, *The Evidence for Parking Polices—A Review*, 9 (2006) http://eprints.whiterose.ac.uk/2023/2/ITS15_The_evidence_base_for_parking_policies_UPLOADABLE.pdf.

given a hypothetical choice between a garage and more living space, eighty-three percent chose the garage.[46]

Second, planners must decide whether to apply parking caps to new construction only or to existing construction as well. If only new construction is governed by a parking cap, new developments could be placed at a competitive disadvantage vis-à-vis existing businesses, if the parking cap is so low as to be lower than consumer demand.[47]

If planners try to avoid this problem by forcing owners of existing buildings to eliminate some of their current stock of parking spaces, those landowners may have to spend money building something in place of parking, or allow the former site of their parking lots to become completely useless. Either way, the landowner would lose money, and perhaps suffer a taking requiring government compensation. But these risks exist only if the landowner cannot construct something profitable, such as additional office space or additional apartments, in place of parking.

In sum, it is theoretically possible that, if they are strict enough to reduce parking below what consumers demand, a city's maximum parking requirements may make the city a less appealing place to live and work. However, we have found no data indicating whether American cities' maximum parking requirements are stringent enough to have this effect. Thus, it is not yet clear how or to what extent these regulations should be reformed.

[46] *Id.* at 16.
[47] *See* Rogue Valley Council of Governments, *Parking Element 9-2* (2002), http://www.rvcog.org/pdf/Planning_RTP_Section_9.pdf.

II. Density

A. The Status Quo

As early as the 1920s, the Standard Zoning Enabling Act (a federally sponsored model zoning enabling act) stated that one purpose of zoning should be to "avoid an undue concentration of population."[48] Since then, anti-density regulation has become virtually universal in the United States.[49] As early as 1971, eighty percent of the vacant land within fifty miles of Times Square in New York City was restricted to lots of half an acre or more.[50] And since the early 1970s, zoning may have become even more restrictive.[51] Moreover, anti-density zoning is not limited to low-density suburbs; even in the densest parts of New York City, zoning limits density to some extent.[52]

It appears that such anti-density regulations do, in fact, limit development—especially compact, walkable development. A study conducted for the Urban Land Institute asked developers about the impact of zoning on "alternatives to conventional, low-density, automobile-oriented, suburban development."[53] Government regulation was identified by 78.2% of developers as a significant barrier to such development.[54]

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[48] U.S. DEP'T OF COMMERCE, A STANDARD STATE ZONING ENABLING ACT, § 3 (1926), *available at* http://www.planning.org/growingsmart/pdf/SZEnablingAct1926.pdf. This law was a model state statute designed to make it clear that local governments had the authority to regulate density and land use. *Id.* § 1.

[49] *See* 3 EDWARD H. ZIEGLER, ARDEN H. RATHKOPF & DAREN A. RATHKOPF, RATHKOPF'S THE LAW OF ZONING AND PLANNING, § 51.10 (2011 ed.) ("minimum lot size" requirements common); NORMAN WILLIAMS, JR., & JOHN M. TAYLOR, AMERICAN LAND PLANNING LAW, § 39.1 (describing minimum lot size requirements as the "most common form of density control").

[50] *See* Note, *Exclusionary Zoning and Equal Protection*, 84 HARV. L. REV. 1645, 1645 (1971).

[51] WILLIAMS & TAYLOR, *supra* note 49, § 35.23 ("[m]unicipal zoning ordinances have increasingly been adopting requirements for widespread or almost-universal very low density"); William Fischel, *The Evolution of Homeownership*, 77 U. CHI. L. REV. 1503, 1515 (2010) (In order to keep out lower classes while avoiding 1970s civil rights litigation, suburbs avoided discrimination claims by downzoning all land, rather than merely excluding only housing catering to the truly poor.).

[52] *See* City of New York, *Zoning Data Tables, Residence Districts*, at http://www.nyc.gov/html/dcp/pdf/zone/zoning_handbook/zoning_data_tables.pdf#page=1 (listing density limits for various zoning districts).

[53] *See* JONATHAN LEVINE, ZONED OUT: REGULATION, MARKETS, AND CHOICES IN TRANSPORTATION AND METROPOLITAN LAND-USE 126 (2006).

[54] *Id.* at 129.

Such regulation is one reason why the average American neighborhood has only two to seven dwelling units per acre.[55] Such low-density areas tend to be highly automobile-dependent, because if only a few houses can be built on a block near public transit, that means only a few people can walk to such transit.[56]

B. Minimum Density Requirements: Rare, but not Unknown

Critics of smart growth often accuse smart growth advocates of trying to force Americans into higher-density housing.[57] Most cities, however, have nothing resembling a mandatory, citywide minimum density requirement. In fact, only two cities—San Jose and Portland—have widespread minimum density regulations.

San Jose has minimum density requirements even for its low-density zones—but those requirements are quite lenient. In the city's R-1 (single-family residential) zone, the city allows densities between one and eight units per acre.[58] In this way, the city imposes a minimum density of one house per acre on developers—hardly an "urban" level of density. Most commentators suggest that a neighborhood must have at least seven to fifteen dwelling units per acre to support

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[55] See Joanna D. Malaczynski & Timothy P. Duane, *Reducing Greenhouse Gas Emissions from Vehicle Miles Traveled: Integrating the California Environmental Quality Act with the California Global Warming Solutions Act*, 36 ECOLOGY L.Q. 71, 80 n.44 (2009) (estimating current average density at 7.6 units per acre); Mark Fina & Leonard Shabman, *Some Unconventional Thoughts on Sprawl*, 23 WILLIAM & MARY ENVTL. LAW & POLICY REV. 739, 741 (1999) ("two units per acre typical of present development").

[56] *See* Malaczynski & Duane, *supra* note 55, at 80 n.44 (claiming that raising average density to nine units per acre could reduce vehicle miles traveled by thirty percent nationwide).

[57] *See* Kurt Paulsen, *Sprawl, Residential Density, and Exclusionary Zoning*, 20 PROBATE AND PROPERTY 23, 27 (2006) (to some, smart growth proposals are an "attempt by government bureaucrats to force people to live in higher-density [housing]"); Jim Wooten, *Our Opinion: Suburbs Evil? Evidence Thin*, ATLANTA JOURNAL-CONSTITUTION, June 6, 2004, at E6 (accusing smart growth advocates of "using transportation funding to force high-density development [and] drive people into urban clusters"). Of course, residents of existing low-density development may see nearby development as "forcing" them into high-density environments—but this claim seems to be based on a confused view of property rights. When one buys a house, one buys the house—not necessarily the right to force every dwelling to look like that house (unless, of course, one has contracted with nearby property owners to create that right through a restrictive covenant).

[58] SAN JOSE CODE, § 20.30.010(C)(1).

significant public transit ridership, as only such compact neighborhoods have a critical mass of people living within walking distance of a bus stop.[59] In areas with lower density, very few people will live within a short walk of a bus or train stop, and transit ridership will therefore be low.[60]

Portland's maximum and minimum densities are generally set out in the subdivision element of its zoning code. For subdivisions in the city's low-density single-family zones, maximum densities range between one house per two acres and one house per 5000 square feet,[61] and minimum densities are roughly two-thirds that amount.[62] Similar standards govern the city's higher-density zones.[63] For example, in the multifamily R3 zone, the maximum density is one dwelling unit per 3000 square feet (roughly fourteen units per acre), while the minimum density is one unit per 3750 square feet (roughly eleven units per acre).[64]

To be sure, many cities have high-density districts as well as low-density districts.[65] However, the existence of these districts hardly constitutes a smart growth–oriented minimum

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[59] *See* Robert H. Freilich, *The Land Use Implications of Transit-Oriented Development: Controlling the Demand Side of Transportation Congestion and Urban Sprawl*, 30 URB. LAW. 547, 552 & n.18 (2009); ANTHONY DOWNS, STILL STUCK IN TRAFFIC: COPING WITH PEAK-HOUR TRAFFIC CONGESTION 210 (2004) (seven units per acre supports bus service once every half hour).

[60] *See* PAMELA BLAIS, PERVERSE CITIES 60–61 (2010) (citing numerous studies).

[61] *See* PORTLAND CODE, Ch. 33.610, Table 610.1.

[62] *See* PORTLAND CODE, Ch. 33.610(D). I note that for purposes of calculating the minimum density, the code excludes land "within an environmental overlay zone, potential landslide hazard area, or special flood hazard area." *Id.* In addition, where a subdivider does not choose to build any streets, the minimum density is eighty percent of the maximum density. *Id.*, Ch. 33.610(C)(2).

[63] *See, e.g. Id.*, § 33.611(C), (D) (in R2.5 zone, maximum density is one lot per 2500 square feet, and minimum density is sixty-eight percent of that amount where streets are present, eighty percent otherwise).

[64] *Id.*, Ch. 33.120, Table 120-3 (listing minimum and maximum density regulations for other zones as well). In addition, the city has established specialized density requirements for individual neighborhoods. *Id.*, Ch. 33.505.200 (requiring one dwelling per 2250 square feet in North Lombard Street area, and one per 2000 feet in Albina district abutting Martin Luther King Boulevard); Ch. 33.561.240 (requiring similar densities in North Interstate zone). Note that it is not clear how difficult it is for developers to work around these requirements; for example, we have found no media coverage of developer requests for variances. Since the city has a wide variety of zones, we suspect that a developer who wishes to build less densely that its current zone allows can ask to be rezoned into a lower-density district. However, we have been unable to discover how common such rezoning requests are, or how controversial they are when they occur.

[65] *See* INDIANAPOLIS MUNICIPAL CODE, § 731-213 (city creates suburban high-rise zone, and specifies range of densities that are "typical" depending on apartment height; for example, 12–22 units per acre "typical" for one- to three-story structures); ALBUQUERQUE MUNICIPAL CODE, § 14-16-3-2(7)(b) (creating minimum density of 12 units per acre for mixed-use development).

density requirement, because a division of cities into higher- and lower-density zones is part of traditional zoning. Additionally, some cities allow developers to request that their properties be rezoned as a special pedestrian or transit-oriented zone, which typically includes minimum densities.[66]

Thus, it appears that urban regulation of density generally follows the traditional pattern of American zoning: to mandate less density rather than more. As noted above, anti-density regulation is virtually universal in the United States.[67] In fact, even Portland and San Jose have maximum density requirements for every residential zone, including multifamily zones.[68]

C. Side Effects of Minimum Density Requirements

Since minimum density requirements are relatively new and rare, there is little empirical evidence about the consequences of such requirements. To meet the smart growth objective of encouraging less driving, minimum density requirements should encourage development that is compact enough to support public transit and to support the placement of stores and employers within walking distance of housing. In this way, such regulations could be justified on the ground that they make a city's investment in public transit worthwhile, which in turn would lead to more walking and transit use, which in turn might reduce congestion and pollution.

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[66] *See* BOSTON CODE, Art. 87-3 and 87-7 (landowner may ask city to create "Smart Growth Overlay District"; as part of rezoning, city will establish minimum and maximum densities); JACKSONVILLE CODE, § 656.1402–4 (creating "transit-oriented development" zone for areas near bus stops, if developers request such zoning and comply with criteria); COLUMBUS CODE, §§ 3320.13, 3320.19 (landowner can ask to have land rezoned to "traditional neighborhood" district with minimum densities; not directly suggesting maximum lot sizes, but proposing appropriate lot width and depth); MEMPHIS CODE, § 3.8.6(A)(5) (requiring minimum density of seven units per acre for optional "sustainable subdivision"). In addition, Seattle recently enacted temporary minimum density requirements for certain pedestrian-oriented neighborhoods. *See* Seattle Dep't of Planning and Development, *Minimum Density*, at http://www.seattle.gov/dpd/codesrules/changestocode/minimumdensity/whatwhy/default.htm (legislation in effect while city planning department drafts permanent rules).

[67] *See supra* notes 48–52 and accompanying text.

[68] *See* PORTLAND CODE, Ch. 33-610, Tables 610.1 and 610.2; Ch. 33.611.200(B), Ch. 33-612, Table 612-1; SAN JOSE CODE, § 20.30.200, Table 20-60 (imposing minimum lot sizes for a wide range of districts, including multifamily districts).

In theory, however, minimum density requirements could deter development: if a city requires 10 units per acre in zone X and a developer cannot find enough prospective homeowners to fill those units, the developer will be unwilling to build in zone X. It follows that an overly restrictive minimum density requirement in a walkable area actually could encourage sprawl by discouraging development in that area, prompting developers to build in sprawling suburbs instead. However, it is not known whether existing requirements in fact discourage development, or whether the requirements replicate what a free market would produce in the absence of such regulations.

Even developers that can profitably comply with minimum density requirements might do so in ways that impede walkability. For example, a developer might, in the absence of a density target, plan to build a few houses on a set of gridded streets, and then seek to comply with the minimum density requirement by adding additional houses on cul-de-sacs.[69] Cul-de-sacs actually reduce walkability: in subdivisions dominated by cul-de-sac streets, residents cannot visit their neighbors without going out of their way to a neighborhood "main" street.[70]

Furthermore, any minimum density requirements would have unintended consequences if applied to existing buildings. For example, suppose Jim buys a 5,000-square-foot single-family house in a neighborhood now zoned for a minimum of twenty units per acre (and thus for a maximum lot size of roughly 2000 square feet). If Jim's house burns down, he will have to sell half his land and possibly build a much smaller house in order to comply with the zoning ordinance—arguably an intrusive, if not downright absurd, result.

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[69] See Kenneth J. Dueker, *Mandated Density: The Blunt Instrument of Smart Growth* (2002), http://americandream coalition.org/landuse/mandate.pdf.

[70] *See* Brian W. Ohm & Robert J. Sitkowski, *The Influence of New Urbanism on Local Ordinances: The Twilight of Zoning?*, 35 URB. LAW. 783, 792 (2003) (cul-de-sacs "force the major circulation pattern of a community onto a few major roads").

Most zoning codes allow "nonconforming uses" (that is, uses valid when a zoning code is enacted, but which are outlawed by a code amendment) to continue.[71] However, some codes provide that if a building occupied by a nonconforming use is significantly damaged, the building may not be restored for the nonconforming use.[72] If Jim lives in a city governed by such a code, Jim may not continue the nonconforming use, and instead will be required to sell half his property and build the smaller house. Assuming that this is an undesirable result, municipalities enacting minimum density requirements should be lenient toward nonconforming low-density buildings, and should allow them to continue even if the nonconforming property is damaged or destroyed.

Finally, minimum density requirements may not succeed in increasing density. If developers already are willing to build at something similar to a proposed minimum density, they likely will do so without governmental prodding, because each new building means additional profit for a developer. At most, government regulation likely will lead to marginal increases in density. Furthermore, if developers are unwilling to build at a government-mandated density, they may choose not to build at all, thus reducing, rather than increasing, urban density.

D. A Note or Two on Urban Growth Boundaries and Housing Prices

Some governments encourage urban density through policies designed to limit the growth of new suburbs. These policies, when effective, indirectly increase urban density by forcing development into already-settled areas.

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[71] *See* JOHN R. NOLON & PATRICIA E. SALKIN, LAND USE AND SUSTAINABLE DEVELOPMENT LAW: CASES AND MATERIALS 203 (8th ed. 2012).
[72] *See* Moffatt v. Forrest City, 234 Ark. 12, 350 S.W. 2d 327 (1961).

The most restrictive such policy is Oregon's growth management system.[73] Oregon law requires municipalities to adopt urban growth boundaries and to prohibit development outside that boundary, and also has created a regional government to supervise an intermunicipal growth boundary in the Portland suburbs. Oregon law classifies land into three types: rural, urbanizable, and urban. Rural land is agricultural, forest, or otherwise unsuitable for dense human settlement. Urban areas are within or adjacent to existing cities. Urbanizable lands are within the growth boundary, and may be developed for urban uses in the future.[74]

Oregon's growth boundary system is quite controversial—due less to its effects on density than to its effect on housing prices. Opponents of the Oregon system argue that the growth boundary has increased housing prices by limiting the supply of land. Other commentators, by contrast, point out that Portland's housing prices are lower than those of some other western cities.[75] Between 1991 and 2000, Portland-area housing prices increased by 110 percent—a slower increase than in Denver (117 percent), but a more significant increase than in Salt Lake City (98 percent) and Seattle (69 percent).[76] Between 2004 and 2014, there again was little difference between Portland prices and those of other comparable western cities: in both Portland and Salt Lake City, prices increased by 47 percent, while prices increased by 37 percent and 23 percent in Seattle and Denver, respectively.[77] Portland's average housing price ($301,000) is higher than that of Denver and Salt Lake City, but lower than that of Seattle

[73] *See* NOLON & SALKIN, *supra* note 71, at 692–93 (describing both the Oregon system and less restrictive growth management policies adopted elsewhere).
[74] *Id.* at 693.
[75] *See* LEWYN, *supra* note 2, at 35–42 (discussing debate); Robert Liberty, *Abolishing Exclusionary Zoning: A Natural Policy Alliance for Environmentalists and Affordable Housing Advocates*, 30 B.C. ENVTL. AFF. L. REV. 581, 598 (2003) (same); RANDALL O'TOOLE, THE FOLLY OF "SMART GROWTH", REGULATION 20, 23 (Fall 2001), http://object.cato.org/sites/cato.org/files/serials/files/regulation/2001/10/otoole.pdf (asserting that Oregon policies raise housing prices).
[76] *See* Lewyn, *supra* note 2, at 25 n.186 (explaining why these regions most comparable to Portland; they are in the West, of comparable size, and have grown at comparable rates), 36 (housing price statistics).
[77] *See* Zillow, www.zillow.com (search for any house within city limits and find a chart showing the evolution of housing prices for both the neighborhood and the city as a whole).

($465,000).[78] It therefore appears that growth boundaries have had only a modest effect on Portland's prices compared to those of nearby cities.

On the other hand, in the absence of government regulation, Portland's prices might be lower than those of comparable cities. Thus, Portland's rather ordinary housing prices do not prove that growth boundaries have had no effect at all on housing prices, only that such policies have been no more harmful than other cities' regulations.

Whatever the effect on housing prices, growth boundaries have had a limited effect on urban density: Portland has only 4490 people per square mile,[79] roughly one-fourth the density of San Francisco.[80]

We note also that some cities have adopted municipal urban growth boundaries.[81] A growth boundary limited to one city is unlikely to have significant regional effects, because developers can "leapfrog" across municipal boundaries to build in more permissive cities.

The arguments for and against urban growth boundaries and similar policies are not particularly relevant to the density-forcing policies discussed above. While (other factors being equal) policies limiting suburban development likely will restrict the supply of developable land

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[78] *Id.* Note that these statistics are for individual cities as opposed to entire metropolitan regions. However, region-wide housing prices show similar patterns: metro Portland's median home price (just over $271,000) is higher than that of Salt Lake City (just over $233,000) but lower than that of Denver (just over $288,000) and Seattle (almost $340,000). National Association of Realtors, *Median Sales Price of Existing Single-Family Homes for Metro Areas*, http://www.realtor.org/sites/default/files/reports/2014/embargoes/2014-q1-metro-home-prices/metro-home-prices-q1-2014-single-family-2014-05-12.pdf. Note that since 2011, all four regions have experienced roughly comparable price increases, ranging from nineteen percent in Seattle to twenty-nine percent in Salt Lake City.

[79] *See* Portland, Oregon Profile at http://www.city-data.com/city/Portland-Oregon.html.

[80] *See* San Francisco, California Profile at http://www.city-data.com/city/San-Francisco-California.html (just over 17,000 people per square mile). Note also that a variety of fiscal policies may also encourage or discourage compact urban development. For example, some cities offer tax abatements or subsidies in central-city areas or areas near public transit, while the federal government makes mortgage interest—but not rent—deductible (thus favoring larger and more expensive houses). *See* Kevin Gillen, *Philadelphia's Ten-Year Tax Abatement* (2014), http://www.econsult.com/articles/041609_Abatement.pdf (discussing one such abatement program); Chad Emerson, *All Sprawled Out: How the Federal Regulatory System has Driven Unsustainable Growth*, 75 TENN. L. REV. 411, 429–30 (2008) (focusing on mortgage deduction).

[81] *See, e.g.*, Construction Industry Ass'n of Sonoma County v. City of Petaluma, 522 F.3d 897 (9th Cir. 1975), *cert. denied*, 424 U.S. 934 (1976) (upholding greenbelt around California city).

and thus raise housing prices, minimum density rules may actually increase housing supplies (and thus lower housing costs) by forcing the construction of additional housing units. This would only be the case, however, if developers were to respond to minimum density requirements by building additional units, rather than by shifting capital to more permissive jurisdictions.

III. Green Building

American cities have been quite willing to experiment with "green building" regulations designed to require energy efficiency. While only three of the twenty-four cities surveyed require private developers to comply with green building standards, many other cities give incentives to the private sector for green building or require that city-owned buildings follow green building principles (see the Appendix).[82]

A. The Most Restrictive Cities

San Francisco has one of the most aggressive green building programs. Rather than merely incorporating a third party's rating system, San Francisco's building code addresses a wide variety of environmental details.[83] For example,

- The city's code provides that even small residential buildings must achieve a score of seventy-five from the Build It Green "GreenPoints" checklist.[84]
- High-rise buildings must have either a similar score or must achieve a "Silver" rating under the Leadership in Energy and Environment Design (LEED) guidelines enacted by the U.S.

[82] Such regulations are not limited to local government. *See* Kaleb Keller, *LEEDing in the Wrong Direction: Addressing Concerns with Today's Green Building Policy*, 85 U.S.C. L. REV. 1377, 1385, 1387–89 (2012) (describing use of similar standards at state and federal levels).
[83] *See generally* SAN FRANCISCO, CA. BUILDING CODE, § 13C.
[84] *Id.* § 13C.4.103.1.

Green Building Council.[85] Such buildings must also meet specified guidelines for reducing indoor water use, management of construction debris, and storm water management.[86]

- Major alterations of residential buildings must meet the same GreenPoints/LEED goals as high-rises, and must also use low-emitting paints, adhesives, and carpets.[87]

Nonresidential buildings are subject to similar restrictions.[88] For example, new large commercial buildings must achieve LEED Gold certification,[89] and also must meet guidelines reducing indoor water use, construction debris, and energy use, as well as guidelines related to renewable energy, indoor air quality, and use of low-emission construction materials.[90]

San Jose also incorporates LEED guidelines.[91] Large commercial projects must receive LEED certification,[92] as must high-rise residential projects.[93] Large residential projects other than high-rises must receive either LEED certification or GreenPoint certification from the "Build It Green" organization.[94]

Similarly, Boston incorporates LEED guidelines, but only for large projects.[95] Such projects must be eligible for LEED certification.[96] Boston's rules are more lenient than San Jose's, insofar as they define "large" projects more narrowly: in San Jose, any commercial

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[85] *Id.* § 13C.4.103.2.1.
[86] *Id.* § 13C4.103.2.2–2.4.
[87] *Id.* § 13C4.103.3.
[88] *Id.* § 13.C.5.
[89] *Id.* § 13C.5.103.1.1.
[90] *Id.* §§ 13.C.5.103-1.2–1.9. *See also* §§ 13.C.5.103-2 (rules governing new mid-sized commercial buildings) and 13.C.5.103-3 (rules governing alterations of existing commercial buildings).
[91] *See* SAN JOSE CODE, § 17.84.114.
[92] *Id.* § 17.84.220(B) ("tier two" commercial/industrial projects must have "LEED Silver" certification); § 17.84.121 (defining "tier two" projects as "large" projects); § 17.84.112 (defining "large" commercial projects).
[93] *Id.* § 17.84.220(C).
[94] *Id.* § 17.84.220(B) (a "tier two" residential project must receive "the minimum green building certification of LEED Certified or GreenPoint Rated"); § 17.84.107 (describing GreenPoint); § 17.84.121 (a "tier two" project is a "large" project); § 17.84.113 (a "large" residential project is one with more than 10 units that is not a high-rise building).
[95] *See* BOSTON CODE, Arts. 37B (green building provisions apply only to "large" projects as defined in Art. 80B) and Art. 80B2 (to be governed by "large project" rules, projects must generally be 50,000–100,000 square feet unless in the Harborpark area).
[96] *Id.*, Art. 37-4.

project of over 25,000 square feet is governed by green building rules,[97] while Boston's threshold is 50,000–100,000 square feet (depending on the type of development).[98]

Austin's code provides that major commercial buildings[99] must accumulate a certain number of design-related points, and adds that these points may be obtained either through earning a one- or two-star "green building" rating from the city, or through other design features unrelated to green building.[100]

B. Incentives, Not Requirements

Half a dozen cities do not require green building, but instead give builders incentives for such construction. For example,

- Jacksonville's code provides that regulatory applications by landowners with green certification shall be given priority over other applications.[101]
- Seattle provides "density bonuses" (that allow more density than would otherwise be permissible under the zoning code) to developers in residential and mixed-use zones, and even some industrial areas as well, who earn a LEED Silver rating.[102]
- Memphis, Tennessee, and Louisville, Kentucky, apply green building principles to optional "sustainability" zones. In Memphis's "sustainable subdivision" zone, ten percent

[97] *See* SAN JOSE CODE, § 17.84.112
[98] BOSTON CODE, Art. 80B2 (1, 2).
[99] That is, commercial, non-office uses that (a) are national chains, or (b) are more than 10,000 square feet, or (c) are being converted from industrial or warehouse use to commercial use. AUSTIN CODE, Ch. 25, Art. 3.3.1.
[100] *Id.*, Art. 3.3.2.
[101] *See* JACKSONVILLE CODE, § 327.106(a). These applications include applications for regulatory review of site plans, plat approval, and variances.
[102] *See* SEATTLE CODE, § 23.45.526(A) (residential zones), § 23.48.011(E) (mixed-use zone); § 23.49.011(A)(2)(m) (downtown mixed-use zone); § 23.50.033(B) (one industrial zone). The above discussion is focused on zoning-related incentives; note, however, that direct subsidies may be common as well. *See, e.g.*, Milwaukee Energy Efficiency, at http://www.smartenergypays.com/.

of the square footage must be LEED-certified.[103] Similarly, Louisville gives developers a "sustainable permit" designation if half their square footage meets the standards of LEED or other green building organizations.[104]

Green building requirements in Indianapolis and Las Vegas are even more lenient, reducing or rebating permitting fees for certified green building projects.[105] Similarly, Columbus reimburses the costs of LEED certification.[106]

C. City Buildings

Eight cities require green building, but only for city-owned buildings rather than for the private sector. For instance, Jacksonville requires that new city buildings or major renovations of existing city buildings obtain some kind of green certification[107]—either from LEED or from another certifying agency.[108] Modifications to city buildings are governed by similar rules if those modifications affect more than 50 percent of a building's square footage. Denver, Albuquerque, and Nashville have similar rules.[109] Seattle and Portland go slightly further,

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[103] MEMPHIS CODE, § 3.8.6(9).
[104] LOUISVILLE LAND DEVELOPMENT CODE, Ch. 1 Part 2 ("sustainable permit project" is one in which 50 percent of square footage is certified either by LEED, Green Globes or Energy Star), Chs. 5.3.2 and 9.1.3(F)(8) (developers may built at greater heights and provide fewer parking spaces for such projects).
[105] *See* INDIANAPOLIS, IN. CODE, § 536–621; City of Las Vegas, *City of Las Vegas Launches Updated Green Building Program*, at http://www.lasvegasnevada.gov/Publications/19434.htm.
[106] City of Columbus, *Green Columbus Fund*, at http://econdev.columbus.gov/content_two_column.aspx?id=40383.
[107] *See* JACKSONVILLE CODE, §§ 327.102(a) (new buildings) and (b) (renovations affecting more than fifty percent of existing building's square footage).
[108] *Id.* § 327.103 (certification may be from Green Building Institute, Florida Green Building Coalition, or other certification systems approved by city).
[109] *See* John W. Hickenlooper, Exec. Order No. 123, § 2.0 (2007), http://usgbccolorado.org/metro/documents /DenverEO_123.pdf (new city buildings and major renovations shall meet LEED Silver standard, and also receive Energy Star certification; other capital improvement projects shall follow "LEED principles"); METRO GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY, TENNESSEE, CODE OF ORDINANCES, § 16.60.050 (mandating LEED Silver certification for "projects which exceed five thousand gross square feet of occupied space or for which the total project cost exceeds two million dollars"); ALBUQUERQUE, NEW MEXICO CODE OF ORDINANCES, § 3.9.3(A) ("All city building construction projects and major remodels over 5,000 square feet, with a 341,300 BTU per hour connected energy load or with a 50 kilowatt or greater service capacity" shall receive LEED Silver certification.).

requiring a LEED Gold rating for new city buildings and large-scale renovations, as well as related environmental improvements such as reduced energy and water use.[110]

Washington, D.C. also requires LEED certification for major city-owned and financed commercial projects,[111] and another form of green certification for city-owned and financed residential projects.[112] But the District of Columbia goes further, also applying LEED green building standards to privately owned land sold by the city to a private entity.[113] Similarly, Baltimore requires LEED Silver certification (or comparable design standards) not only for city projects, but also for city-subsidized buildings.[114]

D. Costs and Benefits of Green Building Ordinances

Code provisions that mandate green building—either for city-owned buildings or for private developers—may reduce long-term energy costs and create positive externalities, insofar as reductions in energy use lead to reductions in pollution.[115] A "green" building may consume a quarter less energy than a conventional building.[116]

However, green certification may impose short-run costs on developers and taxpayers. One law review article estimates that LEED certification, the most widely used form of green

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[110] *See* Brennon Staley and Sandra Mallory, *DPD Sustainable Building Policy Sec. 4.1* (2011), http://www.seattle.gov/dpd/GreenBuilding/docs/dpdp021677.pdf; City of Portland, *City of Portland Green Building Policy* (2009), at http://www.portlandoregon.gov/bps/article/243213. Portland goes a bit further still, requiring existing city buildings to "pursue" LEED Silver certification.

[111] *See* DISTRICT OF COLUMBIA CODE, § 6-1451.02(a)(2) (nonresidential projects over 10,000 square feet must meet standards for LEED Silver Certification, as well as numerous other Environmental Protection Agency standards).

[112] *Id.* § 6-1451.02(a)(3) (residential projects over 10,000 square feet must meet Enterprise Community Partners "Green Communities standard, or a substantially similar standard").

[113] *Id.* § 6-1451.03(b)(1). Projects receiving a city subsidy are subject to this standard if less than fifteen percent of the project was financed by the city; projects with higher city subsidies are treated as city-owned property.

[114] CITY OF BALTIMORE, BUILDING, FIRE AND RELATED CODES, § 3705.

[115] *See* Sarah B. Schindler, *Following Industry's LEED: Municipal Adoption of Private Building Industry Standards*, 62 FLA. L. REV. 285, 296–98 (2010) (describing some of the local externalities that green building designed to combat).

[116] *See* Christopher Nutter, *Emerging Risks in the Design and Construction of Green Buildings*, at http://apps.americanbar.org/litigation/committees/construction/email/spring2012/spring2012-0402-emerging-risks-design-construction-green-buildings.html.

certification, adds between four and eleven percent to total construction costs.[117] Therefore, if a city requires such certification and its suburbs do not, development in the city could become more expensive, thus increasing the incentives for developers and their customers to do business in suburbia.

Additionally, the environmental impact of LEED may not always be completely positive. For example, LEED certification tends to favor buildings tightly sealed from the outside, but such buildings may have worse indoor air quality.[118] If a developer tries to avoid this problem by using an influx of outdoor air as a substitute for air conditioning, there might be increased amounts of moisture, thereby creating an elevated risk of mold.[119] LEED also allows developers to obtain water quality points for creating synthetic turf instead of grass, but such turf may contain lead and other toxins.[120] Furthermore, the innovative materials sometimes required by "green" design may create unrelated problems: to avoid the indoor air quality harms caused by formaldehyde, one builder used oriented strand board to hold doors together. Unfortunately, these doors are more expensive and less durable, which means additional energy will be used to create new doors on a regular basis.[121]

IV. Conclusion

Most medium-sized cities have used regulation to make buildings more environmentally friendly, both through smart growth–oriented regulations and through "green building"

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[117] *See* Keller, *supra* note 82, at 1385.
[118] *See id.* at 1404–5 (noting that LEED also gives points for indoor air quality, mitigating this concern).
[119] See Associated General Contractors of America, *The Hidden Risks of Green Buildings: Why Building Problems Are Likely in Hot, Humid Climates*, Aug. 26, 2009, http://newsletters.agc.org/environment/2009/08/26/guest-article-the-hidden-risks-of-green-buildings-why-building-problems-are-likely-in-hot-humid-climates.
[120] *See* Keller, *supra* note 82, at 1405.
[121] *See* Nutter, *supra* note 116.

regulations. Both types of regulation are environmentally beneficial at first glance. However, more study is needed about their potential side effects.

For example, a maximum parking requirement in a neighborhood may, by reducing the number of parking lots, make the neighborhood more pedestrian-friendly and, to the extent driving declines, may also make the area less polluted and congested with traffic. But if the regulation is too restrictive and is not universally adopted, businesses and their customers may shun the neighborhood and move to areas with more parking. If the latter areas are more automobile-dependent in general, such maximum parking regulations may result in the city or region becoming more automobile-dependent as a whole.

Similarly, a minimum density requirement may, by increasing density, make a neighborhood more pedestrian- and transit-friendly. But, if a city wants more density than developers are willing to build and nearby areas lack similar restrictions, the city may get no density at all, as developers flee to more permissive suburbs. These regulations' effect on housing prices may depend on whether they in fact increase density: if developers build additional units, housing supply will increase and, all other things being equal, housing prices will not increase. However, if developers are scared off by government regulation, such density requirements may result in reduced supply and increased prices.

Green building requirements may create similar risks: when a city increases the costs of doing business, it risks encouraging development to move into other cities or to suburbs. If those areas are more auto-oriented, development may shift to such auto-oriented places, thus causing an increase in driving and in pollution.

In sum, government regulation designed to force smarter, more environmentally friendly growth may face a difficult tradeoff: if regulations are only slightly more restrictive than what an

unregulated market might produce, they may not do very much good. But if regulations are significantly more restrictive, they may encourage development to shift to less environmentally sensitive municipalities.

Appendix: Lists of Cities Surveyed That Require Parking Maximums or Minimum Densities, or Have Green Building Ordinances

Parking Maximum Requirements

Required for nearly all uses of the property	Required for specified uses of the property	Required for specified parts of the city
Fort Worth, Tex.	El Paso, Tex.	Austin, Tex.
San Francisco, Cal.	Portland, Or.	Boston, Mass.
Louisville, Ky.	Seattle, Wash.	San Jose, Cal.
	Jacksonville, Fla.	Denver, Colo.
	Columbus, Ohio	Albuquerque, N.M.
	Milwaukee, Wis.	
	San Jose, Cal.	

Minimum Density Requirements

San Jose, Cal.
Portland, Or.

Green Building Requirements

Mandated for (some) private developments	Incentivized for private developments	Required only for buildings owned (or financed) by the city
San Francisco, Cal.	Jacksonville, Fla.	Jacksonville, Fla.
San Jose, Cal.	Seattle, Wash.	Denver, Colo.
Boston, Mass.	Memphis, Tenn.	Albuquerque, N.M.
	Louisville, Ky.	Nashville, Tenn.
	Indianapolis, Ind.	Seattle, Wash.
	Las Vegas, Nev.	Portland, Or.
	Columbus, Ohio	Washington, D.C.
		Baltimore, Md.

Note: The twenty-four surveyed cities were Albuquerque, N.M.; Austin, Tex.; Baltimore, Md.; Boston, Mass.; Charlotte, N.C.; Columbus, Ohio; Denver, Colo.; Detroit, Mich.; El Paso, Tex.; Fort Worth, Tex.; Indianapolis, Ind.; Jacksonville, Fla.; Las Vegas, Nev.; Louisville, Ky.; Memphis, Tenn.; Milwaukee, Wis.; Nashville, Tenn.; Oklahoma City, Okla.; Portland, Or.; San Francisco, Cal.; San Jose, Cal.; Seattle, Wash.; Tucson, Ariz.; and Washington, D.C.