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Sustainable Housing in Three Steps Including Heat Island Overlay Zones

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The needs of the planet are the needs of the person.

Theodore Roszak¹

ABSTRACT

Under current models of sustainable housing, many local governments are attempting various methods to mitigate, to varying degrees, the inevitable human impact on the environment that arises from residential buildings. This Note anticipates a synthesis of these diverse approaches and, to this end, offers comparative international legal analyses of municipal ordinances designed to promote sustainable neighborhoods. This Note, however, is written for an American planning and development audience.

This Note argues sustainable neighborhoods often require three types of municipal ordinances at the level of the subdivision: (1) ordinances to promote urban agriculture to allow food security, reduce food miles, and localize and diversify auxiliary sources of agricultural production; (2) ordinances to offset ubiquitous encroachment on biodiversity through mandating greenways, easements, and other greenspaces, often through overlay zones; and (3) ordinances for the design of energy-efficient multifamily buildings to sustain low-impact, nonsprawl living spaces that require certifications addressing site design and overlay zones.

Special examples include promoting vegetation through “green” or vegetated roofs to reduce stormwater and citywide temperatures, as well as requiring more greenspace in heat island overlay zones. Heat island overlay zones are a new concept I am introducing that could be used to save lives from the increasingly dangerous effects of climate change, especially in underprivileged neighborhoods that have traditionally been neglected by city councils and planning

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¹ THEODORE ROSZAK, *PERSON/PLANET: THE CREATIVE DISINTEGRATION OF INDUSTRIAL SOCIETY* xxx (Anchor Press/Doubleday 1978).

commissions. For example, heat islands unfairly leave people of color at risk² and especially affect the lives of the elderly.³

This Note also emphasizes the relationship between land use and the functional interactions of humans with their environment to help support food independence, minimize urban sprawl, and prevent species eradication. This Note advocates an approach to subdivision planning that could be compatible with other areas of large-scale planning, like mixed-use neighborhoods and comprehensive zoning. This Note will address concerns that multifamily residential complexes like townhouses, condominiums, and apartments do not have room to grow food.

INTRODUCTION

To date, the regulation of sustainable housing has proceeded in a sort of ad hoc fashion, as different municipalities have enforced various regulations with wildly different approaches. Some city planning departments have focused on incorporating agriculture and horticulture into urban neighborhoods. Other planning departments have sought to preserve wild space in the form of parklands and trails, and have focused on encouraging, if not outright requiring, energy-efficient materials and design.

This Note compares and contrasts several types of regulations from various nations, local governments, and agencies to evaluate each set of regulations for its language, intention, judicial application, if any, and effectiveness. The regulations studied for this Note aim to resolve facets of city planning to reduce the human impact in three key areas: agriculture, wild space, and energy efficiency.⁴

Furthermore, this Note aims to guide planners and developers on issues planners universally face at a critical stage in urban

² *Heat Islands and Equity*, U.S. ENV'T PROT. AGENCY (Aug. 3, 2023), <https://www.epa.gov/heatislands/heat-islands-and-equity> [<https://perma.cc/BT8T-7RYH>].

³ Alvin Christopher G. Varquez et al., *Future Increase in Elderly Heat-Related Mortality of a Rapidly Growing Asian Megacity*, PUBMED CENTRAL (June 9, 2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7283254/> [<https://perma.cc/9Q8R-ULC5>].

⁴ See generally Angus, *Understanding Ahupua'a: Ancient Hawaii's Unique Land Division Model*, HORIZON GUEST HOUSE (Sept. 16, 2021), <https://horizonguesthouse.com/2021/09/16/understanding-ahupua%CA%BBa-ancient-hawaiiis-unique-land-division-model/> [<https://perma.cc/9UJH-KQVE>] (showing other concepts of holistic land division such as Hawaii's Ahupua'a system. Ahupua'a were self-sufficient cross-sectional wedges of land, each one "run[ning] from the mountains . . . to the sea.").

development.⁵ This Note should help standardize regulations vertically among state, county, and municipal governments, and harmonize enforcement horizontally by relevant departments within each level of government. In addition, this Note suggests what changes can be implemented now, what changes require more intensive planning, and what changes are still anticipating technological innovation.

This Note promotes a view of nature as a ubiquitous matrix of life-giving resources. Instead of externalizing conservation work to a vanishing wilderness, accountability for natural resources must be localized within each neighborhood and home. If we are to manage these life-giving resources in perpetuity, according to the Public Trust Doctrine, should we not live off the “earth’s interest, not its principal”?⁶

⁵ *E.g.*, URB. GREEN COUNCIL, NYC GREEN CODES TASK FORCE: FULL PROPOSALS (2010), https://www.urbangreencouncil.org/wp-content/uploads/2022/11/Green-Codes-Task-Force_Full-Proposals.pdf [<https://perma.cc/VWE4-PM7V>] (NYC’s Green Codes Task Force produced a detailed brief analyzing each potential municipal response to climate change. In this Note, I analyze a series of municipal responses to several environmental problems including climate change, habitat loss, and the effects of large-scale agriculture).

⁶ *See* MARY CHRISTINA WOOD, NATURE’S TRUST: ENVIRONMENTAL LAW FOR A NEW ECOLOGICAL AGE 282 (Cambridge University Press 2014).

Figure 1. *Renderings of a Hypothetical Subdivision Conditioned on a Neighborhood Garden, a Trail Easement for Pristine Greenspace, and a Cluster of Energy-Efficient Multifamily Residences, Showing Top-Down (top) and Overhead (bottom) Views.*⁷



I ZONING, SUBDIVISION, AND THE DENSITY VERSUS GREENSPACE DEBATE

The first Section discusses some of the tools available to developers, planners, and other conservationists, like zoning laws, conditions on subdivisions, and private land-use controls. This Section also reviews the historical debate surrounding the impact of land-use controls on issues like conservation, equity, and affordability.

⁷ Photos renderings courtesy of Maeve Cier, University of Oregon, School of Art and Design. Please direct correspondence to mcier@uoregon.edu.

A. The Power to Zone

Any of the policy changes suggested in this Note may require amending zoning laws to allow for permitted uses. They also may be used as required conditions to achieve regulatory approval of a subdivision.

The typical United States municipality has tremendous power to implement the measures discussed in this Note. The municipality also has the power to forestall these measures, for example, by not amending zoning laws to allow for less commonly permitted uses, such as gardening and trails.

The *police power* of states to enforce laws benefitting the public welfare is granted to the states by the Tenth Amendment. State constitutions, in turn, grant municipalities limited lawmaking powers. These powers are particularly broad if the state constitution contains a “home rule clause.”⁸ A home rule clause is a “provision of the state constitution or similar legislation granting a local municipality a certain amount of autonomy to allocate powers between the state and the local government.”⁹ Such clauses enable cities to “adopt laws that affect local property, affairs, and government” that do not conflict with state laws, and these laws include rules related to zoning and regulating subdivisions.¹⁰

The state’s police power is checked by the federal government’s power to enter treaties with tribes and regulate interstate commerce. In turn, the federal government’s powers are checked by the Fifth Amendment prohibition against taking citizens’ private property for public use without just compensation.¹¹ U.S. Constitutional guarantees and prohibitions, including the Equal Protection Clause and Due Process Clause of the Fourteenth Amendment, also check state police power.

One way American municipalities typically use police power is to divide cities into zones based on similar use, such as residential, commercial, or industrial districts. Only a specified, itemized list of uses is permitted in each district. This is called “Euclidean” zoning because the practice was given judicial authority by a Supreme Court

⁸ See JOHN R. NOLON & PATRICIA E. SALKIN, *LAND USE IN A NUTSHELL* 4, 6 (Thomson /West 1st ed. 2006).

⁹ *Home Rule*, CORNELL L. SCH., https://www.law.cornell.edu/wex/home_rule (Mar. 2022) [<https://perma.cc/4NR2-CR85>].

¹⁰ NOLON, *supra* note 8, at 6.

¹¹ *Id.* at 4, 23.

case named *Euclid*.¹² The practice was simultaneously steamrolled through state legislatures in concert with the Department of Commerce under President Hoover in 1926.¹³

Zoning evolved as a check on the property rights of landowners so as not to interfere with others' use or enjoyment of their property. The intention of Euclidean zoning is to avoid any conflicting uses within a district and thereby standardize public nuisance law.¹⁴ The term per se nuisance is also used to describe a conflicting use prohibited by a zoning ordinance.¹⁵ The cumulative approach of Euclidean zoning assumes that single-family residences must necessarily be protected from all other conflicting uses to protect the family and character of the residence.

Specifically, Euclidean zoning attempts to avoid conflicting land uses by creating a hierarchy of land uses. This hierarchy is based on beliefs about each land use's intensity in terms of its potential to negatively affect nearby land users according to "vague public welfare claims."¹⁶ The Euclidean model puts single-unit (a.k.a. single-family) residential use at the apex and industrial use at the bottom. The top use is "protected" from all other potentially conflicting uses; the bottom use needs no protection, so a Euclidean zoning code would typically allow all land uses in industrial zones. Under this approach, which is also called cumulative zoning, at each level of the hierarchy one or more additional uses are permissible, plus the permissible uses at the higher levels. Thus, for example, in a single-unit residential zone, only single-unit residential uses are permitted; in a multi-unit residential zone, both multi-unit and single-unit residences are permitted; in a business zone, businesses as well as multi-unit and single-unit residences are permitted.¹⁷

Traditionally, more sustainable uses, such as gardening or trails, have required special exemptions. However, this may need to change to encourage more sustainable neighborhoods.

¹² *Euclid v. Ambler Realty Co.*, 272 U.S. 365 (1926).

¹³ Sarah J. Adams-Schoen, *The White Supremacist Structure of American Zoning Law*, 88 BROOK. L. REV. 1225, 1271–73 (2023).

¹⁴ See NOLON, *supra* note 8, at 21.

¹⁵ *Id.*

¹⁶ See Adams-Schoen, *supra* note 13, at 1282.

¹⁷ *Id.* at 1279.

B. The Need to Change Zoning Laws

Sustainability measures may require amending zoning laws. For example, if a residential district is not zoned to allow a sustainable use, such as a garden or wildlife habitat, then the zoning laws would have to be amended to allow these permitted uses. Typical uses in a single-family residential zone include one detached house, a garage, and a large yard on each side.

Unfortunately, large yards have gone hand-in-hand with nonsustainable landscaping practices. The need to “keep up appearances” and inflate property values through well-manicured, monocultured lawns that “guzzle water” and “lower biodiversity”¹⁸ is an image of sterile luxury that has served little function to improve the quality of lives of residents or sustain nature. Large yards enrich deedholders and provide a fragile peace of mind for suburbanites while destroying the ecological feedback loops upon which our survival as a species depends. Allowing either infill of high-density housing or set-asides for wildlife and gardens would put to good use these resource-draining yards.¹⁹

Furthermore, amending zoning laws provides equity to underprivileged communities. Historically, people of color were excluded from American single-family residential zones.²⁰ “[T]he federal government [exerted] considerable leverage on cities to adopt zoning ordinances that included restrictively regulated single-family residential districts separated from residential areas where people of color lived by a physical feature or buffer zone.”²¹ Exclusion occurred in conjunction with division of a city by a railroad or freeways. Interstate highways were routed “directly, and sometimes purposefully, through Black and brown communities.”²² The wealth divide in America is continually compounded by a property tax system that often

¹⁸ Allison C. Meier, *Uncovering the Seeds of a Post-Lawn Future*, BLOOMBERG (Sept. 30, 2019, 5:00 AM), <https://www.bloomberg.com/news/articles/2019-09-30/the-seeds-that-sleep-beneath-your-front-lawn#:~:text=Many%20lawns%20are%20what's%20known,which%20require%20care%20to%20maintain> [<https://perma.cc/H9FJ-GU3T>].

¹⁹ See *Middle Housing Code Changes | HB 2001*, CITY OF EUGENE, <https://www.eugene-or.gov/4244/Middle-Housing> [<https://perma.cc/CC6B-RPE3>] (last visited Nov. 29, 2023) (providing an example of a recent movement to amend the city code to incentivize infill of existing lots as through duplexes and cottage clusters).

²⁰ See Adams-Schoen, *supra* note 13, at 1273.

²¹ *Id.*

²² Noel King, *A Brief History of How Racism Shaped Interstate Highways*, NAT'L PUB. RADIO (Apr. 7, 2021, 5:02 AM), <https://www.npr.org/2021/04/07/984784455/a-brief-history-of-how-racism-shaped-interstate-highways> [<https://perma.cc/CH4V-5Z45>].

apportions services and school funding to wealthier neighborhoods because they pay more property tax.²³ The typical property tax is based on appraised home values²⁴ that, in turn, are biased toward the single-family residence and limited-use zoning of residential districts through the Highest and Best Use analysis.²⁵ However, the single-family residential zone, as indicated above, is not as sustainable as more dense zoning. Thus, racial and class equity are motivations, like conservation, for amending zoning laws to provide, simultaneously, for more density and for more sustainable uses.

Amending zoning laws, however, must take certain considerations into account. Rezoning may not be contract or spot zoning, and in most states may require coordination with a comprehensive or regional plan. Amending zoning laws may occur in conjunction with imposing subdivision conditions.

C. The Power to Regulate Subdivisions

A city typically requires that developers of subdivisions provide certain amenities for the neighborhoods they develop. Developers must meet these conditions of subdivision in exchange for the right to plat, in other words, to divide up land into buildable lots or parcels to create a subdivision plat map.²⁶ The lots or parcels can then be developed into houses and sold to consumers. Municipalities have the capability to enforce subdivision conditions based on their constitutionally granted police power. Conditions are normally used to require developers to

²³ See Liz Farmer, *Unfair Property Taxes and What to Do About Them*, ROUTE FIFTY (July 19, 2022), <https://www.route-fifty.com/finance/2022/07/unfair-property-taxes-and-what-do-about-them/374651/> [<https://perma.cc/Q58K-8SV9>] (Baltimore’s “general fund revenue” goes toward services like education); see, e.g., David Insley & Briana Avant, *Where Do My Property Taxes Go?*, GUARANTEEDRATE (Feb. 8, 2022), <https://www.rate.com/resources/where-do-my-property-taxes-go> [<https://perma.cc/J3CJ-CHB3>].

²⁴ Chris Seabury, *How Property Taxes Are Calculated*, INVESTOPEDIA, <https://www.investopedia.com/articles/tax/09/calculate-property-tax.asp> [<https://perma.cc/S3CZ-ATXP>] (Apr. 30, 2023).

²⁵ See, e.g., Shannon Slater, *The Impact of Zoning on Property Values*, LINKEDIN (Feb. 26, 2016), <https://www.linkedin.com/pulse/how-zoning-can-impact-property-values-shannon-slater/> [<https://perma.cc/C25X-LZYH>]; contra DICKMAN L. FIRM, *infra* note 58 (“While zoning does not necessarily affect the value of your property, it may change the tax rate you must pay.”).

²⁶ See, e.g., *Platting Division and Subdivision of Land*, IOWA LEGIS., <https://www.legis.iowa.gov/docs/code/2008/354.pdf> [<https://perma.cc/9DQG-SSX4>].

install sidewalks, traffic lights, etc.²⁷ Conditions could be expanded to include requirements for gardens, greenspace, and energy-efficient multifamily housing for the purpose of mitigating the present ecological catastrophes.

Restrictions on development are a type of exaction. Exactions are regulatory takings that constitute “conditions imposed by a municipality that a landowner or developer must meet before the municipality will issue the landowner or developer a subdivision, building, or occupancy permit.”²⁸

The constitutional requirements for exactions evolved from case law interpreting the Fifth Amendment against taking of private property without just compensation.

To satisfy substantive due process, ordinances must serve a legitimate state interest. Exactions are one means to achieve that interest. The essential nexus relationship between the end to be achieved (the legitimate state interest) and the means chosen to achieve that end (the exaction) must be close enough so that the exaction substantially advances the legitimate state interest.²⁹

This is the standard given by *Nollan v. California Coastal Commission*.³⁰ Legitimate state interests include avoiding nonsustainable construction methods that exacerbate the climate crisis by destabilizing the food chain through large-scale agriculture,³¹ by encroaching upon wildlife and precipitating the sixth great extinction,³² and by disrupting the climate through energy inefficiency³³ (Section IV). This commonsense approach to conservation-minded construction is predicated on the role of the government as the guardian of the Public Trust.³⁴

Speaking to legitimate public interest, the proposed ordinances would be more functional than the purely aesthetically motivated architectural design ordinances. Design ordinances are an occasional device used by city councils to preserve a desired appearance within

²⁷ See, e.g., KNOXVILLE, TENN. CODE ch. 27, app. A § 1 (2016), https://library.municode.com/tn/knoxville/codes/code_of_ordinances/269186?nodeId=APXASURE [<https://perma.cc/T8UG-WFHC>] (providing regulations for subdivisions).

²⁸ BARLOW BURKE & JOSEPH SNOE, PROPERTY EXAMPLES AND EXPLANATIONS 622 (Wolters Kluwer 5th ed. 2016).

²⁹ *Id.*

³⁰ *Nollan v. Cal. Coastal Comm'n*, 483 U.S. 825 (1987).

³¹ See *infra* Part II.

³² See *infra* Part III.

³³ See *infra* Part IV.

³⁴ See WOOD, *supra* note 6, at 14.

certain neighborhoods to “either mandate a variety of architectural plans to prevent a monotonous sameness of homes or promote uniformity of appearance and function.”³⁵

After establishing a legitimate state interest, the municipality must meet a proportionality test: “If the essential Nexus exists, courts then determine whether there is rough proportionality between the condition exacted and the projected impact of the landowners’ proposed development.”³⁶ This test is taken from *Dolan v. City of Tigard*.³⁷ Thus, the city must submit findings to show how the impact created by the development requires this regulatory taking.

Partial takings are more favored than total takings, but there are still some requirements that must be met. Partial regulatory takings must comply with the *Penn Central* balancing test.³⁸ The court must weigh the following: (1) the “economic impact of the regulation on the claimant”; (2) “the extent to which the regulation has interfered with distinct investment-backed expectations”; and (3) “the character of the governmental action,” that is, whether the “interference with property can be characterized as a physical invasion by government” or the “interference arises from some public program adjusting the benefits and burdens of economic life to promote the common good.”³⁹ In partial takings, the city must still show a legitimate government interest, and it may need to compensate the landowner.

Foreseeably, ongoing data points would need to be collected to show the beneficial effects of these measures. The work of land trusts in monitoring easements—and the use of conservation tools like Geographic Information Systems (GIS)—will be addressed in the Section on conservation easements. The data collected by land trusts could help meet the public benefit requirement of any regulatory taking that may be imposed by a subdivision condition.

Municipalities may also provide incentives for landowners who meet specified restrictions on development. Florida’s Growth Management Act offers “transferable rural land use credits.”⁴⁰ Cluster

³⁵ See BURKE & SNOE, *supra* note 28, at 591.

³⁶ *Id.* at 624.

³⁷ *Dolan v. City of Tigard*, 512 U.S. 374 (1994).

³⁸ Adam R. Pomeroy, *Penn Central After 35 Years: A Three Part Balancing Test or a One Strike Rule?*, 22 FED. CIR. BAR J. 677 (2013).

³⁹ *Penn Cent. Transp. Co. v. N.Y.C.*, 438 U.S. 104, 124 (1978).

⁴⁰ AMERICAN BAR ASS’N, GREEN BUILDING AND SUSTAINABLE DEVELOPMENT: THE PRACTICAL LEGAL GUIDE 74 (Jonathan E. Furr et al. eds, 2009).

developments incentivize housing developers to leave a “significant percentage of the development . . . protected or in open space” by allowing for smaller lots and greater density in developed areas.⁴¹ Alternatively, a municipality may opt to award a density bonus or an “increase in allowed dwelling units per acre (DU/A), Floor Area Ratio (FAR) or height which generally means that more housing units can be built on any given site.”⁴²

This Note will discuss two other tools for planners: (1) overlay zones and (2) property tax exemptions, in Section III.

D. The Pros and Cons of Private Land Use Controls

In tandem with the above measures, private controls on land use can work together with zoning ordinances and subdivision conditions. Historically, servitudes have been used by common interest communities for controlling land use in residential neighborhoods.⁴³

Servitudes, like easements and covenants, are “burdens . . . placed on private property” where “normally those benefitting from these burdens have to purchase such rights from the burdened owners.”⁴⁴ “Servitudes are private rules that limit the use of privately held land for the benefit of the owners of designated parcels of land, and only those owners.”⁴⁵ They “supplement land use rules.”⁴⁶ While “[e]asements give third parties the right to physically enter and use land,”⁴⁷ “[c]ovenants restrict the use of the burdened property or impose some affirmative obligation on its owner.”⁴⁸ Common interest communities like “cooperatives, condominiums, townhouse communities, planned communities, new-towns, traditional neighborhood developments, or homeowner associations” use servitudes to create more exclusive

⁴¹ *Id.* at 77.

⁴² *Density Bonus*, GROUNDED SOLUTIONS NETWORK, <https://inclusionaryhousing.org/designing-a-policy/land-dedication-incentives/density-bonus/> [https://perma.cc/PDK5-RS7S] (last visited Dec. 2, 2023); *see also* Ethan Varian, *Affordable Housing Planning Falls Short*, EAST BAY TIMES, July 16, 2023, at B1. (These measures increase affordability, which is a concern to many Americans, as a recent California civil grand jury recommended appointing to each municipality an “individual staff member . . . tasked specifically with ensuring cities and the county meet their state-mandated housing goals.”).

⁴³ *See* NOLON, *supra* note 8, at 29.

⁴⁴ *Id.* at 24.

⁴⁵ *Id.* at 28.

⁴⁶ *Id.* at 29.

⁴⁷ *Id.* at 26.

⁴⁸ *Id.*

neighborhoods.⁴⁹ To give a common historical example, “a developer might want to develop a more exclusive community, one with deeper setbacks or larger lots, for example, or one that is governed by design standards to create a certain look or feel that is not achieved by the typical zoning ordinance.”⁵⁰ The standards are achieved through “covenants placed in the original deeds.”⁵¹

At the same time, people who live in typically high-end communities often are burdened by unrealistic demands made by homeowners’ associations (HOAs) that disallow sustainable practices such as clotheslines and gardens.⁵² HOAs cite inconsequential reasons such as unsightliness to other neighbors.⁵³ These homeowners’ associations must encourage, not hamper, harmony with nature, for housing to become sustainable.

In the environmental arena, easements provide a powerful incentive to landowners to encourage conservation.⁵⁴ However, there is a competing financial incentive for municipalities to increase development. The so-called property tax revolts against fluctuations in the housing market of the 1960s and 1970s lowered cities’ property tax revenue and thereby incentivized cities to allow for as much development as possible to increase their tax base and increase sources of revenue based on development fees.⁵⁵ Development may also be limited by how much land cities can annex.⁵⁶

⁴⁹ *Id.* at 29.

⁵⁰ *Id.* at 30.

⁵¹ *Id.*

⁵² Donald Schmit, *Can Your HOA Forbid You from Using a Clothesline to Dry Your Laundry?*, URB. CLOTHESLINES (Sept. 14, 2012, 9:43 AM), <https://urbanclotheslines.com/blog/can-your-hoa-forbid-you-from-using-a-clothesline-to-dry-your-laundry/> [<https://perma.cc/Y6PY-VZ28>]; Rebecca Reed, *Gardening with an HOA*, BONNIE PLANTS, <https://bonnieplants.com/blogs/garden-fundamentals/gardening-with-an-hoa> [<https://perma.cc/SUG7-G5XJ>] (last visited Nov. 29, 2023).

⁵³ *Beware the Illegal Clothesline*, HOMESTEAD DREAMER (Oct. 21, 2015), <https://www.homesteadreamer.com/2015/10/21/beware-the-illegal-clothesline/> [<https://perma.cc/TKJ9-67VT>].

⁵⁴ See *infra* Part III; *Estate Tax Incentives for Land Conservation*, LAND TR. ALL. RES. CENTER (2015), <https://landtrustalliance.org/resources/learn/explore/estate-tax-incentives-for-land-conservation> [<https://perma.cc/K5PS-YBAD>].

⁵⁵ See, e.g., ISAAC WILLIAM MARTIN, *THE PERMANENT TAX REVOLT: HOW THE PROPERTY TAX TRANSFORMED AMERICAN POLITICS* (2008).

⁵⁶ See, e.g., ANNEXATION BY WASHINGTON CITIES AND TOWNS, MUN. RSCH. & SERVS. CTR. OF WASH. 3–4 (June 2020), <https://mrsc.org/getmedia/f7797a3e-d87b-4875-b70a-229a082d7ef3/Annexation-By-Washington-Cities-And-Towns.pdf?ext=.pdf> [<https://perma.cc/SE43-BB3P>].

E. Smart Growth and the Density Versus Greenspace Debate

The following set of proposals would fall within the realm of “smart growth,” which is defined as progressive planning. Smart growth goes hand-in-hand with “upzoning,” which typically means allowing for more high-density housing and mixed-use development.

These proposals—implemented together—provide an example of a cluster subdivision. Cluster subdivisions are “several houses . . . grouped together on a tract of land,” allowing for the “presence of undeveloped land that is held for the common enjoyment of the neighboring residents or the community at large.”⁵⁷ A cluster subdivision is a type of planned unit development.

A central issue in smart growth is how to reduce cost of housing without building over potential greenspace. Density is heralded as a solution to resource-exhausting and inequitable “R1” single-family residential housing. Under Oregon law, for example, new amendments to the zoning code increase the amount of buildable land available for residential use by decreasing the lot size required for housing. For a city to amend its code, the city should analyze the effect on the housing market and whether amending the code would increase the cost. Each city should engage in economic analysis to determine what that means for housing affordability.

Some jurisdictions have adopted class-restrictive zoning amendments that are inherently inequitable to the less wealthy to maintain a property tax base.⁵⁸ A prime example is market-rate single-family housing—it could even be called the elephant in the room. It requires fewer municipal services than high-density housing.

Think about this, though: zoning for density can lower the costs associated with utility consumption.⁵⁹ In addition, some of the proposed ordinances in this Note, such as green roofs, are cost-enhancing attributes that will increase the property tax base.⁶⁰

⁵⁷ *Cluster Subdivisions*, AM. PLANNING ASS'N. (June 1960), <https://www.planning.org/pas/reports/report135/> [<https://perma.cc/8EAS-44LX>].

⁵⁸ See, e.g., *Do Zoning Changes Affect Property Taxes?*, DICKMAN L. FIRM (Feb. 4, 2021), <https://www.dickmanlawfirm.org/blog/2021/02/do-zoning-changes-affect-property-taxes/> [<https://perma.cc/V9K6-KVJF>] (“While zoning does not necessarily affect the value of your property, it may change the tax rate you must pay.”).

⁵⁹ ROBERT STUPKA & CHRISTOPHER KENNEDY, *IMPACT OF NEIGHBORHOOD DENSITY ON BUILDING ENERGY DEMAND AND POTENTIAL SUPPLY VIA THE URBAN METABOLISM* (2010), <https://www.aceee.org/files/proceedings/2010/data/papers/2262.pdf> [<https://perma.cc/FA56-7TTB>].

⁶⁰ Jonathan Leger, *Improve Your Property Values and Save Money with a Rooftop Garden*, EVAN C. LAI LANDSCAPE DESIGN, INC. (Mar. 24, 2016), <https://www.ecld.com>

High-density housing is much more equitable than “R1” zoning, and it can also be built more sustainably. The multifamily buildings suggested in this Note may allow cities to build more densely, notwithstanding inclusion of agriculture and greenspace, which will reduce the space consumed by commercial sprawl.

Also, urban agriculture and greenspace do not need to be a large portion of the development. They should be enough to preserve the natural and functional properties of the space, maybe ten percent each, more if the development is next to a wetlands or other protected space.⁶¹

Urban greenspace is a way to prevent ubiquitous human encroachment on wildlife. In addition, urban greenspace helps to prevent the collapse of the food chain caused by activities like building over wild space and the spraying of pesticides. It would help to point out that several states, such as Oregon, Tennessee, and Washington, have urban growth boundaries to limit the extent of urban sprawl.⁶²

Density without greenspace assumes the less wealthy (who may live in dense housing) do not need, want, or deserve access to nature. Density without garden space assumes the environment can afford for “big agriculture” to continue producing the high levels of emissions and using the pesticides required to ship food across the continent. Furthermore, certain non-domestic animal species rely on humans for survival and are termed “synanthropic,” so a certain degree of humans’ interaction with wildlife is essential to their existence.⁶³

Walkable cities are the norm of human history. In preindustrial times, and particularly before the Enclosure Acts in Renaissance England, most communities regularly grew their own food together.⁶⁴

/blog/2016/3/24/the-value-of-a-rooftop-garden#:~:text=In%20terms%20of%20actual%20real,value%20of%20the%20nearby%20properties [https://perma.cc/8GUL-JLXF].

⁶¹ Richard A. Clarke, *Easement and Partial Taking Valuation Problems*, 20 HASTINGS L.J. 517, 520 (1968) (“Experience shows that [percentages of land condemned] can constitute from 25% to 99% of the fee, depending upon the nature of the easement,” so a trail easement must be less than 25% to avoid a regulatory exaction).

⁶² David Bollier, *Urban Growth Boundaries*, SPRAWL WATCH, <http://www.sprawlwatch.org/ubg.html> [https://perma.cc/N4SF-Q5PK] (last visited Nov. 10, 2023).

⁶³ Shosht, *A Single Word for Non-Domesticated Animals That Live Among Humans?*, STACK EXCH.: ENGLISH LANGUAGE & USAGE (Oct. 17, 2017), <https://english.stackexchange.com/questions/414440/a-single-word-for-non-domesticated-animals-that-live-among-humans> [https://perma.cc/Y792-Y4K5].

⁶⁴ *Commons*, BRITANNICA, <https://www.britannica.com/topic/commons> [https://perma.cc/HNC4-BXQB] (last visited Nov. 29, 2023).

I intend to show smart growth is feasible through ordinances that do the following: (1) amend the pertinent zoning laws, (2) rely heavily on conditions on subdivision, and (3) require private servitudes. Through such ordinances, I will demonstrate the twin goals of density and greenspace (as well as gardens and energy efficiency) may alike be met.

II

URBAN AGRICULTURE

A. Policy Motivation, in Brief

Municipal ordinances relating to agriculture and horticulture within city limits have three benefits: (1) strengthening food security, (2) promoting nutritional equity, and (3) reducing the burden on overworked commercial agricultural zones. Many municipalities already have systems in place to promote urban agriculture. First, municipalities promote agriculture through urban gardening. In cities that do not have immediate access to adjacent farmland, urban gardens may be the proper method to reduce transportation and spoilage costs, as well as encourage small-scale agriculture which replenishes, rather than depletes, the soil's nutrients. The second kind of agriculture or horticulture ordinance is "green roof" vegetation. Green roofs can insulate buildings while providing ecosystem services.

These systems help society transition toward a simpler model of natural resource consumption and entrepreneurship, while the integration of new technology like artificial intelligence into homes and businesses may eventually prove to be more energy efficient than current distribution models.⁶⁵

The following Sections explore some examples of projects that some cities are implementing to meet the agricultural needs of the inner city.

B. Envision San José 2040 General Plan, San José, CA

The Envision San José 2040 General Plan is a comprehensive plan to boost San Jose's environmental leadership in many facets, including

⁶⁵ Jonathan Woetzel et al., *How Technology Is Reshaping Supply and Demand for Natural Resources*, MCKINSEY GLOB. INST. (Feb. 15, 2017), <https://www.mckinsey.com/capabilities/sustainability/our-insights/how-technology-is-reshaping-supply-and-demand-for-natural-resources> [<https://perma.cc/FUG2-LB9L>].

culture, infrastructure, land use, parks, and green building.⁶⁶ Land Use Goal 12, entitled “Urban Agriculture,” includes eleven policies to strengthen community gardens.⁶⁷ These policies include the following goals:

- “new and expanded community gardens and farmers markets” throughout the city, “prioritizing the provision of these gardens in low income, nutritionally-deficient neighborhoods”;
- “support urban agriculture opportunities such as back-yard, roof-top, indoor, and other gardens that produce ecologically sound food for personal consumption”;
- “encourage developers to incorporate gardens that produce ecologically sound food for residents and workers”;
- “protect and preserve the remaining farmlands”;
- “preserve agricultural lands and prime soils in non-urban areas in order to retain the aquifer recharge capacity of these lands”;
- “encourage incorporation of edible landscaping in appropriate locations”;
- “support the efforts of non-profit organizations and the County to integrate and/or maintain sustainable small scale agriculture within existing and planned parks and open spaces”;
- “work with the County Health Department, school districts and non-profit health organizations . . . to educate the community on the nutritional, economic, and environmental benefits of consuming locally grown and ecologically sound foods”; and
- “revise the Zoning Ordinance to allow both community gardens and incidental gardening as permitted uses in appropriate zoning districts.”⁶⁸

With the advent of companies like Infarm, which specializes in indoor agriculture, it may be more feasible to incorporate agriculture into residential spaces and use fewer resources than traditional agriculture. There are several benefits to this approach: “Unlike conventional farming, Infarm’s vertical farms use no pesticides. They also recycle water and nutrients and use the evaporated water of the

⁶⁶ CITY OF SAN JOSE, ENVISION SAN JOSÉ 2040: GENERAL PLAN ch. 6 (2023), <https://www.sanjoseca.gov/home/showpublisheddocument/22359/637686090967970000> [https://perma.cc/4V47-6NH3].

⁶⁷ *Id.* at 18–19.

⁶⁸ *Id.*

plants. As a result, they use 95% less land and 95% less water than soil-based agriculture, Infarm claims.”⁶⁹

Numerous other cities are experimenting with urban gardens. Since the enclosure of the commons in sixteenth-century England, local governments have rented allotments to local citizens to garden.⁷⁰ Also, more than 550 community gardens exist in New York City. The GreenThumb program’s website offers instructions and locations.⁷¹ Gardens are allowed in two places in New York City’s Zoning Resolution: (1) in all residential zoning districts and most commercial zoning districts under Use Group 4B, and (2) in all manufacturing zoning districts under Use Group 17C.⁷² Many developing nations, such as the Philippines and Senegal, have strengthened food security by use of urban gardens.⁷³

As shown by the above policy initiatives, the purpose of the urban gardens is to promote equitable access to food while supporting local and ecological agriculture.

Compliance can be difficult. Many urban gardeners experience theft from other gardeners or strangers.⁷⁴ New gardeners must get permission from the garden or lot owners to start their own plots. New York City has a digital tax map whereby potential gardeners can look up the borough, block, and lot number for the plot in which they are interested.⁷⁵ Potential gardeners may also consult the online “zoning

⁶⁹ Sam Shead, *A Dutch Vertical Farming Company Has Just Been Valued at Over \$1 Billion*, CNBC (Dec. 17, 2021), <https://www.cnbc.com/2021/12/16/infarm-vertical-farming-firm-valued-at-over-1-billion-by-investors.html> [<https://perma.cc/67TC-2XP9>].

⁷⁰ *Allotment & Gardens*, WEBONEUK LTD., <https://www.allotment-garden.org/allotment-information/allotment-history/> [<https://perma.cc/V6JQ-JF52>] (last visited Nov. 29, 2023).

⁷¹ *How to Start a GreenThumb Community Garden*, NYC PARKS GREENTHUMB, <https://www.nycgovparks.org/greenthumb/start-a-garden> [<https://perma.cc/QJ24-BH2H>] (last visited Nov. 20, 2023).

⁷² *Frequently Asked Questions*, NYC URB. AGRIC., <https://www.nyc.gov/site/agriculture/faqs/frequently-asked-questions.page> [<https://perma.cc/6NRM-XFJS>] (last visited Nov. 29, 2023).

⁷³ See Halie Kampman et al., *Household and Community Gardens Surge in the Philippines and Senegal During COVID-19: How Do Contrasting Models Speak to Different Visions for Future Food Systems?*, GASTRONOMICA, Summer 2021, at 47, <https://online.ucpress.edu/gastronomica/article-abstract/21/2/47/116804/Household-and-Community-Gardens-Surge-in-the?redirectedFrom=fulltext> [<https://perma.cc/LB8C-ZWSF>].

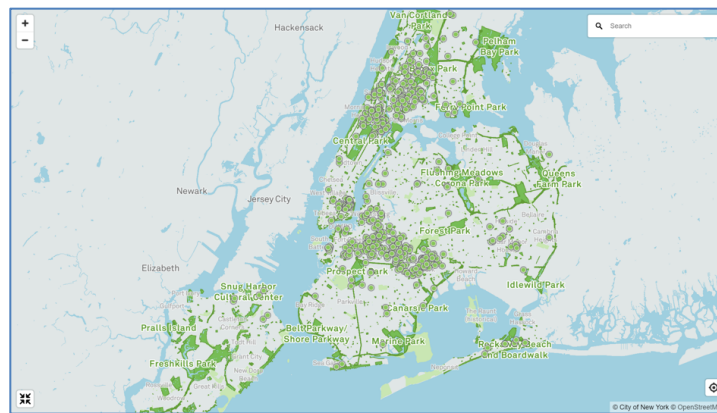
⁷⁴ Jesse Hirsch, *Thievery, Fraud, Fistfights and Weed: The Other Side of Community Gardens*, MOD. FARMER (Dec. 6, 2013), <https://modernfarmer.com/2013/12/robbery-drugs-fistfights-dark-side-community-gardening/> [<https://perma.cc/S26R-4VMH>].

⁷⁵ *DOF - Digital Tax Map*, NYC.GOV, <https://www.nyc.gov/site/finance/taxes/property-digital-tax-map.page> [<https://perma.cc/J585-2BNK>] (last visited Nov. 29, 2023).

and land use map.⁷⁶ Assuming the garden is securely locked to outsiders, the community garden group must decide how to best construct, partition, compost, and irrigate the garden beds.⁷⁷ English allotments, on the other hand, do not require group coordination because they are rented by individuals.⁷⁸

However, gardens are feasible within the inner city. Figure 2 is a map wherein each light green circle represents a link to information about a community garden in that location, showing the promising prevalence of community gardens in New York City.⁷⁹

Figure 2. *Location of Urban Gardens in New York City.*⁸⁰



C. Pasco County, FL, U.S.

Pasco County, Florida, offers a model ordinance for community gardens with attention paid to zoning, permitted uses, area and density requirements, lot requirements, coverage, parking, and development standards.⁸¹ A chart is included in the model ordinance of conditional

⁷⁶ *New York City's Zoning & Land Use Map*, NYC PLANNING, <https://zola.planning.nyc.gov/about/#9.5/40.7076/-73.7596> [https://perma.cc/6PZQ-RG59] (last visited Nov. 29, 2023).

⁷⁷ See NYC PARKS GREENTHUMB, *supra* note 71.

⁷⁸ See WEBONEUK LTD., *supra* note 70.

⁷⁹ *Community Gardens*, NYC PARKS, <https://www.nycgovparks.org/greenthumb/community-gardens> [https://perma.cc/2XSR-FS2N] (last visited Nov. 29, 2023) (“GreenThumb . . . provides programming and material support to over 550 community gardens in New York City.”).

⁸⁰ *Id.*

⁸¹ *Food Policy Advisory Council (FPAC)*, PASCO CNTY., FLA., <https://www.pascocountyfl.net/411/Food-Policy-Advisory-Council-FPAC> [https://perma.cc/M82Z-FRBF] (last visited Nov. 29, 2023).

and permitted uses for each type of district.⁸² For example, a market garden is a conditional use in an estate residential district, while all community gardens, market gardens, and community farms are principal uses in agricultural districts and hybrid “agricultural-residential” districts. The types of gardens are described in a University of Florida article as follows:

The initiatives are distinguished based on the sale of products, vehicle trips, and size. Community gardens allow the growing and harvesting of food crops or ornamental plants on lots of any size and between 14–100 daily vehicle trips. Market gardens must be less than 5 acres and permit the sale and purchase of produce (including fruits, vegetables, and other garden-derived edibles) grown on- or off-site and more than 14 daily vehicle trips. Community farms can grow produce (including fruits, vegetables, and other garden-derived edibles) primarily for off-site distribution, have 14 or more vehicle trips daily, and be any size. Community farms also require a farm manager. Hours of operation for all the initiatives are between sunrise and sunset.⁸³

The 2017 ordinance sought to address food insecurity among 14% of Pasco County’s population.⁸⁴ There is, however, a complex application process:

Residents must submit an application to obtain a garden plan permit to implement one of the three initiatives. Accessory structures require an additional site plan, and community gardens and community farms must register with the Pasco County Planning Department. Under the ordinance, all three categories can be located on vacant property and will be the principal use until the property is developed. However, community gardens are the only type allowed on public lands.⁸⁵

Furthermore, the county’s Food Policy Advisory Council (FPAC), the county’s legal team, and the Long Range Planning Department all are involved in training local government officials.⁸⁶

Drafting the definitions was a time-consuming process: “Identifying the discrete categories of urban agricultural uses required balancing the

⁸² Pasco County, Fla., Ordinance No. 17-19 (June 20, 2017), <https://content.civicplus.com/api/assets/d9ac4734-f316-4fd4-a8e3-ec799db8dfd0> [<https://perma.cc/3URA-YSYX>].

⁸³ Candace A. Spencer et al., *How to Establish an Urban Agriculture Ordinance*, UNIV. OF FLA. (Apr. 2, 2019), <https://edis.ifas.ufl.edu/publication/HS1327> [<https://perma.cc/CDK8-7LC4>].

⁸⁴ *Id.*; See CLAIRE W. HERBERT, A DETROIT STORY 204–07 (2021) (discussing how gardens have been used to revitalize an inner city, how a 2013 agricultural ordinance interplays with right-to-farm laws and accepted agricultural practices, and how the ordinance allows for some legal nonconforming uses).

⁸⁵ Spencer et al., *supra* note 83.

⁸⁶ *Id.*

goal of allowing urban agriculture with the necessary legal restraints and common residential concerns of noise and traffic.⁸⁷ In other words, the drafters balanced the intention of the ordinance against existing zoning law and nuisance concerns. The application was reworked and took over a year to be released. The county faced other administrative hurdles, such as Florida’s transparency Government-in-the-Sunshine Law and the County Land Development Code. These codes presented extra administrative work until the ordinance was reworked. Perhaps this is a good example of the administrative hurdles that may impede a well-intended venture. However, the county persisted in correcting the ordinance. The application and ordinance are now polished and reposted for easy viewing.⁸⁸

D. Toronto Municipal Code, Chapter 492, Green Roofs

The city of Toronto successfully implemented “green” or vegetated roofs. The results included reducing the average citywide temperature, reducing stormwater runoff, and increasing beach access.⁸⁹

In 2009, Toronto adopted a cutting-edge “Green Roof Bylaw.” This bylaw required new developments or additions greater than 2,000 square meters in gross floor area to contain a green roof.⁹⁰ A green roof is designed as an “extension of an above grade roof . . . that allows vegetation to grow in a growing medium and which is designed, constructed and maintained in accordance with the Toronto Green Roof Construction Standard.”⁹¹ The required coverage of available roof space ranges from 20%–60% depending on the gross floor area. The available roof space is the total roof area minus the following: areas designated for renewable energy, residential private terraces, residential outdoor amenity spaces, and tower roofs on buildings with a floor plate of less than 750 square meters.⁹²

⁸⁷ *Id.*

⁸⁸ See Pasco County, Fla., *supra* note 82.

⁸⁹ *Toronto Green Roof Bylaw & Eco-Roof Incentive Program*, URB. LAND INST., <https://developingresilience.uli.org/case/toronto-green-roof-bylaw-and-eco-roof-incentive-program/> [<https://perma.cc/KUK8-ELKU>] (last visited Nov. 29, 2023) [hereinafter URB. LAND INST.].

⁹⁰ *City of Toronto Green Roof Bylaw*, CITY OF TORONTO, <https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/green-roofs/green-roof-bylaw/> [<https://perma.cc/HZ7Q-GW2D>] (last visited Nov. 29, 2023).

⁹¹ *Chapter 492: Green Roofs*, TORONTO MUN. CODE § 492-1 (Nov. 9, 2017), https://www.toronto.ca/legdocs/municode/1184_492.pdf [<https://perma.cc/X82G-F6HL>].

⁹² CITY OF TORONTO, *supra* note 90.

The bylaw has several purposes. To combat a lack of green space, higher temperatures, stormwater management challenges, and decreased water quality, Toronto “turned to an underused resource: the city’s nearly 500 million square meters of rooftop.”⁹³ The new roofs “retain stormwater, improve air quality, lower ambient temperatures [in the summer], reduce building energy use, and create attractive and useful outdoor amenities.” The bylaw implemented green roofs after a study, begun in 2005 by Ryerson University, found that the green roofs would be highly effective.⁹⁴

The ordinance requires vegetation on a percentage of available roof space on large downtown buildings. Available roof space is defined as follows:

The total roof area of the building or building addition excluding: A. Areas designated for renewable energy devices; B. Private terraces no greater in area than the floor of the abutting residential unit at the roof level; and C. In the case of a residential building or a building addition to a residential building, the Required Outdoor Amenity Space.⁹⁵

The percentage required to be covered is given as follows:

Every building or building addition constructed after January 30, 2010, with a gross floor area of 2,000 square metres or greater shall include a green roof with a coverage of available roof space in accordance with the following chart:

2,000 - 4,999 square metres: 20 percent;
5,000 - 9,999 square metres: 30 percent;
10,000 - 14,999 square metres: 40 percent;
15,000 - 19,999 square metres: 50 percent;
20,000 square metres or greater: 60 percent.⁹⁶

A permit must be issued by the Chief Building Official. The official appoints a Green Roof Technical Advisory Group of eleven individuals. The ordinance is enforced by a fine of “not more than \$100,000.”⁹⁷

The code presents detailed engineering requirements for green roofs. The green roof assembly “shall, as a minimum, consist of a root repellent system, a drainage system, a filtering layer, a growing medium and plants, and shall be installed on a waterproof membrane

⁹³ URB. LAND INST., *supra* note 89.

⁹⁴ *Id.*

⁹⁵ See TORONTO MUN. CODE, *supra* note 91.

⁹⁶ *Id.* § 492-2.

⁹⁷ *Id.* § 492-21.

of an applicable roof.”⁹⁸ There are several technical requirements: gravity loads, density of the growing media, slope stability, parapet heights and overflow scupper locations, wind uplift pressures, fire safety, public access, waterproofing, drainage, plant survivability, plant selection, irrigation, and a maintenance plan.⁹⁹

The construction of a typical green roof requires several layers of material under the soil for waterproofing, insulation, and drainage.¹⁰⁰

The Ryerson University study has proven accurate. Green roofs have lowered the city’s average temperature by about 1.5 to 2° C. The roofs also retain 12,300 cubic meters of stormwater runoff per year, which reduces sewer overflow and, as Toronto is a lakefront city, adds three days of beach access per year. Additionally, the roofs increase the lives of buildings, extend the life of the roof itself, and reduce air-conditioning usage.¹⁰¹

The city is facilitating compliance with the bylaw by providing funds to help existing buildings convert to green roofs and providing financial assistance to developers for the construction of green roofs on new buildings.¹⁰² For example, the Eco-Roof Incentive Program helps schools, nonprofits, and small buildings convert to green roofs. The Green Roof Screening Tool helps builders determine if the bylaw applies to their project and, if so, estimate the amount of green roof coverage required under the bylaw. Because of these proactive administrative steps, the Green Roof Bylaw is considered a huge success.¹⁰³

⁹⁸ *Id.* § 492-9.

⁹⁹ *Id.*

¹⁰⁰ George Georgiou, *Inverted Roof Typical Detail*, PINTEREST, <https://www.pinterest.com/pin/497507090082851536/> [<https://perma.cc/DEQ2-37CH>] (last visited Nov. 29, 2023).

¹⁰¹ See URB. LAND INST., *supra* note 89.

¹⁰² *Id.*

¹⁰³ See THOMAS W. LIPTAN & J. DAVID SANTEN JR., *SUSTAINABLE STORMWATER MGMT.: A LANDSCAPE-DRIVEN APPROACH TO PLANNING & DESIGN* (2017) (for the premier handbook on landscape stormwater management, which describes through hundreds of photos the surface conveyance of runoff into swales, the vegetative retrofitting of impervious surfaces, the myriad synergistic benefits to energy and sewage costs, and examples of vegetated roofs); see also David Rouse et al., *Green Infrastructure: A Landscape Approach*, *PAS Report 571*, AM. PLAN. ASS’N (Jan. 2023), <https://www.planning.org/publications/report/9026895/> [<https://perma.cc/UA9M-7TSL>].

E. Action Items

Local governments should bolster urban agriculture by (1) requiring space to be reserved within neighborhoods for urban gardens or individual allotments and (2) requiring green roofs on buildings with a certain minimum roof area to reduce stormwater runoff and moderate average citywide temperature.

III

GREENSPACE

A. Policy Motivation, in Brief

Preventing habitat encroachment at the local level is key to preserving species that are constantly on the retreat from human spaces.

Including more greenspace within neighborhoods qualifies as a “buffer zone approach” to encroachment to mitigate species extinctions.¹⁰⁴ Buffer zones could also improve public health. Nancy Wells, at Cornell’s College of Human Ecology, argues that by “[a]cting as a moderator or buffer, nearby nature or green space may have the potential to attenuate the relation between risk and health, to dampen negative health outcomes among vulnerable populations and ultimately, thereby, to reduce health disparities.”¹⁰⁵

The following survey of legal schemes for conserving wild space reveals effective tools are already in place for preserving wildlife habitats and protecting wetlands. Also, leaving sections of land undeveloped saves building costs.

B. U.S. Uniform Conservation Easement Act

A conservation easement is one way to transfer development rights. Development rights are the “right[s] to build on the land [as] provided for under the local zoning ordinance.”¹⁰⁶ A conservation easement thus, functions as a burden on landowners when sold to a third party. For example, the value appraised by the permitting of the land to construct single-family homes could be sold to a conservancy or other such

¹⁰⁴ See *Ecological Buffers*, THE NATURE CONSERVANCY (2015), <https://www.nature.org/media/centralapps/recommended-shale-practices-ecological-buffers.pdf> [<https://perma.cc/6B5X-8CCG>].

¹⁰⁵ Nancy M. Wells, *The Natural Environment as a Resilience Factor: Nature’s Role as a Buffer of the Effects of Risk and Adversity*, in 67 NATURE & PSYCH. 1, 2 (Anne R. Schutte et al. eds., Cham Switzerland, 2021), https://doi.org/10.1007/978-3-030-69020-5_7 [<https://perma.cc/WR98-5PKQ>].

¹⁰⁶ See NOLON, *supra* note 8, at 35.

organization.¹⁰⁷ “The land is then burdened by a deed restriction prohibiting any further development that would alter the environmental or historical features of the land.”¹⁰⁸ In the United States, the Uniform Conservation Easement Act (UCEA) governs the creation of easements. The UCEA, written in 1981 and amended in 2007, allows for the granting of an easement or nonpossessory rights in a parcel, incentivized by classifying the easement as a charitable donation for tax purposes.¹⁰⁹ The rights to develop are transferred in perpetuity to a qualifying organization, usually a certified land trust, government agency, or tribe. The trust, agency, or tribe specifies whatever “durable restrictions and affirmative obligations” are to be “attached to real property to protect natural and historical resources.”¹¹⁰ Thus, easements can be tailored to the needs of the wildlife or ecosystem that is being protected.

The process for preparing an easement involves carefully describing the property and drafting the easement deed. First, a surveyor and qualified appraiser examines the property, producing a baseline documentation report that diagrams the parcels of the easement and the entire original property.¹¹¹ Then a nonprofit, such as a land trust or conservancy, works with landowners to draft an easement deed that meets the stated conservation goals.¹¹² The deed spells out detailed restrictions, as well as the grantor’s reserved rights. For example, an easement deed may prohibit construction, development, or logging where there is a key species’ habitat but allow agriculture, logging, or other uses in other parts of the property. The deed usually includes conservation-oriented language in the “recital” clauses, which help to interpret the intentions of the easement.¹¹³ An easement is subject to existing property rights “unless the owners of those rights release them

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ *Uniform Conservation Easement Act*, NAT’L CONF. OF COMM’RS ON UNIF. STATE LAWS 1 (2007), <https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=3c195455-5f21-0b82-f2b7-693545f86c94&forceDialog=0> [<https://perma.cc/N5ST-JNSZ>].

¹¹⁰ *Id.*

¹¹¹ William F. Paulus & Nancy E. Duhnkrack, *Conservation Easements*, LEXIS PRACTICE ADVISOR, <https://oregonlandtrusts.org/wp-content/uploads/2020/08/Conservation-Easements.pdf> [<https://perma.cc/4AFJ-KTA6>] (last visited Nov. 29, 2023).

¹¹² *See generally Legal Document Library*, COAL. OF OR. LAND TRS., <http://oregonlandtrusts.org/legal-document-library/> [<https://perma.cc/D6GS-Z5QC>] (last visited Nov. 29, 2023) (providing a collection of example easement deeds and purchase agreements).

¹¹³ *Id.*

or subordinate them to the easement.”¹¹⁴ “[A] conservation easement may be . . . recorded . . . in the same manner as other easements,” i.e., the easement deed should be properly recorded with the assessor’s office.¹¹⁵ Grantors are advised to complete a Form 8283 for tax purposes.¹¹⁶

The conservation easement began as early as the 1930s when the National Park Service purchased easements along the Blue Ridge Parkway in Virginia and North Carolina and along the Natchez Trace Parkway in Mississippi, Alabama, and Tennessee.¹¹⁷ Journalist William Whyte was the first to use the term conservation easement to describe this practice in the late 1950s.¹¹⁸ California passed the first easement enabling statute in 1959.¹¹⁹ In 1965, the Federal Highway Beautification Act incentivized states to pass easement laws protecting scenic areas around highways.¹²⁰ Nonscenic conservation easements also became a priority for many states. Forty states had passed laws allowing for the creation of such easements by 1979, and the UCEA was written in 1981.¹²¹

Furthermore, the tax benefits of easements have withstood challenges in *Pine Mountain Preserve, LLLP v. Commissioner*,¹²² *Kissling v. Commissioner*,¹²³ and *Rajagopalan v. Commissioner*.¹²⁴ Illegitimate uses are prosecuted. In 2020, two Atlanta-based accountants pleaded guilty to “promoting [a] syndicated conservation easement tax scheme involving more than \$1.2 billion in fraudulent charitable deductions.”¹²⁵

¹¹⁴ NAT’L CONF. OF COMM’RS ON UNIF. STATE LAWS, *supra* note 109, at 7.

¹¹⁵ *Id.* at 5.

¹¹⁶ *Instructions for Form 8283*, INTERNAL REVENUE SERV. (Dec. 2021), <https://www.irs.gov/instructions/i8283#idm139825558711408> [<https://perma.cc/K9NV-M8GM>].

¹¹⁷ Federico Cheever & Nancy A. McLaughlin, *An Introduction to Conservation Easements in the United States: A Simple Concept and a Complicated Mosaic of Law*, 1 J.L. PROP. & SOC’Y 108, 115 (2015).

¹¹⁸ *Id.*

¹¹⁹ *Id.* at 116.

¹²⁰ *Id.* at 115–16.

¹²¹ *Id.*

¹²² *Pine Mountain Pres., LLLP v. Comm’r*, 151 T.C. 247 (2018).

¹²³ *Kissling v. Comm’r*, 120 T.C.M. (CCH) 314 (T.C. 2020).

¹²⁴ *Rajagopalan v. Comm’r*, 120 T.C.M. (CCH) 355 (T.C. 2020).

¹²⁵ Press Release, Dep’t of Just. Off. of Pub. Aff., Atlanta Tax Professionals Plead Guilty to Promoting Syndicated Conservation Easement Tax Scheme Involving More Than \$1.2 Billion in Fraudulent Charitable Deductions (Dec. 21, 2020), <https://www.justice.gov/opa/pr/atlanta-tax-professionals-plead-guilty-promoting-syndicated-conservation-easement-tax-scheme> [<https://perma.cc/S9HC-2EZB>].

There has been, however, a successful challenge to easements brought under the Takings Clause. In *PennEast Pipeline Co., LLC v. State of New Jersey*,¹²⁶ the U.S. Supreme Court allowed PennEast to condemn and seize forty properties previously held by the state of New Jersey as conservation easements to construct a gas pipeline from Pennsylvania to New Jersey.¹²⁷

Also, easements can have extremely stringent requirements. For example, a case in the Oregon Court of Appeals concerned how many employees were allowed to be home occupants in a renovated barn on an easement property.¹²⁸

Conservation easements have become a staple form of real property interests donated to organizations like The Nature Conservancy¹²⁹ and the member organizations of the Land Trust Alliance.¹³⁰ Easements have become a staple form of donation because they are cheaper to purchase than buying a tract of land outright, and the donor or seller may continue using the land for allowed uses.¹³¹

Tax write-offs, however, can be abused by incorrect appraisal or by neglecting to use a certified land trust.¹³² Legislation is currently on the floor to strengthen valuation requirements for easements and prevent tax abuse.¹³³ The first such piece of legislation introduced was the Charitable Conservation Easement Program Integrity Act in 2017, which is still being advocated.¹³⁴

Conservancies or land trusts are usually better equipped than other agencies to use scientific techniques to maintain biodiversity. Usually,

¹²⁶ *PennEast Pipeline Co., LLC v. New Jersey*, 141 S. Ct. 2244 (2021).

¹²⁷ *Id.*

¹²⁸ 1000 Friends of Or. v. Clackamas Cnty., 483 P.3d 706 (Or. Ct. App. 2021).

¹²⁹ *How We Work: Private Lands Conservation*, THE NATURE CONSERVANCY, <https://www.nature.org/en-us/about-us/who-we-are/how-we-work/private-lands-conservation> [<https://perma.cc/DF58-QXSG>] (last visited Nov. 29, 2023).

¹³⁰ *See How to Conserve Your Land*, LAND TR. ALL., <https://landtrustalliance.org/take-action/conserv-your-land/how-to-conserv-your-land> [<https://perma.cc/QF3R-ABAC>] (last visited Nov. 21, 2023).

¹³¹ *See Frequently Asked Questions*, COAL. OF OR. LAND TRS., <https://oregonlandtrusts.org/resources/faq/> [<https://perma.cc/PMB9-SNQ2>] (last visited Nov. 29, 2023).

¹³² *See* Marc Campopiano, *The Land Trust Alliance's New Accreditation Program*, 33 *ECOLOGY L.Q.* 897 (2006), <https://www.jstor.org/stable/24114615> [<https://perma.cc/SFD6-L4HK>].

¹³³ Press Release, Land Trust Alliance, Nonprofits Call for Immediate Passage of Charitable Conservation Easement Program Integrity Act (Dec. 2, 2021), <https://landtrustalliance.org/newsroom/press-releases/nonprofits-call-for-immediate-passage-of-charitable-conservation-easement-program-integrity-act> [<https://perma.cc/X8ZF-9MCD>].

¹³⁴ *Id.*

a Gap Analysis Project (GAP) is conducted in “protected areas such as parks and wilderness areas.”¹³⁵ GAP is a United States Geological Survey (USGS) program that “identif[ies] gaps in conservation planning and coverage” by using “computerized geographic information systems (GIS) to create a series of overlay maps of features relevant to biodiversity-based conservation.”¹³⁶ The software generates maps of the terrain that overlap vegetation and species patterns to show the most critical corridors as well as predict how different types of land use would affect those species.¹³⁷ An example of an Oregon platting map using satellite imaging may be found online.¹³⁸

In contrast to easements, which create property rights in land, other incentives may be available to landowners to leave land undeveloped, like land use credits or density bonuses. Since an easement is a (nonpossessory) property interest in perpetuity, the grantee may enforce it at any time.

An easement could be a helpful tool to create trail easements, which, like gardens, might not be open to the general public. However, the entire square footage of the easement must be protected from any landscaping or spraying of chemicals, which could encroach upon the wildlife, and it must be made accessible to residents of the subdivision.

Note certain uses would be disallowed for biodiversity purposes (like interfering with wild horticulture, spraying chemicals, grading, or paving impervious surfaces). Greenspace must be kept in pristine condition to minimize encroachment, as even insects are critical to mitigating the effects of the ongoing sixth mass extinction of species.¹³⁹

Using a Gap Analysis Project could prove to be the turning point in the maintenance of biodiversity. GAP and habitat conservation plans should be required for each development.¹⁴⁰ Setting aside the “first fruits” of the landscape toward conservation would allow the most

¹³⁵ COUNCIL ON ENV'T QUALITY, INCORPORATING BIODIVERSITY CONSIDERATIONS INTO ENVIRONMENTAL IMPACT ANALYSIS UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT 12 (1993), https://ceq.doe.gov/docs/ceq-publications/Incorporating_Biodiversity_1993.pdf [<https://perma.cc/EWQ8-D8TL>].

¹³⁶ Wayne Myers et al., *Landscape-Level Habitat Modeling and Mapping for Conservation Planning: Use of GAP Analysis*, in BIODIVERSITY CONSERVATION HANDBOOK: STATE, LOCAL & PRIVATE PROTECTION OF BIOLOGICAL DIVERSITY 113 (Robert B. McKinstry Jr. et al. eds., 2006).

¹³⁷ *Id.* at 113–14.

¹³⁸ See *ORMAP*, STATE OF OR., <https://ormap.net/gis/index.html> [<https://perma.cc/782U-6QGU>] (last visited Nov. 29, 2023).

¹³⁹ OLIVER MILMAN, *THE INSECT CRISIS: THE FALL OF THE TINY EMPIRES THAT RUN THE WORLD* 13 (W.W. Norton & Company 2022).

¹⁴⁰ AMERICAN BAR ASS'N, *supra* note 40, at 76.

biodiverse portion of each landscape to remain untouched. For example, the most crucial areas to identify are known water bodies and the spaces buffering them.¹⁴¹

The Council on Environmental Quality (CEQ) states that “natural corridors and migration routes should be protected or restored,” and “roads, powerlines, and other linear features should utilize existing developed areas wherever possible rather than cross relatively undisturbed areas.”¹⁴² In fact, “linked smaller areas . . . support wide-ranging species . . . [and] allow natural flows of organisms, energy, water, and nutrients critical to ecosystem functioning.”¹⁴³ Thus, municipalities should require linking undeveloped land to corridors in other neighborhoods or to public lands.¹⁴⁴ If trails between neighborhoods were linked, then species would better be able to migrate through urban spaces (and nonlandscaped space should be the rule, not the exception).¹⁴⁵ Corridors maximize ecological value, as geographer Neil Smith alluded to when he discussed “an alternative conception of the relation with nature, focusing on the production of nature.”¹⁴⁶

Certain precautions must be taken when building next to greenspace. The International Wildland-Urban Interface Code (IWUIC) is a model building code that focuses on protecting properties on the fringe of the city from potential wildfires.¹⁴⁷ Key requirements of the code include

¹⁴¹ *Id.* at 65.

¹⁴² COUNCIL ON ENV'T QUALITY, *supra* note 135, at 7.

¹⁴³ *Id.*

¹⁴⁴ AMERICAN BAR ASS'N, *supra* note 40, at 70.

¹⁴⁵ See *Human-Made Linkages*, CONSERVATION CORRIDOR, <https://conservationcorridor.org/corridor-examples/#human-made> [<https://perma.cc/M827-EGV4>] (last visited Nov. 29, 2023) (showing examples of effective migration corridors).

¹⁴⁶ NEIL SMITH, *UNEVEN DEVELOPMENT: NATURE, CAPITAL, AND THE PRODUCTION OF SPACE* 8 (University of Georgia Press 3d ed. 2008); see *Transfer of Development Rights*, WE CONSERVE PA, <https://conservationtools.org/guides/12-transfer-of-development-rights> [<https://perma.cc/B6WG-WB3P>] (last visited Nov. 29, 2023) (examples of ordinances using transfers of development rights); see also *Model Trail Easement Agreement with Commentary*, WE CONSERVE PA, https://conservationtools.org/library_items/324 [<https://perma.cc/WRT8-Z38J>] (last visited Nov. 29, 2023) (providing an example of a trail easement agreement).

¹⁴⁷ See Int'l Code Council [ICC], *2021 International Wildland-Urban Interface Code*, at ch. 5 (2021), <https://codes.iccsafe.org/content/IWUIC2021P1> [<https://perma.cc/G3FF-WPTH>] (“The construction provisions of Chapter 5 are intended to supplement the requirements of the International Building Code and address mitigation of the unique hazards posed to buildings by wildfire and to reduce the hazards of building fires spreading to wildland fuels.”).

fire service access, identification of premises, water supplies, hydrants, and fire protection plants. Building materials should be “fire resistant” or “ignition resistant” materials. Trees within defensible space zones near the dwelling must be separated by ten feet from crown to crown.¹⁴⁸

The IWUIC outlines special precautions that must be taken to protect the forest from human-made fires.¹⁴⁹ This is worth mentioning here because mandating greenspace next to sustainable housing nevertheless requires separation between the greenspace and any buildings, maintenance of landscape by removal of dry materials, and storage of fire-preparedness equipment.¹⁵⁰

C. IUCN World Congress on Protected Areas (Sixth Congress, 2014)

Also known as the World Parks Congress (WPC), the World Congress on Protected Areas convenes once every ten years to “define the agenda” for parks and other protected areas (“PA’s”) and to “appraise progress and setbacks.”¹⁵¹ The sixth WPC collected a “total of 150 recommendations for transformative change.”¹⁵² Recommendations included increasing “capacity to address novel threats” and improving the quality or effectiveness of protection.¹⁵³ The WPC prioritized protecting oceans, which included investing in “large-scale marine management initiatives” and detecting and preventing “illegal activities at sea.”¹⁵⁴ The WPC stressed respect for indigenous culture by prohibiting offsets that negatively affect World Heritage sites. The WPC also stressed transparency in supply chains. The recommendations aspired to “create a fully sustainable ocean, at least 30% of which has no extractive activities.”¹⁵⁵

¹⁴⁸ *Id.* at ch. 6: Fire Protection Requirements.

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

¹⁵¹ *Summary of 6th International Union for Conservation of Nature (IUCN) World Parks Congress (WPC) 2014*, IUCN WORLD PARKS CONG. 2014 BULL., Nov. 2021 at 1, <https://enb.iisd.org/events/6th-international-union-conservation-nature-iucn-world-parks-congress-wpc/summary-report-12> [<https://perma.cc/UM3P-RRGW>].

¹⁵² *Priorities Emerging from the IUCN World Parks Congress 2014*, IUCN WORLD PARKS CONG. 10 (2014), <https://www.worldparkscongress.org/sites/wpc/files/documents/pages/Priorities%20emerging%20from%20the%20IUCN%20World%20Parks%20Congress%202014.pdf> [<https://perma.cc/RHM8-92FZ>].

¹⁵³ *Id.* at 14.

¹⁵⁴ *Id.* at 22.

¹⁵⁵ John Davis, *World Parks Congress Recommends Target of 30% No-Take MPA Coverage Worldwide*, OPEN COMM'NS FOR THE OCEAN (Dec. 31, 2014), <https://octogroup>

The First World Congress on National Parks was held in 1962 in Seattle, Washington.¹⁵⁶ It “aimed to establish a more efficient international understanding of national parks,” including “definitions and standards for representative systems of protected areas leading to the elaboration” of the UN List of Protected Areas. The recommendations of the Congress are nonbinding but considered to be expert advice.¹⁵⁷

Also, the Draft Convention on European Landscapes (1998) proposed to “complement the national level of landscape protection, management and planning with a European-wide set of actions.”¹⁵⁸ The Convention sought to accomplish this goal by “support for national effort; support for transfrontier landscapes; recognition of outstanding achievements in landscape protection, management and planning”; and “recognition of landscapes of European significance.”¹⁵⁹ These measures complement World Heritage Status, mainly by “accomodat[ing] landscape systematically in its town and country planning policies.”¹⁶⁰

The convention nods to its predecessor conservation movements: “In some countries such as Sweden (Sporron, 1995), Ireland (Aalen, 1997) and England (Countryside Commission, 1997), nation-wide work has been undertaken to survey record and understand landscapes.”¹⁶¹ The Draft Convention describes the Pan-European Biological and Landscape Diversity Strategy (PBLDS), which is a convention that aims to “provide an innovative and proactive approach to stop and reverse the degradation of biological and landscape diversity values in Europe.”¹⁶² The PBLDS was part of the Environment for Europe partnership that spawned the Aarhus Convention on public participation, access to information, and environmental justice. Finally, the Draft Convention summarizes

.org/news/world-parks-congress-recommends-target-30-no-take-mpa-coverage-worldwide/ [https://perma.cc/4MFB-3QBN].

¹⁵⁶ *What Is the IUCN World Parks Congress?*, IUCN WORLD PARKS CONG., <https://www.worldparkscongress.org/about/history> [https://perma.cc/G5UL-597S] (last visited Nov. 29, 2023).

¹⁵⁷ *Id.*

¹⁵⁸ *Landscape Conservation Law: Present Trends and Perspectives in International and Comparative Law*, 39 IUCN ENV'T POL'Y & L. PAPER 23 (2000).

¹⁵⁹ *Id.*

¹⁶⁰ *Id.* at 75.

¹⁶¹ *Id.* at 21.

¹⁶² *Id.* at 27.

planning initiatives, such as Singapore branding itself as the Garden City,¹⁶³ the Greenway Movement in North America,¹⁶⁴ and South Africa's Physical Planning Act.¹⁶⁵

Applying the conventions, developing protected lands requires an environmental impact assessment and must meet special requirements provided by the Ramsar Convention on Wetlands and similar bodies of law. For example, in an Australian decision (the *Tasmanian Dam Case*),¹⁶⁶ which has been used as precedent multiple times, the High Court of Australia ruled that developing a hydroelectric dam violated the federal World Heritage Properties Conservation Act as it had external affairs power over the states under the constitution. However, in the *Greenwatch* case in Uganda, the judge would not apply the National Environmental Act over a landowner's right to title.¹⁶⁷ Indeed, the "bundle of rights" property doctrine must be modified in contexts where the public trust over natural resources is at stake.¹⁶⁸

It is more effective to enforce these conventions sooner than later. Proactive management can prevent fatal delays in action: "Law cannot restrain change by perpetuating old legal norms: it must assume a proactive role."¹⁶⁹ This was best exemplified in the *Greentree*¹⁷⁰ case where the Australian Commonwealth Government's delay between inspections, when 20% of the wetland had been plowed, and civil action one year later, when 100% had been plowed and drained.¹⁷¹

In the United States, in *Gondelman v. D.C. Dep't of Consumer & Regulatory Affairs*, a court upheld preservation of privately maintained, publicly owned greenspace within a historic district in accordance with the comprehensive plan.¹⁷² *Gondelman* shows planning for greenspace receives favorable treatment from courts.

¹⁶³ *Id.* at 39–47.

¹⁶⁴ *Id.* at 48–52.

¹⁶⁵ *Id.* at 58.

¹⁶⁶ *Commonwealth v Tasmania* (1983) 158 CLR 1 (Austl.).

¹⁶⁷ *GreenWatch v Att'y Gen. & NEMA* (2012) Miscellaneous Cause No. 140 of 2002 [2002] (Uganda).

¹⁶⁸ Zada Lipman, *Compliance and Enforcement of International Environmental Conventions in Australia*, in *COMPLIANCE AND ENFORCEMENT IN ENVIRONMENTAL LAW: TOWARD MORE EFFECTIVE IMPLEMENTATION* 36–38 (Leroy Paddock et al. eds., 2011).

¹⁶⁹ *THE LEGAL CHALLENGE OF SUSTAINABLE DEVELOPMENT* 17 (J. Owens Saunders ed., 1990) [hereinafter *LEGAL CHALLENGE*].

¹⁷⁰ *Minister for the Env't & Heritage v Greentree* [No. 2] (2004) NSWLEC 102; (Austl.).

¹⁷¹ Lipman, *supra* note 168, at 44–45.

¹⁷² *Gondelman v. D.C. Dep't of Consumer & Regul. Affs.*, 789 A.2d 1238 (D.C. Cir. 2002).

Enforcement is not without obstacles. All protected lands encounter difficulties, such as poaching of wildlife, invasion by livestock, and timbering, among other economic activities. “They are also subject to air or water pollution, whether by local activities or by long-distance contaminants such as acid rain.”¹⁷³ Enforcement is costly in both money and time.

There are also enforcement problems with environmental impact assessments, such as enforceability by the public, the “need for [a] broad definition of environment,” “inadequate access to [the] EIA process for [the] public,” “lack of funding,” discouragement of “public involvement,” “need [for] feedback from project for project management, and the timing of EIA before decision.”¹⁷⁴

D. Overlay Zones (Eugene, OR, U.S.)

Overlay zoning is a smart growth technique that imposes additional requirements upon a zone or district beyond the Euclidean zoning requirements. Specifically, “[o]verlay zoning is a flexible zoning technique that allows a municipality either to encourage or to discourage development in certain areas.”¹⁷⁵ An overlay zone is “defined as a mapped overlay district superimposed on one or more established zoning districts. A parcel within the overlay zone will thus be simultaneously subject to two sets of zoning regulations: the underlying and the overlay zoning requirements.”¹⁷⁶ Municipalities use overlay zones for any practical purpose, such as historical preservation, resource conservation, flood management, fire resilience, or even encouraging development.

Designating a neighborhood as a “special study area” did not deprive property owners of all beneficial use of their land and thus did not constitute a taking in *Glisson v. Alachua County*.¹⁷⁷

The city of Eugene, Oregon, has experimented with overlay zones, specifically for riparian and wetlands protection. The city designated certain areas of protected land to promote State Land Use Goal 5 of water resources conservation.¹⁷⁸

¹⁷³ LEGAL CHALLENGE, *supra* note 169, at 25.

¹⁷⁴ *Id.* at 129.

¹⁷⁵ NOLON, *supra* note 8, at 218.

¹⁷⁶ *Id.*

¹⁷⁷ *Id.* at 221–22; *Glisson v. Alachua County*, 558 So. 2d 1030 (Fla. Dist. Ct. App. 1990).

¹⁷⁸ See *Goal 5 Water Resources Conservation Plan, Section IV, Map 13*, CITY OF EUGENE, <https://www.eugene-or.gov/DocumentCenter/View/5421/Goal-5-Water-Resources>

Analogously, sections 9.4770–9.4790 of the Eugene Code establish water quality overlay zones for the protection of tributaries and headwater streams pursuant to the Clean Water Act.¹⁷⁹ There is a long list of permitted uses within the water quality overlay zone.¹⁸⁰

Figure 3 shows a map of a Water Resource Overlay Zone from Eugene, Oregon.¹⁸¹

Eugene integrated these overlay zones with the comprehensive plan. Most importantly, the city had to ensure greenways were only a partial, not a total, regulatory taking. Partial regulatory takings are defined as regulations that leave the landowner in possession of the property but impose a restriction on use that denies some (but not all) economic use of the land.¹⁸² According to Emily Jerome, a Eugene attorney, the partiality of the taking was ensured by requiring less than 33% of the area in question to be greenway or other set-aside.¹⁸³

-Conservation-Plan-Section-IV-Map-13?bidId= [https://perma.cc/NF22-MNV6] (last visited Nov. 21, 2023); see also *Goal 5 Water Resources Conservation Plan, Section III*, CITY OF EUGENE, <https://www.eugene-or.gov/DocumentCenter/View/5453/Wetlands-Inventory-Map--Tile-4?bidId=> [https://perma.cc/G4ZM-UPAT] (last visited Nov. 21, 2023) [hereinafter *Maps at Goal 5 Water Resources Conservation Plan*].

¹⁷⁹ EUGENE, OR., CODE §§ 9.4770–.47790 (2022), <https://www.eugene-or.gov/DocumentCenter/View/41043/WQ-Overlay?bidId=> [https://perma.cc/NL99-7RQ3].

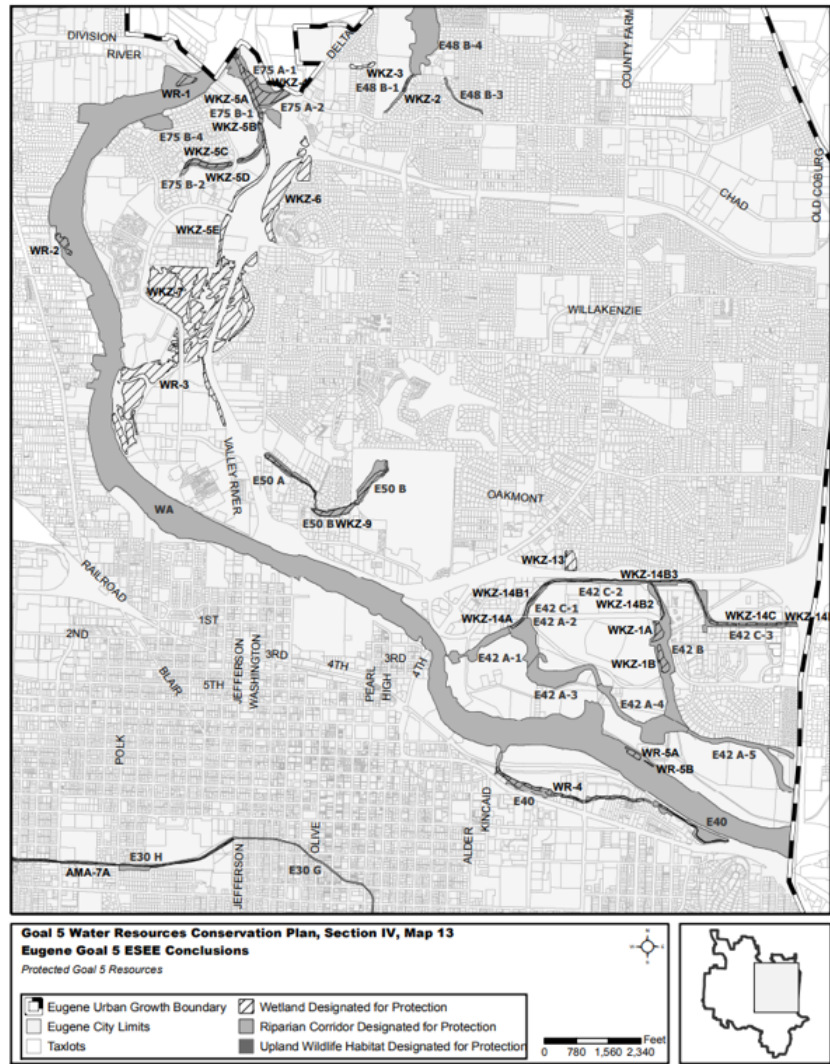
¹⁸⁰ EUGENE, OR., CODE § 9.4780 (2022), <https://eugene.municipal.codes/EC/9.4780> [https://perma.cc/NJ42-UA7H].

¹⁸¹ See *Maps at Goal 5 Water Resources Conservation Plan*, *supra* note 178.

¹⁸² Jeremy Young, *What Are the 3 Types of 'Takings' for Eminent Domain Cases in the U.S.?*, JDSUPRA (Sept. 15, 2023), <https://www.jdsupra.com/legalnews/what-are-the-3-types-of-takings-for-3590000/> [https://perma.cc/DC35-UZJ9].

¹⁸³ Interview with Emily Jerome, Deputy City Att'y, City of Eugene, Or. (Mar. 31, 2022).

Figure 3. Eugene Water Resource Overlay Zone Map.¹⁸⁴



Additionally, notice was sent to landowners of the change in law so the landowners would waive their right to remonstrance. Compare this to an irrevocable petition, such as one in a local improvement district: “An irrevocable petition is a legal document associated with a parcel of real property which has been signed by the property owner/

¹⁸⁴ *Id.*

developer which commits that property to support and participation in the cost of improving an adjacent unimproved street or alley in the future.”¹⁸⁵

What else could the city have done? Requirements on builders could include conditions of subdivision, like requiring developers to create streets or sidewalks. However, if anyone in the city is allowed to use a trail or garden that belongs to the residents of a subdivision, then that condition would constitute a taking. ORS 455.175 describes conditions of development:

(1) As used in this section: (a) “Conditions of development” means requirements that, as part of a residential subdivision, a developer, declarant or owner must construct public improvements that are contained in: (A) A development agreement under ORS 94.504 (Development agreements) to 94.528 (Recording); (B) Conditions of approval under ORS 92.040 (Application for approval of subdivision or partition), 215.416 (Permit application) or 227.175 (Application for permit or zone change); or (C) Any other agreement with, or conditional approval by, a local government.¹⁸⁶

Alternatively, the city could use a property tax exemption like the multi-unit property tax exemption (MUPTE) program to encourage multifamily residential structures.

The Multi-Unit Property Tax Exemption (MUPTE) is a tool that can shift a proposed housing development to being financially feasible. It is a state-enabled program designed to be an incentive for the redevelopment of residential properties in city centers and along transit corridors. In Eugene, the City Council has authorized the use of MUPTE in the downtown area. MUPTE allows new multi-family units (five or more units) to avoid property taxes on the value of new residential construction for up to ten years. The property continues to generate taxes for the land value during the exemption period.¹⁸⁷

¹⁸⁵ *Irrevocable Petition*, CITY OF EUGENE, <https://www.eugene-or.gov/441/Irrevocable-Petition> [https://perma.cc/43YZ-353W] (last visited Nov. 21, 2023).

¹⁸⁶ OR. REV. STAT. § 455.175 (2022).

¹⁸⁷ *Multi-Unit Property Tax Exemption*, CITY OF EUGENE, <https://www.eugene-or.gov/829/Multi-Unit-Property-Tax-Exemption#:~:text=In%20Eugene%2C%20the%20City%20Council,value%20during%20the%20exemption%20period> [https://perma.cc/3UTX-FVX6] (last visited Nov. 21, 2023); see also, *Review MUPTE Frequently Asked Questions*, S. OR. BUS. J. (Feb. 1, 2019), <https://southernoregonbusiness.com/review-mupite-frequently-asked-questions-june/> (“The intent of MUPTE is to lower operating costs in the early years of a housing development so that it becomes financially feasible,” so they are best used for permanent developments, such as residential complexes especially, that show a public benefit. MUPTEs are controversial for thrusting a higher proportion of the property tax burden onto surrounding residences, so the reader is advised to check for other subsidies first).

However, getting a city to give up its property taxes is very difficult, and a typical exemption will last for a set period before expiring.

E. Heat Island Overlay Zones

As discussed above, an overlay zone imposes additional requirements upon a zone or district beyond the Euclidean zoning requirements. One of the uses of overlay zones could be to identify and correct “heat islands:” “The urban heat-island effect was first documented in the 1960s when scientists noticed cities were noticeably hotter than the surrounding countryside.”¹⁸⁸ Concrete retains heat. Parks and greenspace retain cool air, which causes circulation of air as the cooler air moves toward the ground and the warm air rises. This temperature differential prevents the stagnation of air and creates air currents that help dissipate heat in areas adjacent to the greenspace. Thus, naturalized areas, even golf courses, can serve as cooling agents for urban areas.¹⁸⁹

Scientists studied urban heat island effects by mapping heat data. Poorer neighborhoods of the inner city typically have fewer trees and are more susceptible to heat waves.¹⁹⁰ This effect has increased due to climate change.¹⁹¹ Heat islands have a drastic effect on mortality: “In the UK, pooled estimates derived from time-series epidemiological studies show that mortality increases by around 2.5% for every 1 °C above a daily mean threshold temperature of 18 °C.”¹⁹²

The underprivileged communities that typically inhabit these neighborhoods with less tree canopy will be more reliant on rising

¹⁸⁸ JERRY YUDELSON, GREEN BUILDING A TO Z: UNDERSTANDING THE LANGUAGE OF GREEN BUILDING 170 (2007).

¹⁸⁹ *Id.*

¹⁹⁰ Meg Anderson & Sean McMinn, *As Rising Heat Bakes U.S. Cities, the Poor Often Feel It Most*, NAT’L PUB. RADIO (Sept. 3, 2019), <https://www.npr.org/2019/09/03/754044732/as-rising-heat-bakes-u-s-cities-the-poor-often-feel-it-most> [<https://perma.cc/U4D7-D6F3>].

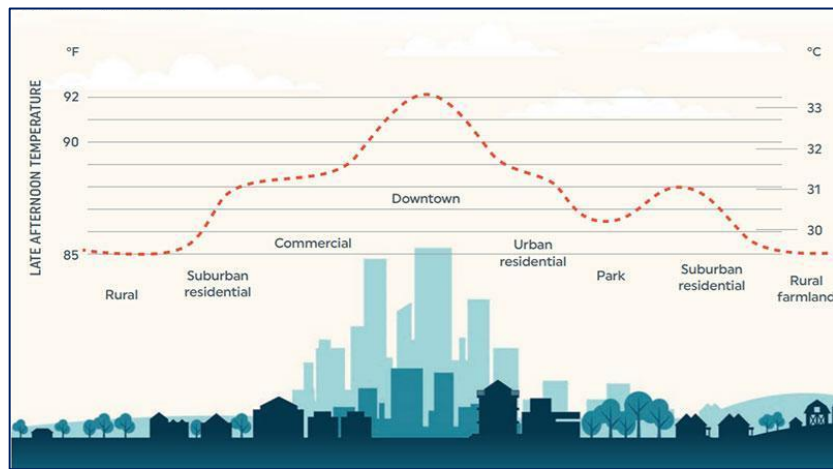
¹⁹¹ Christine Clarridge, *More Than Half of Seattle Lives on “Heat Islands,”* AXIOS SEATTLE (Aug. 7, 2023), <https://www.axios.com/local/seattle/2023/08/07/seattle-heat-islands> [<https://perma.cc/NN3C-MMLE>].

¹⁹² Helen. L. Macintyre, et al., *The Winter Urban Heat Island: Impacts on Cold-Related Mortality in a Highly Urbanized European Region for Present and Future Climate*, 154 ENV’T INT’L. 1, 2 (2021), <https://pubmed.ncbi.nlm.nih.gov/33895439/> [<https://perma.cc/72FD-L9KS>].

electricity costs.¹⁹³ Formerly redlined neighborhoods were historically deemed to be riskier by mortgaged lenders “based on the number of African Americans and immigrants living there.”¹⁹⁴ These neighborhoods today “are hotter than the highest-rated neighborhoods by an average of almost 5 degrees.”¹⁹⁵

Figure 4 shows the “average air temperature of a city with 1 million or more people can be 1.8° to 5.4°F warmer on average and as much as 22°F hotter at night than surrounding areas because of the urban heat island effect.”¹⁹⁶

Figure 4. *A Diagram Showing How Much Impact the Type of Neighborhood (and thus the Lack of Tree Canopy) Can Make on the Late Afternoon Temperature (Left Side Fahrenheit, Right Side Celsius).*¹⁹⁷



For example, in San Francisco, a resource-neglected neighborhood like the Tenderloin District has only 2% tree coverage, while a well-

¹⁹³ *U.S. Residential Electricity Bills Increased 5% in 2022, After Adjusting for Inflation*, U.S. ENERGY INFO. ADMIN. (May 31, 2023), <https://www.eia.gov/todayinenergy/detail.php?id=56660> [https://perma.cc/RD2U-XYF8].

¹⁹⁴ Meg Anderson, *Racist Housing Practices from the 1930s Linked to Hotter Neighborhoods Today*, NAT'L PUB. RADIO (Jan. 14, 2020), <https://www.npr.org/2020/01/14/795961381/racist-housing-practices-from-the-1930s-linked-to-hotter-neighborhoods-today> [https://perma.cc/4FWZ-SXSV].

¹⁹⁵ *Id.*

¹⁹⁶ Elizabeth Foster, *Four Approaches to Reducing the Urban Heat Island Effect*, URB. LAND INST. MAG. (July 6, 2020), <https://urbanland.uli.org/sustainability/four-approaches-to-reducing-the-urban-heat-island-effect/> [https://perma.cc/35TV-WT9J] (citing Heat Island Group, LAWRENCE BERKELEY NAT'L LAB'Y (2019)).

¹⁹⁷ *Id.*

maintained neighborhood like Twin Peaks has 26% tree coverage.¹⁹⁸ Ironically, the Tenderloin needs the tree coverage more. The Tenderloin has a considerable houseless population. Leaving these individuals exposed to continuous sunlight during the expected, drastic heat waves could cause heat exhaustion. Consequently, a sudden spike in individuals with heat exhaustion could potentially burden the healthcare system during the summer months.

The Tenderloin and Twin Peaks neighborhoods are highlighted in the satellite image in Figure 5, where one can see much more greenspace in the wealthier Twin Peaks neighborhood.¹⁹⁹

Figure 5. *A Satellite Image of San Francisco, California, with Added Ovals Highlighting Tree Canopy in High-Coverage (Twin Peaks) and Low-Coverage (Tenderloin) Neighborhoods.*²⁰⁰



¹⁹⁸ Nami Sumida, *San Francisco Is Home to 669,000 Trees. This Satellite Data Shows Where They're Planted.*, S.F. CHRON. (Sept. 27, 2021, 4:00 AM), <https://www.sfchronicle.com/projects/2021/sf-tree-cover/> [https://perma.cc/PMJ4-SFMU].

¹⁹⁹ *Satellite Image of San Francisco, USA From Sentinel 2*, EOS DATA ANALYTICS, <https://eos.com/gallery/satellite-image-of-san-francisco-usa/> [https://perma.cc/9QN4-E5WS] (labels added).

²⁰⁰ *Id.*

For the technically inclined, the authors of an article on Portland housing use thermal imaging to show how different building types affect the heat island.²⁰¹

Fortunately, an overlay zone can be tailored to meet the needs of the urban heat island. The actual text of an overlay zone is very basic—for example,

Sec. 10-2.2.1801. Purpose.

The purpose of the overlay zoning district is to allow for additional control on an individual lot or a group of lots that will supersede the requirements of the underlying zone.

The overlay zoning classification will primarily be used for the following reasons:

- A. To allow for flexibility from the normal requirements of the underlying zone;
- B. To ensure the preservation of specific feature(s) subject to the site(s);
- C. To ensure the preservation of the character of the area in proximity to the subject site(s).

Sec. 10-2.2.1802. Regulations.

When the overlay zone is imposed, the City shall enact specific criteria and standards for the development of the lot or lots in question.²⁰²

There are several steps to creating a heat island overlay zone. A municipality should first identify heat island neighborhoods through temperature or satellite data. Then, a professional using the data should determine the percentage of tree coverage in affected neighborhoods. The city would then be ready to write the ordinance. An ordinance laying out a heat island overlay zone needs to define a heat island as containing less than a certain percentage of vegetative coverage or fluctuating by a certain number of degrees in the summer months; then it needs to require any new construction to contain 20% or 30% green space or 50% roof space until the desired percentage of vegetative coverage is met. Thus, the ordinance would require any development in that neighborhood to plant a certain surface area of trees and

²⁰¹ See Yasuyo Makido, et al., *Nature-Based Designs to Mitigate Urban Heat: The Efficacy of Green Infrastructure Treatments in Portland, Oregon*, 10 *ATMOSPHERE* 282 (2019), <https://www.mdpi.com/2073-4433/10/5/282/htm> [<https://perma.cc/43NB-UPF8>].

²⁰² WALNUT CREEK, CAL., MUN. CODE §§ 10-2.2.1801–02 (2023), <https://www.codepublishing.com/CA/WalnutCreek/html/WalnutCreek10/WalnutCreek1002B-18.html> [<https://perma.cc/HX7W-WLRG>].

shrubbery in sidewalks, medians, and setbacks. LEED standards go even further in correcting heat islands:

LEED suggests several simple measures to reduce solar heating in the summer and create cooler microclimates. First, reduce the amount of hardscape or impervious surface areas that can absorb heat. Second, put shading around all absorptive hardscape surfaces (parking lots, sidewalks, patios, and plazas) so that at least 50% is shaded at noon on a typical summer day. . . . Third, place 50% or more parking underground or under the building so there is less surface area to heat up from parking lots. Fourth, use highly reflective paving materials (gray or white concrete instead of asphalt) for a parking lot, so that more incoming solar radiation will be reflected back into space and not be absorbed. Fifth, use open-grid pavement system that would have vegetation growing inside the pavers so that there is less area to absorb heat from the sun.²⁰³

Also, “LEED requires a green roof to cover at least 50% of the roof surface and a cool roof to cover at least 75% or some combination of two approaches.”²⁰⁴

F. Action Items

Local governments may use several methods to increase greenspace:

- (1) Easements are effective tools for preserving pristine natural habitats within a development and, due to their perpetuity, may be more effective than land use credits or density offsets;
- (2) A Gap Analysis Project is an effective tool to evaluate the biodiversity of a landscape and ensure the most valuable habitats are being preserved;
- (3) Strategically planned wildlife corridors can be linked between neighborhoods to allow the preservation of larger migratory corridors;
- (4) The International Wildland-Urban Interface Code should be passed by local governments to prevent damage to forests from human-made fires;
- (5) Protected lands should be proactively managed by land trusts or government agencies to ensure conservation; and
- (6) Heat Islands are ideal neighborhoods on which to impose overlay zones on new development that require greater tree coverage.

²⁰³ YUDELSON, *supra* note 188, at 170–71.

²⁰⁴ *Id.*

IV ENERGY-EFFICIENT, MULTIFAMILY HOUSING

A. Policy Motivation, in Brief

Improvements in energy efficiency of materials and design conserve heat and reduce energy and water requirements. However, initial costs of innovative materials and inconsistencies in municipal requirements remain challenging for developers. Also, multifamily housing can conserve heating and reduce sprawl and encroachment on wildlife.

B. U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED)

The LEED standards in environmental design use a point scorecard to rate buildings on a rubric.²⁰⁵ For example, the Neighborhood Development Checklist assigns twenty-eight points for Smart Location & Linkage, including such factors as preferred location, access to quality transit, and site design for habitat or wetland and water body conservation. The checklist assigns forty-one points for Neighborhood Pattern & Design, including such factors as walkable streets, compact development, and housing types and affordability. The checklist assigns thirty-one points for Green Infrastructure & Buildings, including credits for certified green buildings, optimize[d] building energy performance, water use reduction, solar orientation, and wastewater management. Six points are assigned for Innovation & Design Process. Finally, four points are available for Regional Priority Credits. Developments that earn forty to forty-nine points are considered Certified, fifty to fifty-nine are Silver, sixty to seventy-nine are Gold, and over eighty are Platinum.²⁰⁶ Note the LEED standards reinforce the aforementioned principles of coordinated city planning, linkage of wild space, and wetlands conservation.

LEED certification goes hand-in-hand with the International Green Construction Code. The U.S. Green Building Council (USGBC) was formed in 1993 in Washington, D.C., to address growing concerns about sustainability in building.²⁰⁷ In 1998, the USGBC released the first LEED standards. The rating system has been updated several

²⁰⁵ Checklist: *LEED v4 for Neighborhood Development*, U.S. GREEN BLDG. COUNCIL (June 5, 2014), <https://www.usgbc.org/resources/leed-v4-neighborhood-development-checklist> [https://perma.cc/8NCA-EJPC] (click "Download" to see a checklist of LEED standards for neighborhood developments).

²⁰⁶ *Id.*

²⁰⁷ AMERICAN BAR ASS'N, *supra* note 40, at 6–7.

times, and “as of December 2008, 15,609 buildings have been registered under the LEED program.”²⁰⁸

The USGBC has published an “Ordinance to Establish and Maintain a LEED for Neighborhood Development Zone.”²⁰⁹ This model ordinance would allow municipalities to create a Neighborhood Development Overlay (NDO) zone that would in turn “accelerate the achievement of the jurisdiction’s sustainability, economic, and social goals, particularly: location-efficient growth and redevelopment; sensitive environmental resource protection; social equity and public health; energy efficiency and climate protection; water efficiency and resource protection; and increased employment, property values, and tax revenues resulting from green development.”²¹⁰ The ordinance requires certification and provides incentives to develop local code. The NDO map is key to defining the overlay zone, where “ND privileges” are conferred upon the properties therein. Cities may instead opt for a “floating zone” that requires an application process. (The overlay zone could require new subdivisions to be built to LEED standards without affecting older neighborhoods.)²¹¹

Creation of the NDO map involves identifying “which parcels meet the requirements of ND Smart Location and Linkage,” as well as identifying “the presence or absence of the environmental resources and buffers . . . including imperiled species and ecological communities, wetlands and water bodies, agricultural land, and floodplains.”²¹²

Unfortunately, the individual certification requirements may vary according to the local Planning Director’s discretion: “[T]he Director [shall/may] specify any ND rating system requirements that she/he determines to be unsuitable or impractical for [city/county], and that shall not be applied to covered projects.”²¹³ The ordinance may also specify which “types” of “projects” are covered by the ordinance. The ordinance covers five performance standards:

²⁰⁸ *Id.* at 7.

²⁰⁹ CRITERION PLANNERS, LEED-ND PLANNERS GUIDE & MODEL ORDINANCE 7–18 (2011), https://www.usgbc.org/sites/default/files/leednd_planners_guide_model_ordinance.pdf [<https://perma.cc/2PGJ-XR84>].

²¹⁰ *Id.* at 7.

²¹¹ *Id.* at 8.

²¹² *Id.* at 9.

²¹³ *Id.* at 11.

(1) Project occupancy characteristics (number of residents, tenants, and/or visitors); (2) Occupant travel to and from the project site by trip type, mode, and length; (3) Energy sources and consumption for project buildings, travel, and infrastructure; (4) Water sources and consumption for project building interior uses and exterior irrigation; and (5) Stormwater quantities discharged from the project site to the community stormwater system.²¹⁴

The ordinance specifies several incentives and facilitations that assist in implementation of the requirements: fee incentives, expedited permitting, bonus zoning (including building density/building height/subdivision parcels), financial assistance, technical assistance, public agency leadership on public lands, local designer training, and awards of recognition.

The Planning Director collects performance information according to the five standards listed above. There is an exemption process (for individual requirements), an appeals process, and a process for the enlargement of eligible areas and improvement of scoring potential.

In Oregon, an exception would be required for building codes that conflict with state statutes, as state regulations explicitly preempt local regulations.²¹⁵ However, Oregon's Residential Reach Code provides an option to increase energy efficiency.²¹⁶

C. International Green Construction Code

The International Green Construction Code (IgCC) “provides the design and construction industry with the single most effective way to deliver sustainable, resilient, high-performance buildings”²¹⁷ The IgCC contains a set of building codes for every category within construction, like plumbing or electricity, and can be adopted by municipalities and used by developers to help meet the USGBC's LEED standards.²¹⁸

²¹⁴ *Id.* at 15–16.

²¹⁵ OR. REV. STAT. § 455.040 (2022), https://www.oregonlegislature.gov/bills_laws/ors/ors455.html [<https://perma.cc/LQP9-R66Y>].

²¹⁶ *Oregon Residential Reach Code*, DEP'T OF CONSUMER & BUS. SERVS. (Aug. 6, 2021), <https://www.oregon.gov/bcd/codes-stand/Documents/2021-residential-reach-code.pdf> [<https://perma.cc/P4PC-SYM2>]. For an example of another Model Green Building Ordinance, see Florida Solar Energy Center, *Report of the Florida Green Building Workgroup to the Florida Building Commission*, UNIV. OF CENT. FLA. (Jan. 25, 2008), http://www.floridabuilding.org/fbc/workgroups/Workgroup_Greenbuildings/Green_Building_Ords.pdf [<https://perma.cc/99UB-G3H9>].

²¹⁷ *Overview of the International Green Construction Code*, INT'L. CODE COUNCIL (Oct. 2018), <https://www.iccsafe.org/products-and-services/i-codes/2018-i-codes/igcc/> [<https://perma.cc/6RFZ-2THW>].

²¹⁸ *Id.*

Typical energy efficiency requirements include reducing lighting consumption through timed and motion lights, maximal use of natural light and window space, better insulating the building, and improving and resealing the thermal envelope around the building.²¹⁹ Innovations in windows contain marks to prevent birds from crashing into them, which is a problem for biodiversity in large cities.²²⁰ Developers can also be encouraged to use carbon offsets.²²¹

The IgCC results from a “public/private collaboration that provides green model code requirements for jurisdictions to adopt,” thus intended to complement LEED certification.²²² Specifically, the International Code Council is a nonprofit that develops the IgCC to promote uniformity across jurisdictions and to reduce planning costs otherwise incurred by government bodies.²²³ The U.S. Green Building Council awards a certain amount of LEED credits for compliance with the IgCC.²²⁴

Certain legal issues arise when municipalities enforce green building standards such as home rule provisions, lack of enabling authority, or preemption by federal statute.²²⁵ However, municipal building codes have been consistently upheld by the Supreme Court of the United States.²²⁶ Also, in *Maguire v. Reardon*,²²⁷ the Supreme Court upheld a San Francisco ordinance used to demolish an additional building within a range of the first structure deemed unsafe by the fire code. Furthermore, the Supreme Court upheld a gasoline storage ordinance in *Pierce Oil Corp. v. City of Hope*.²²⁸ Thus, municipalities have the power to act now to require developers to use green building codes and LEED certification.

²¹⁹ *NYStretch Energy Code: 2020 Outreach, Training and Resources*, N.Y. STATE ENERGY RSCH. & DEV. AUTH. (July 2019), <https://www.nyserda.ny.gov/All-Programs/Energy-Code-Training/NYStretch-Energy-Code-2020> [<https://perma.cc/8DWM-DSZJ>] (click “Download NYStretch” to access “NYStretch Energy Code – 2020”).

²²⁰ *Bird Friendly Building Design & Construction Requirements Guidance Document: Local Law 15 of 2020*, NYC BLDGS. (Nov. 2020), https://www1.nyc.gov/assets/buildings/bldgs_bulletins/bird_friendly_guidance_document.pdf [<https://perma.cc/JD2X-F9UU>].

²²¹ AMERICAN BAR ASS’N, *supra* note 40, at 31.

²²² INT’L CODE COUNCIL, *supra* note 217.

²²³ *Id.*

²²⁴ *Id.*

²²⁵ AMERICAN BAR ASS’N, *supra* note 40, at 228.

²²⁶ *See* *Wilson v. Eureka City*, 173 U.S. 32 (1899).

²²⁷ *See* *Maguire v. Reardon*, 255 U.S. 271 (1921).

²²⁸ *Pierce Oil Corp. v. City of Hope*, 248 U.S. 498, 501 (1919).

Some scholars think developers will have to factor in carbon emissions of construction. In *Center for Biological Diversity v. National Highway Traffic Safety Admin.* in the Ninth Circuit, the CBD successfully challenged a rule promulgated by the NHTSA concerning fuel economy under the Energy Policy and Conservation Act of 1975.²²⁹ The Ninth Circuit struck down the rule for failing to account for greenhouse gas emissions through an environmental impact statement. This case could be interpreted to require greenhouse gas emission assessment from developers.²³⁰

Financing and insuring may be required to enable the transition to energy efficiency. However, funding, such as through property taxes, may be limited for some municipalities. Other ways the city can encourage developers are streamlined approvals, density bonuses, public funding, and fee waivers.²³¹

It is worth noting that many developing countries have a difficulty reducing consumption when limited funds are directed toward expanding the power grid. For example, the Peru Referential Plan for the Efficient Use of Energy, 2014–2025, projects energy demand over a decade for five sectors—transportation, industry, buildings, agriculture, and other.²³² The residential goals include “improvement of consumption habits and the selection of adequate electrical equipment and appliances, as well as the intense use of efficient architecture, in accordance with the climatic conditions of each region,” especially energy-saving lamps, improved kitchen stoves, and solar water heaters.²³³ However, the country is still expanding the electric grid. UK Trade & Investment states that “access to electricity [in Peru] has increased from 45% in 1990 to 80% in 2009.”²³⁴ Access

²²⁹ *Center for Biological Diversity v. National Highway Traffic Safety Admin.*, 538 F.3d 1172, 1198 (9th Cir. 2008).

²³⁰ AMERICAN BAR ASS'N, *supra* note 40, at 14.

²³¹ *Id.* at 222; see *We Build Earthships*, EARTHSHIP BIOTECHTURE, <https://earthship.com/build/#:~:text=It%20includes%20the%20Six%20Principles,the%20use%20of%20renewable%20energy> [<https://perma.cc/9N3Y-GW8S>] (last visited Oct. 30, 2023) (showing a simple but comprehensive design of a sustainable home); see *We Educate Building Professionals*, URB. GREEN COUNCIL, <https://www.urbangreencouncil.org/what-we-do/educating-building-professionals/> [<https://perma.cc/4D2P-YBA7>] (last visited Oct. 30, 2023) (offering a number of professional workshops on making buildings more energy efficient).

²³² *Follow-Up Peer Review on Energy Efficiency in Peru*, APEC ENERGY WORKING GRP. (Mar. 2020), https://aperc.or.jp/file/2020/4/7/Follow-Up_PREE_Peru.pdf [<https://perma.cc/85FH-PJKL>].

²³³ *Id.* at 23.

²³⁴ *Power Opportunities in Peru*, UK TRADE & INV. (2010), <https://s3.amazonaws.com/StagingContentBucket/pdf/20110322141900313.pdf>.

to electricity is relatively new for many Peruvians, who are now being asked to reduce consumption.²³⁵ Thus, the socioeconomic needs of a particular community should be taken into account when determining what is considered to be the standard of “energy-efficiency.”²³⁶

D. Action Items

There are several ways local governments can require energy-efficient buildings: (1) local governments have the burden and power to take the initiative to require builders to use LEED and IgCC standards; (2) developers may be required to calculate or offset carbon emissions in the future; (3) municipalities can incentivize developers to adopt more energy-efficient technology through streamlined approvals, density bonuses, public funding, and fee waivers; (4) developing nations need assistance to invest in new, more energy-efficient technologies.

CONCLUSION: COMPREHENSIVE CONSERVATION

This Note has shown that sustainable neighborhoods are attainable from a legal perspective. Ordinances put constraints on developers to set aside greenway or agriculture space and may have to be negotiated or limited to prevent takings issues. Ordinances that are specific, such as the ordinance requiring green roofs, may be more successful but may also be highly technical in nature and require engineering.

It is foreseeable that soon every new housing development will be required to set aside wild space, to host a community garden, to transition to energy-efficient homes, and possibly even to include sustainable utilities. In fact, these potential requirements are essential. In a postindustrial state of constant habitat encroachment and resource degradation, we can no longer afford to view nature as a distant frontier. Instead, humans must protect nature’s function as a surrounding fabric of ecosystem services that nurtures life itself, rather than a discrete bouquet of extractable assets. Greenspace should be the default, rather than the afterthought, of city planning.

Humanity must begin to view nature as a ubiquitous matrix of life-giving resources to be managed in perpetuity for the benefit of the

²³⁵ *Id.*

²³⁶ See also *Research Knowledge Base*, AM. PLANNING ASS’N (2023), <https://www.planning.org/knowledgebase/> [<https://perma.cc/L7SW-2NM8>] (providing additional tools for municipalities to implement green building standards).

public. What better way is there to preserve nature's capital than to preserve a macrocosm of biodiversity alongside each living space? Only then will humans have turned a perfect storm of resource mismanagement behaviors into a set of mutually reinforcing, sustainable practices in harmony with their surroundings. The cities that pioneer these tools will prove to be more successful.