# TEXAS ENVIRONMENTAL LAW JOURNAL

Vol. 56, No. 1 Spring 2026 Pages 1 to 162

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*Prepared through The University of Texas School of Law Publications Office*
*ISSN 0163-545x*
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*The University of Texas School of Law Texas Environmental Law Journal*
*Please cite as: TEX. ENV'T L.J.*

# Red Tape & Yellow Lines: How Euclidean Zoning Laws Escalate Climate Change & Undermine Resilience

By Austin Biehle

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## I. INTRODUCTION

Sundance Square in Fort Worth, Texas shines with string lights draped through the air, illuminating glittering fountains that dance on red brick pavers below. A century-old building flanking the square features a much-beloved mural of cattle and trail hands on horseback, memorializing the historic site as a segment of the famed Chisholm Trail. Tourists and locals alike gather to enjoy live music from local performers, while others stroll through the plaza on their way to a restaurant or shop. As the city's "civic living room,"[1] Sundance Square represents the heart of Fort Worth: a vibrant gathering place replete with local businesses, preserved historic buildings, and walkable charm.

Sundance Square is also environmentally sustainable and resilient, coupling community development with achievements in heat reduction, surface permeation, and carbon sequestration, all of which help combat the ills of climate change.[2] Trees line the adjacent street, providing heat-reducing shade while functioning as living carbon sinks.[3] Permeable surfaces and drains allow for efficient runoff processing.[4] Walkability reduces the need to drive, sparing the environment unnecessary greenhouse gas emissions. Such qualities combine to make the square a valuable asset in the city's ability to mitigate and

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1 *Sundance Square Plaza,* LANDSCAPE PERFORMANCE SERIES (2014), https://www.landscapeperformance.org/case-study-briefs/sundance-square-plaza [https://perma.cc/3C5P-3RYC].

2 *Id.*

3 *Id.*

4 *Id.*

adapt to climate challenges, fostering resilience in the face of rapid change.

But perhaps the most remarkable quality of Sundance Square lies in its not-so-distant past. Until 2013, Sundance Square was two parking lots. Located at 400 Main Street, the lots swallowed two entire blocks in the heart of the city. The lots were built in a district originally zoned as Business/Light Industrial, in accordance with Fort Worth's Euclidean zoning laws.[5] While the original justification for the two lots now home to Sundance Square is uncertain,[6] if 400 Main Street were still zoned as Business/Light Industrial today, Fort Worth's Euclidean zoning laws would demand that comparable parking lots occupy the city's center, regardless of whether the spaces were truly necessary for the surrounding buildings.[7] Minimum parking requirements, aptly criticized for relying on questionable and even arbitrary standards,[8] are just one subtle yet impactful feature of Euclidean zoning laws, one that seems insignificant but can have greatly disproportionate impacts. In their present state, such parking minimums monopolize extensive quantities of land, preventing any other use.[9] For development under these requirements, valuable factors like sustainability and community needs are simply not considered. If Fort Worth had allowed its original zoning standards to remain in Sundance Square's district, then

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5 FORT WORTH, TX, CODE OF ORDINANCES APPENDIX A (stating that the first comprehensive zoning ordinance for the City of Fort Worth was adopted in 1940 and included maps showing the various zoning districts); *see Fort Worth, Texas City Plan & Zoning Commissions Proposed Zoning Ordinance*, FORT WORTH, TEXAS (1940), Courtesy of the Fort Worth History Center, Fort Worth Public Library (showing that 400 Main Street was originally zoned Business/Light Industrial) [https://perma.cc/SRY5-AQTZ].

6 FORT WORTH OPEN RECS. CTR, PUB. INFO. REQUEST E002304-013125 [hereinafter PUB. INFO. REQUEST] (stating that "there are no responsive documents" available regarding the original justification for the parking lots at 400 Main Street) [https://perma.cc/5N4Q-JB43].

7 FORT WORTH, TX, CODE OF ORDINANCES § 4.1000 (2025) (stating "off-street parking and loading" requirements for districts zoned Light Industrial).

8 Nathaniel Meyersohn, *This Little-Known Rule Shapes Parking in America. Cities are Reversing It.*, CNN (May 5, 2023, 9:00 AM), https://www.cnn.com/2023/05/20/business/parking-minimums-cars-transportation-urban-planning/index.html [https://perma.cc/BPL8-RBJW].

9 *Id.*

where there is a proud community center at the heart of the city, there might have been nothing.

Instead, after an official zoning change in 2013, the city reclaimed the two blocks of parking, transforming them into the vibrant, sustainable community center present today.[10] The district housing Sundance Square is now zoned "H" for "Mixed-Use," allowing for a flexible blend of uses.[11] This newfound flexibility promotes functional, walkable design, and perhaps most importantly, eliminates strict minimum parking requirements.[12]

While Sundance Square represents an encouraging development in the field of municipal zoning law, its transition to mixed-use is the exception, not the rule. Unfortunately, restrictive Euclidean zoning laws—like those imposing parking minimums in Fort Worth—are far from unique. Euclidean zoning laws are ubiquitous throughout the United States, present in virtually every municipality and perpetuated with "near-religious fervor."[13] Beyond setting minimum parking requirements, the inherent structure of these laws causes a host of issues with wide-reaching implications. By definition, Euclidean zoning laws separate land uses into categorical classifications, isolating residential, commercial, and industrial uses from one another.[14] By doing so, these laws dramatically increase the distances between residential areas (where people live) and commercial areas (where people work, shop, and socialize), resulting in sprawling urban road networks that

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10 FORT WORTH ZONING MAP CHANGE ZC-13-006 [https://perma.cc/EPT8-5G5A].

11 PUB INFO. REQUEST, *supra* note 6 (stating that 400 Main Street is zoned "'H' Mixed-Use - Central Business District" as of Feb. 10, 2025).

12 FORT WORTH, TX, CODE OF ORDINANCES art. 2 § 6.200 (2025) (stating district "H" mixed-use zones are exempt from parking requirements).

13 Nicolas M. Kublicki, *Innovative Solutions to Euclidean Sprawl*, 31 ENV'T L. REP. 11001, 11002 (2001).

14 *See* Eliza Hall, *Divide and Sprawl, Decline and Fall: A Comparative Critique of Euclidean Zoning*, 68 U. PITT. L. REV. 915, 923 (2007).

entrench daily dependence on car travel.[15]

With this excessive road construction and car dependency come a host of environmental problems, culminating in one of humanity's single greatest contributions to climate change.[16] Instead of walking or cycling for transportation, people are practically forced to drive, resulting in the emission of greenhouse gases for virtually every errand.[17] Additionally, green spaces that serve as temperature-regulating carbon sinks are lost to roads and parking lots, paved over with concrete that traps heat from the sun.[18] This trapped heat increases the energy consumption of nearby buildings.[19] Since water cannot penetrate these impermeable concrete surfaces, runoff and flood susceptibility increase significantly.[20] When multiplied across a nationwide scale, these factors pose disastrous consequences for the planet and all who inhabit it.

Communities faced with the challenge of mitigating emissions and adapting to climate change cannot afford to waste the valuable resources, energy, and land necessary to help in this effort. Euclidean zoning laws' wasteful effects thus render communities vulnerable and impaired, preventing them from adapting land for more dynamic, flexible uses that can safeguard against climate change. Thus, reforming Euclidean zoning laws is necessary to protect communities and empower them to effectively address the escalating threats of a changing climate.

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15 *Id.* at 928.
16 *Id.* at 933.
17 *Id.* at 928.
18 *What Are Heat Islands?*, ENV'T PROT. AGENCY, https://www.epa.gov/heatislands/what-are-heat-islands (last updated Sept. 2, 2025) [https://perma.cc/C9TX-G3TW].
19 *Heat Island Impacts*, ENV'T PROT. AGENCY, https://19january2017snapshot.epa.gov/heat-islands/heat-island-impacts_.html [https://perma.cc/FH56-B6UG].
20 *Impervious Surfaces and Flooding*, U.S. Geological Surv., https://www.usgs.gov/special-topics/water-science-school/science/impervious-surfaces-and-flooding [https://perma.cc/BB3X-UPE3] (last visited Nov. 9, 2025).

This Note proposes mixed-use zoning, the antithesis of Euclidean zoning, as the core component of a multifaceted alternative framework designed to address the climate-related ills of Euclidean zoning. When combined with the flexibility offered by cluster and floating zoning, and the technological adaptation incentivized by performance standards, mixed-use zoning presents a vastly more sustainable alternative, combatting climate change and championing resilience.

Section II of this Note presents the impetus for zoning reform—the rising threat of climate disaster—along with the accompanying rise of resilience strategies. Section III examines the legal origins of Euclidean zoning's dominance within American municipal governance and considers how the legal landscape creates challenges for reform. Section IV analyzes the myriad ways Euclidean zoning perpetuates urban sprawl and its many dire implications for climate change and resilience. Section V delves into alternative zoning approaches, contemplating the purposes and functions of mixed-use, cluster, and floating zoning, along with performance standards for surface permeability. Section VI uses these alternatives to construct a robust climate-resilient zoning framework, forming a multifaceted approach that champions sustainability and resilience. Section VII offers insight into the legal, political, and psychological hurdles to overcome in the fight for reform.

## II. CLIMATE CHANGE: THE CRISIS AND THE EMERGENCE OF RESILIENCE

Over the past several decades, climate change has emerged as one of the leading issues of the modern era, with far-reaching implications for almost every aspect of human

life.[21] Rapid industrialization in the mid-19th century and the automobile's widespread adoption in the 20th century have led to a significant increase in greenhouse gas emissions, in turn fueling climate change.[22] The dramatic increase in emissions and subsequent global warming have led to an increased susceptibility to flooding, excessive heat, severe weather events, and other hazards.[23]

For example, sea levels are rising globally, with coastal cities projected to experience an estimated forty-nine inches of rise by the 2080s.[24] Temperatures are also rising, with some projections estimating an increase of up to eight degrees Celsius by 2100.[25] Areas around the world have already experienced excessive heat, with the past several summers getting progressively hotter.[26] As the climate crisis continues to intensify, decisive and widespread action is more important than ever to reduce its impacts.

To combat this growing crisis, communities throughout the United States must adopt climate strategies. Collectively referred to as climate resilience, these strategies mitigate daily activities' impacts on climate change and facilitate adaptation to changing circumstances.[27] Examples of climate resilience include initiatives reducing the transport of agricultural goods by producing and buying local, protecting green spaces that function

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21 Conference of the Parties' Twenty-First Session, *U.N. Framework Convention on Climate Change, Paris Agreement*, U.N. DOC. FCCC/CP/2015/L.9/REV.1 (Dec. 12, 2015).

22 Hall, *supra* note 14, at 928.

23 Shelby D. Green, *Zoning Neighborhoods for Resilience: Drivers, Tools and Impacts*, 28 FORDHAM ENV'T L. REV. 41, 44 (2016).

24 ROSENZWEIG ET AL., URBAN CLIMATE CHANGE RESEARCH NETWORK, ARC3.2 SUMMARY FOR CITY LEADERS — CLIMATE CHANGE AND CITIES (2nd ed. 2015).

25 *Id.*

26 Dwayne Brown et al., *NASA, NOAA Analyses Reveal Record-Shattering Global Warm Temperatures in 2015*, NASA (Jan. 20, 2016), http://www.nasa.gov/press-release/nasa-noaa-analyses-reveal-record-shattering-global-warm-temperatures-in-2015 [http://perma.cc/DAW6-4LFG].

27 *See* Green, *supra* note 23, at 60.

as carbon sinks, and conserving resources.[28]

To create the greatest impact, local resilience efforts require the support of local city governments around the country.[29] However, Euclidean zoning laws, a mainstay of municipal law in the United States, have created substantial barriers to climate change mitigation. These laws impose draconian restrictions that hinder the flexibility necessary to foster climate resilience.[30] At a systemic level, Euclidean zoning laws can (and often do) perpetuate wasteful and inefficient resource use. Notably, this directly leads to urban sprawl and car dependency, developments that significantly contribute to climate change.[31] Thus, not only are these laws unproductive, but they are also *counterproductive*, actively stifling adaptation efforts while simultaneously ensuring that waste continues. As the former Massachusetts Assistant Secretary of Environmental Affairs asserted: "[t]here is no other area in environmental law" where the regulatory program is "not just indifferent, but actively hostile to the best thinking in the field."[32] The present analysis focuses on the disproportionate impact of municipal Euclidean zoning laws on catalyzing climate change and inhibiting climate resilience, offering an evidence-based solution framework for reform.

## III. STATE OF THE LAW: HOW EUCLIDEAN ZONING BECAME PERVASIVE IN THE UNITED STATES

As a primary cause of urban sprawl's proliferation in the United States, Euclidean

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28 *Climate Resilience Portal*, CENTER FOR CLIMATE AND ENERGY SOLUTIONS, https://www.c2es.org/-content/climate-resilience-overview/ [https://perma.cc/2TS4-FB5Y] (last visited Nov. 9, 2025).

29 *See* Green, *supra* note 23, at 60.

30 Nicole Stelle Garnett, *Ordering (And Order In) the City*, 57 STAN. L. REV. 1, 5 (2004); *see also*, Jay Wickersham, *Jane Jacob's Critique of Zoning: From* Euclid *to Portland and Beyond*, 28 B.C. ENV'T. AFF. L. REV. 547, 548 (2001) (stating that Euclidean zoning has been "overly rigid" in "dividing our cities and towns into uniform, low-density districts, each dedicated to a single primary use").

31 *See generally* Hall, *supra* note 14.

32 Wickersham, *supra* note 30, at 554.

zoning laws sit at the heart of land use, pollution, urban heat retention and flooding susceptibility issues, even impacting climate resilience efforts. Considering Euclidean zoning laws' myriad negative implications, one might wonder why these laws are so widely and indiscriminately used. If Euclidean zoning laws are so detrimental to the environment, then how did they become the standard for municipal land use in the United States? Why do they determine the built environments millions of Americans must navigate on a daily basis? This section explores the case law behind these questions, beginning with the Supreme Court case that endorsed standardized zoning by categorical type.

The origins of Euclidean zoning can be traced to its namesake, the landmark Supreme Court case *Euclid v. Ambler Realty Co.*[33] In *Euclid,* the plaintiff sued a municipal corporation that sought to enforce a zoning ordinance that the plaintiff claimed would limit his property rights under the Fourteenth Amendment's Due Process and Equal Protection Clauses.[34] The Court reversed the lower court's opinion, holding that local governments had the constitutional right to restrict land usage by dividing land into zones in which only certain uses are permitted.[35] According to the Court, this right was a natural extension of local governments' police power to protect the safety, health, and welfare of its people.[36] This original goal, however, is long lost. Current Euclidean zoning laws throughout much of the United States promote wasteful practices,[37] rather than protect public health; instead, Euclidean zoning endangers public health by preventing measures to adapt to and mitigate

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33 272 U.S. 365 (1926).
34 *Id.* at 384.
35 *Id.* at 397.
36 *Id.*
37 Rachael Watsky, *The Problems with Euclidean Zoning*, BOS. UNIV. DOME, https://sites.bu.edu/-dome/2018/07/19/the-problems-with-euclidean-zoning/ [https://perma.cc/ZL9U-WYVM].

the harmful health effects of climate change.

Following *Euclid*, so-called Euclidean zoning rapidly became the norm. American cities throughout the country began dividing themselves into distinct zones: residential, commercial, and industrial.[38] Even villages and small towns began adopting these zoning laws, making them a truly pervasive feature of the American landscape.[39] Despite varying levels of public backlash to these changes as early as the late 1950s,[40] municipalities across the nation leveraged their newly reinforced police powers to ensure myriad construction projects were regimented according to strict zoning plans.[41] Thus, a century after *Euclid*, Euclidean zoning has become and remained the status quo, despite its inefficiency and restrictive qualities.

## IV. PREVENTING PROGRESS: EUCLIDEAN ZONING AS A CATALYST OF CLIMATE CHANGE AND AN INHIBITOR OF CLIMATE RESILIENCE

As previously discussed, Euclidean zoning laws emerged in the United States in the early twentieth century, largely in response to a rapidly growing industrial landscape, and have since become ubiquitous.[42] Originally intended as a public health measure,[43] these zoning laws divided land use into three separate purposes: industrial, residential, and commercial. This division ensured that the public, safely housed in residential areas, was protected from exposure to dangerous emissions from factories and businesses located in

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38 Andres Duany & Emily Talen, *Making the Good Easy: The Smart Code Alternative*, 29 FORDHAM URB. L.J. 1445, 1451 (2002).

39 Peter Bajurny, *A Primer on Zoning Codes: The Basics*, STREETS MN, https://streets.mn/2016/03/25/a-primer-on-zoning-the-basics/ [https://perma.cc/WQB7-7WYQ] (stating that Euclidean zoning is present in "nearly every city, village, or town in the United States" as of 2016).

40 *See generally*, Jane Jacobs, *Downtown Is For People, reprinted in* THE EDITORS OF FORTUNE, THE EXPLODING METROPOLIS 157 (1958).

41 *See* Watsky, *supra* note 37.

42 *See generally* Duany & Talen, *supra* note 38.

43 Joseph Schilling & Leslie S. Linton, *The Public Health Roots of Zoning*, 28 AM. J. PREVENTATIVE MED. 96, 96 (2005).

industrial and commercial areas.[44]

As industrialization and its corresponding pollution have grown exponentially in the past century, protecting human and community health remains a critical concern, especially in light of the unique threats posed by the rapidly changing climate.[45] While Euclidean zoning initially benefited public health, having some positive impacts, its role in creating pollution has undermined its original goal, and its proliferation across the country has only created more pollution and exacerbated climate change—perhaps the biggest public health threat.[46]

While Euclidean zoning banished some hazards from the public sphere, it also banished the resources necessary to survive. By dividing land uses into distinct zones, Euclidean zoning increases distances between residential areas, where people live, and commercial areas, which house necessities like food and goods.[47] These increased, sprawling distances typically require car travel to navigate, resulting in car dependency and excessive road construction.[48] The unintended consequence of increased car travel undermines Euclidean zoning's original purpose as a public health measure, dramatically increasing pollution like greenhouse gas emissions in the very residential areas it originally sought to protect.[49] Moreover, pollution is not Euclidean zoning's sole contribution to

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44 Watsky, *supra* note 37.

45 *Id.* (stating that "[Euclidean zoning] can be helpful, as it enforces the separation of industrial land uses from residential land uses and can protect against pollution risks").

46 *See generally* Hall, *supra* note 14.

47 *Id.* at 933.

48 *Id.*

49 HOWARD FRUMKIN ET AL., URBAN SPRAWL AND PUBLIC HEALTH: DESIGNING, PLANNING, AND BUILDING FOR HEALTHY COMMUNITIES 44, 65 (2004) (stating that ozone, a greenhouse gas resulting from vehicle emissions, is found in significantly higher concentrations in areas shaped by urban sprawl (lower density residential areas) than those that are not (higher density residential areas). These vehicle emissions "degrade[] air quality" and "threaten health").

deleterious health impacts. The decrease in physical activity associated with increased car travel also harms public health by worsening the nationwide obesity epidemic.[50] Some scholars have also attributed ailments like diabetes, asthma, metabolic syndrome, social isolation, and depression to the effects of Euclidean zoning.[51]

Since Euclidean zoning also sets minimum house lot and parking lot sizes, it dramatically increases buildings' footprints, contributing to urban sprawl and excessive concrete usage.[52] These factors further contribute to pollution. Consequently, they also contribute to climate change. As a primary culprit of urban sprawl, Euclidean zoning increases greenhouse gas emissions,[53] heat retention,[54] impermeable surfaces,[55] and wasteful land usage.[56] These results directly catalyze climate change by contributing to increasing carbon dioxide ($CO_2$) levels, exacerbating the Urban Heat Island Effect,[57] increasing susceptibility to flooding, and wasting energy.[58]

### A. EUCLIDEAN ZONING PROMOTES AND PERPETUATES URBAN SPRAWL

To fully express the magnitude of Euclidean zoning's implications for both climate change and climate resilience, one must understand its most fundamental impact: urban sprawl. Euclidean zoning's role in promoting and perpetuating urban sprawl represents its greatest contribution to climate change, as virtually all the ways Euclidean zoning

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50 JOEL S. HIRSCHHORN, SPRAWL KILLS: HOW BLANDBURBS STEAL YOUR TIME, HEALTH, AND MONEY 179, 187 (2005).
51 *Id.* at 228.
52 Watsky, *supra* note 37.
53 *Id.*
54 Rosenweig et al., *supra* note 24.
55 Watsky, *supra* note 37.
56 *Id.*
57 Halle Parker, *If You Live in New Orleans, You Probably Live in a "Heat Island," Report Says*, WWNO https://www.wwno.org/coastal-desk/2023-07-28/if-you-live-in-new-orleans-you-probably-live-in-a-heat-island-report-says [https://perma.cc/9E6V-KT64] (stating that a heat island is an area with excessive concrete that absorbs and retains sunlight, warming the surrounding area).
58 Rosenweig et al., *supra* note 24.

adversely impacts the environment originate from its connection to sprawl. Urban sprawl is characterized by "low-density development that disperses [a] population over the *widest possible area*, with rigidly separated functions [that are] connected by limited access roadways."[59] In other words, sprawl occurs when land is treated like an infinite resource. Rather than carefully conserve land, sprawl spreads development across an impractically vast area, and then erects road networks as the only means of travel. While the United States contains a vast amount of land, it must be utilized to its fullest potential to appropriately address climate change and create climate resilient communities. Sprawl's wasteful approach to land use is incompatible with these goals, and considering how endemic sprawl is in the United States, poses a serious threat to progress. Understanding how Euclidean zoning laws cause sprawl provides the insight necessary to reform these laws and reverse their damage.

For example, the Atlanta metropolitan area provides one of the starkest illustrations of how Euclidean zoning laws directly cause urban sprawl. In 1970, metropolitan Atlanta was densely populated, occupying only 490 square miles.[60] Over the next forty years, however, the city began expanding urban development outwards, separating land by uses in accordance with its Euclidean zoning laws.[61] As a result, metropolitan Atlanta swelled to a staggering 5,268 square miles by 2010.[62] Though its population grew to three times its size in forty years, the urbanized area expanded over *ten times* in size,[63] making Atlanta

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59 ANTHONY FLINT, THIS LAND: THE BATTLE OVER SPRAWL AND THE FUTURE OF AMERICA, 47 (2006) (emphasis added).

60 Josh Halsey, *Metro Atlanta: Urban Sprawl*, ARCGIS STORYMAPS (Dec. 7, 2020), https://storymaps.arcgis.com/stories/b7006dac3c4c468b835ba790ec5fadc8 [https://perma.cc/37RG-LVTL].

61 *See id.*

62 *Id.*

63 *Id.*

the "least densely populated metropolitan area in the United States."[64] Atlanta's uncontained sprawl is now causing some of the "most significant and widespread" environmental impacts in the nation, including increased air pollution, water pollution, heat, and loss of green space.[65]

Atlanta is by no means the only city in America to experience sprawl because of Euclidean zoning laws. Other notable examples include Chicago, Kansas City, and Baltimore.[66] Between 1970 and 1990, the populations of metropolitan Chicago, Kansas City, and Baltimore grew by only 1%, 16%, and 20%, respectively, yet their geographic footprint grew by 24%, 55%, and 91%.[67] In other words, the rate of these cities' geographic expansion was utterly disproportionate to their population growth, resulting in far greater land use than necessary. Other examples are Detroit and Pittsburgh, which grew approximately 30% in geographic size even as their populations *declined.*[68] As these examples attest, sprawl is a natural byproduct of categorical land designation because it requires increasing the distance between all of the places essential to a functioning urban area.[69] Thus, Euclidean zoning provides the very template for sprawl, serving as the structural basis for implementing wasteful urban development practices.

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64 James E. Kundell & Margaret Myszewski, *Urban Sprawl*, NEW GEORGIA ENCYCLOPEDIA (June 8, 2017), https://www.georgiaencyclopedia.org/articles/arts-culture/urban-sprawl/ [https://perma.cc/7QNE-C6U4].

65 *Id.*

66 John P. Rafferty, *Urban Sprawl*, ENCYCLOPEDIA BRITANNICA, https://www.britannica.com/topic/urban-sprawl [https://perma.cc/73P2-HWVX] (Mar. 22, 2024).

67 *Id.*

68 *Id.*

69 Wickersham, *supra* note 30, at 557 (stating that "Euclidean zoning is one of the great generators of suburban sprawl, with all of its environmental, economic, and social costs"). *See generally* William H. Whyte, Jr., *Are Cities Un-American?*, *reprinted in* THE EDITORS OF FORTUNE, THE EXPLODING METROPOLIS 23 (1958).

Despite receiving criticism as early as 1958,[70] Euclidean zoning-induced sprawl has continued unabated, causing myriad negative environmental impacts. The sheer scale of sprawl in the United States amplifies these effects, potentially creating disastrous consequences. With a rapidly warming planet at stake, it is essential to understand the ways Euclidean zoning contributes to urban sprawl and destabilizes the environment. The following sections analyze Euclidean zoning's central contributions to urban sprawl and how they lead to inefficient land use and car dependency, which spur climate change and inhibit effective climate resilience efforts.

### B. Euclidean Zoning's Contributions to Urban Sprawl Catalyze Climate Change

By mandating parking minimums and prioritizing single-family housing, Euclidean zoning creates sprawl that uses land inefficiently and stimulates car dependency, resulting in myriad detrimental implications for the climate. While Euclidean zoning "appears to be value-neutral, it actually favors large, free-standing buildings, surrounded by parking."[71] For example, Euclidean zoning laws typically set a required parking ratio for every building based on its specific use and square footage, expressed per every 1,000 square feet of property.[72] Though originally intended to ameliorate insufficient parking in the early 1900s,[73] these mandates have contributed to a staggering overabundance of parking spaces.[74] Largely due to these mandates, approximately two billion parking spaces exist in

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70 *See generally* Jacobs, *supra* note 40.
71 Wickersham, *supra* note 30, at 558.
72 JANOVER, *Parking Ratio in Commercial Real Estate*, https://www.commercialrealestate.loans/-commercial-real-estate-glossary/parking-ratio/ [https://perma.cc/R4P2-XAZT] (last visited Mar. 8, 2025).
73 Meyersohn, *supra* note 8.
74 *Id.*

the United States, "enough to pave over the entire state of Connecticut."[75] This means there are several times more parking spots than cars, with up to "seven spots for every registered vehicle."[76] Such remarkable excess, extending beyond the literal capacity for use, is a waste of resources and land. Rather than utilizing that land for housing, businesses, public resources, or any other useful purpose, the land occupied by these excess parking spaces will simply sit vacant, contributing only to urban sprawl.

These parking minimums are not just problematic—they can also be arbitrary. Though parking minimums often have some ostensibly rational basis for their existence, they also often do not. The town of Woodbury, Georgia, with a population of only 905, has "dozens of specific mandates," including a mandate of five parking spaces per helicopter landing pad.[77] The city of SeaTac, Washington, requires "one parking spot at butterfly and moth breeding facilities for every 150 square feet of office or retail space."[78] But arbitrary standards are not limited to small towns and cities. They also appear in major metropolitan areas. Notably, Dallas "requires one parking space for every million gallons of capacity at a sewage treatment plant, but two parking spaces for a water treatment plant."[79] These puzzling examples further underscore the poor justification for using parking minimums, raising questions as to why they are still in use across the country.

By blanketing land in concrete, parking minimums directly contribute to climate change by retaining excess heat and driving energy consumption. Urbanized areas

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75 *Id.*

76 Robert Ferris, *How the $8 Billion Parking Industry is Evolving to Stay Alive*, CNBC (May 6, 2023), https://www.cnbc.com/2023/05/06/how-the-8-billion-parking-industry-is-evolving-to-stay-alive-.html [https://perma.cc/7P63-U84B].

77 Meyersohn, *supra* note 8.

78 *Id.*

79 *Id.*

experience increased heat due primarily to concrete, which absorbs and re-emits heat from the sun.[80] Consequently, urban temperatures can be up to *seven degrees higher* than outlying areas that have less concrete.[81] This phenomenon is known as the Urban Heat Island Effect.[82] Parking minimums can contribute to this effect by covering areas around houses and businesses with unnecessary concrete. As the climate continues to warm, excess heat emitted by concrete can exacerbate the already high temperatures, increasing the risk of heat-related illnesses.[83] Additionally, higher temperatures increase electricity demand for air conditioning by up to nine percent for every two degrees Fahrenheit increase.[84] Because electricity companies usually rely on fossil fuel power plants to meet this demand, the Urban Heat Island Effect results in increased greenhouse gas emissions, directly contributing to climate change.[85] Thus, parking minimums and other sources of excessive concrete usage will require reform to mitigate further contributions to climate change.

Additionally, unlike soil or vegetation, concrete is impermeable, meaning it cannot absorb water.[86] Excessive concrete usage thus increases runoff, making communities more susceptible to climate-related flooding. When rain falls, the water runs off the concrete and into gutters or other water management systems, draining into nearby streams.[87] While

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80 ENV'T PROT. AGENCY, *supra* note 18.

81 *Learn About Heat Island Effects*, ENV'T PROT. AGENCY, https://www.epa.gov/heatislands/learn-about-heat-island-effects [https://perma.cc/9EVS-J8FR] (Apr. 2, 2025).

82 OFF. OF AIR & RADIATION, ENV'T PROT. AGENCY, *Heat Island Effect Glossary*, https://sor.epa.gov/-sor_internet/registry/termreg/searchandretrieve/glossariesandkeywordlists/search.do?details=&vocabName=Heat%20Island%20Effect%20Glossary&filterTerm=urban%20heat%20island%20effect [https://perma.cc/UPN5-QNFS] (Feb. 9, 2009).

83 ENV'T PROT. AGENCY, *supra* note 19.

84 *Id.*

85 *Id.*

86 Rebecca Pineo, *Permeable vs. Impermeable Surfaces*, UNIV. DEL., https://www.udel.edu/canr/cooperative-extension/fact-sheets/permeable-impermeable-surfaces/ [https://perma.cc/EC8N-F7TE] (Oct. 2024).

87 U.S. Geological Surv., *supra* note 20.

concrete-covered areas can manage small amounts of water, they are not nearly as effective at water management as areas with permeable surfaces, which can absorb great quantities of water and thereby divert much of it from local streams.[88] Consequently, when rain falls, concrete-covered areas flood much quicker than areas with permeable surfaces because their streams' water levels rise at a much quicker rate.[89] As climate change intensifies, extreme weather events like storms and hurricanes will continue to become "more frequent and more intense."[90] With this in mind, communities with excessive concrete will likely be even more susceptible to flooding during such events. Therefore, it is in communities' best interests to reduce the amount of concrete in their area. Reforming Euclidean zoning laws to remove parking minimums will contribute greatly toward that goal.

In accordance with Euclidean zoning's preference for "free-standing buildings,"[91] such laws prioritize residential zoning with single-family housing, creating sprawling expanses of poorly utilized space. Residential zoning lies at the very root of car-dependent infrastructure. This type of zoning requires that the residential areas where people live are strictly separated from everything else, including shops, restaurants, hospitals, and places of worship, connected only by "limited access roadways."[92] By increasing the distance between people and the daily goods and services necessary for life, people become almost entirely reliant on car travel.[93] Because roads are necessary to connect people to these distant resources, more roads are built, resulting in abundant concrete and all its

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88 *Id.*
89 *Id.*
90 *Extreme Weather and Climate Change*, NAT'L AERONAUTICS & SPACE ADMIN. (Oct. 23, 2024), https://science.nasa.gov/climate-change/extreme-weather/ [perma.cc/WNG5-G5K7].
91 Wickersham, *supra* note 30 at 558.
92 FLINT, *supra* note 59 at 47.
93 *Id.*

aforementioned ills: runoff, flooding, the Urban Heat Island Effect, and increased energy demand.

Additionally, increased travel distances dramatically increase greenhouse gas emissions because people must drive to accomplish virtually any task outside of the home. Evidencing this increased reliance on passenger car travel, the number of miles driven per capita between 1969 and 1990 grew by seventy-two percent in the United States, despite a population increase of only twenty-one percent.[94] In 2014, the largest source of transportation-related greenhouse gas emissions in the United States came from passenger vehicles, including cars, SUVs, pickup trucks, and minivans, accounting for over half of the emissions from the transportation sector.[95] Considering that the transportation sector is the second largest contributor of greenhouse gas emissions,[96] passenger car travel is undeniably a substantial contributor to climate change. Euclidean zoning's requirement of isolating residences will only ensure that does not change.

Most residential zoning in the United States is reserved strictly for single-family housing.[97] In these zones, no other residential structure, not even a duplex or a row house, is permitted. This prioritization of single-family housing is perhaps unsurprising, given that the *Euclid* Court voiced undisguised contempt for the intermingling of single-family housing and alternative housing arrangements, describing the latter as a "mere parasite"

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94 Anne Maurer, *Smart Growth Principles and the Fair Housing Act: An Examination of the Loudoun County Revised General Plan*, 13 J. AFFORDABLE HOUS. & CMTY. DEV. L. 239, 241 n.31 (2004) (citing David J. Cieslewicz, *The Environmental Impacts of Sprawl, in* URBAN SPRAWL: CAUSES, CONSEQUENCES & POL'Y RESPONSES 26 (Gregory D. Squires ed., 2002)).

95 ENV'T PROT. AGENCY, *Sources of Greenhouse Gas Emissions*, https://climatechange.chicago.gov/-ghgemissions/sources-greenhouse-gas-emissions [perma.cc/SM2S-ZQ4P] (last visited Mar. 8, 2025).

96 *Id.*

97 *See* Michael Manville et al., *It's Time to End Single Family Zoning*, 86:1 J. Am. Planning Ass'n 106, 107 (2019).

that diminished a district's "residential character."[98] While the single-family home has long enjoyed this protected status, often ensconced in the "American Dream,"[99] the reality is that single-family housing is not a one-size-fits-all solution. Many people do not need the extra space provided by a detached single-family house. However, since virtually all the land zoned for residential use restricts development to single-family homes, buyers often have few alternatives. Thus, buyers often buy much more house than they need, as evidenced by the decrease in residents in the average American household.[100] Considering that single-family houses have also dramatically inflated in size over the past several decades, the United States is now replete with "oversized, under-occupied dwellings."[101] The resulting implications for energy consumption are extensive: people are consuming more energy—often produced by fossil fuel power plants—to light and air condition excess space.[102] Thus, single-family residential zoning directly exacerbates climate change by encouraging blatant energy waste and increasing greenhouse gas emissions.

In addition to wasting energy, single-family residential zoning also wastes land. These exclusively single-family residential zones, often described as "R1" zoning,[103] also set minimum lot sizes and setbacks for each house, guaranteeing a large ring of vacant space surrounding each newly-built house.[104] For example, R1 in Minneapolis may have a minimum lot size of 5,000 square feet, while R1 in an outer-ring suburb would require a

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98 Euclid v. Ambler Realty Co., 272 U.S. 365, 394 (1926).
99 Manville et al., *supra* note 97, at 109.
100 DAVID OWEN, GREEN METROPOLIS: WHY LIVING SMALLER, LIVING CLOSER, AND DRIVING LESS ARE THE KEYS TO SUSTAINABILITY 46 (2009).
101 *Id.*
102 ENV'T PROT. AGENCY, *supra* note 19.
103 Manville et al., *supra* note 97, at 106.
104 *See* Bajurny, *supra* note 39.

lot to be "*many times that size*."[105] This area increases the overall land a residential zone consumes, further contributing to sprawl and the underutilization of land. These issues are even more concerning when factoring in the sheer scale of R1 zoning in the United States. Across the nation, R1 zoning takes up a disproportionate percentage of cities' land. For example, more than 70 percent of Los Angeles, 80 percent of Seattle, and 90 percent of San Jose are zoned R1.[106] To reverse this destructive practice, Euclidean zoning laws must be reformed to ensure that precious land resources can be conserved and utilized to their fullest potential, rather than being carelessly consumed.

### C. Euclidean Zoning's Contributions to Urban Sprawl Inhibit Climate Resilience

Perhaps the greatest cost of Euclidean sprawl lies not in the negative effects it causes, but in the positive efforts it prevents. Sprawl stifles climate adaptation and mitigation by constructing an inflexible and limiting environment, making climate resilience a daunting task for communities.

Sprawl's excessive concrete usage provides an illustrative example, as it dramatically reduces green space, thereby limiting space for trees, vegetation, and other natural carbon sinks. While concrete increases heat, runoff, and flood susceptibility, green space does the exact opposite. For example, trees are some of the most effective tools to combat the ills associated with climate change.[107] By providing shade and releasing water vapor through their leaves, trees can reduce peak summer temperatures by up to nine

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105 *Id.* (emphasis added).
106 Manville et al., *supra* note 97, at 107.
107 *See Tree Facts*, Arbor Day Found., https://www.arborday.org/trees/treefacts/ [perma.cc/6LQN-HJCH] (last visited Mar. 8, 2025).

degrees Fahrenheit.[108] Moreover, shaded surfaces may be up to forty-five degrees cooler than unshaded surfaces,[109] helping nearby buildings reduce their energy needs by up to thirty percent.[110] Trees also counteract greenhouse gas emissions; a single tree absorbs more than forty-eight pounds of $CO_2$ in a year,[111] and urban trees relieve cities like Chicago[112] and Kansas City[113] of several thousand tons of air pollution each year. The United States Forest Service recommends using trees to manage runoff,[114] as one tree can intercept 2,380 gallons of rainfall per year.[115] Taken together, preserving space for trees and other vegetation is essential to adapt to and mitigate climate change. Consequently, communities must reform Euclidean zoning laws to halt the excessive concrete usage associated with urban sprawl and reclaim green spaces.

Euclidean zoning limits transportation options, preventing people from adopting less carbon-intensive means of transportation.[116] Instead of walking or cycling to pick up groceries or go to a doctor's appointment, people living in distant R1 zones often have little choice but to drive. To do otherwise would not only be inconvenient, but potentially dangerous, as car-dependent areas characterized by urban sprawl can pose fatal hazards for

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108 *Using Trees and Vegetation to Reduce Heat Islands*, ENV'T PROT. AGENCY, https://-19january2017snapshot.epa.gov/heat-islands/using-trees-and-vegetation-reduce-heat-islands.html [perma.cc/2Q92-NU75].

109 *Id.*

110 ARBOR DAY FOUND., *supra* note 107.

111 *Id.*

112 David J. Nowak et al., *Urban Trees and Forests of the Chicago Region*, USDA FOREST SERV., 2 (2013).

113 David J. Nowak et al., *Assessing Urban Forest Effects and Values: The Greater Kansas City Region*, USDA FOREST SERV., 2 (2013).

114 *Fact Sheet #4: Control Stormwater Runoff with Trees*, U.S. DEP'T OF AGRIC., FOREST SERV., https://www.fs.usda.gov/psw/topics/urban_forestry/products/CUFR_182_UFfactsheet4.pdf [https://perma.cc/W25H-E92C] (last visited Mar. 8, 2025).

115 *Id.*

116 *See generally*, Jamie F. Chriqui, *Communities on the Move: Pedestrian-Oriented Zoning as a Facilitator of Adult Active Travel to Work in the United States*, FRONTIERS IN PUB. HEALTH (2016).

pedestrians.[117] In other words, the car-dependent infrastructure created by Euclidean zoning simply prioritizes car travel over pedestrian travel,[118] often leaving pedestrian areas unprotected and unsafe.[119] Thus, Euclidean zoning not only makes it more difficult to travel by foot or bike, but can also create an environment that is actively hostile to doing so.

In addition, limiting residential zones to single-family housing limits people's housing options. When single-family homes dominate the market over other housing solutions, residents are forced to buy more house than they need. This inflexibility undermines climate resilience efforts by stifling the market for energy-efficient housing that would better suit many people's needs.

As these examples show, an alternative to current zoning practices is desperately needed to reverse the damage caused by a century of Euclidean zoning laws. Fortunately, a range of alternatives can help counteract Euclidean zoning's destructive legacy, including alternative zoning laws and performance standards. By assessing these options and the benefits and challenges they present, the following section will lay the groundwork for a path to change, one that transitions away from practices that harm the climate towards those that support it.

## V. ALTERNATIVES TO EUCLIDEAN ZONING: ASSESSING THE OPTIONS

Opposition to Euclidean zoning spans a wide range of perspectives, from idealistic aesthetic and urban planning movements,[120] to grassroots social and cultural

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[117] *See generally*, Reid Ewing et al., *Urban Sprawl as a Risk Factor in Motor Vehicle Occupant and Pedestrian Fatalities*, AM. J. PUB. HEALTH (2003) (stating that "sprawl is a significant risk factor for traffic fatalities, especially for pedestrians").
[118] *See generally* Chriqui, *supra* note 116.
[119] *See generally* Ewing et al., *supra* note 117.
[120] *See generally* Hall, *supra* note 14.

movements.[121] This analysis, however, seeks to propose avenues for reforming the zoning laws themselves to target the core climate-related issues they perpetuate.

For example, some cities have reformed their zoning laws to allow for "mixed-use" zoning, creating opportunities to minimize the distance between residential and low-impact commercial spaces, reducing car dependency and urban sprawl.[122] Mixed-use zoning is compatible with complementary zoning frameworks, such as cluster and floating zoning, which increase opportunities for sustainable, climate resilient development. Cluster zones conserve green space by grouping houses into dense clusters,[123] while floating zones preserve districts for flexible future uses.[124]

In addition, emerging technological innovations can improve a zoning framework by informing benchmarks for appropriate standards. For example, new technologies for enhancing road drainage can reduce the risk of flooding.[125] Certain cities, known as sponge cities, have adopted such technologies on a broad scale, resulting in improved drainage that enhances resilience to flooding from sea level rise and severe weather events.[126] Such innovations can make a significant difference in managing floodwaters during climate-related disasters, increasing a city's overall climate resilience. Adopting a more flexible system for regulating land use that also incorporates standards for emerging technologies would allow communities to utilize land more efficiently and safely, creating opportunities

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121 *See generally* Green, *supra* note 23.

122 *See generally* Kublicki, *supra* note 13.

123 Joe Rosenthal, *Cluster Subdivisions*, AM. PLAN. ASS'N (June 1960), https://www.planning.org/-pas/reports/report135/ [https://perma.cc/DW57-WTEQ].

124 Dorothy Ariail, *Property Topics and Concepts*, AM. PLAN. ASS'N (2008), https://www.planning.org/-divisions/planningandlaw/propertytopics.htm#Floating [https://perma.cc/9ANH-N9E3].

125 *See generally* Robert Muggah, *How China's Sponge Cities are Preparing for Sea-Level Rise*, WORLD ECON. F. (June 28, 2019), https://www.weforum.org/agenda/2019/06/how-china-s-sponge-cities-are-preparing-for-sea-level-rise/ [https://perma.cc/NF6M-XXW6].

126 *Id.*

for more effective climate resilience efforts.[127]

### A. MIXED-USE ZONING

Rather than separating land into distinct categorical zones (i.e., industrial, commercial, and residential), mixed-use zoning does the opposite, uniting various uses and thereby allowing for the integration of compatible uses.[128] For example, low-impact commercial spaces like shops and restaurants can be integrated into residential areas, creating one mixed-use district. Incompatible uses, however, remain separated, ensuring that harmful industrial areas and their pollutants remain distant from residential areas.[129]

Using § 4.1300 of the Fort Worth, Texas Code of Ordinances as an example, Fort Worth defines mixed-use zoning's purpose as creating areas with a variety of housing types that exist among neighborhood-serving commercial and institutional uses.[130] Mixed-use zoning also encourages compact, walkable development forms that are more cost-effective and land-efficient than low density, single use developments.[131] Notably, Fort Worth states that mixed-use zoning "promotes sustainable development that minimizes negative impacts on natural resources."[132] Buildings and public spaces in mixed-use districts should be designed to minimize negative impacts on air and water quality.[133] This underscores how mixed-use zoning addresses the public health concern of pollution, which Euclidean zoning was originally intended to address, while still maintaining the efficiency and sustainability that come with a mixture of uses

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127 *See generally* Wickersham, *supra* note 30.
128 Kublicki, *supra* note 13, at 11,001.
129 *Id.* at 11006.
130 FT. WOR., TEX., CODE OF ORDINANCES § 4.1300 (2024).
131 *Id.*
132 *Id.*
133 *Id.*

By bringing compatible uses closer together, people no longer need to rely as heavily on cars to access the places and resources they need.[134] Instead of driving to accomplish every errand, people can simply walk to local restaurants and shops to access food and goods. Consequently, less gasoline is burned and carbon emissions are reduced.[135] In addition, with fewer cars on the road at any given time, traffic conditions improve throughout the area, further decreasing the amount of gasoline burned and carbon emitted.[136] Thus, mixed-use zoning offers a valuable opportunity to mitigate people's daily carbon emissions, ultimately slowing climate change.

Mixed-use zoning is also conducive to more efficient land use. While Euclidean zoning's separation of land results in residential areas that go unused during the day and commercial areas that go unused at night, mixed-use zoning combines these uses, ensuring that a given area is used throughout the entire day and night.[137] To exemplify Euclidean zoning's inefficiency, consider that areas with one- to three-story buildings in commercial retail-zoned Beverly Hills, California typically go unused for an astonishing fourteen hours a day.[138] In contrast, mixed-use zoning would share these functions, combining commercial and residential uses in the same area. This would allow the area to be in use at different times of the day: commercial in the morning and residential at night. Thus, mixed-use zoning allows communities to reclaim underused land otherwise consumed by Euclidean sprawl, creating opportunities for more flexible land usage that is conducive to

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134 ATLANTA REG'L COMM'N, QUALITY GROWTH TOOLKIT: MIXED-USE DEVELOPMENT 4, https://-web.archive.org/web/20111128011547/http://www.atlantaregional.com/File%20Library/Local%20Gov%20Services/gs_cct_mixedusetool_1109.pdf [https://perma.cc/CN2D-QFMP].

135 *Id.*

136 *Id.*

137 Kublicki, *supra* note 13, at 11004.

138 *Id.*

climate resilience efforts.

The same logic applies to parking spaces. If a parking lot can be shared by buildings with a wide variety of purposes and used throughout the day, less parking is required to support a given area. Generally, residential buildings need parking overnight, offices need parking during the day, restaurants need parking during evenings and weekends, and retail buildings need parking during the morning and evening.[139] Mixed-use zoning allows each of these buildings to be built in the same area and share one parking lot.[140] As reported by the Atlanta Regional Commission, a shared parking arrangement between office, restaurant, and entertainment uses can reduce the necessary parking spaces from "4-5 spaces per 1,000 square feet to 2½-3 spaces per 1,000 feet."[141] This frees an enormous amount of land for green spaces, urban agriculture, outdoor markets, or other flexible spaces. Mixed-use zoning would therefore allow for more efficient land usage while simultaneously reducing excess concrete, thereby mitigating runoff, flooding susceptibility, and heat retention.

Prior to the advent of Euclidean zoning and its strict separation of uses, urban areas in the United States were largely defined by a mixture of land uses, where a wide variety of buildings and open spaces functioned together.[142] Thus, the underlying principle of mixed-use zoning is not a new concept. Rather, it embodies a return to the spirit and historical qualities that defined American cities for many years.[143] Returning to a mixture

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139 ATLANTA REG'L COMM'N, *supra* note 134, at 3.
140 *Id.*
141 *Id.*
142 Edward Erfurt, *Recovering the Lost Art of Mixed-Use Development*, STRONG TOWNS (Dec. 2, 2022), https://archive.strongtowns.org/journal/2022/12/2/recovering-the-lost-art-of-mixed-use-development [https://perma.cc/MH4D-3FFW].
143 *Id.*

of uses through mixed-use zoning would help reclaim the efficient land and resource management lost in the proliferation of urban sprawl, combatting climate change and uplifting climate resilience efforts in the process.

### B. CLUSTER ZONING

As previously discussed, R1 single-family zoning uses land inefficiently, representing an environmentally unsustainable approach to residential planning.[144] Cluster zoning, however, provides an alternative that promotes environmentally-conscientious land use.[145] This approach groups houses together in dense clusters called modules.[146] The modules are separated by large tracts of undeveloped land, which remain preserved in their natural condition.[147]

By creating residential areas where houses are enveloped by the surrounding natural landscape,[148] cluster zoning ensures an abundance of green space that doubles as a carbon sink and an avenue for flood mitigation. Additionally, green space preserves trees that can shade the area, minimizing the Urban Heat Island Effect. By protecting green space,[149] cluster zoning helps reduce the amount of land that might otherwise be covered in concrete, indirectly reducing runoff and heat retention. Consequently, cluster zoning is an effective tool to combat climate change and reduce the ills caused by Euclidean zoning. Since standard zoning ordinances generally do not permit true clusters,[150] communities would need to reform their zoning laws to reap the full benefits of cluster zoning.

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144 Manville et al., *supra* note 97, at 106.
145 Rosenthal, *supra* note 123.
146 *Id.*
147 *Id.*
148 *Id.*
149 *Id.*
150 *Id.* at 17.

For a cluster zone to be successful, the green space between houses must be effectively managed to ensure its integrity.[151] Green space is meant for common usage by those residing in the area, so competent stewardship is critical for maintaining and protecting the land.[152] Whether the land is privately or publicly owned, there remains a responsibility to uphold the space's integrity so all can enjoy it.[153]

### C. FLOATING ZONING

As described by the American Planning Association, a floating zone is a zoning district that "delineates conditions which must be met before that zoning district can be approved for an existing piece of land."[154] A floating zone is one that has yet to enter the zoning map;[155] it is written as an amendment to the current zoning ordinance, preserving a zone until it can be used for a specified purpose once the necessary conditions are met.[156] In this way, floating zoning complements existing zoning frameworks (i.e., mixed-use zoning).[157]

Floating zoning traces its legal history back to 1951, when the New York case *Rodgers v. Tarrytown* helped lay its foundations.[158] The plaintiff in *Rodgers* challenged the town's right to amend its zoning ordinance to create a new zoning district. The court held that a town may amend its zoning laws so long as the amendment is not arbitrary and reasonably promotes its residents' general welfare.[159] This case helped establish the legal

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151 *Id.* at 7–8.
152 *See id.* at 14.
153 *See id.* at 23.
154 Ariail, *supra* note 124.
155 *Id.*
156 *Id.*
157 *Id.*
158 *Id.*
159 Rodgers v. Tarrytown, 302 N.Y. 115, 121, 125–26 (N.Y. 1951).

basis for zoning amendments, paving the way for towns to utilize floating zoning and other flexible approaches.[160]

At their core, the purpose of floating zones is to add flexibility to the otherwise rigid practice of zoning.[161] Incorporating floating zones into a larger mixed-use zoning framework can be used to preserve areas for a community to decide how they want to use land in the future.[162] For example, a floating zone can provide a community the opportunity to ensure a cluster zone is implemented once the appropriate conditions are satisfied.[163] Alternatively, a floating zone could be specified for "R2" zoning, which permits development of a variety of housing types, like row houses and townhouses, to best suit a community's housing needs.[164] Ultimately, floating zones bring communities into the conversation, empowering them to shape their home in a way that promotes efficiency and sustainability. Floating zones are a powerful way of ensuring communities have a say in how land is used, providing the flexibility and opportunity necessary to use land for climate resilience efforts.

Notably, for a floating zone to satisfy its intended community purpose, safeguards must be implemented to prevent favoring private development over the broader public interest.[165] Thus, implementing a floating zone requires careful community oversight to ensure it attains its goals.

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160 Ariail, *supra* note 124.
161 Comment, *Zoning – The Floating Zone: A Potential Instrument of Versatile Zoning*, 16 CATH. U.L. REV. 85, 87 (1966).
162 Ariail, *supra* note 124.
163 *Id.*
164 FT. WOR., TEX., CODE OF ORDINANCES § 4.709 (2024).
165 Ariail, *supra* note 124.

### D. PERFORMANCE STANDARDS

With every land use comes certain byproducts, such as dust, heat, and waste.[166] Performance standards regulate these byproducts by specifying a maximum level of byproduct a given land use can produce.[167] To be most effective, performance standards need to specify performance levels based on scientific data.[168]

One promising application of performance standards is regulating the permeability of hard surfaces, namely concrete. Such performance standards can be incorporated into a zoning ordinance to ensure that parking lots, sidewalks, and roads meet certain standards for water infiltration. As previously discussed, the impermeable nature of traditional concrete causes increased flooding susceptibility wherever it is used, creating serious challenges for adapting to increased rainfall from severe weather events. Moreover, concrete greatly contributes to excess runoff. Since hard surfaces are a pervasive and inevitable aspect of infrastructure, requiring cities' hard surfaces to meet performance standards for permeability would ensure they are supporting climate adaptation and not unduly hindering resilience.

Given the emergence of technological advancements in permeable materials, requiring performance outcomes for hard surfaces is only becoming more feasible. For example, porous asphalt, pervious concrete, and permeable interlocking concrete pavement have emerged as viable alternatives to traditional concrete.[169] Each of these materials

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166 Luther L. McDougal III, *Performance Standards: A Viable Alternative to Euclidean Zoning?*, 47 TUL. L. REV. 255, 258 (1973).

167 *Id.* at 259.

168 *Id.* at 260.

169 *Stormwater Best Management Practices*, ENV'T PROT. AGENCY, https://www.epa.gov/-system/files/documents/2021-11/bmp-permeable-pavements.pdf [https://perma.cc/N29T-RX7S] (last visited Mar. 8, 2025).

reduces stormwater discharges, pavement ponding, and local flooding, offering significant value to cities susceptible to climate-related flooding.[170] While permeable materials often cost more than traditional concrete, the savings in maintenance costs and stormwater management can make permeable materials more cost-effective over time.[171]

Notably, Euclidean zoning ordinances rarely set performance standards for hard surface permeability.[172] Rather, their standards can be vague and often lack a scientific basis. For example, Fort Worth's zoning ordinance simply requires parking lots be "hard-surfaced and dust free."[173] The benefits of permeable materials compared to traditional concrete highlight a regulatory gap in current zoning ordinances. Cities thus have a compelling opportunity to leverage performance standards and incentivize the market for these alternatives.

Incorporating performance standards for hard surface permeability into zoning ordinances ensures parking lots, sidewalks, and roads are sufficiently permeable. These standards can play a significant role in managing runoff and adapting to flooding events. Ultimately, performance standards can promote climate adaptation and resilience.

## VI. A FLEXIBLE FRAMEWORK: RECOMMENDATIONS FOR REFORMING EUCLIDEAN ZONING LAWS

Although each of the explored alternatives have merit, combining them into a single model will help fully leverage the value. Therefore, the present analysis uses each of these alternatives, laid out in a practical plan that increases the likelihood of successful

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170 *Id.*
171 *Id.*
172 *See generally* McDougal III, *supra* note 166.
173 FT. WOR., TEX., CODE OF ORDINANCES § 6.202 (2024).

widespread implementation. While each city will likely need to make adjustments to meet its own unique circumstances, the recommendations outlined here form a climate-ready plan intended to fit many cities' needs.

Fundamental to enhancing climate resilience is reforming Euclidean zoning laws to allow for flexible solutions to climate change's most daunting challenges. Mixed-use zoning fosters such flexible solutions, and as such presents itself as an effective replacement for Euclidean zoning. When mixed-use zoning is combined with cluster and floating zoning, as well as performance standards, they form a climate-resilient framework that effectively addresses the climate-related ills of Euclidean zoning. After analyzing the aspects of Euclidean zoning most detrimental to climate resilience, the following recommendations target those aspects most desperately requiring reform. Importantly, instead of attempting to address every ill caused by Euclidean zoning, the present analysis focuses on what specific reforms can have the greatest impact on slowing climate change and facilitating resilience.

Namely, cities must end single-family zoning and permit the construction of middle-housing in current single-family zones, such as row houses and duplexes. Incentivizing the market for alternative housing empowers people to select a residence that suits their needs instead of exceeding them, reducing energy and land waste. Additionally, cities must adopt mixed-use zoning to allow future residences to intermix with low-impact commercial spaces like stores and restaurants, as well as schools, hospitals, and other necessities. Shrinking the distance between residences and necessities will facilitate walkability, reducing the need to drive and emit unnecessary greenhouse gases. Abolishing minimum parking and house lot size requirements will also help in the fight against climate

change by freeing up space for alternative, dynamic uses. Cities must also implement performance standards for permeable materials to ensure hard surfaces are resilient to flooding. Finally, cities must preserve green spaces through cluster and floating zones to increase carbon sequestration, improve permeation, and reduce heat through the presence of shade and absence of concrete.

These recommendations maintain the separation of people from polluting factories and heavy commercial spaces core to the original purpose of Euclidean zoning, protecting public health and safety while allowing flexibility for communities to decrease greenhouse gas emissions, reduce heat retention, and enhance resilience. Examples of cities that have implemented such reforms will be considered, along with their reported environmental impacts. These cities will provide practical models that other cities can learn from when implementing their own reforms.

While reforming Euclidean zoning laws alters the legal environment, it does not alter the current built environment.[174] Attempting to completely remove current sprawling, inefficient areas would not only be infeasible, but also a huge waste of resources that would be better utilized in trying to improve these areas. Consequently, many urban and suburban areas will require conscientious infilling and retrofitting to increase density and efficiency. This section provides helpful examples and illustrations, with the goal of adapting as much space as possible to be more efficient and climate-conscious while preventing unnecessary destruction of the current built environment.

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[174] CDC, NAT'L CTR. FOR ENV'T. HEALTH, DIV. OF EMERGENCY AND ENV'T HEALTH SERVS., IMPACT OF THE BUILT ENVIRONMENT 1–2 (2006), https://stacks.cdc.gov/view/cdc/24142 [https://perma.cc/Y3NX-V29M] (stating the built environment consists of the physical parts of human society, including houses, buildings, and infrastructure).

### A. End Single-Family Zoning and Adopt Mixed-Use Zoning for Future Development

Ending single-family zoning will halt the proliferation of highly inefficient single-family zones and allow developers to infill middle-housing in areas currently zoned residential. This change will incentivize a diverse market for middle-housing, empowering people to buy what best suits their needs, rather than artificially restricting their options. Eliminating the legal crutch of single-family zoning will effectively inhibit the wasteful trend of "oversized under-occupied dwellings."[175] For future development, reforming Euclidean zoning laws to mixed-use zoning ensures that residences can be built alongside low-impact commercial spaces like shops, restaurants, and community spaces. Reducing the distances between residences and daily necessities will reduce the need to drive a car for every errand—saving fuel, lowering greenhouse gas emissions, and enabling more resilient communities.

In 2021, Portland, Oregon became the largest modern city in the United States to end single-family zoning with its "Residential Infill Project."[176] This reform made it legal for duplexes, triplexes, fourplexes, and cottage clusters to be built on land previously zoned exclusively for single-family housing.[177] Because four middle-housing units are permitted on a single residential lot, four families can now live where only one could before.[178] After

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175 Owen, *supra* note 100, at 46.

176 U.S. Dep't of Transp., Climate Change Ctr., Zoning Reforms 15 (2025), https://rosap.ntl.bts.gov/view/dot/79376/dot_79376_DS1.pdf [https://perma.cc/BB8G-VZM8].

177 City of Portland, *Portland Sees Significant Production of Middle Housing Resulting from Recently Adopted Zoning Changes, Report Finds* (Feb. 4, 2025), https://www.portland.gov/bps/planning/rip2/news/2025/2/4/portland-sees-significant-production-middle-housing-resulting-0 [https://perma.cc/4US9-JS8W].

178 Michael Andersen, *The Eight Deaths of Portland's Residential Infill Project* 2 (Lincoln Inst. of Land Pol'y, Working Paper No. WP21MA1, 2021), https://go.lincolninst.edu/andersen_wp21ma1.pdf?_gl=1*edckg6*_ga*MTIwMDkyMTQxOC4xNzM5NjUxMTYx*_ga_26NECLE3MM*MTc0MDIwMTExMy41LjEuMTc0MDIwMTQ5NS4wLjAuMA [https://perma.cc/QG9K-PEZD].

the project's inception, Portland permitted over 1,400 middle-housing units and accessory dwelling units in just three years, making middle-housing the most prominent type being built in what were previously single-family zones.[179] Since the average sale price of a middle housing unit in Portland was up to $300,000 less than a standard single-family detached house, Portlanders have had more opportunity to buy homes that meet their needs instead of buying excess.[180] Portland's trailblazing success serves as a model for American cities to follow, championing resilience through sustainable land use and energy efficiency.

### B. Abolish Minimum Parking and Housing Lot Requirements

Removing minimum parking lot requirements from municipal zoning ordinances provides a simple and effective way to reclaim land and prevent excessive concrete usage, making way for alternative uses. As discussed in the introduction to this Note, Sundance Square in Fort Worth provides a prime example of how parking lots can be reclaimed for sustainable community use. Annually, the 61 newly-planted trees in the square sequester 6,567 lbs. of $CO_2$ and intercept 23,858 gallons of rainwater in their canopies.[181] Structural umbrellas reduce surface temperatures by 22 degrees Fahrenheit.[182] Instead of concrete, the ground is covered with red brick pavers with a Solar Reflectance Index of 29, reducing heat while meeting LEED requirements.[183] The square is also graded to drain runoff into 3,127 square feet of permeable surface, contributing to a 7.3 percent reduction in impervious surfaces.[184] Notably, transforming the lots into Sundance Square did not cause traffic issues or significant congestion, easing concerns about the impacts of similar

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179 CITY OF PORTLAND, *supra* note 177.
180 *Id.*
181 *Sundance Square Plaza, supra* note **Error! Bookmark not defined.**.
182 *Id.*
183 *Id.*
184 *Id.*

projects.[185] These improvements strongly enhance Fort Worth's climate resilience, underscoring the value of reclaiming and repurposing parking lots for alternative uses.

While critics might counter that extensive alterations to existing property can be prohibitively expensive, the increased economic output of an area desirable for people to visit can offset such costs over time.[186] Moreover, simply leaving an area as undeveloped green space instead of paving it over with concrete costs nothing, but still carries the benefits of improved carbon sequestration and heat reduction. Alternatively, the land spared from parking lot requirements could instead be used for other valuable uses, such as affordable housing. Furthermore, the same logic applies to house lot requirements. Decreasing minimum lot sizes for detached homes would make more room available for infill housing in areas already zoned for residential use.

By abolishing parking minimums on a citywide scale, cities can maximize climate resilience and create a lasting impact. In 2017, Buffalo, New York became the first major city in the United States to abolish parking minimums.[187] Buffalo's Unified Development Ordinance, or "Green Code," was the city's first major overhaul of zoning laws since 1953,[188] charting a course for improving sustainability throughout the city. Specifically, the Green Code's removal of parking minimums promotes density,[189] which in turn facilitates walkability and alternative transportation forms that reduce the city's overall greenhouse gas emissions. Similarly, Minneapolis, Minnesota abolished its parking

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185 *Id.*

186 *Id.* (estimating that Sundance Square offers a 604% increase in potential gross revenue relative to the parking lots that preceded it).

187 U.S. DEP'T OF TRANSP., CLIMATE CHANGE CTR., *supra* note 176, at 14.

188 CITY OF BUFFALO, *Using the Unified Development Ordinance (Buffalo Green Code)*, https://www.buffalony.gov/1224/Using-the-Unified-Development-Ordinance [https://perma.cc/UGP4-QJMY] (last visited Mar. 8, 2025).

189 U.S. DEP'T OF TRANSP., CLIMATE CHANGE CTR., *supra* note 176, at 14.

minimums in 2020 through its 2040 Comprehensive Plan.[190] Seeking to achieve comparable goals, the 2040 Comprehensive Plan aims to improve climate resilience and reduce greenhouse gas emissions by eighty percent by 2050.[191] Together, Buffalo and Minneapolis provide inspiring models for improvement, proving that the citywide elimination of parking minimums is not only possible but practical as a key way to promote climate resilience.

### C. IMPLEMENT PERFORMANCE STANDARDS FOR PERMEABLE SURFACES

Performance standards are dynamic tools backed by scientific criteria that allow a city to specify the performance levels of its built environment.[192] When applied to hard surfaces, performance standards set permeability requirements that can contribute to a city's resilience to climate-related flooding. As part of its Project Clear Initiative, St. Louis, Missouri established performance standards for permeable pavement.[193] The standards specify that permeable pavement must be capable of removing eighty percent of total suspended solids and capturing ninety percent of annual rainfall.[194] These strong standards lay the foundation for resilience, ensuring that the city can withstand a high volume of rainfall. Philadelphia, Pennsylvania also displayed a commitment to promoting permeable "green streets" through its Green City, Clean Waters program.[195] This program aims to

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190 *Id.*

191 *Climate Change Resilience*, MINNEAPOLIS 2040, https://minneapolis2040.com/goals/climate-change-resilience/ [https://perma.cc/UE9D-GU5R] (last visited Mar. 8, 2025).

192 *See generally* McDougal III, *supra* note 166.

193 *Permeable Pavement Performance Criteria*, MSD PROJECT CLEAR, https://msdprojectclear.org/what-we-do/stormwater-management/bmp-toolbox/stormwater-quality/permeable-pavement/performance-criteria/#:~:text=For%20new%20and%20redevelopment%20sites,longevity%20rate%20in%20the%20field [https://perma.cc/T2TC-KEYK] (last visited Mar. 8, 2025).

194 *Id.*

195 *See* PHILA. WATER DEP'T, AMENDED GREEN CITY CLEAN WATERS PROGRAM SUMMARY 25 (2011), https://water.phila.gov/wp-content/uploads/files/GCCW_AmendedJune2011_HIGHRES.pdf.

retrofit parking lots and other areas with permeable pavement, improving the city's sustainability.[196] As pioneering cities like these refine their approach to permeable pavement implementation, others can learn from their progress. Moreover, as technological advancements continue to emerge, permeable materials will only become more accessible. Cities willing to chart a sustainable path forward must take advantage of these emerging materials and use performance standards as a tool for resilience.

### D. PRESERVE GREEN SPACE THROUGH CLUSTER AND FLOATING ZONES

Green space plays an essential role in cities' climate resilience because it reduces heat, sequesters carbon, and reduces flooding susceptibility.[197] Cluster zoning offers an effective way to increase green space by clustering housing in dense arrangements, preserving open parcels of the natural environment. Amherst, Massachusetts, for example, adopted incentives to encourage the development of housing clusters.[198] As a result, new communities were built that preserved open green space while providing other benefits, like improved access to affordable housing.[199] This example highlights how cluster zoning can be an effective way to increase green space and develop more sustainable communities overall.

As previously discussed, floating zones can be utilized to ensure a housing cluster is implemented, making them an indirect yet important means of preserving green space.[200] Furthermore, floating zoning can reserve land for various specified purposes like housing

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196 *See id.*

197 *Urban Green Space*, UNIV. OF LEEDS, https://leaf.leeds.ac.uk/green-space/ [https://perma.cc/X237-CP9Z] (last visited Sep. 18, 2025).

198 Johamary Peña & Sagar Shah, *Active Living Opportunities through Cluster Housing*, AM. PLAN. ASS'N (May 2, 2022), https://www.planning.org/blog/9227411/active-living-opportunities-through-cluster-housing/ [https://perma.cc/ZRG6-AP68].

199 *Id.*

200 *See Ariail*, *supra* note 124.

clusters, mixed-use developments, or other uses a community deems important. Thus, floating zoning is a powerful tool for sculpting the built environment to foster climate resilience and best suit community needs.

For these reforms to prevail, however, their central obstacles must be considered, as well as potential strategies for overcoming them.

## VII. OVERCOMING OBSTACLES: THE FACTORS TO CONSIDER ON THE ROAD TO REFORM

This final section will address concerns related to legal obstacles, public perception, entrenched cultural schemas, and other hurdles to reforming Euclidean zoning laws. It will also provide recommendations for successfully reforming Euclidean zoning laws by considering the factors that have allowed other cities to succeed. Analyzing such factors will help assemble a nuanced roadmap to achieving reform. Learning lessons from other cities' experiences will bolster the understanding necessary for reform.

Given that challenges will naturally vary based on a city's legal, demographic, and political environment, this analysis seeks to yield brief recommendations that are generally applicable to a variety of places, rather than provide guidelines for any particular place.

Recent zoning decisions in Los Angeles illustrate some of the most important challenges present in zoning reform. In 2024, the Los Angeles Zoning Commission unanimously voted against allowing middle-housing in single-family zones, choosing instead to confine middle-housing projects to areas already zoned for multi-family residences.[201] Though over seventy percent of Los Angeles is zoned single-family, the

[201] David Wagner, *Behind the LA Zoning Commission Recommendation to Leave 72% of City Zoned for Single-Family Homes*, LAIST (Oct. 12, 2024), https://laist.com/news/housing-homelessness/los-angeles-zoning-planning-department-recommendation-recap [https://perma.cc/SUA3-8BU3].

Commission refused to rezone any of the land.[202] This decision was especially questionable given that Los Angeles has been under pressure by California state law to plan for nearly half a million new homes in the next five years.[203] Moreover, the current zoning standards reportedly cannot handle the mandated growth,[204] making rezoning single-family areas all the more urgent.

The Commission's decision came after hearing eight hours of discussion during a public meeting, where most attendees voiced support for rezoning.[205] Advocates from climate organizations, affordable housing developers, homeless service providers, and housing justice groups urged this much-needed expansion of middle-housing.[206] Ultimately, however, the Commission sided with a small group of local homeowners who expressed concerns about how middle-housing projects might impact their home value.[207]

Though the Commission's decision was perhaps puzzling for the rezoning advocates, it was certainly not unpredictable, as rezoning efforts often face substantial and influential opposition from homeowners.[208] Homeowners who oppose zoning reforms are typically motivated by two concerns: adverse impacts to their home values and the potential for rezoning to alter their neighborhoods' character.[209] Though these concerns are understandable, they are generally not supported by the reality of incorporating middle-

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202 *Id.*
203 *Id.*
204 *Id.*
205 *Id.*
206 *Id.*
207 *Id.*
208 Eliza Terziev, *Missing Middle Housing Policies Balance Interests While Addressing the Affordable Housing Crisis*, REASON FOUND. (Nov. 4, 2024), https://reason.org/commentary/missing-middle-housing-policies-balance-interests-while-addressing-the-affordable-housing-crisis/ [https://perma.cc/24K2-TP8H].
209 *Id.*

housing. The existing literature has consistently shown that middle-housing generally does not devalue nearby property.[210] Contrary to popular conception, compelling evidence demonstrates that middle-housing can actually *increase* property values.[211] As for the neighborhood itself, adding middle-housing to single-family areas typically only results in modest density increases that do not undermine the neighborhood's overall character.[212]

Given the discrepancy between homeowners' perception and reality, educating concerned homeowners could help diffuse opposition to zoning reforms, perhaps even engendering support. Such outreach can be an effective way to clarify the benefits of rezoning and help prevent decisions like those made by the Los Angeles Zoning Commission. Given that people often experience the implicit bias to "favor the perpetuation of the familiar,"[213] education is critical to ensuring that a preference for the familiar does not foreclose new opportunities.

A report documenting Portland's successful adoption of the "Residential Infill Project" emphasized the importance of using concrete examples and non-technical language wherever possible to facilitate impactful communication.[214] Neutral analyses conducted by city governments or other trusted entities can provide valuable starting points from which to dispel misperceptions and foster collaboration.[215] Given that large-scale zoning reform like Portland's project can take years to approve, it is necessary to establish

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210 MARK OBRINSKY & DEBRA STEIN, OVERCOMING OPPOSITION TO MULTIFAMILY RENTAL HOUSING 10 (2006), https://www.jchs.harvard.edu/sites/default/files/rr07-14_obrinsky_stein.pdf [https://perma.cc/3KJZ-CXAU].

211 *Id.*

212 Terziev, *supra* note 208.

213 Robert C. Ellickson, *The Zoning Straightjacket: The Freezing of American Neighborhoods of Single-Family Houses*, 96 INDIANA L.J. 395, 422 (2021).

214 Andersen, *supra* note 178.

215 *Id.*

a foundation of trust between communities and city governments to ensure successful reform and implementation.[216]

While Euclidean zoning laws may be challenged in other ways—such as opposing them in court—garnering local support will likely prove more fruitful than litigation. Zoning laws in general are practically impervious to legal challenges due to the "nearly unfettered discretion" courts allow municipal governments.[217] As discussed previously in this Note, the *Euclid* Court established the constitutionality of zoning ordinances as an extension of municipalities' police powers. Consequently, courts afford municipal governments significant deference regarding the exercise of such police powers, making challenging zoning laws extremely difficult.[218] Due to the difficulties of challenging zoning laws in court, pursuing reform through education, political advocacy, and negotiation will likely prove a more successful strategy.

As pioneering cities like Portland begin implementing major zoning reforms, their progress will provide instructive models for other American cities, offering opportunities to refine and improve the implementation of alternative zoning methods. Exposure to such reforms will nudge neighboring cities and communities to consider the value of zoning alternatives, perhaps for the first time. Because Euclidean zoning has dominated the fabric of the American landscape for so many decades, cultural schemas surrounding what development ought to look like have long been skewed towards Euclidean norms like single-family zoning. As the strain of climate change continues to push current

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216 *Id.*

217 Sarah J. Adams-Schoen, *The White Supremacist Structure of American Zoning Law*, 88 BROOK. L. REV. 1225, 1275–76 (2023).

218 Kenneth A. Stahl, *Reliance in Land Use Law*, 2013 BYU L. REV. 949, 984–85 (2014).

infrastructure to its limit, however, the luxury of perpetuating the familiar must give way to change. It is time to overcome limiting biases by broadening the public imagination, championing a path to reform that will lead to more sustainable, climate-resilient communities.

## VIII. CONCLUSION

Climate change is an existential threat to human life and will not go away on its own. The World Meteorological Association confirmed 2024 as the hottest year on record, totaling 1.55 degrees Celsius above pre-industrial levels.[219] Moreover, *every one* of the past ten years ranks in the top ten hottest years.[220] Rising sea levels, extreme weather events, and melting ice are only becoming more pressing crises.[221] Addressing this widespread climate challenge will require equally widespread action, and it begins at the local level. Cities throughout the United States must reform their Euclidean zoning laws to reverse the extensive damage they have caused and adapt to the challenges of a new climate reality.

If cities truly seek to safeguard the public health as Euclidean zoning laws originally intended, then those same laws must be reformed. Presently, Euclidean zoning laws undermine public health by exposing residential areas to the pollution they ought to have protected them against, directly contributing to the climate crisis in the process. These counterproductive laws must make way for laws that decrease pollution and combat climate change, perhaps the greatest public health threat today.

The present zoning regime is untenable, resulting in unconscionable levels of land

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219 *WMO Confirms 2024 as the Warmest Year on Record at about 1.55°C Above Pre-Industrial Level*, WORLD METEOROLOGICAL ORG., https://wmo.int/news/media-centre/wmo-confirms-2024-warmest-year-record-about-155degc-above-pre-industrial-level [https://perma.cc/YYJ7-SQ9S].

220 *Id.* (emphasis added).

221 *Id.*

and energy waste. As the antithesis to Euclidean zoning, mixed-use zoning offers a solution. When combined with cluster zoning, floating zoning, and technological performance standards, mixed-use zoning provides a sustainable path forward that promotes more efficient resource use. Mixed-use zoning reunites residential areas with low-impact commercial areas, bringing people closer to the things they need and thereby reducing reliance on car travel. Abolishing parking minimums and reducing house lot sizes will ensure that otherwise usable land is not lost. Cluster zoning preserves much-needed green space, helping to protect wilderness, reduce flooding susceptibility, and counteract the Urban Heat Island Effect. Floating zoning increases flexibility in zoning ordinances, empowering communities with the ability to choose what uses will best serve their needs, rather than having zoning ordinances make that choice for them. Performance standards that incentivize and harness the capabilities of emerging technologies will improve the permeability of road materials, decreasing runoff in the process. Together, these tools form a framework that supports climate resilience, creating avenues for effective adaptation and mitigation.

As the consequences of complacency and hesitation continue to accumulate, action is needed now more than ever to protect people and the planet. Though zoning reform can be a long and sometimes arduous process, it is worth the effort to make the change to a climate-resilient mixed-use framework. After a hundred years of Euclidean zoning laws, it is time to reverse the damages of the past and make way for resilient American cities in the future.

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