# Land Lines

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JANUARY 2020

## The Big Rethink

**Minneapolis Undoes Single-Family Zoning**

**Innovative Financing for Green Infrastructure**

**Municipalities and the Shifting Retail Landscape**

# Land Lines

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"Cyclist Centered Triplex" by Laura Stene, 2019. Credit: Courtesy of Designing for Minneapolis 2040 Studio, Dunwoody College of Technology, Minneapolis.



# When Theory and Practice Part

**I'M STILL RECOVERING** from studying graduate-level economics, where the going wisdom was that certain challenges are insoluble. An early lesson, for example, was that no voting system can reliably reach the "right decision" that satisfies a set of basic principles. Nobel laureate Kenneth Arrow showed that no voting method is fair, and that the only voting method that isn't flawed is dictatorship. I learned through the apocryphal tale of the Tragedy of the Commons that ungoverned access to common resources will always end in the overuse and destruction of those resources. I also learned that collective action to produce public good could not succeed if it involved more than seven people. I'm not kidding.

As I recover, I've detected a flaw in the *sequence* adopted by economists to break down problems. We look first to theory to frame our response, then seek to apply the theoretical structure to resolve the challenge. We begin with seemingly reasonable assumptions about rational human behavior, e.g., people always prefer more rather than less of a good thing; if a voter prefers candidate A over candidate B and candidate B over candidate C, then the voter must prefer candidate A over candidate C (transitivity). We then construct the challenge itself as a set of choices made by rational agents. Inevitably, theory tells us that some challenges are insurmountable, and optimal resolution is impossible. No matter how we tally votes, we can always find a case where voters will collectively violate transitivity. Because more is better, pastoralists will overgraze and destroy shared grazing commons by increasing the size of their herds.

But the words of two more practical 20th-century philosophers have helped me see things differently: "In theory, there is no difference between practice and theory. In practice, there is" (attributed to Yogi Berra); and, "A resource arrangement that works in practice can work in theory" (commonly known as Ostrom's Law). Berra was a short, stocky baseball catcher who would swing at anything thrown near him—and almost never struck out. He was voted league MVP three times and played on more world champion teams than any other player. Elinor Ostrom, the first woman to win the Nobel Prize in Economics, spent a career showing how large groups of individuals who use a common resource, like a fishery, find ways to steward the resource sustainably.

As it turns out, many of the challenges eschewed by economists as insoluble are also existential. Maybe the best way to solve them is to try things out until we find something that works. One of the best and most effective examples of taking action before all the theoretical nuts and bolts were firmly in place—and a potential model for addressing other complex global issues—is the Montreal Protocol.

In the 1970s, people started noticing that the ozone layer of the upper atmosphere was thinning out over the poles—especially over Antarctica. The ozone layer makes the sky blue. It also makes life on earth possible by absorbing harmful ultraviolet radiation from the sun. After a little more than a decade, scientists concluded that the culprit was the release of chlorofluorocarbons and other ozone-depleting substances (ODS), artificial compounds used as refrigerants,

aerosol propellants, and inputs in the production of plastics like Styrofoam. ODS use was ubiquitous and growing, and the chemical industry did not have—and was not particularly willing to develop—alternatives. It became clear that action on a global scale would be required to address the ozone crisis, motivating industry to find alternatives to these harmful chemicals, persuading as many countries as possible to ban their use and enforce the bans, and collecting and replacing ODS in existing refrigerators and industrial stocks.

The obstacles seemed insurmountable. Industry spokespeople popularized "ozone denial": "How do propellants from my deodorant, sprayed at sea level, get to altitudes of 50,000 feet?" "How do ODS released in Topeka make it to the poles?" Scientists produced compelling, but not definitive, answers to these questions, in the form of things like thunderstorms and global circulation. But as public concern grew, something extraordinary happened: even without scientific certainty, policy makers, environmentalists, scientists, and industry leaders decided that the risks posed by ozone depletion were severe enough to warrant precaution.

In 1987, 46 countries signed the Montreal Protocol to protect the ozone layer by phasing out the production and consumption of ODS. It took effect two years later, and its implementation was adaptive and practical. Because the science was emerging, signatories decided to base future policy decisions on periodic assessments by panels of worldwide experts in science, the environment, and economics. To get the other 151 countries in the world to join, signatories agreed to trade only with other signatories. It didn't take long before all countries signed on.

For lower-income countries without the resources needed to replace ODS, compliance enforcement was non-punitive. Wayward countries were asked to work with a UN agency to prepare action plans to get back into compliance. In 1991, the Multilateral Fund was established, with wealthier countries providing around $4 billion to help lower-income countries meet their commitments. By 2010, all 142 developing country signatories had completely phased out ODS.

The Montreal Protocol was the first UN treaty in history to achieve universal ratification. It proves that, economic theory to the contrary, collective solutions to seemingly insurmountable challenges are possible. It also proves something especially critical for our current times: we can effectively and comprehensively tackle our most complex global environmental challenges. Concerns over ozone depletion evolved from a fringe environmental issue to a driver of unprecedented national and international cooperation. As of this year, 98 percent of ODS contained in nearly 100 hazardous chemicals worldwide have been phased out. All 197 signatories are in compliance. Projections show that the ozone layer will return to 1980 levels between 2045 and 2065.

The Montreal Protocol is an effective global policy framework that has led 197 nations to address threats to the ozone layer. Here, representatives gather for the opening session of the 28th meeting of the parties to the protocol in 2016. Credit: Ministry of Environment, Rwanda/Flickr CC BY 2.0.

One unanticipated benefit of the Montreal Protocol is the climate protection that it has already achieved. By removing some of the most powerful greenhouse gases from the atmosphere, the treaty's contribution to climate change mitigation is larger than the first global reduction target of the climate-focused Kyoto Protocol. The latter was an extension of a global framework established in 1992 to prevent "dangerous" human interference with the climate system. That framework, the United Nations Framework Convention on Climate Change (UNFCCC), proposed a simple goal: to reduce greenhouse gas emissions from all sectors to keep global warming below 2ºC. Like the Montreal Protocol, it has been ratified by 197 countries and relies on an expert research panel to guide and adjust policy responses. But climate change is far more challenging and contentious than protecting the ozone layer. So far, this framework has not been nearly as effective as the Montreal Protocol; it remains to be seen whether increasing public concern or shifting political winds will change that.

In 2000, following the adoption of the United Nations Millennium Declaration, global Millennium Development Goals (MDGs) were established for all member states. The declaration stated that all people have the right to freedom, equality, and a basic standard of living that includes freedom from hunger and violence. The MDGs established eight specific targets to be achieved by 2015 for poverty reduction in all countries, and met with some success: member states achieved three of the eight targets, and made significant progress on four of the other five. To help less developed countries achieve the goals, developed countries agreed to cancel around $50 billion of debt for heavily indebted poor countries.

In 2015, the UN developed a set of Sustainable Development Goals (SDGs) to succeed the MDGs. The SDGs, the most complex global policy framework to date, include 17 global goals designed to "achieve a better and more sustainable future for all." A reporting framework binds the 193 ratifying member states to report on progress on 169 targets and 232 approved indicators. The SDGs reveal ever more ambitious efforts to work collectively to address global challenges.

Though these global policy frameworks have attained varying levels of success, they share important common elements: recognition of the problem; general agreement on causes and remedies; lofty but specific goals; an onus on developed countries to lead the way (sometimes with resources); monitoring and evaluation structures; and, in the best cases, binding agreements that define compliance and include mandatory reporting.

Thank goodness economists didn't take the lead in the design of these frameworks. We would still be waiting for a theoretical framework for our collective efforts before we could begin implementation. Luckily, more pragmatic people realized that finding a structural solution that satisfies a set of predetermined principles is less important than taking action to overcome an existential challenge, addressing obstacles when they are encountered.

At the Lincoln Institute, we have adopted a similar approach to achieve our global mission. The guiding framework, our Pathways to Impact, illustrates our strategy for addressing six global social, environmental, and economic challenges using land policy. We have articulated medium-term objectives and will soon identify a set of benchmarks through which we can track our success. In the coming months, we will align our objectives and benchmarks with the appropriate SDGs. This will show both our commitment and our contribution to a better and more sustainable future for all. We also recognize that our work on the ground won't always align with even the most well-crafted strategic goals, and we are working to remain flexible enough to meet obstacles as they arise. If there's one thing I've learned, it's that practice makes theory imperfect—and that's a good thing.

Rendering of an interior pedestrian walkway at Quayside, a smart city development planned along the Toronto waterfront. Credit: Picture Plane for Heatherwick Studio for Sidewalk Labs.

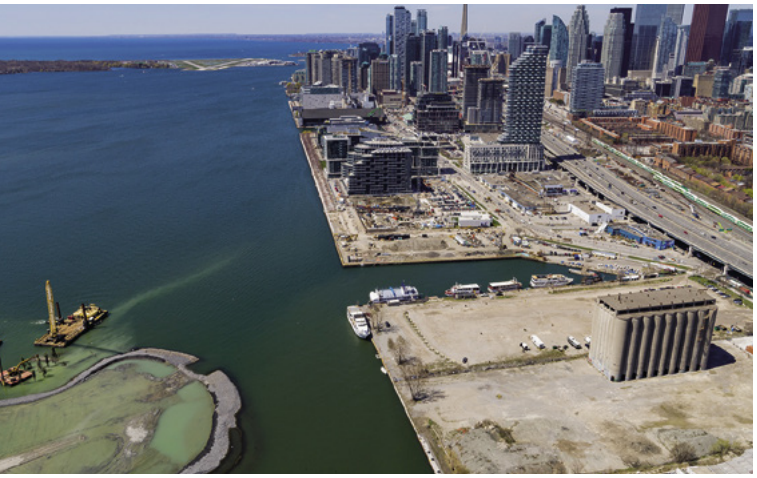
# Privacy, Equity, and the Future of the Smart City

**AS A RULE**, 12-acre development projects don't tend to receive national or international attention. But that hasn't been the case for Quayside, a parcel off Lake Ontario in Toronto. Two years ago, Waterfront Toronto—the government entity overseeing the redevelopment and reconfiguration of a larger swath of real estate along the Don River that includes Quayside—brought in Sidewalk Labs as a private partner. A subsidiary of Google's parent company, Alphabet, Sidewalk pledged to invest $50 million in the endeavor. The company seemed an ideal choice to help make Quayside a kind of prototype "smart city" neighborhood, and it produced ambitious plans.

It also produced no small amount of controversy, and at times it has appeared that the entire partnership might implode. That threat seemed to have passed at press time, at least temporarily. All the friction has had an unexpected result: Quayside could prove to be a much more valuable prototype for smart city planning than originally imagined.

That's not because of what has been built (which is, to date, nothing), but rather because of the way its bumpy ride has clarified the core smart city issues that need to be resolved before building can happen—not just in Toronto, but in any urban area. While it's hard to find an example of a smart city project that's quite as comprehensive as Quayside aims to be, there are many playing out on a more limited scale, from Kansas City's "smart city corridor" centered on a two-mile streetcar line to the LinkNYC program (also from Sidewalk Labs), which is replacing pay phones in New York City with slim, Wi-Fi–enabled kiosks.

The biggest issue needing resolution may be privacy. That might seem intuitive, and Sidewalk Labs itself professed to be aware of, and sensitive to, privacy concerns in its initial proposal. That proposal included plenty of the sort of tech-forward ideas you'd expect from a Google-connected entity, from heated bike lanes to autonomous delivery robots. Many of the proposed elements relied upon sophisticated sensors to collect data and guide efficiency in everything from trash collection to traffic to lighting.



At left, an aerial view of the Quayside neighborhood in Toronto, which developers hope to transform into a technology-enabled smart neighborhood. At right, the Quayside site plan. Credits (left to right): DroneBoy for Sidewalk Labs, Sidewalk Labs.

While Sidewalk's proposal addressed privacy, the company was apparently caught off guard when it was criticized for leaving too much discretion to private-sector tech vendors. Among those unimpressed: former Ontario privacy commissioner Ann Cavoukian, a prominent privacy advocate Sidewalk had added to its advisory board but who promptly resigned.

Cavoukian, now the executive director of the privacy-focused Global Privacy & Security by Design Centre consultancy, explains that she recognizes the potential value of data collection for shaping a neighborhood or a city. But she believes, in essence, that in the context of the smart city, securing privacy is a planning-level decision better left to the public sector. "The technology, the sensors, will always be on," she says. "There's no opportunity for people to consent or revoke consent. They have no choice."

She specifically advocates what she terms a "privacy by design" strategy, which "scrubs" data at the point of collection. For instance, cameras or sensors gathering traffic data might also pick up license plate numbers. If Cavoukian and other privacy advocates have their way, that level of personal data would simply not be collected. "You still have the value rendered from the [aggregate] data," she says. "But you don't have the privacy risks because you've de-identified the data." The essence of the privacy by design idea is that it privileges the public interest over private use of data; Cavoukian has pointed to the European Union's General Data Protection Regulation—which strictly protects individual privacy and has forced even the biggest tech players to adjust since its implementation in 2018—as a model.

Sidewalk Labs proposed gathering wide swaths of data in a kind of "trust," with private vendors encouraged to anonymize data. To critics like Cavoukian, this delayed privacy decisions until too late in the process: post-planning, post-implementation, less a baseline than an afterthought. One poll found that 60 percent of Toronto residents who were aware of the plan didn't trust Sidewalk's data collection. The two sides are still working out details, but have agreed for now that sensor-gathered data will be treated as a public asset, not a private one. (Sidewalk Labs did not respond to an interview request.)

The Toronto proposal has been controversial for other reasons. Notably, it sought oversight of much more than the original 12-acre parcel, dangling the possibility of locating a new Google Canadian headquarters along the city's waterfront as part of a scheme that would give Sidewalk latitude over 190 acres of potentially

lucrative properties. This proposal was turned back, but spurred a useful debate about smart cities and equity.

Jennifer Clark, a professor and head of the City and Regional Planning Section at the Knowlton School of Architecture in the College of Engineering at the Ohio State University, has studied smart city efforts around the world. She is the author of *Uneven Innovation: The Work of Smart Cities*, forthcoming from Columbia University Press in February 2020. As Clark explains, technology businesses and government or planning entities come to these collaborations with distinct perspectives. Enterprises like Sidewalk Labs that are devoted to new city technologies, she says, "come from a particular orientation of thinking about who the 'user' is. They're very much thinking through a consumer model, with users and consumers as essentially the same thing. That's not how planners think about it in cities. Users are citizens."

Similarly, companies designing technology meant to make a city "smart" are seeking a revenue model that will not just fund a given project, but can ultimately prove profitable—which guides the nature of their prototyping products and services that might eventually be applied elsewhere. Clark points out that a seldom-discussed element of the smart city phenomenon is its "uneven implementation." Quayside and the wider waterfront redevelopment it is part of are expected to result in high-value properties, used and frequented by a demographic attractive to businesses.

"There's an assumption that if you do these urban development districts, you're experimenting on the model, you get the model right, and then you do broad deployment, so that there's equity," Clark says. But frequently, in practice, "there is no path to that." Whatever innovations emerge tend to recur in demographically similar contexts.

What often underlies this dynamic is a kind of power mismatch. The private side of a development partnership is often richly funded, in a position to offer financial incentives, and thus to essentially dictate terms; the public side may have fewer resources, and less sophistication about assessing or fully deploying cutting-edge technology. But in this case, Clark notes, the Quayside story (which she addresses in her book) may be a bit different.

"There's an assumption that if you do these urban development districts, you're experimenting on the model, you get the model right, and then you do broad deployment, so that there's equity," Clark says. But frequently, in practice, "there is no path to that."

"Toronto has a history of community organizing and community development," she notes. "And the community organizations there have a sophisticated understanding of the data collection practices that were proposed." Thus the privacy pushback, and how it gets resolved, might prove to be the real lasting payoff, especially if it's resolved in a way others can emulate.

A replicable model, one that offers guidelines for both technology and the rules that technology must play by, is essentially the outcome that Cavoukian wants. She is now working with Waterfront Toronto, and explicitly hopes that Quayside—with either Sidewalk Labs or new partners at the helm—can become a rejoinder to the surveillance-oriented versions of the smart city that are taking shape in tech-advanced urban areas from Shanghai to Dubai.

"We want to be the first to show how you could do this and put that out as a model," she says. "We want a smart city of privacy."

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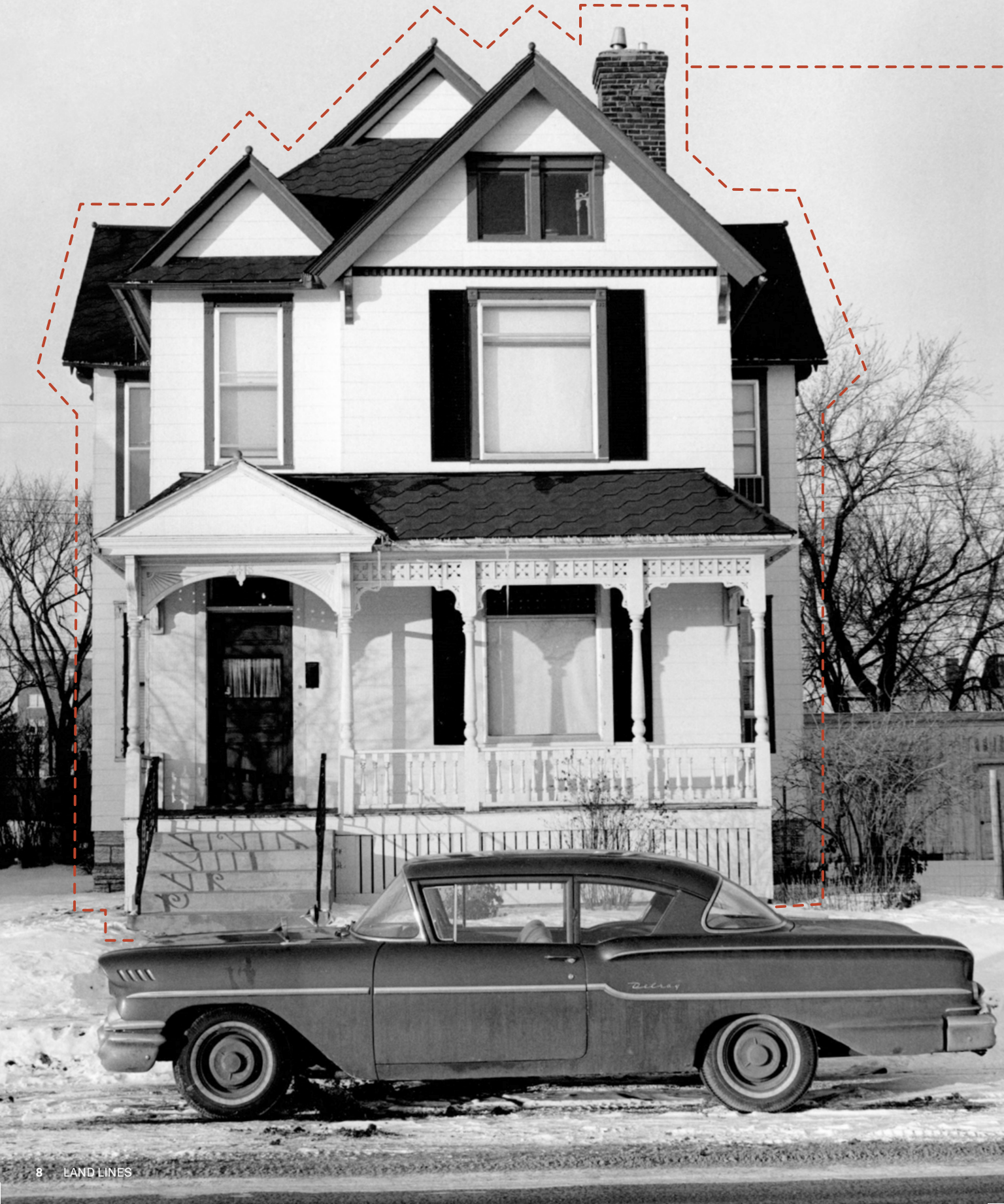
**Rob Walker** is a journalist covering design, technology, and other subjects. His book *The Art of Noticing* was published in May 2019.



# RE ZONING HISTORY

## Influential Minneapolis Policy Shift Links Affordability, Equity

*By Kathleen McCormick*

**WITH THE ARRIVAL OF 2020**, Minneapolis becomes the first major U.S. city to implement a ban on single-family zoning in every neighborhood. For decades, single-family zoning had locked up nearly three-quarters of the city's urban land in low-density housing and had contributed directly to lasting racial inequities. The historic and controversial policy shift—which comes with the formal adoption of the *Minneapolis 2040* comprehensive plan and follows years of research, planning, and political maneuvering—will allow duplexes and triplexes citywide. It has been hailed as a significant and replicable step toward more effective and equitable use of urban land, and has inspired or helped inform similar shifts across the country.

From an economic and planning perspective, undoing single-family zoning is "a momentous idea," says William Fischel, emeritus economics professor at Dartmouth College, a zoning board member in Hanover, New Hampshire, and author of the Lincoln Institute of Land Policy book *Zoning Rules! The Economics of Land Use Regulation* (Fischel 2015). "I heartily approve of what Minneapolis is doing."

The movement toward exclusively single-family neighborhoods in the United States began in the 1910s and 1920s, says Fischel. "Advocates of zoning were unabashedly in favor of the single-family house" for many reasons, including public health; such structures were seen as improvements to crowded and unsanitary urban neighborhoods. The turning point that made single-family zoning so desirable across the nation came in the 1970s, when inflation made housing a very attractive equation for building personal wealth, he says. Beginning in the 1980s and 1990s, with the rising value of homes, people found that they could stop development in their single-family neighborhoods through zoning. "That's been a clear goal all over the country, to protect single-family-zoned housing," mostly from incursions of industry or denser and more affordable housing, says Fischel.

Single-family zoning is a barrier to home ownership for those who can't afford to purchase a home, effectively locking up certain neighborhoods. During the *Minneapolis 2040* process, its champions—including a progressive mayor and city council, along with the city's Community Planning and Economic Development (CPED) department—presented the comprehensive plan as part of the solution to addressing the enduring effects of policies that intentionally

Minneapolis, 1963. Credit: Jerome Liebling via Getty Images

Neighborhoods zoned for single-family housing currently encompass 70 percent of the 54 square miles of Minneapolis. Beginning this year, two- and three-family structures will be allowed citywide. Credit: akaplummer/iStock.

and systematically discriminated against communities of color. The resulting disparities, the plan says, were "rooted in overt and institutionalized racism that has shaped the opportunities available to multiple generations of Minneapolis residents." As the plan notes, Minneapolis has both the nation's lowest home ownership rate among black households and the widest unemployment gap between black and white residents.

"Equity drove this in a big way," says Caren Dewar, executive director of the Minneapolis-based Urban Land Institute (ULI) Minnesota, whose members include large multifamily and affordable housing developers, urban planners, architects, and others. "It was a bold move, and it was hard. City council members ran on a very progressive platform, supported by a group of savvy and engaged advocates who supported overcoming racist history and providing more housing."

As Minneapolis begins its history-making policy implementation, other cities and states have begun to implement shifts that encourage density, equity, and affordability, from allowing accessory dwelling units (ADUs) in parts of Washington, DC, to passing statewide legislation in Oregon that legalizes certain types of multifamily properties in cities of 10,000 or more. Others are watching to determine how dismantling single-family zoning will not only provide more places to live, but also change the physical, economic, and social landscape of cities.

## Housing Woes in a Growing City

Between 2010 and 2016, Minneapolis added more than 37,000 residents and 12,000 homes, increasing its population 11 percent to 425,000, according to estimates from the Metropolitan Council (Met Council), the policy and planning agency for the Twin Cities metropolitan region. This growth is part of a rebound from the decades of decline that had occurred since the city's population peaked at nearly 522,000 in 1950—changes related to the loss of industry, "white flight," and the construction of new suburbs. The Minneapolis metro region's population is expected to grow as much as 10 percent per decade, to 3.7 million by 2040, according to the Met Council. To meet existing and future housing demand, the region needs to add more than 14,000 homes each year for the next two decades.

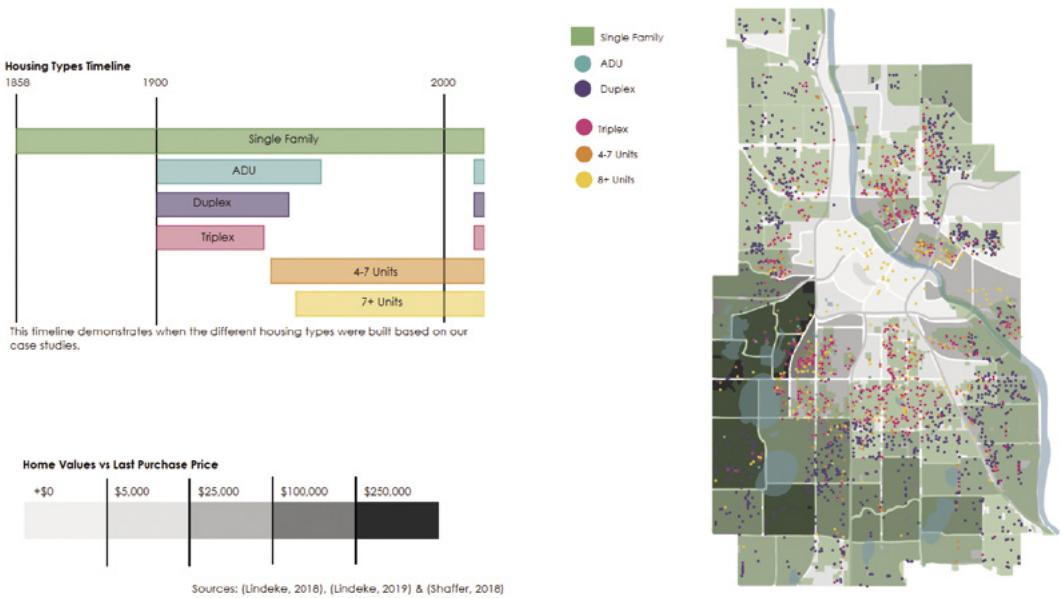
Now boasting one of the lowest vacancy rates in the U.S., 19 Fortune 500 companies, and steady economic and population growth, the Minneapolis-St. Paul area is ranked first in the Midwest for real estate investments, especially in rental properties (PwC 2019). But it also ranks first in a more dubious arena: Minneapolis has the nation's lowest black home ownership rate, according to a 2018 analysis of 128 U.S. cities conducted by the APM Research Lab, a sister company of Minnesota Public Radio News. The study showed more than 70 percent of white households in these cities, but only 40 percent of black households, owned their

home. In Minneapolis, the gap was more pronounced: 78 percent of white households, and only 19.8 percent of black households, were homeowners (APM 2019).

Minneapolis is also grappling with an affordable housing crisis amplified by a lack of housing options, particularly smaller residences suitable for first-time buyers and those looking to downsize. These "missing middle" properties include duplexes, triplexes, cottage courts, and small apartment buildings. Such multifamily buildings were a valued part of the city's urban fabric until the 1940s, when single-family zoning began to take hold. Many were grandfathered into the single-family zones, which now encompass 70 percent of the city's 54 square miles.

In the past decade, rising home prices and the lack of housing types (Figure 1) have boosted the percentage of renters from 49 percent to a 52 percent majority. The cost of single-family homes has been rising steadily in recent years, and the median home price hit $290,000 in June 2019, a 7.2 percent increase over June 2018, according to the Minneapolis Area Realtors, while homes in the wealthier single-family neighborhoods can sell for several million dollars. Median rent was $1,695 in the first quarter of 2019, up 3.6 percent over the previous year, compared to the U.S. median monthly rent of $1,530 (Clark 2019). Financial pressure on renters has been compounded by decreasing wages: since 2000, the median income of Minneapolis renters has declined 14 percent as median rent increased 11 percent. The plan notes that the city's economic gaps by race are significant: black households earn a median income of $20,871, less than a third of the $65,000 earned by white households, and 45 percent live below the poverty line. These disparities are at least in part the outcome of exclusionary zoning, research suggests.

**FIGURE 1** Minneapolis Housing Types




Research and data visualization by architecture students in the Designing for Minneapolis 2040 Studio at Dunwoody College of Technology in 2019 illustrate how single-family structures have dominated the local housing landscape during the 20th century. The students' research for the course encompassed transportation, housing, and equity. Credit: Dunwoody College of Technology.

## Mapping Prejudice

In 2016, an interdisciplinary team of community activists, students, and scholars from the University of Minnesota began a project called Mapping Prejudice. The goal of the project was to make structural racism visible by identifying and mapping the property contracts that made many neighborhoods racially exclusive during the 20th century. Although this practice was not limited to Minneapolis (see sidebar), their effort was the first comprehensive visualization of racial covenants for an American city.

The team's intent was to work with residents, activists, and policy makers to understand how contemporary inequities were rooted in historic injustices. Using GIS and with help from volunteers, the team has been reviewing more than 1.4 million digital scans of warranty deeds in Hennepin County from 1900 through 1960, and has uncovered more than 20,000 covenants for private homes that specifically excluded people on the basis of race or ethnicity. These findings demonstrate that structural barriers stopped many people of color from buying property and building wealth for most of the last century.

When the city's first racially restrictive deed was written in 1910, Minneapolis was not particularly segregated, but covenants "changed the landscape of the city," notes the Mapping Prejudice website. For example, a 1919 advertisement in the *Minneapolis Tribune* offered "restricted" housing sites overlooking one of the city's lakes that could not be sold, mortgaged, or leased to anyone of African, Asian, or Jewish descent (Figure 2). The Mapping Prejudice research revealed that most deeds were crafted mainly to exclude blacks, who were pushed into small areas of North Minneapolis as racially restrictive deeds increased—even as the number of black households also grew.

In the 1930s, federal housing administrators endorsed these documents, requiring them for projects that used federally backed financing. Lenders followed suit, accepting the rationale that covenants provided the essential insurance

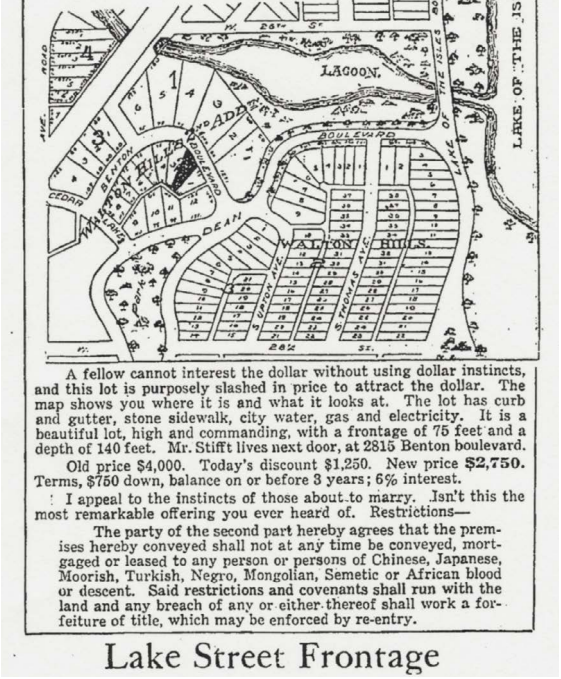



**FIGURE 2** The Mapping Prejudice team found archival materials including this 1919 advertisement from the *Minneapolis Tribune*, which restricts real estate purchases based on ethnicity. Credit: Mapping Prejudice.

of stable investments in residential property. Banks routinely "redlined" or denied loans for properties in racially mixed neighborhoods, and increasing sections of the city became entirely white, laying the groundwork for patterns of residential segregation that still exist today. Though the laws would change—the U.S. Supreme Court made covenants unenforceable in 1948, the Minnesota Legislature prohibited their use in 1953, and the U.S. Congress banned racial restrictions as part of the Fair Housing Act of 1968—the effects of covenants and predatory lending practices would endure in Minneapolis and elsewhere.

Partnering with the Mapping Prejudice team, city planners compared zoning maps and demographic data with redlined areas and found they had nearly identical boundaries. They documented that even after redlining was abolished, people of color had been excluded from most of the single-family neighborhoods in the city, and thus had been prevented from owning homes, accumulating wealth, and having access to the better jobs, transit,

educational opportunities, parks and open space, and other benefits available to residents of more affluent white neighborhoods.

The areas that were covenanted are largely white and among the wealthier parts of the city today, while the areas engineered to be largely black remain that way and are among the city's poorest neighborhoods. Where shifts are occurring—in some areas of North Minneapolis, for example—they follow patterns of gentrification, as white residents priced out of other areas "discover" mostly black neighborhoods with lower-priced housing.

The Mapping Prejudice project proved that "Minneapolis had a direct link from racially biased zoning to single-family zoning," says Heather Worthington, CPED's long-range planning director. When it came time to design the comprehensive plan, "the linkage between the racially biased housing and lending practices and covenants was really the important policy underlayment, as these informed the development of single-family zoning," Worthington says. "That was the first reason we had to address the city's single-family zones." The second: "We heard from Minneapolis residents that, as they aged, they couldn't access other types of housing, as so much of it was single-family, one-size-fits-all kind of housing. They wanted more choice, and places to downsize. We had a huge racial disparity and [we also had] a large segment of the population that said, 'We want more options.'"

## RESIDENTIAL SEGREGATION AND EXCLUSIONARY ZONING

Minneapolis was the first large city in the country to enact a fair housing ordinance, and Minnesota was one of the first states to pass a civil rights law outlawing housing discrimination, says Myron Orfield, a professor at the University of Minnesota Law School and director of the Institute on Metropolitan Opportunity (Orfield 2017). But residential segregation endures in this city and in communities across the country—the result of "a century of social engineering on the part of federal, state, and local governments that enacted policies to keep African Americans separate and subordinate," notes Richard Rothstein in *The Color of Law* (Rothstein 2017).

While the federal Fair Housing Act prohibits housing discrimination based on race, color, national origin, religion, sex, ability, and familial status, it does not prohibit class-based, or economic, discrimination—a legal loophole that permits continued discrimination against communities of color, which tend to be lower-income due to historical barring from home ownership and educational opportunities (DeNinno 2019). Housing segregated by income level is increasing due to exclusionary zoning policies that municipalities or individual neighborhoods use to reduce affordable housing options through restrictions against apartments, townhomes, and other forms of multifamily housing, and such policies are still legal under current federal law, writes Richard Kahlenberg, senior fellow at the Century Foundation, in *The New York Times*: "Rising class segregation by residence is partly related to rising income inequality, but it is also the result of an expansion of exclusionary zoning." In extremely wealthy neighborhoods with very large lot requirements, he notes, "policies can effectively exclude virtually all families not in the top one percent by income and wealth" (Kahlenberg 2017).

Kahlenberg argues for a new economic fair housing act to curtail government zoning policies that discriminate based on economic status. Such a law could ban exclusionary zoning at the local level or impose a penalty on municipalities that maintain discriminatory zoning, either by withholding infrastructure funds or by limiting the tax deduction homeowners can take for mortgage interest.

## Laying the Groundwork for Change

In April 2017, a previous city council unanimously adopted 2040 comprehensive plan goals that addressed key areas including racial disparities, housing and transit, and climate resilience. Later that year, the election of an especially progressive city council slate brought new mandates to Minneapolis. Elected to a second term and as president of the council was Lisa Bender, a cycling advocate and urban planner with a master's degree in city and regional planning from the University of California, Berkeley, who had introduced a successful ADU ordinance in 2014. Andrea Jenkins, the first black, transgender woman to hold public office in the country, won a seat on the council after campaigning on a platform that included raising the minimum wage and increasing affordable housing supplies. She is now vice president of the council. Jacob Frey, a civil rights attorney and community activist, was elected mayor, and also ran on a platform of expanding housing.

The zoning changes Bender, Jenkins, Frey, and others promoted through *Minneapolis 2040* faced fierce opposition; "Don't Bulldoze Our Neighborhoods" lawn signs appeared around town, mostly in whiter, wealthier neighborhoods. Many in Minneapolis say the eventual success of the plan was attributed to a concerted effort to engage in community outreach by city officials and various local Yes in My Backyard (YIMBY) activist groups.

The community engagement process underpinning *Minneapolis 2040* spanned more than two years and 200 meetings, garnering over 18,000 public comments. The breadth and depth of the community outreach was unprecedented for the city, says Worthington, including community workshops and dialogues, artist-supported events, and online engagement. Planners were very intentional in seeking out communities that were typically underrepresented in planning efforts, such as renters, people of color, the

> For the first few months of the [two-year] comprehensive planning process, planners were often booed at meetings . . . but by the final months, people wanted to learn more. It became "we're all in this together."


Local leaders instrumental in the effort to create more affordable housing in Minneapolis through steps such as eliminating single-family zoning include, from left to right, City Council Vice President Andrea Jenkins, City Council Housing and Policy Development Chair Cam Gordon, City Council President Lisa Bender, and Mayor Jacob Frey. At right, an example of signs opposing the policy shift. Credits (left to right): Elizabeth Flores, *Minneapolis Star Tribune* via Getty Images; Tony Webster/Flickr CC BY 2.0.


Architecture students in the Designing for Minneapolis 2040 Studio at Dunwoody College of Technology collaborated with city officials to study historical housing patterns and future needs. This rendering of a triplex at 26th and Lyndale includes retail on the ground floor as a nod to the hardware store that long occupied this site. Credit: Megan Bur, courtesy of Dunwoody College of Technology.

disability community, and seniors, she says. "We tried to meet people where they were, have more visual presentations, and use innovative tactics. We went to many festivals and programs and jumped on buses and light rail to talk to people." They also worked to achieve a much greater level of transparency than previous planning efforts.

Part of the process was educating residents by partnering with the Mapping Prejudice team, who presented findings and participated in discussions. "Minneapolis has a lot of what I call 'progressive dissonance'—people who describe themselves as liberal and progressive but don't understand the bias going back 100 years," Worthington says.

For the first few months of the planning process, planners were often booed at meetings and received abusive emails. By the final months, she says, people wanted to learn more. It became "we're all in this together and need to work together" to solve housing and equity issues, she says, rather than a Not in My Backyard (NIMBY) concern about preserving neighborhood character.

## Duplexes and Triplexes

To be clear, the new zoning in Minneapolis does not prohibit construction of single-family homes. It simply says that no neighborhoods in the city can have *only* single-family homes. New duplexes and triplexes must be built within the existing building envelope, and up to two units can be added within that footprint to owner-occupied homes. Indeed, one doesn't have to look far to find examples of how duplexes and triplexes could work in single-family neighborhoods.

"Our city originally developed along streetcar lines, so we have many neighborhoods that have a rich diversity of housing types and land uses, including duplexes, triplexes, and smaller multifamily buildings," Bender has said (Grabar 2018). "So we were able to keep pointing back at those neighborhoods and say, 'This is a pretty incremental change.'"

By inserting ADUs, duplexes and triplexes, and other housing types, "we're undoing things that have been done for a long time," said Bender in an interview for *Land Matters*, the Lincoln Institute podcast (Flint 2019). The comprehensive

Architecture student Adam Booth designed this well disguised quadplex to demonstrate that "density can be added without majorly impacting neighborhoods." Credit: Adam Booth, courtesy of Dunwoody College of Technology.

plan process raised questions such as, how do we redefine what is the status quo, what isn't working for people today, who gets to live here, and what are people's aspirations for this city, she says. "We're at a crossroads in terms of people being able to live in our city and in terms of climate change, and we have to make some good moves" and meaningful investments.

Addressing concerns that more duplexes and triplexes will change neighborhood character and overtax the city's infrastructure, supporters of the plan point to the fact that the city had an additional 100,000 residents decades ago—mostly more people in each home—and has plenty of street, transit, and other infrastructure capacity, says CPED Director David Frank.

An early draft of the comprehensive plan allowed for fourplexes on single-family lots. But organized opposition and a staff analysis, including architect-designed models, convinced planners to limit the density. To provide perspective, Worthington notes, a typical city lot is 40 feet wide by 120 feet deep, and the maximum home size is 3,000 square feet. "Three units gets us more density on the lot but is a lot more livable" than trying to fit four in the same footprint. Three-unit developments can also use residential financing, whereas a four-unit configuration triggers commercial financing and building regulations. A triplex also doesn't require ADA accommodations and is easier to lay out, she adds. Duplexes and triplexes "will be a relatively small change in terms of impact on neighborhoods, but can be a big opportunity for people who historically have had limited access to neighborhoods that have the best transit, grocery stores, parks, and other amenities."

Will the new zoning cause developers to demolish single-family homes en masse and redevelop adjacent lots into multifamily buildings, as opponents have warned? Worthington responds that the economics of tearing down an existing home and building a duplex or triplex are unlikely to pencil out for larger-scale developers; a homeowner with equity who can afford to build an ADU or convert part of the home to make a duplex, she says, "is probably a better prospect."

Worthington also points to other potential players, including two land trusts in the area that buy property and help fund affordable housing development. Eddie Landenberger, vice president and senior project manager for the Twin Cities Land Bank—a local nonprofit organization that in the past decade has helped leverage land purchases for over 1,500 single-family and multifamily homes, including many that have been rehabbed in North Minneapolis—says interest in taking advantage of the new zoning regulations is on the rise.

"We don't have clarity yet on how many duplexes and triplexes could be built in the next year or 10 years, but we do have more single-family and smaller developers now seeing duplex and triplex as an incremental step into building multifamily buildings," says Landenberger. The land bank has been doing deals through the city's Missing Middle program, which provides gap financing and grants as part of the city's multi-pronged approach to developing more affordable housing (see sidebar).

"The zoning change provides more opportunities for a landlord to have a couple units, and we're starting to see smaller developers jumping into these projects," says Landenberger. "The new zoning is already helping us with our work, as we're now seeing entitlement processes referring to these future zoning changes."

## MINNEAPOLIS AFFORDABLE HOUSING EFFORTS

In the city of Minneapolis, 50 percent of renters and 74 percent of low-income renters are cost-burdened, according to *Minneapolis 2040*. Since 2000, the city has produced or preserved 8,900 housing units considered affordable for residents earning 50 percent of the area median income (AMI), which is $100,000 for a family of four in 2019. But the city also lost approximately 15,000 homes that were affordable to households at this economic level; the homes generally still exist, but they are cost-prohibitive to own or rent.

The city's 2019 budget addressed the four pillars of Minneapolis' affordable housing agenda—production of new affordable housing, preservation of existing affordable housing, protection of renter rights, and increases in affordable home ownership opportunities—with an historic $40 million, more than three times the city's previous record. State and federal funds bring that total to $50 million. This investment includes the Affordable Housing Trust Fund, which was increased by $14 million in 2019 to $21.6 million. The fund provides gap financing to preserve and produce affordable rental housing for households earning less than 50 percent of AMI, with a priority for units affordable to households earning less than 30 percent of AMI.

The city also allocated $500,000 for the new Missing Middle Housing Pilot Program, which aims to develop affordable residential housing projects with between three and 20 rental or ownership units on vacant land along transit corridors. Minimum criteria for rental projects include 20 percent affordable units for households at or below 50 percent of AMI, maintained for a minimum of 30 years. Program financing for ownership projects requires at least 10 percent of units to be affordable to households at or below 80 percent of AMI. The city will finance up to $95,000 for each eligible affordable unit.

In addition to the Missing Middle pilot program, multiple interrelated efforts are underway to add more diverse and affordable housing options and a more equitable distribution of housing.

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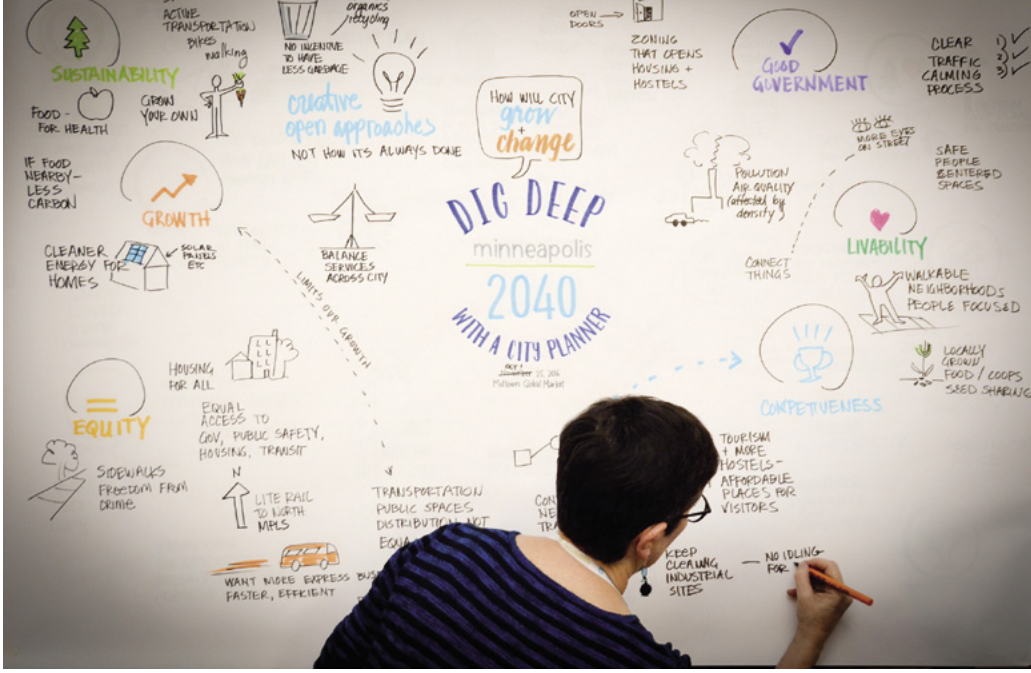
- **Accessory Dwelling Units (ADUs):** One of the city's goals in passing an ADU ordinance in 2014 was to provide age-in-place housing options. Planners developed design and regulatory standards for units to retain the character and context of the city's low-density residential areas. The city eased development costs by waiving the two largest fees tied to adding a dwelling unit, a sewer availability charge and a parkland dedication fee, which together save homeowners about $4,000. The city had issued 137 permits for ADUs as of January 2019.

- **Inclusionary Housing:** City council approved an interim inclusionary housing ordinance in December 2018 and voted to increase affordability requirements and impact fees for new upzoned development. A permanent inclusionary housing policy and ordinance proposal has been under consideration for 2020, pending city council approval. The proposed policy being considered would give developers of new rental housing with more than 20 units several options for providing affordable units on-site. These options range from requiring 4 percent of units to be affordable to those earning 30 percent of AMI to requiring 20 percent of units to be affordable at 50 percent AMI. The latter option includes tax increment financing assistance from the city. Developers could also build affordable units elsewhere or pay in-lieu. Ownership projects must have at least 10 percent of units priced as affordable for households earning 80 percent of AMI.

- **Affordable Housing Preservation:** The city's 2019 budget includes $3.4 million to preserve and stabilize naturally occurring affordable housing (NOAH). Launched in 2018, the 4d Program—named for the state tax classification for such properties—helps apartment building owners obtain property tax reductions of up to 40 percent if they commit to keeping 20 percent or more of their units affordable. In 2018, over 750 units with affordable rents were preserved with a 10-year affordability commitment.

- **Minneapolis Homes:** Funded at $5 million in 2019, this program offers loans for down payment assistance and has enabled the purchase of hundreds of city-owned vacant lots and houses, including many in North Minneapolis. Under the program, the city assisted with 74 homes in 2018, and 57 were purchased by a person of color or indigenous person.




In addition to housing, the newly enacted comprehensive plan encompasses issues such as transportation, technology, parks and open space, and public health. The *Minneapolis 2040* planning process involved an unprecedented level of community outreach and engagement. Credit: Courtesy of Minneapolis 2040.

## Measuring Progress

According to fair housing laws, the city can't restrict home sales to any particular groups or individuals, but the city is searching for the regulatory lever it can use to help people move into formerly single-family neighborhoods, says Worthington. "You can do things as a private citizen, like build an ADU and rent it to a person eligible for subsidized housing," she says. "There's a strong thread of that kind of community activism that runs through the city."

The comprehensive plan is "part of an ecosystem of changes in policy at the city level on regulating land use, how we incentivize housing, how we invest in areas of the city that have been disinvested in over time." She says Minneapolis is not pinning hopes just on duplexes and triplexes, which are likely to be built gradually over time and won't provide the volume of housing needed. Upzoning along transit corridors with newly allowed four- to 10-story mixed-use buildings, another key component of the plan, is likely to spur more homes. She says the city is working with partners to identify a set of metrics to measure progress toward affordable housing, land use, and equity goals.

Still, uncertainty lingers, among opponents of the plan and supporters alike. One lakeside single-family neighborhood near a future light-rail station is applying for a never-used local conservation district designation in an effort to forestall development there. And advocates including City Council Vice President Jenkins say effective implementation will be key.

"I have some concerns around who will be able to take advantage of these opportunities," says Jenkins, who is participating in a 10-city Policy Link initiative to develop strategies related to displacement. She says Minneapolis has helped low-income residents buy single-family homes and has built large affordable housing complexes, but she'd like to see the city expand the homeownership program and technical assistance program "to build a pipeline for home ownership, to allow black residents to become small developers, live in owner-occupied duplexes and triplexes, stabilize their communities, and build wealth for their families.

"The new Missing Middle pilot program has a lot of potential," says Jenkins. "That missing middle is where we can have the most success for low-income communities of color, particularly for black people." She says the city owns hundreds of vacant lots, and "we have to be

smart, creative, and intentional about these opportunities. The majority who have benefitted so far have not been people of color." She says the city needs to "lean into" more targeted outreach and support for community development groups and mortgage education and training, and ensure that the ongoing discussion around these issues includes all communities.

## Testing Incremental Change

As eliminating single-family zoning becomes more common, or at least more commonly considered, are we witnessing the end of an era? Only time will tell, says zoning expert Fischel. "Minneapolis is a very progressive city," he says, and its zoning changes could be a special case that might not see widespread adoption across the nation. A city with a majority of renter households might have an easier time building public support for eliminating single-family zoning than a majority homeowner city. Introducing Minneapolis-inspired policy changes to cities where homeowners are a distinct majority could be one test of wider applicability. Another test could be whether such a change would be overturned by a less-progressive city council in the future.

Fischel's recommendations for urban planners and public officials in other cities parallel what Minneapolis has just done: educate the public about exclusionary zoning and emphasize the benefits of compact urban development and density. Avoid the "NIMBYs are evil and YIMBYs are good" argument, he suggests, and explain that higher density is good for social and economic diversity and for climate resilience. "Invert the 'make no little plans' concept to 'make lots of little plans,'" says Fischel. "Undo single-family zoning in one city or one neighborhood at a time and see if it works. Try incrementalism."

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# THE RICHES OF RESILIENCE

Cities Are Investing in Green Infrastructure. Should Developers Help Foot the Bill?

*By Anthony Flint*

**LIKE MANY COASTAL CITIES,** Miami is facing a climate future that is already here. Even without a major storm, seawater has been washing over the streets and bubbling up from bathtub drains, a harbinger of what's to come when a projected two feet of sea-level rise invades the low-lying, porous land of South Florida by mid-century.

The threat is not going unanswered. Based in no small part on the experience of dealing with the region's notorious hurricanes, planners and political leaders in the metropolitan region have a good idea of what's necessary to build resilience: a combination of hard barriers and green infrastructure, including the restoration of natural systems to absorb and distribute the inundation.

Two years ago, voters approved a $400 million Miami Forever Bond to help pay for a "stronger, more resilient future," distributing the money across five categories: flood prevention, parks, roadways, public safety, and affordable housing. Special emphasis has gone to protecting lower-income neighborhoods, as well as the city's legendary luxury beachfront properties. That juxtaposition—between Little Havana inland, for example, and the ritzy condominium towers of Brickell Bay Drive—has prompted consideration of how the funding could be augmented by those who can afford it most.

At Brickell Bay Drive, which is routinely flooded, a proposed park and seawall redesign incorporating green space and stormwater remediation—which is estimated to cost up to $35 million—will help keep water away from some of the city's most iconic residential towers. The skyline will soon include two 1,000-foot luxury towers that will be the tallest on the East Coast south of New York City, made possible by changes in height restrictions. As such wildly successful private real estate development becomes the primary beneficiary of taxpayer-funded resilience infrastructure, officials are weighing how the private sector might play a greater role in financing the green scheme.

Jane Gilbert, chief resilience officer at Miami's Office of Resilience and Sustainability, says when it comes to paying for resilience, all options are on the table—including land value capture, also known as land value return, a financing mechanism that recovers a portion of taxpayer-funded investments associated with increases in land values. A mounting body of evidence suggests a clear tie between green infrastructure and increased property values; and indeed, resilience infrastructure won't just enhance property values, like parks or transit stations have been shown to do. It will allow private developments to continue to exist in the first place.


The Miami waterfront, left, is a highly developed area vulnerable to flooding and sea-level rise. At right, the aftermath of Hurricane Irma along Brickell Bay Drive, 2017. Credits (left to right): Demetrius Theune/iStock, Mike Stocker/Associated Press.

"Could we do value capture for properties just outside the [proposed] park? Maybe," Gilbert said. "We're going to look at every financing vehicle we can."

Just as climate change is inspiring new paradigms in insurance, home finance, agriculture, transportation, and so many other sectors, it is forcing cities to revisit the fundamental relationship between the infrastructure that government is providing and the real estate that is being protected. The magnitude of the task—communities around the world are spending an estimated $25 billion per year on green infrastructure—necessitates a search for additional funding.

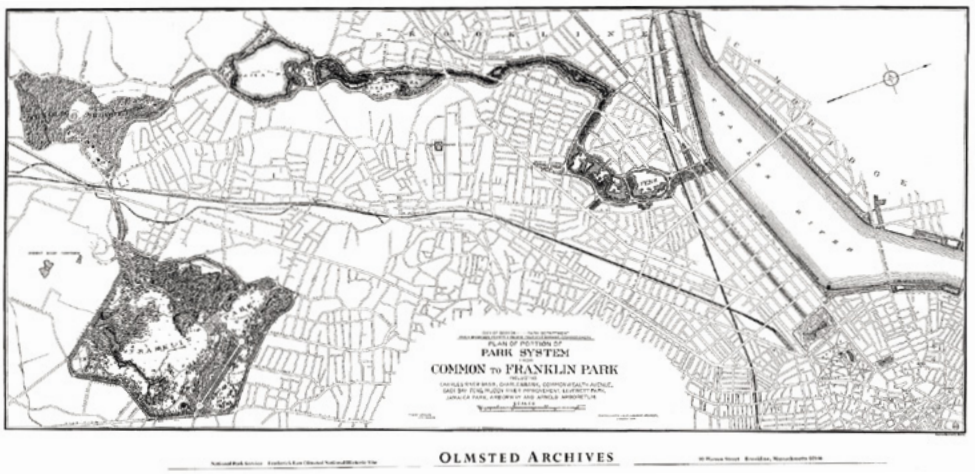
## NO CHOICE BUT TO INVEST

The relationship between government-provided infrastructure and the private sector has had a long history. Landowners, commerce, and industry have enjoyed most of the benefits of canals, railroads, bridges and tunnels, roadways, and many other facilities since the republic began investing in infrastructure in a meaningful way. Investments in infrastructure have also surged at key moments when cities have faced major problems like disease, overcrowding, and congestion.

By the end of the 19th century, cities were growing fast and trying to accommodate industry and a steady influx of immigrants. "It forced the need to invest," said Alex Krieger, professor of urban design at Harvard University, principal at architecture and planning firm NBBJ, and author of *City on a Hill: Urban Idealism in America from the Puritans to the Present* (Belknap Press 2019).

"Boston had to build a subway system because it was facing utter congestion, horse manure in the streets, and a city doubling in size," he said. The same was true for local projects most residents now consider part of the landscape, like the Charles River dam; the infilling of the city's Back Bay, now a bustling residential and commercial district; and the creation of Frederick Law Olmsted's Emerald Necklace, which was designed primarily as a sanitation and flood-control system, as well as a park. "The fear was that things would become completely dysfunctional and unmanageable," Krieger said. "Things were closer to the boiling point and there was no choice but to invest."

Cities are at a similar moment today, amid the growing recognition of the havoc that climate change is wreaking. Just as filling in mud flats made Back Bay possible, resilience infrastructure is the key to future urban development—and arguably plays an even




Frederick Law Olmsted's Emerald Necklace, which has become a treasured corridor of parks and open space in Boston, was designed as a sanitation and stormwater management system in an era dominated by looming environmental and public health crises. Credit: Courtesy of City of Boston.

greater enabling role, as the climate stakes get ever higher.

The current crisis does not want for solutions. Many of the systems and approaches for dealing with sea-level rise and storm surge are close at hand, according to Billy Fleming, director of the McHarg Center at the University of Pennsylvania and one of the editors of the new Lincoln Institute of Land Policy book *Design with Nature Now* (Steiner 2019). Fleming helped curate the 25 green and blue infrastructure projects showcased in the book, which honors the ecological design tenets of pioneering landscape architect Ian McHarg (see page 47).

The interventions featured in the book include a New York City landfill transformed into a park, a wetland in China constructed to filter pollution from a planned city of 50,000 people, and a proposal for built landforms in coastal Norfolk, Virginia, that would absorb stormwater and tides. The fundamental concept behind this approach to resilience, cultivated by the Dutch in particular over the centuries, is to blend dikes, berms, barriers, and floodgates—the "hard" or "gray" infrastructure designed to keep water out—with "soft" systems that replicate nature and let water in, to be absorbed and distributed.

The projects in the book and others like them reflect design innovation, experimentation, and some trial and error, and can serve as prototypes for different urban conditions, Fleming said. But in addition to municipal commitments, they need a higher-level organizational framework so successful green infrastructure systems can be scaled up and implemented—on a par with preparing for war, building the interstate highway system, or sending a man to the moon.

"It's a national problem that needs a national-scale mobilization," he said. Federal agencies like the Army Corps of Engineers, he said, will have to be set up to administer and fund the best solutions for climate adaptation.

There is always more innovating to do, just as NASA constantly improved the design of its rockets. But the basic engineering solutions, Fleming suggests, are ready to be implemented.

Investments in infrastructure have surged at key moments when cities have faced major problems like disease, overcrowding, and congestion . . . Cities are at a similar moment today, amid the growing recognition of the havoc that climate change is wreaking.

Weishan Wetland Park, a green infrastructure project in China built to filter urban pollution. The project is featured in the new Lincoln Institute of Land Policy book *Design with Nature Now*. Credit: Courtesy of AECOM.

To extend the metaphor, green infrastructure solutions are like the aircraft carriers and bombers needed for World War II: proven in terms of getting the job done, they simply needed to be built and deployed. The matter of funding was an assumption in the case of preparing for war; it just hasn't been resolved in the case of battling climate change.

"If we decided tomorrow that this was as real a problem as cholera was in the 1870s, we would find the money," said Harvard's Krieger. "A consensus will only come out of a collectively understood crisis."

## AN APPROACH WITH MULTIPLE BENEFITS

The traditional means of financing infrastructure is centered around borrowing at the federal, state, and local levels. As federal funding generally has waned, some cities have explored new bonding mechanisms that clarify how investments in sustainability will pay dividends in the future. In Washington, DC, a green bonds program provides capital for riverways and stormwater and sewage management based on the measurable performance such efforts produce. The inaugural $350 million issuance, in 2014, was the nation's first municipal century bond—a 100-year duration—and has become popular for its stability and greater yield.

The rationale for that approach is inherent in the Environmental Impact Bond, which, according to the financial firm Quantified Ventures, provides up-front capital from private investors for environmental projects, either to pilot a new approach whose performance is viewed as uncertain or to scale up a solution that has been tested in a pilot program.

While the most cautious investors view green infrastructure as new and unproven, in fact it is extraordinarily potent. "Green infrastructure delivers multiple benefits to society, including environmental, economic, and health outcomes," said Eric Letsinger, founder of Quantified Ventures, which focuses on projects with positive social and environmental impact.

Green infrastructure practices can produce positive health outcomes, for example, that translate to reduced costs to local health systems and plans. Letsinger said involving other sectors in paying for resilience would address the "wrong pockets" problem—the economics scenario where one entity bears the cost of an investment that generates benefits for others—that has "historically limited green infrastruture economic beneficiaries, like health parners, from paying their share of the implementation costs."

Similarly, some of the biggest economic beneficiaries are private land and property owners. A 2017 report published by the Urban Land Institute quantified how water management mechanisms using green infrastructure can create value for real estate projects by improving operational efficiency as well as serving as an attractive amenity. One of the key takeaways was that natural resilience systems can enhance financial viability (Burgess 2017).

Installation of a bioretention bumpout in Washington, DC, where a Green Bonds program provides capital for stormwater and sewage management projects. Credit: Chesapeake Stormwater Network.

"We found many examples of thoughtful incorporation of green infrastructure that led to increased property values," said Katharine Burgess, ULI's Urban Resilience Program vice president. Green infrastructure, she said, can pay off in terms of operational cost savings. It can be integrated into placemaking and design, contributing amenity and market value, and can provide an ancillary benefit of freeing up developable land to increase yield.

A new matrix for risk assessment and due diligence in real estate, indeed, has climate change at its center. Another ULI survey of investors and developers concluded that factors like climate risk and vulnerability to flooding had become increasingly important for those considering developing, purchasing, or investing in property (Burgess and Rapoport 2019). "It's definitely a changing atmosphere," Burgess said.

The bottom line for the development community seems to be what is widely intuitively understood: higher, protected ground is more valuable ground.

"At the end of the day, this isn't about building codes or insurance or technology—it's about land use," and the hazards, shocks, and stresses related to the serviceability of land, said Harvard University's Jesse Keenan. He led research showing that lower-elevation properties in the Miami area gained value at a much slower rate than places that were high and dry (Keenan 2018).

Keenan coined the term "climate gentrification" to describe how inland neighborhoods in the city, like Little Haiti, have become suddenly sought-after. In the absence of resilience infrastructure to protect against rising seas, land that is higher than Miami's average of six feet above sea level is seen as a place of refuge.


At a Climate Ready workshop in Boston in 2017, the city invited participants to try their hand at balancing waterfront development with flood protection. Credit: City of Boston.

## PUBLIC–PRIVATE COLLABORATION

Is there a way to quantify the benefits of green infrastructure to spread out the responsibility of paying for it? Miami is not the only city giving the concept serious consideration. In Boston, planners have commissioned a study on a section of East Boston waterfront that includes the "potential for value capture from new waterfront development to fund resiliency infrastructure based upon existing and potential future uses" (BPDA 2018).

The study area includes a long stretch of developable land that will be rezoned from industrial and maritime use, ushering in mixed-use development with greater height and density—but that is also directly in the path of anticipated future flooding. "It's a discussion of equity . . . [potentially having] developers help pay for infrastructure that not only protects them, but also [offers protection] inland," said Richard McGuinness, deputy director for climate change and environmental planning at the Boston Planning and Development Agency.

A more modest version of public-private collaboration is unfolding at the Gillette headquarters alongside Fort Point Channel in Boston, where the company is preparing to provide the right of way for a flood barrier to be funded by the Federal Emergency Management Agency. The project costs will be augmented by funds from the city's capital budget that have been dedicated to resilience. Ultimately the company's gesture is an act of self-preservation—the razor factory is right at the water's edge—but city officials are encouraged by the recognition that building resilience requires businesses and government to work in sync.

Other metropolitan regions in the United States are also exploring how green infrastructure

**CAU Cañaveralejo** Green Infrastructure Projects and Land Value Increment Per Neighborhood

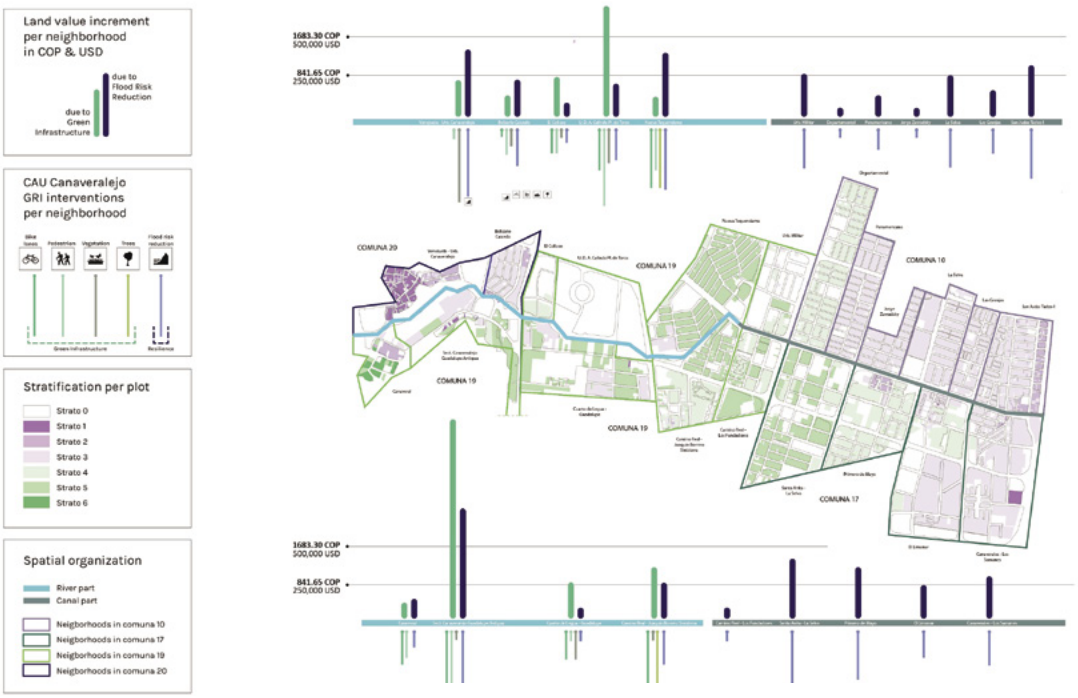



**FIGURE 1** A team of researchers explored the connections between green infrastructure and land value in Cali, Colombia, concluding that "land value increases are attributable to investments in resilience measures."

creates value, and they're creatively harnessing that power. In Pittsburgh, a portion of some 10,000 vacant and tax-delinquent parcels are set for green makeovers—urban farms, community gardens, pocket parks and the like—that could be financed through transfer of development rights. The approach ensures that the parcels aren't taken off the tax rolls because the development rights will get used in other areas planned for infill redevelopment. At the same time, the parks and community gardens will enhance property values in once-blighted areas, said Roy Kraynyk, a vice president at Allegheny Land Trust (Kraynyk 2017).

Meanwhile, research in South America suggests that well-established land value capture mechanisms in Colombia—which have long been used to support more traditional infrastructure projects related to housing and transit—could feasibly be put into use for resilience. A team of researchers led by Stelios Grafakos, principal economist at the Global Green Growth Institute, assessed the impact of green infrastructure on land values along a river project in Santiago de Cali, Colombia, known as the CAU Cañaveralejo (Grafakos 2019).

The hedonic pricing model the team developed, aided by GIS analysis, "quantitatively demonstrates a useful increase in land values attributable to capital investments in resilience and risk reduction. . . . Land value increases are attributable to investments in resilience measures such as the implementation of sustainable urban drainage systems, green corridors for flood management, restoration of natural floodplains, and multifunctional public space for recreation and stormwater management" (Figure 1).

## CALCULATING THE VALUE OF GREEN INFRASTRUCTURE

Fundamentally a stormwater management tool, green infrastructure also "creates amenities that can raise property values and provide health benefits," said Robin Hacke, executive director of the Center for Community Investment (CCI) at the Lincoln Institute. CCI works with cities including Miami, Milwaukee, and Seattle to identify and secure funding for resilience projects including green infrastructure and affordable housing. Hacke said land value capture is a "promising approach" that has been part of those conversations. Such discussions will likely gain momentum, as a growing body of research indicates that green infrastructure increases value:

- "In Boston, the 1330 Boylston complex . . . saw rent increases of $300 to $500 per month for units overlooking a $112,500 green roof, soon netting about $120,000 a year" (Burgess 2017).
- "High quality green environments can contribute to . . . rental uplifts of up to 20 percent" (UKGBC 2015).
- ". . . the assessed property values of the Menomonee Valley industrial properties were 5.8 percent higher than they otherwise would have been without green infrastructure" (Madison 2013).
- "Hedonic studies show that a reduced risk of flooding can result in a 2 percent to 8 percent increase in property values" (Clements 2013).

With such data emerging, cities seeking buy-in from developers may find that they're standing on firmer ground. But Hacke offered a word of caution: as values rise, so does the risk of displacement. Cities must prioritize affordability, she said, and invest in projects that "protect the community's ability to remain in place."

All told, the project has resulted in an overall increase in values of $2.2 million across 48 blocks in nine neighborhoods, a boost of about 7 percent. The work, which is still underway, includes tree planting, green spaces, and bicycle and pedestrian pathways.

One of the paper's coauthors takes the concept a step further, suggesting that green infrastructure's most tangible benefit may be that it protects against loss. "Financing urban climate adaptation through land value capture, in some respects, requires an inversion of the fundamental premise of the concept: rather than creating value, investments in adaptation serve to preserve value that would otherwise be diminished or paid," said James Kostaras, senior fellow at the Institute for International Urban Development.

> "Land value increases are attributable to investments in resilience measures such as the implementation of sustainable urban drainage systems, green corridors for flood management, restoration of natural floodplains, and multifunctional public space for recreation and stormwater management."

In that framework, Kostaras suggests, "some increment of the land value that is being preserved and protected by climate adaptation interventions is mobilized as a source of funding to mitigate the impact of flooding and other climate-driven events."

Properties in Miami that flood or sit near roads that flood have already lost $125 million in value since 2005, according to research compiled in the online Flood IQ education initiative. Future losses will easily double that amount in the next 15 years, and that projection doesn't include any new properties that become at risk from now through 2033 (First Street).

Seen another way, new private development in any area that is vulnerable to the impacts of climate change creates a burden for the public, because of the people and property in need of protection. As such, private-sector contributions to green infrastructure are more akin to developer extractions or impact fees, which have been charged to builders of conventional suburban development for decades to help pay for the extension of utilities to previously undeveloped areas.

## NEW WAYS TO PAY FOR INNOVATION

In the reconsideration of the relationship between public investments and private development, resilience infrastructure may well become the most critical of city services, alongside police or fire protection, or water, sewer, and power facilities. Keeping water at bay has acquired an outsized importance. "There's a centrality to it," said Enrique Silva, director of International and Institute-Wide Initiatives at the Lincoln Institute.

Measuring the benefits of that infrastructure will be complex, Silva said. In most land value capture mechanisms, the impact of public investments is measured in a more linear fashion; for example, the land value "uplift" within a half-mile radius of a new transit station. With green infrastructure, the land value impact is spread across a larger ecosystem, potentially producing significant variation in terms of assigning financial obligations. Do the properties closest to the intervention benefit most, or do those a mile down the rivershed enjoy the protections just as much? Or should all land and property within a special "resilience district" be treated the same?

"One could argue it's less complex with a new metro line," Silva said. Governments, he said, will "have to make that call—defining the catchment area."

For others, it's an open question that natural systems are such a singular driver of increased property values. Miami developer David Martin, principal at the Terra Group, said he would like to see a "fixed funding source for infrastructure that's not relying on macroeconomic forces that go up and down." In his view, resilience infrastructure is one of several factors determining land value—others being things like low interest rates or the quality of the local school system.

Such calibrations are an indication of the hard work ahead, but the impetus to find new ways of financing climate action will remain strong. "The infrastructure funding challenges that local governments face are just too great to solve through business-as-usual solutions," said Letsinger, from Quantified Ventures. "They'll need to innovate their way up this mountain, and if we're going to expect them to innovate, then we've got to give them new ways to pay for innovation."

Letsinger and others emphasize both the urgency of building climate resilience and the real-time availability of solutions. "We don't need to wait," he said. "Cities now have the tools, the means, and the access to capital today to advance the resilience projects that they need." □

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"The infrastructure funding challenges that local governments face are just too great to solve through business-as-usual solutions. They'll need to innovate their way up this mountain, and if we're going to expect them to innovate, then we've got to give them new ways to pay for innovation."

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# THE UNMALLING OF AMERICA

# How Municipalities Are Navigating the Changing Retail Landscape

By Gregory Scruggs

**THE STRUGGLING BANGOR MALL** is a national parable of changing retail habits. Built on a former dairy farm in Maine, the mall threw open its doors in October 1978, growing to serve up to two-thirds of the state's population with a plum location off a main thoroughfare, Interstate 95, in the middle of the state. For decades, the mall contributed handsomely to the local tax base, to the tune of $1.2 million per year. In recent years, however, the cream-colored structure with blue trim that once anchored Maine's third-largest city has gone through the same hard times affecting shopping malls across the country.

Over the past two decades, consumers nationwide have made significant shifts in their shopping habits, migrating to online retail and returning to traditional commercial corridors and shopping districts in economically strong metro areas. Meanwhile, Walmart has consolidated its position as the nation's largest brick-and-mortar retailer, with a strong clientele of rural, exurban, and small-town customers. As a result, once-venerable retail brands like Sears and Toys 'R' Us have faced bankruptcy.

This disruption has created a checkerboard of vacancies nationwide, including on the expansive 88 acres of the Bangor Mall, which is now anchored by Dick's Sporting Goods and Furniture Mattresses & More. Other longtime retailers in the space, like department store JCPenney, have signed lease extensions, though the mall's very future remains wobbly as out-of-state owners grapple with retail headwinds. In 2017, then-owner Simon Property Group of Indianapolis—which owns retail properties in 37 U.S. states and Puerto Rico, as well as in Europe and Asia—defaulted on an $80 million loan that had used the mall as collateral. The property was sold at auction to a New York-based investor trio in February 2019 for $12.6 million, less than half of its assessed value.

Those assessments have fallen precipitously in recent years due to the decrease in estimated net operating income and increase in vacancy, according to Bangor City Assessor Philip Drew. The mall has seen consecutive year-over-year reductions of roughly 25 percent, from $60.9 million in 2017 to $46.3 million in 2018 to $34.6 million in 2019. In both 2017 and 2018, years that saw the departures of flagship tenants Macy's and Sears, respectively, the mall's owner paid its taxes, but appealed for reductions in its assessment given the precarious situation at the property. Drew denied the requests, and his decisions have been appealed to the State of Maine Board of Property Tax Review.

Credit: uschools/iStock.

In Bangor, Maine, fiscal losses related to the decline of the city's 88-acre shopping mall, left, have been offset by reinvestments in the downtown area, right. Credits (left to right): Ten-X Commercial, Denis Tangney Jr/iStock.

In the meantime, the Bangor Mall's tax bill has dropped below $1 million for the first time in two decades. Such an outcome may sound like a major hit to Bangor's budget, but the blow turned out to be manageable, Drew says. The mall accounts for 1.31 percent of the city's total taxable valuation. But the shifts at the mall aren't the only changes afoot: overall, Bangor collected more property tax revenue this year than last. "The city's taxable valuation growth has recently occurred in the downtown district, with a new bank campus owned by Bangor Savings Bank valued at $22 million and the remodel of downtown structures to satisfy the demand for downtown apartments," Drew says.

In other words, while a mall on the edge of town sputters, Bangor's downtown is thriving, and the loss of property and sales tax from one has been compensated for by the other. It's the result of a downtown revitalization plan Bangor started in the 1990s. It's also part of a growing counternarrative to the dominant media story of the past decade, which predicted that the surge in online shopping would spell the end for brick-and-mortar retail, potentially damaging municipal fiscal health along the way.

As this shift plays out in communities large and small across the United States, the facts are more complicated than those media accounts would suggest—and the outlook is more optimistic than the headlines portend. By implementing proactive measures from investing in downtowns to rethinking the use of the valuable acreage occupied by malls, Bangor and other jurisdictions are demonstrating how to navigate the changing retail tides.

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## Why Retail Matters to Municipalities

That local governments fund their operations in large part on property taxes is no secret (see Figure 1). The revenue source accounts for 72 percent of the total local taxes collected in 2015. While the ratio of residential to commercial properties varies from community to community, as do the respective tax rates placed upon those properties, retail typically accounts for approximately one-quarter of all commercial property value. Whether retail is make or break for a municipal budget, however, varies widely.

"In some communities dependent on malls, they can make up 20 to 30 percent of their tax base and other taxpayers may have been paying relatively less," says Lincoln Institute of Land Policy Fellow Ron Rakow, former assessor for the City of Boston. Rakow has conducted research on the tax implications of the changing retail environment. "If the mall isn't doing as well, the community is either going to have to reduce services or increase taxes for others."

Onondaga County, which surrounds Syracuse, New York, is among those communities facing such tough choices. ShoppingTown Mall opened in 1954, placing it among the earliest U.S. shopping malls. A succession of major tenants, including Macy's, Dick's Sporting Goods, JCPenney, and Sears, has closed since 2015. The mall's assessment has dropped precipitously as well, from $53 million in 2008 to $36 million in 2014. Meanwhile, the mall's owner, Moonbeam LLC, has resisted paying its tax bill to Onondaga County. In June 2019, the company missed a deadline to pay $9.7 million in back taxes dating to 2015. The county is trying to foreclose on the mall in order to redevelop the site, but in August 2019 the company announced its intention to head to bankruptcy court to avoid losing the property.

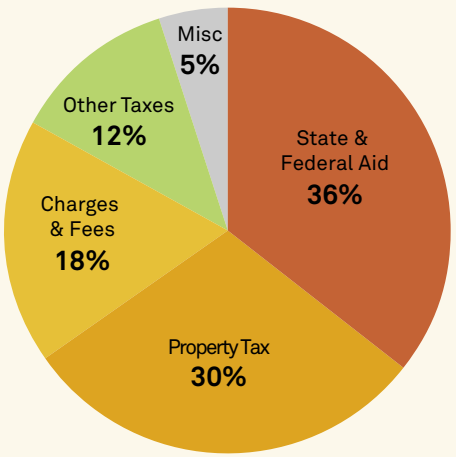
It's not just property taxes that are a factor, of course. "Retail is huge, not only from a property tax standpoint, but also [in terms of] sales tax," says Marc Moffitt, senior research analyst at the Denton (Texas) Central Appraisal District and an adjunct faculty member at the University of North Texas.

Retail typically accounts for approximately one-quarter of all commercial property value. Whether retail is make or break for a municipal budget, however, varies widely.

Sales and other non-property taxes account for about 12 percent of municipal tax revenue. So far, that revenue stream appears to be holding steady nationwide. In the Rockefeller Institute's most recent state revenue report, covering the fourth quarter of 2017, sales tax collection increased 4.8 percent, doubling the typical quarterly average (Dadayan 2018).

The combination of property and sales tax that retailers provide makes for a potent one-two punch. "There are Texas towns that are 80 percent residential, but the 20 percent that is commercial makes up the tax base," Moffitt says.

**FIGURE 1** Local Government General Revenue Sources




*Source: U.S. Census, 2017 Census of Governments: Finance*


At left, a shopping mall demolition in Westminster, Colorado. Credit: JohnGiez/Flickr CC BY 2.0. At right, Sears closing in Holyoke, Massachusetts. Credit: JJBers/Flickr CC BY 2.0.

## Reinvesting in Downtowns

There are 8.5 billion square feet of retail space in the United States, which equates to 24.5 square feet of retail space per capita, or five times Europe's average of 4.5 square feet per capita.

Moffitt looks to the 13 regional malls sprawled across the Dallas-Fort Worth metro area where he lives as a classic example of the overbuilt mall environment. "How many regional malls can you have in one region?" he asks.

Local governments have seen the mall contraction coming. Most malls have been struggling to maintain close to full occupancy for at least a decade, sometimes up to two decades. "The general trends support the fact that increasing vacancy rates are likely for some regional malls," Bangor assessor Drew says. Moffitt predicts that such vacancies will increase 20 percent over the next five years.

That makes the forthcoming decade a crucial transition period as consumers vote with their feet and their wallets, staking out a preference for denser, walkable urban environments over big-box stores and shopping malls. In 2019, a report from the George Washington University School of Business and Smart Growth America claimed that "walkable urban places," which meet a certain threshold of real estate, walkability, and human interaction density, were gaining market share faster than their suburban counterparts in the country's 30 largest metro areas (Loh 2019).

This trend includes both infill in central cities and the urban redevelopment of traditionally car-oriented outer areas. While booming metropolitan economies are driving this increasingly urban pattern in the built environment—New York City, Washington, DC, Chicago, Boston, the San Francisco Bay area, and Seattle top the list—smaller communities are catching on.

Sheboygan, Wisconsin, on the shores of Lake Michigan, is seeing the fruits of decades of work to revitalize its downtown. The construction of two malls in the area in the early 1970s "essentially sapped the economic life out of the downtown," according to *Downtowns: Revitalizing the Centers of Small Urban Communities* (Buriyidi 2015). The city began to explore strategies for bringing residents and shoppers back downtown as early as the 1980s, creating a retail-focused Business Improvement District in the 1990s, but the local shopping hub, Memorial Mall, remained a significant player in the financial mix. A decade ago, the city lost $1.3 million in annual tax revenue when Memorial Mall, which eventually closed in 2017, challenged its tax assessment.

The mall wasn't the only commercial taxpayer to take issue with its bill; Walmart is now seeking tax reductions of $90,000 and $180,000 for 2017 and 2018. The effort by Walmart is one of many initiated by the retailer in municipalities across the country, and is part of an ongoing conflict between big-box retailers and municipalities regarding the fairness of property tax assessments. The tension has led to legal appeals in at least 21 states over the past 10 years, according to a survey of the International Association of Assessing Officers conducted by *CityLab* in 2018, and has led at least four states to consider legislation that would regulate assessments for big-box properties.

Despite these losses, Sheboygan has managed to maintain its existing city services without increasing residential property taxes. How? Parallel with Memorial Mall's demise, Acuity Insurance has bet big on the 50,000-person beach town 60 miles north of Milwaukee. The mid-sized insurance company, founded in 1925 and active in 27 states, has made major investments in its corporate headquarters in Sheboygan, expanding the building and hiring hundreds of people. Although the headquarters itself is located outside of downtown, new downtown apartments have sprung up to house its growing staff, contributing to the ongoing revitalization effort there. Sheboygan is also investing in a downtown innovation district and launching a pop-up retail program that offers short-term leases to small business owners.

As in Bangor, these downtown development efforts have helped Sheboygan absorb the loss of a mall that was once a major contributor to its tax base. This kind of rebound isn't feasible everywhere, Rakow points out: "If a community's economy and population is not growing and healthy, it will be difficult for [businesses] to thrive, whether in a mall or downtown." But in Sheboygan, officials are demonstrating that there can be life after the mall.

"While in the past it was one of the higher valued properties, the loss of value affects the mindset more than the pocketbook," says Sheboygan City Assessor Mike Grota.

## Ripe for Redevelopment

Today's malls, some say, are the wrong use for the right site. That is, they generally have good locations near major roadways and in some cases public transit, and the large parcels of land they occupy are serviced with water, sewer, and electricity. "Malls as a property type are dead," says Moffitt, who says it's not *if* but *when* malls go under and are ready for redevelopment.

"What malls are worth right now is their dirt. Their structures have little to no value," Moffitt adds. "Investors view malls as mixed-use redevelopment opportunities better able to serve the community, and they are going to provide a much more robust sales and property tax base."

Stories of successful mall transformations are emerging. "Mall properties may no longer be exclusively retail on a forward-going basis," says Rakow. "To keep them economically viable and maintain the foot traffic that smaller retailers are so dependent on, other uses like museums, health clubs, and specialty food stores are coming into malls."

"What malls are worth right now is their dirt. Their structures have little to no value," Moffitt adds. "Investors view malls as mixed-use redevelopment opportunities better able to serve the community, and they are going to provide a much more robust sales and property tax base."

Such a radical change from the mall as an exclusively retail environment may conflict with land use policy. Instead of serving as an obstacle to this transition, local government can seize the reins to help secure an economically vibrant future. "There is a whole new notion of communities working with mall owners if there are zoning or land use issues," says Rakow.

The nonprofit Kidzu Children's Museum occupies 8,500 square feet in University Place mall in North Carolina, and is planning to expand into an adjacent storefront, as depicted in this rendering. Credit: Courtesy of Kidzu.

Such is the case with University Place in Chapel Hill, North Carolina. In 2016, it was among the college town's top 10 taxpayers. The next year, it fell off that perch. "The square footage of the center represents a significant retail presence in our market," Chapel Hill Economic Development Officer Dwight Bassett says. "We would like to see new investment create new value and become a top taxpayer again."

For over a decade since Washington, DC–based Madison Marquette purchased the faltering mall, Chapel Hill has accommodated changes to the site from a traditional internal mall to one more externally facing. Now the mall is home to a children's museum, health club, and CrossFit studio. One large retail space was converted to Southern Season, a specialty food store that offers a wine- and beer-tasting bar, cooking classes, and a full-service restaurant.

"We allowed a new entrance on a major road, changed our sign ordinance and temporarily had our library located at the mall while we rebuilt our library," Bassett says. "I think that being a partner and constantly asking how we can help facilitate moving the center to a different market destination has been a key piece of the role we have played to date."

But not every mall transformation works out successfully. The Hickory Hollow Mall in the Antioch neighborhood of Nashville, Tennessee, lost the last of its two remaining department stores in 2011 and ultimately closed its doors. The mall's owners repositioned the property with a new name—Global Mall at the Crossings—and added a new community center, a community college satellite campus, a library, and a recreation center. As a potential anchor, the mall also hosts a practice rink for Nashville's NHL franchise. However, even after pumping in over $50 million, the mall continues to struggle. In November 2019, a plan to transform the mall into Nashville's first "innovation district" collapsed when a local developer backed out of the deal. Many of Hickory Hollow's storefronts continue to sit vacant. Without money coming in, the structure has fallen into disrepair.

Another path for malls is linked to the success of e-commerce: their location has proven appealing to Amazon for its distribution centers. While communities were initially eager to offer tax breaks to the online retail giant—especially in the course of its search for a second headquarters—that has begun to shift, according to Rakow. "Communities have caught on to Amazon," Rakow says. "Since Amazon needs to have these distribution centers strategically placed, communities aren't so quick to give tax incentives and breaks for the facilities. Amazon should pay its fair share just like any brick-and-mortar store. The notion of giving incentives doesn't seem like it's a wise fiscal practice."

Moffitt argues there are catalyzing moments when a small investment by the public sector, such as forgoing some property tax revenue, can pay a huge dividend. He points to Colin Creek Mall in Plano, Texas. A developer bought the dying mall, valued at just $10 million, with the benefit of a local property tax incentive and will recast the site with $1 billion in commercial development. "They are going to have 15 to 20 restaurants that spin off a ton of sales and liquor tax," Moffitt says. "It's a total game changer when it comes to the tax base."

## Cultivating Offline Commerce

Four in every five U.S. consumers makes online purchases (Smith 2016), and nearly 40 percent of those online shoppers buy something on Amazon at least once a month (Selyukh 2018). That tendency impacts the built environment, but perhaps not as severely as often thought. "The internet shopping trend has magnified what I believe is a market oversaturation with retail space," Moffitt says. In other words, a trend that was already underway has been exacerbated.

Moffitt breaks it down to simple supply and demand. "In a given 10-mile radius there are only so many discretionary dollars available to spend," he says. "Those dollars either go to brick-and-mortar stores or go online. If some of those are going online out of convenience, what's going to happen is those online sales are going to cannibalize a local brick-and-mortar store [selling the same types of products]."

But Moffitt says retail is far from dead. He points out that U.S. retail real estate currently sits at over 95 percent occupancy, which is even higher than at the 2007 peak before the Great Recession. New retail space continues to be built out and leased. And the future eaters and drinkers at Colin Creek Mall represent another truism about the changing retail landscape, per Moffitt: "There's a lot of stuff you don't buy on Amazon."

Bars, restaurants, hair salons, barbershops, gyms, pet day care, and yoga studios are all types of retail businesses based on experiences or consumption rather than on goods. They are much better positioned to thrive in the new retail era.

For example, London School of Economics professor Lindsay Relihan has studied early adopters of online grocery platforms. In the first two years since switching to some measure of online grocery shopping, those consumers reduce their spending at grocery stores by 4.5 percent but increase their spending at coffee shops by 7.6 percent (Relihan 2017).

U.S. retail real estate currently sits at over 95 percent occupancy, which is higher than at the 2007 peak before the Great Recession. New retail space continues to be built out and leased.


Some experiences cannot be replicated online, and communities are counting on that to help support their local businesses. Credit: Brewbooks/Flickr CC BY 2.0.

"Policies that support a transition to service-oriented retail, and the density and accessibility of that retail, are likely to be key to local retail health," she says. "Transitions are very disruptive in the short run, but I don't see any reason why fiscal health should necessarily decline in the long run."

"Policies that support a transition to service-oriented retail, and the density and accessibility of that retail, are likely to be key to local retail health."

Such service-oriented businesses, which rely heavily on foot traffic, tend to be located on main streets and traditional commercial corridors. Those locations are now "the most desirable from a retail real estate perspective," Rakow says. "They command fairly high rents and have lower vacancy." This trend bodes well for urban locations and less so for post-war suburban areas that lack the dense fabric of a main street or commercial corridor.

At the end of the day, Amazon and the acceleration of e-commerce still account for only about 10 to 11 percent of retail sales (USDC 2019). CBRE expects that market share to grow to just over 15 percent by 2022. Meanwhile, Walmart's big-box stores on the urban fringe continue to thrive, even as cities reinvest in their downtowns. As customer proclivities and technologies evolve, few can predict what the retail landscape might look like 10 or 20 years from now. But one thing is certain, as municipal leaders in Bangor, Sheboygan, Chapel Hill, and many other communities are discovering: keeping up with changing retail habits and their impact on fiscal health requires flexibility, creativity, and foresight.

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Mayor Marty Walsh at the C40 World Mayors Summit in 2019. Credit: Courtesy of C40 Cities.

Born and raised in the working-class Boston neighborhood of Dorchester, **Martin J. Walsh** is serving his second term as Boston's 54th mayor, focusing on schools, affordable housing, and immigration, among many other issues. He has also become an international leader in confronting climate change and building resilience, hosting a major climate summit in 2018 and forming a coalition of mayors committed to working on renewable energy and other strategies. He has pledged to make Boston carbon-neutral by 2050, and has led Imagine Boston 2030, the first citywide comprehensive plan in half a century, as well as the Resilient Boston Harbor initiative. He made time to speak with Senior Fellow Anthony Flint, reflecting on being mayor in the midst of the unfolding climate crisis.

# Building Climate Resilience in Boston

ANTHONY FLINT: **You have been one of the most active mayors in the nation on the pressing issue of climate change. Tell us about your recent efforts to coordinate action—and how you feel about all this work being done at the local level in the absence of a federal initiative?**

MARTY WALSH: We hosted our first climate summit, and we've been working with mayors across America. I was elected as the North American cochair for C40 [the global network of cities committed to addressing climate change] prior to President Trump pulling out of the Paris climate accord. We've been working with Mayor [Eric] Garcetti in Los Angeles and other mayors to make sure that cities recommitted themselves to the Paris climate agreement. This is such an important issue for the country and for Boston, and it's so important to have engagement and leadership. It's unfortunate that we haven't had a [federal] partner in the last few years. But we're going to continue to take on the challenges and continue to think about the next generation. What I'm hoping is that ultimately we will have a federal partner, and when that time comes we won't be starting at zero.

"We're going to continue to take on the challenges and continue to think about the next generation. What I'm hoping is that ultimately we will have a federal partner, and when that time comes we won't be starting at zero."


Mayor Walsh addresses the Boston Climate Strike at City Hall Plaza in September 2019. The event was part of a global, student-led climate protest. Credit: Jeremiah Robinson, courtesy of City of Boston Mayor's Office.

**AF: Turning first to mitigation: what are the most important ways that cities can help reduce carbon emissions? Should cities require the retrofitting of older buildings, for example, to make them more energy efficient?**

MW: We have a program called Renew Boston Trust, identifying energy savings in city-owned buildings. It's important to be sure we start in our own backyard. We have 14 buildings underway for retrofits—libraries, community centers, police and fire stations. Secondly, we're looking at electrifying some of our vehicles. The third piece is looking at retrofitting and new construction, making sure all new construction is built to higher performance standards with fewer carbon emissions. Ultimately, as we think about reducing carbon emissions, we are looking at 85,000 buildings in our city . . . if we want to hit net zero carbon by 2050, we'll have to retrofit those buildings, large and small. Then there's transportation—getting our transportation system to be cleaner and greener. Even if we had a strong national policy, it's ultimately the cities that will have to carry out the reductions.

**AF: Even if we stopped all carbon emissions tomorrow, the planet will still have to manage significant sea-level rise, flooding, volatile weather, wildfires, and more, because of inexorably rising temperatures. What are the most promising efforts here and around the country in building resilience?**

MW: For Boston and East Coast cities and oceanfront property, our Resilient Boston Harbor plan lays out some good strategies. We have 47 miles of shoreline, and rivers that run through and border our city. We've looked at [the 2012 Atlantic hurricane] Superstorm Sandy and at what happened in Houston [due to Hurricane Harvey in 2017], in terms of protecting people in major flooding events. We have one big plan for the harbor, but there are other neighborhoods where we have to make sure we're prepared. We're doing planning studies in all of these areas [under the Climate Ready Boston initiative] to deal with sea-level rise. They eventually become one environmental plan.

It is a public safety matter. It's about quality of life and the future of our city. In the past,

"It is a public safety matter. It's about quality of life and the future of our city. In the past, mayors have focused on economic development and transportation and education. Today, climate change, resilience, and preparedness are part of the conversation in ways they weren't 25 years ago."

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AF: **At the Lincoln Institute, we're big believers in working with nature through blue and green infrastructure—and coming up with new ways to pay for it. Are you also a fan of this approach, which the Dutch and others have developed?**

MW: Resilient Boston Harbor is really a green infrastructure plan. One project that speaks to that is Martin's Park, named for Martin Richard [the youngest victim of the 2013 Boston Marathon bombing]. We raised parts of the park to prevent flood pathways, and installed mini piles and vegetated beds reinforced with stone to prevent erosion at higher tides. We're looking at doing something like that throughout the inner harbor. We're spending $2 million at Joe Moakley Park, which is the start of major flood pathways to several neighborhoods . . . we're trying to cut back on as much flood-related property damage and disruption of people's lives as possible. Berms and other barriers can help keep the water out . . . but there are opportunities to let the water through and not let it build up, in a major storm event.

AF: **In addition to new taxes that have been proposed, would you support a value capture arrangement where the private sector contributes more to these kinds of massive public investments?**

MW: On top of private investment—which we're going to need more of—we are working with philanthropic organizations to see if some philanthropic dollars can go into these kinds of projects. In our budget this year, we're dedicating 10 percent in capital budget to resilience. We're also looking at taking some dedicated revenue and putting it into resilience. For example, we raised fines and penalties for parking violations. That will go right back into transportation and resilience, including things like raising streets

Martin's Park, named for the youngest victim of the 2013 Boston Marathon bombing, is part of Boston's effort to build resilience by reducing erosion and flood risks. Credit: John Wilcox, courtesy of City of Boston Mayor's Office.


Mayor Walsh, shown at the annual Mayor's Greenovate Awards ceremony, says investing in climate resilience and preparing Boston for the future is simply part of his job. Credit: John Wilcox, courtesy of City of Boston Mayor's Office.

up. That's a start. Over time, we'll dedicate more of our budget to this. At some point hopefully, the federal government will invest. Right now, they are paying millions and millions for disaster relief. Rather than coming in after an event and a tragedy happens, I would hope that they will want to make investments on the front end.

**AF: Given projections that large swaths of Boston will be underwater later this century, can you reflect on a personal level about this threat to the city you currently lead? How would you inspire more urgency to address this problem?**

**MW:** That's our job. Our job is to govern in the present day, and manage all the day-to-day operations, but our job is also to lay down the foundation of what our city looks like in the future. The infrastructure that we build out will be here for the next 50 to 60 years. The Resilient Boston Harbor plan is [designed] to deal with sea-level rise 40 or 50 years from now. We're building all of that with the expectation of preserving and protecting the residents of the city. I would hope that when I'm not here as mayor anymore, the next mayor will come in and will want to invest as well. This is the legacy of the city—I wouldn't say it's necessarily my legacy—to look back years from now, for residents to look back and be grateful for the investments and the time that leaders took in 2017 and 2018 and 2019.

I don't think as a country we're where we need to be. The Dutch and other European countries are farther ahead. So we're playing catch-up. And we're not waiting for the next generation to try to solve this problem.

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**Anthony Flint** is a senior fellow at the Lincoln Institute of Land Policy and a contributing editor to *Land Lines*.

"Our job is to govern in the present day, and manage all the day-to-day operations, but our job is also to lay down the foundation of what our city looks like in the future."

# Inclusionary Housing:

## Creating and Maintaining Equitable Communities

*By Rick Jacobus*

**THE NEED FOR** affordable, high-quality housing has never been more urgent. In many cities, skyrocketing housing costs are displacing lower-income households, segregating neighborhoods, and forcing residents to sacrifice quality or location for price.

Unequal access to housing drives sprawling development patterns; worsens traffic congestion; pollutes the air; increases taxpayer dollars spent on basic infrastructure; decreases racial, cultural, and economic diversity; and perpetuates inequality.[1] Thus, in response, more than 800 U.S. communities have developed and enacted inclusionary housing policies to create mixed-income developments and increase economic inclusion.[2]

Inclusionary housing (also called inclusionary zoning) refers to a range of local policies that tap the economic gains from rising real estate values to create affordable housing—tying the creation of homes for lower-income households to the construction of market-rate residential or commercial development. In its simplest form, an inclusionary housing program might require developers to offer a certain percentage of new residential units to lower-income households at rents or prices that they can afford.

For cities struggling to maintain economic integration, inclusionary housing is one of the most promising strategies available; well-designed programs can generate significant affordable housing resources without overburdening landowners or limiting development. Inclusionary housing is also one of the few proven strategies for providing affordable housing in asset-rich neighborhoods, where residents are likely to benefit from access to quality schools, public services, and better jobs; the policies are also critical to ensuring that transit-oriented development occurs in an equitable manner.

Inclusionary housing taps the economic gains from rising real estate values to create affordable housing—tying the creation of homes for lower-income households to the construction of market-rate residential or commercial development.

Faced with declining federal and state resources for affordable housing, communities need to take full advantage of every potential tool. For many jurisdictions across the country, now is the time to consider adopting robust, carefully designed inclusionary housing policies that increase affordable housing stock and create inclusive communities.


In Williamsburg, Brooklyn, the developer of this luxury tower called the Edge (background), where condos can sell for millions of dollars, also built the Edge community apartments (foreground), where units rented for as little as $886 per month at the time of opening. Credit: NYC Department of City Planning.

## Designing Inclusionary Housing Policies

No two communities are exactly alike, and no two inclusionary housing policies should be identical, either; policy makers must create programs that suit local conditions. While every policy should address the considerations listed below, how each does so will differ considerably from place to place. Factors to consider may include:

**Mandatory or Voluntary Program Structure:** Most inclusionary housing programs mandate the provision of on-site affordable units in market-rate developments. Developers may receive incentives such as increased density to offset costs, but they must provide affordable units. A small number of voluntary programs are structured to offer incentives in exchange for affordable units, but in practice these have succeeded only with extremely valuable incentives.[3]

**Set-Aside Requirements:** Cities typically establish a percentage of each new building that must be set aside for affordable housing; most programs require between 10 and 20 percent of units. These requirements usually apply both to rental projects, which must provide a share of units at affordable rents, and to ownership projects, which must sell a share of units at affordable prices.

**Income Level of Beneficiaries:** Inclusionary housing alone cannot possibly meet all local housing needs, and cities must therefore consider how best to serve people at different income levels. Making homes affordable to lower-income residents costs more, so some programs require relatively few units targeted to such households, while others require more units but for residents at slightly higher income levels.

**Incentives:** Many cities provide incentives designed to reduce the economic burden on developers that provide affordable units. The most common offset for such requirements is the ability to build with increased density, but other common incentives include parking or design waivers, zoning variances, tax abatements, fee waivers, and expedited permitting.

A family gathers outside their inclusionary home in the Old Las Vegas Highway development in Santa Fe, New Mexico. Credit: John Baker Photography.

### RECOVERING INCREASES IN LAND VALUE

Inclusionary housing is a form of land value return (also known as land value capture), a policy that enables communities to recover and reinvest land value increases that result from new infrastructure, zoning, or other government actions. Much of the profit from development is generated by the surrounding community, not the actions of the developer or property owner; inclusionary housing and similar policies ensure that the returns on public investment accrue for public benefit.

**Off-Site Development:** Cities offer developers opportunities to build affordable housing off-site from the main project or to pay in-lieu fees to fund lower-income units in other locations. A key factor that often shapes those decisions is whether a jurisdiction wants to encourage on-site performance or leverage other sources of funding to build more affordable units elsewhere. Done well, off-site production can provide flexibility to developers and increase production.[4]

**Affordability Preservation:** Long-term price restrictions ensure that programs have lasting impact by preventing affordable rates from expiring after a few decades and returning those units to market rate. Very long-term affordability periods are the overwhelming trend, and research suggests they can also offer residents wealth-building opportunities.[5]

**Legal Compliance:** Jurisdictions adopting inclusionary housing programs should pay close attention to evolving case law, but U.S. courts

have generally upheld the basic right of local governments to promote the welfare of their residents by requiring housing that is affordable to lower-income households. There is reason to expect this trend to continue.

## Understanding Economic Feasibility

Inclusionary housing can succeed in more places than many people realize, from big central cities to smaller towns, but it may not be suitable in every type of housing market. Because inclusionary housing relies on market-rate development, it requires that a place contain growing neighborhoods where new housing is being built.

The intervention of inclusionary housing into private markets is almost always controversial, however, and it continues to raise concerns that policy makers must address with care to ensure that programs have the intended positive effects.

Most cities commission economic feasibility analyses to ensure that inclusionary housing requirements do not inadvertently restrict development. Research indicates that this risk exists—but that many inclusionary programs are able to successfully mitigate it and to require affordable units without impacting market-rate housing production.

Generally, housing developers cannot directly pass the cost of affordable units on to neighboring tenants, because developers typically already charge as much as the market will support at a given location. Instead, as most economists agree, inclusionary housing requirements should reduce the amount that developers pay for land. That said, if requirements are set too high or increase too fast, they could slow development by reducing the number of landowners willing to sell.

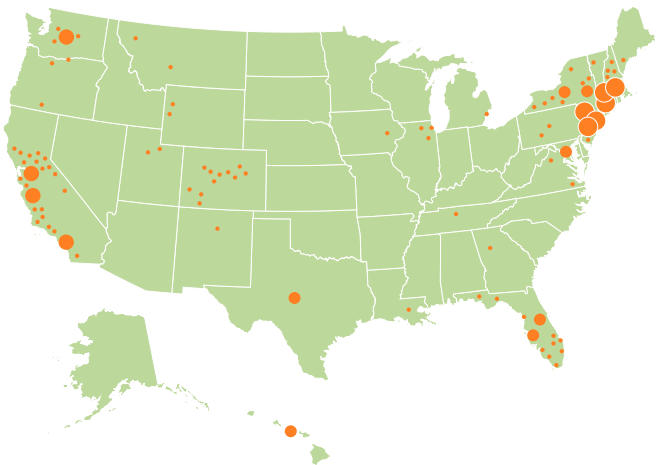
Research also shows clear benefits of integrating lower-income households into higher-income neighborhoods with better schools and overall conditions.[8] Integration within the same building has yet to demonstrate additional benefits.[9] Inclusionary housing offers an important tool for achieving neighborhood-level integration, but many programs ultimately succeed through a mix of both on-site and off-site developments.[10]

### CASE STUDY: MONTGOMERY COUNTY, MARYLAND

Since the early 1970s, Montgomery County has created more than 14,000 homes for lower-income families who successfully integrated into some of the area's most expensive neighborhoods and promoted racial integration throughout the county.[6] Children living in affordable housing produced by the program attended higher-quality schools and performed better than other children in lower-income families.[7]

**Number of Inclusionary Housing Programs**

• 1 to 3 ● 4 to 10 ● 11 to 25 ● 26 to 100



The United States is currently home to nearly 1,200 inclusionary housing programs managed by more than 800 jurisdictions in 27 states. An interactive map is available through the Grounded Solutions Network at InclusionaryHousing.org, a comprehensive online resource on inclusionary housing policies that also includes resources on program design, communications, and economic feasibility evaluations. Source: Grounded Solutions Network (2019).

## Policy Recommendations

### PLAN FOR THE LONG TERM

Jurisdictions should ensure effective administration of their inclusionary housing ordinances. To meet their stated goals, communities must be able to fund ongoing program management and recruit staff with specialized skills to engage successfully with developers and ensure that units remain affordable.

### MEASURE IMPACT

Communities should closely track program data to make needed changes over time and evaluate outcomes. Ultimately, all inclusionary housing programs—both individually and collectively—would benefit from significantly improving and standardizing data collection and performance metrics. Where possible, state and federal government agencies should support broad tracking infrastructure, data collection, and program evaluation.

### PRIORITIZE STAKEHOLDER SUPPORT

To maximize impact and minimize opposition, policy makers should build consensus around investment in affordable housing and mixed-income communities. Engaging community stakeholders, including real estate developers, in the process of designing an inclusionary program is critically important. Incorporating findings from economic feasibility studies and ongoing real-world activities can also further legitimize a program.

### ENACT STATE-LEVEL FRAMEWORKS

Individual states can encourage local inclusionary housing by establishing clear statewide planning frameworks. Policies should explicitly allow local governments to implement inclusionary housing, prohibit local exclusionary housing practices, and require communities to proactively plan for and build affordable housing.

### OFFER FEDERAL INCENTIVES AND SUPPORT

The U.S. government could support inclusionary housing by allocating federal transportation funding to communities that develop affordable housing in concert with new transit. It could also remove regulatory barriers to mortgage markets for buyers of inclusionary homes and allow cities to use federal funds for stewardship of units with long-term affordability controls.

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This policy brief is based on the Policy Focus Report by Rick Jacobus, *Inclusionary Housing: Creating and Maintaining Equitable Communities* (Cambridge, MA: Lincoln Institute of Land Policy, 2015).

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# *Design with Nature Now* Amplifies Ian McHarg's Manifesto on Ecological Planning and Land Use

*Edited by Frederick Steiner, Richard Weller, Karen M'Closkey, and Billy Fleming*


**WITH CLIMATE CHANGE POSING** imminent risks that range from rising seas to more extreme weather events, cities must work with ecology rather than against it to develop sustainably, according to the new book *Design with Nature Now*. Urban design that values natural systems can help us confront the most serious environmental challenges of this century, says the book, released in October 2019 by the Lincoln Institute of Land Policy and the University of Pennsylvania Stuart Weitzman School of Design.

Timed to coincide with the 50th anniversary of pioneering landscape architect Ian McHarg's influential manifesto *Design with Nature*, the new volume—named a Best Book of 2019 by the American Society of Landscape Architects—features more than 160 color images that illustrate 25 cutting-edge projects addressing biodiversity loss, sea-level rise, water and air pollution, and urbanization. These instructive interventions include a park on the site of a New York City landfill that once accepted 29,000 tons of refuse a day; a wetland in China constructed to filter pollution from a planned city of 50,000 people; a proposal for built landforms in coastal Norfolk, Virginia, that would absorb stormwater and tides; and an ambitious concept for a wind turbine farm in the North Sea.

Featuring essays and analysis from leaders in the fields of ecological planning, design, and landscape architecture, *Design with Nature Now* pays tribute to McHarg's philosophy and impact while demonstrating the continued relevance of his work for a swiftly changing era.

"*Design with Nature Now* reminds us of the urgency that led Ian McHarg to write his seminal work—and the unavoidable fact that, in many ways, that urgency has only increased," said George W. "Mac" McCarthy, president of the Lincoln Institute of Land Policy. "With urbanization occurring rapidly and climate change demanding that we rethink nearly everything about where and how we live, McHarg's ideas are more apt than ever."

The book features insights from leading practitioners behind renowned contemporary public works, including James Corner, project lead for New York City's celebrated High Line Park; Anne Whiston Spirn, who has spearheaded an effort to restore nature and rebuild community in West Philadelphia; and Laurie Olin, whose projects include the master plan for the Los Angeles River and the design of Manhattan's Bryant Park. It also offers a behind-the-scenes look at the roots of geographic information system (GIS) technology—McHarg is broadly

credited with developing the concept behind the widely used planning tool—and compelling evidence that thoughtful design principles can help combat climate change.

McHarg drew new connections between ecology and cities in the 1960s and helped to create the multidisciplinary field of ecological planning. Today, the Ian L. McHarg Center for Urbanism and Ecology at the University of Pennsylvania brings environmental and social scientists together with planners, designers, policy makers, and communities to develop practical, innovative ways of improving the quality of life in the places most vulnerable to the impacts of climate change. The editors of *Design with Nature Now*, who are McHarg's successors at the University of Pennsylvania, affirmed the importance of his principles in the climate change effort.

"We are plunging, headlong, into an epoch of global environmental change at an unprecedented scale and pace," write editors Frederick Steiner, Richard Weller, Karen M'Closkey, and Billy Fleming in the introduction to the book.

"How we learn to live with that change is the central challenge for the next half-century of design. In the work we have collected here there are real clues as to how, through design, we can better tune our cities and their infrastructure to the forces and flows of the Earth system."

Reflecting on McHarg's legacy and on the impact of the new book, author and activist Bill McKibben said, "Ian McHarg would be heartened to see the range and quality of thinking he's inspired. Each of these essays will leave you with an enlarged sense of possibility, which is a great gift in a constrained world."

Bruce Babbitt, former U.S. Secretary of the Interior and former board member of the Lincoln Institute, noted, "This exceptional book presents the enduring wisdom of Ian McHarg to a new generation. His insights, freshly interpreted in the pages of landscape designs and drawings, give me hope for the future of our planet."

*To learn more or to order a copy of* Design with Nature Now, *visit* **www.lincolninst.edu/dwnn**.

Ian McHarg in Portugal, 1967. Credit: Pauline McHarg, Ian and Carol McHarg Collection, Architectural Archives, University of Pennsylvania.

The Golden Gate Biosphere Reserve, a vast partnership of 13 terrestrial and marine protected areas in the San Francisco Bay area, is a member of the first Large Landscape Peer Learning Initiative. Credit: samvaltenbergs/iStock.

# Large Landscapes Inspire Bold Ideas

The Golden Gate Biosphere Reserve is one of four large landscapes represented in the inaugural cohort of the Large Landscape Peer Learning Initiative, launched by the Lincoln Institute of Land Policy and the International Land Conservation Network in 2018–2019. The Initiative—which provides members with the opportunity to compare histories, challenges, and strategies, and to devise management strategies for going forward with the help of their colleagues and a panel of conservation experts—also includes representatives from the Appalachian Trail in the eastern United States, and from the Ruta de los Parques and Boldo-Cantillana projects in Chile. A second cohort is in the works for 2020–2021.

To learn more about the International Land Conservation Network, visit **landconservationnetwork.org**.

To learn more about the work of the Lincoln Institute of Land Policy, visit **lincolninst.edu**.

"Our largest and most pressing collective challenges—such as climate change, the need for clean air and water, and rapidly changing population and economic dynamics—are happening at a scale and a pace that demand that we use our collective resources and experience to meet and exceed them. Landscape-scale stewardship is how we work together across boundaries to care for the places we love, enjoy, and depend upon, and how we continue to renew and sustain these places for current and future generations."

— **Greg Moore**, Founder and CEO Emeritus, Golden Gate National Parks Conservancy

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