Land Lines

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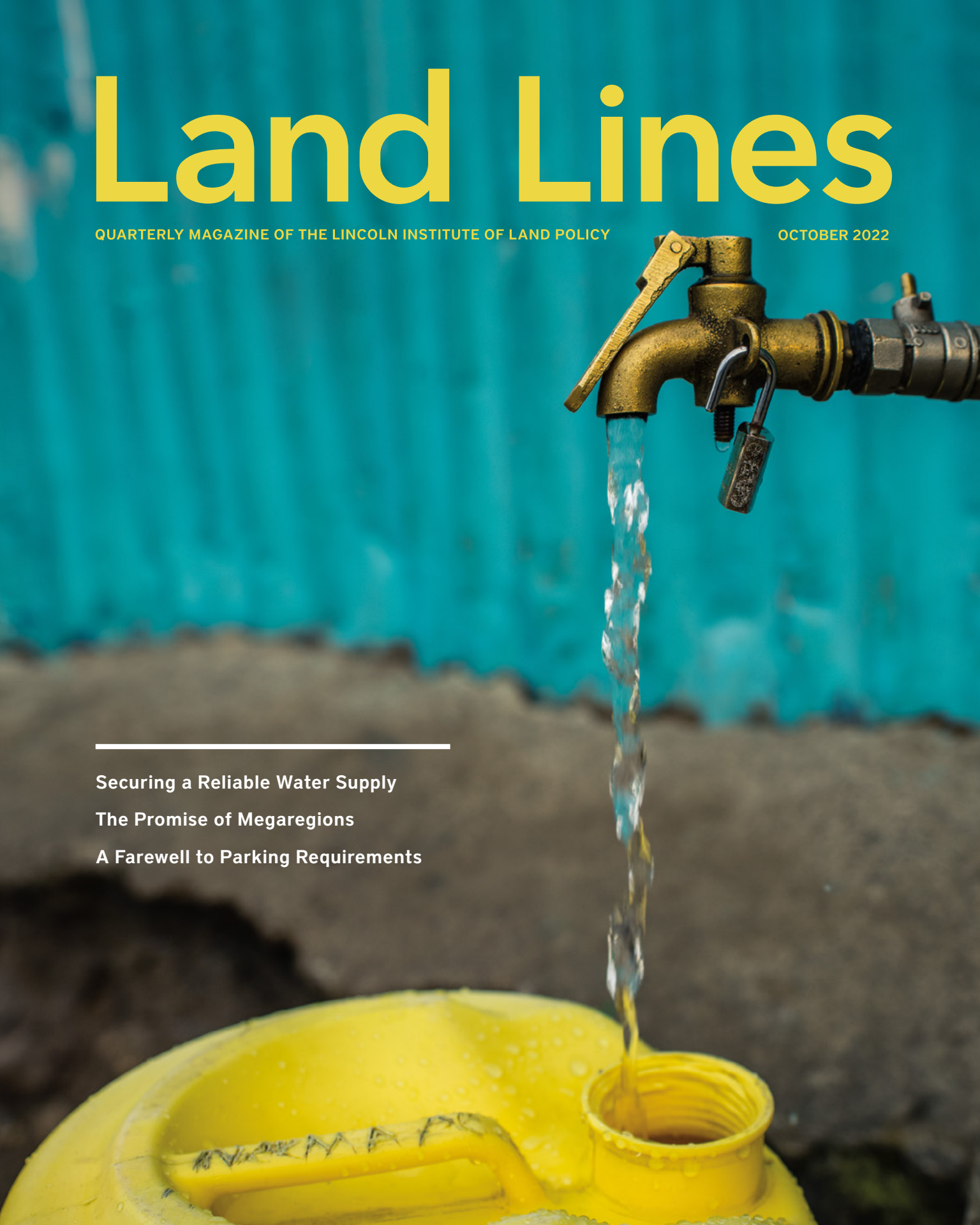

Securing a Reliable Water Supply

The Promise of Megaregions

A Farewell to Parking Requirements

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Filling water containers in Nairobi, Kenya. A collaborative fund launched there in 2015 supports upstream conservation projects to help protect the water supply. Credit: Nick Hall.

PRESIDENT'S MESSAGE GEORGE W. MCCARTHY

Zoning's Asteroid Moment

ZONING IS OFTEN CONSIDERED a timeless element of land policy and planning. And it is. Zoning originated in Asia more than three millennia ago. In those days, it was used to designate land uses behind city walls or to separate people by caste. The practice was adopted more recently in the United States to pursue similar ends. It is now one of the biggest impediments to sustainability in U.S. cities in the 21st century.

I've made my feelings about hyperlocal land control known for many years. A decade ago, on a panel with Nic Retsinas, then director of the Joint Center for Housing Studies at Harvard, I opined that home rule and local land use controls were "dinosaurs" that made it almost impossible to coordinate regional transportation planning and affordable housing efforts. Nic reminded me and the audience that powerful political and economic forces stood firmly in the way of land policy reform. And he noted that dinosaurs lasted for millions of years before becoming extinct—because of a random asteroid colliding with Earth, not natural selection.

But now, something almost as rare as a planet-changing asteroid is afoot in the world of land policy: bipartisan agreement. Numerous blue, red, and purple states have passed or are contemplating efforts to preempt local zoning so they can advance critical policy objectives. Why the sudden shift? Because many policy makers now understand that the national affordable housing crisis cannot be addressed without structural changes to the rules of the game. Other policy makers know that we cannot address one of the ugliest manifestations of zoning—spatial segregation by race and class—without aggressive affirmative action.

Although we are seeing bipartisan agreement on the need for reform, the motivations of policy makers are quite different. Advocates from the right argue that the housing crisis is an artifact of overregulation that stifles housing production. These critics believe zoning reform will unleash market forces that will confront the housing crisis by accelerating new production. Advocates from the left argue that we cannot build affordable housing in the places we need it most because of land policies that have effectively excluded people based on race and income for generations, such as minimum lot sizes and bans on multifamily housing. Zoning reform will make it possible, they say, to build affordable housing in "high opportunity" places with good schools and decent jobs.

Zoning originated in Asia more than three millennia ago. In those days, it was used to designate land uses behind city walls or to separate people by caste. The practice was adopted more recently in the United States to pursue similar ends. It is now one of the biggest impediments to sustainability in U.S. cities in the 21st century.

A team of researchers from Cornell University painstakingly documented zoning practices in 180 jurisdictions in Connecticut with 2,622 zoning districts. The team has now launched an effort to build a crowdsourced atlas of zoning practices across the country. Credit: National Zoning Atlas.

Type of Zoning District

- Primarily Residential
- Mixed with Residential
- Nonresidential Zone

State preemption of local zoning is not new. In 1969, Massachusetts passed Chapter 40B, a measure that allows the state to override local zoning and approve mixed-income, multifamily developments in jurisdictions with little affordable housing. Although it has helped to promote some affordable housing development in some affluent suburbs, it was not a game changer, and few other states considered following suit, until very recently.

Now, some 10 states are ready to preempt local zoning to permit development of multiple housing units on lots that are currently zoned for single-family homes. These include permitting the right to add accessory dwelling units (ADUs) to single-family lots in Connecticut, Nebraska, Utah, Oregon, Maryland, California, and Washington; approving "middle housing," two- to four-family townhomes, on lots zoned for single families in Virginia, Utah, Nebraska, Washington, and Maryland; or completely preempting local government efforts to prohibit multifamily housing development on single-family lots in Oregon, California, Virginia, Maine, and Washington. Massachusetts and California also recently mandated upzoning in "transit-rich" communities. Clearly, local control over land use is no longer sacrosanct.

Although zoning practice is thousands of years old, it is less than a century old in most of the United States. States began granting municipalities the power to dictate land uses in the 1920s, based on the Standard State Zoning Enabling Act drafted by the Department of Commerce in 1923. But what states giveth, states can taketh away. It is sometimes necessary for higher levels of government to supersede the decisions of lower levels of government to promote general welfare or address negative externalities that are artifacts of uncoordinated actions at lower levels. Too often, state efforts to override local governments are misguided; for example, when state policy makers curry favor from voters by imposing property tax limits. In the case of zoning, the need for state action is clearly defensible.

We should celebrate the fact that we are moving in the right direction—mustering the political will to take on a challenge that was, until very recently, considered impossible. But we still know less about zoning than we should. Each state, and often individual jurisdictions in a state, developed its own zoning conventions, which makes it extremely difficult to compare zoning practices among them. It also makes it almost impossible to understand the

implications of zoning decisions on land values and development patterns, or how zoning reform might address big challenges like the housing crisis, spatial inequality, or urban sprawl. This too is changing.

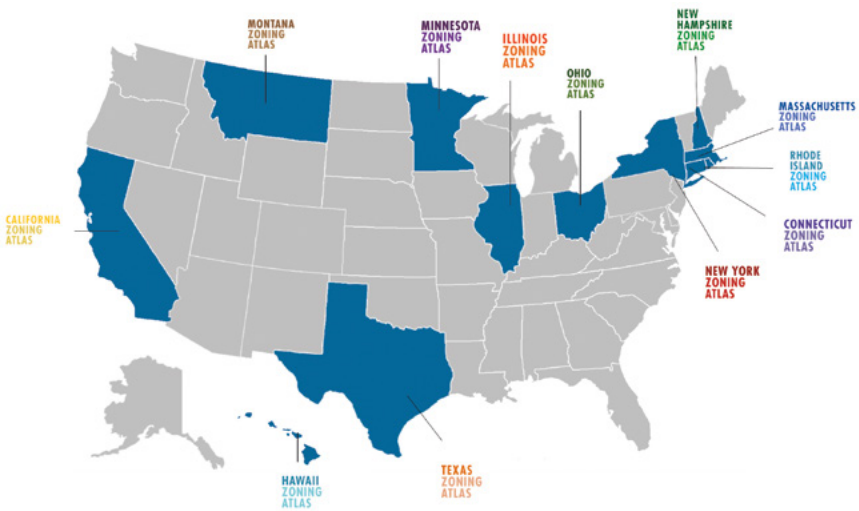
Last year, a small team of visionaries at Cornell University, led by Professor Sara Bronin, produced a Zoning Atlas for the State of Connecticut. Using spreadsheets, maps, and geographic information systems, the team documented, with impressive granularity, residential zoning practices in 180 jurisdictions with 2,622 zoning districts. Incredibly, this required reviewing more than 30,000 pages of text describing zoning practices—in one state.

This herculean task apparently was not a big enough challenge for this plucky band of researchers. The Cornell team recently launched an effort to build a National Zoning Atlas. Now, with a field-tested methodology for creating the Zoning Atlas in Connecticut, they have set out to crowdsource zoning data from the rest of the country using the same methods. So far, self-organized teams in 12 states are participating. When they succeed at building the national atlas—and the Lincoln Institute of Land Policy will do all it can to make sure that happens—a new era of land policy scholarship will arrive. Debates about the costs, benefits, and consequences of zoning reform will be informed by real data.

Zoning reform alone is not sufficient to solve the national housing crisis. But it is necessary. And we need to know a lot more about current zoning practices, and the potential benefits of improved zoning practice, to address the ills generated by decades of bad practice. A century of decentralized and isolated local control of land produced unacceptable levels of racial and economic segregation, urban sprawl that contributed to the climate crisis, and an almost unassailable affordable housing crisis. With the unprecedented alignment of political will with new tools and knowledge, possible solutions to this triple threat are closer than they have ever been.

A century of decentralized and isolated local control of land produced unacceptable levels of racial and economic segregation, urban sprawl that contributed to the climate crisis, and an almost unassailable affordable housing crisis. With the unprecedented alignment of political will with new tools and knowledge, possible solutions to this triple threat are closer than they have ever been.

The National Zoning Atlas has teams in 12 states to date. To learn more about the effort, including how to participate, visit www.zoningatlas.org. Credit: National Zoning Atlas.



New Angles on Noise Pollution

In Paris and other cities, sensors monitor noise from passing vehicles and snap pictures of offenders' license plates. The technology is part of a new generation of tools and approaches intended to help address noise pollution. Credit: Courtesy of Bruitparif.

CITY DWELLERS AROUND THE WORLD noted one surprisingly welcome side effect of the lockdown phase of the pandemic era: less noise. Urban soundscapes have largely returned to form, but that peaceful interlude served as a loud and clear reminder to planners and policy makers that the audible does shape city life—and can, in turn, be shaped by policies that include thoughtful land use and design. Inger Andersen, executive director of the United Nations Environment Programme, highlighted the issue in the *Financial Times* earlier this year, writing that "city planners should take both the health and environmental risks of noise pollution into account."

Of course, the underlying insight here is not new. Citizens have probably complained about various forms of city noise, from construction to concerts to rude neighbors, for as long as cities have existed. While a relatively quiet urban neighborhood might register an ambient level of about 50 decibels, higher levels can begin to interfere with conversation; a busy roadway can measure about 70 decibels (about equal to a vacuum cleaner), and a train crossing that road can push the decibel reading to 90 or higher.

Studies documenting the health effects of noise pollution, which range from sleep disturbances to cognitive issues to heart disease, date back at least to the 1970s. The World Health Organization, along with regulators in the United States, Europe, and elsewhere, has highlighted the issue for decades, often spurred by a panoply of noise activists.

"The good news is, there is much more interest today," says Arline Bronzaft, a City University of New York professor emeritus who conducted some of the earliest studies documenting the impact of city noise on health and well-being. Trained as an environmental psychologist, Bronzaft continues to advocate for quieter built environments as a board member of the environmental nonprofit GrowNYC. Today, she says, there's much more research, and an openness to policy experimentation. "Now that you've got the data," she says, the question is becoming, "what are you doing about it?"

The tools available to assess noise pollution have radically improved. And that may help planners and policy makers devise and enable better design and policy strategies to cope with the problem.

There's an argument for going much deeper in thinking about sound—using measurement technology as a planning tool, not just a punitive one.

The answer is a work in progress, but we may be at a pivotal moment for thinking about "built soundscapes." The tools available to assess the challenge have radically improved. And that may help planners and policy makers devise and enable better design and policy strategies to cope with the problem.

Maybe the most prominent example involves the evolution of tools to measure sound, which have become more sophisticated and are being deployed in new ways. Recently, for example, authorities in Paris and other French cities have begun to experiment with "sound radar" devices meant to function like speed cameras: triggered by noise that exceeds code decibel limits, the sensors photograph the offending vehicle's license plate and fine the owner.

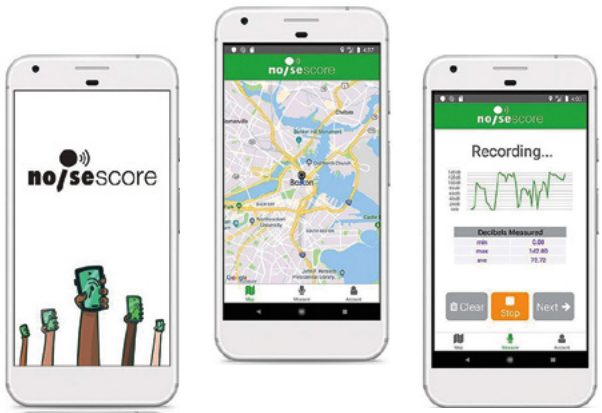
The French sensors were developed by Bruitparif, a state-backed agency devoted to studying city acoustics in Paris and elsewhere. Similar technology is being tested in New York, Edmonton, and other cities. Most cities already have some sort of noise ordinances in place, but such rules are rarely enforced in a systematic or consistent way. The advanced new sensors could help remedy that.

Still, there's an argument for going deeper in thinking about sound—using technology as a planning tool, not just a punitive one. Erica Walker, professor of epidemiology at the Brown University School of Public Health and founder of Brown's Community Noise Lab, spent years creating the "2016 Greater Boston Noise Report," mapping noise data she collected at some 400 locations around the city. The experience gave her a different perspective on soundscapes.

"I started as pro-quiet," Walker says. In fact, she explains with a laugh, she was partly interested in finding out whether city noise codes might help her get some loud neighbors to pipe down.

Creating her noise report brought Walker into contact with a cross section of situations, teaching her that "neighborhoods and sound are complex." Because ordinances focus almost exclusively on sound as a nuisance, they're often incomplete or counterproductive, she explains. Since some level of sound is inevitable in a city, Walker says, considerations of how the acoustic environment affects residents and their interactions with each other should be built into planning and development: "Now I'm anti-quiet—but for peace."

Her Community Noise Lab project is focused on reworking the soundscape dialogue between citizens and policy makers; among other initiatives, that has included creating a free app called NoiseScore to make sound measurement an accessible, collaborative activity. City officials in Asheville, North Carolina, used the tool as part of their effort to incorporate more community feedback into revisions to the city's noise code, which was updated in the summer of 2021. While that still boils down to crafting ordinances, it's an example of technology broadening the discussion, rather than simply serving as an enforcement tool. "They didn't start with: 'We're going to put these sensors up across the city and punish people if they are doing this or that,'" Walker says. "They wanted to understand all of the partners' perspectives."



The NoiseScore app encourages a collaborative approach to understanding neighborhood noise levels. Credit: Courtesy of NoiseScore.

Tor Oiamo, a professor in the Department of Geography and Environmental Studies at Toronto Metropolitan University who conducted a recent public health noise study in that city, notes that more sophisticated sensors, mapping, and modeling software are creating opportunities for planning with sound in mind. In the years ahead, he says, the tools at hand could include a kind of global noise database similar to those tracking air pollution. But there's an obvious challenge: "The difficulty in mitigation with a city that's already built is that the structure is in many ways locked in," he says.

In some cases, cities have found ways to modify or add to existing infrastructure. Bronzaft's groundbreaking research in the 1970s—she documented the negative impact of a New York subway traveling on an elevated line near a school—resulted in the installation of sound-muffling acoustic tiles in classrooms, and the use of rubber pads on tracks throughout the subway system to lessen train noise. Other train systems now use rubber tires, and the next wave of quiet mass-transit innovation includes maglev trains and electric buses.

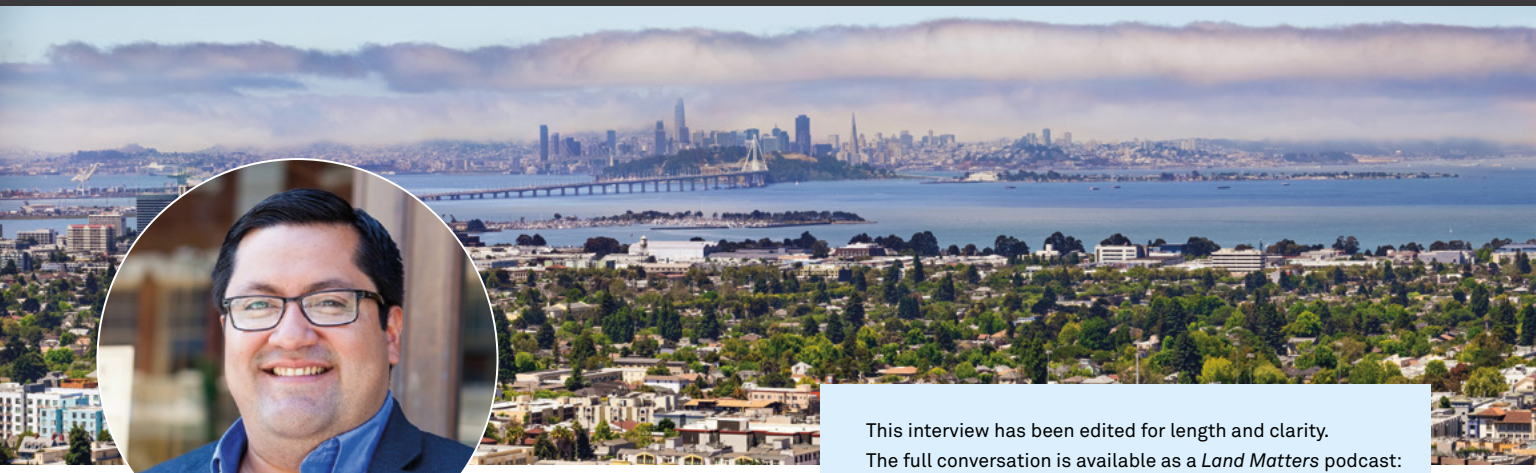
Oiamo also points to successful efforts in Amsterdam and Copenhagen to revise traffic patterns, with the specific goal of reducing noise in residential zones. And he credits Toronto with a thoughtful approach to its current Port Lands development project: because it's reminiscent of a master-planned neighborhood, it's possible to factor the soundscape into the design process. In addition, many of the most measurably useful ways to mitigate urban noise overlap with thoughtful land use: more green space and trees, careful consideration of building density (strategic density can actually create pockets of quiet), and so on.

Land works have been used to mitigate urban noise for years, from the berms around the edges of New York's Central Park to trees and sound barriers along highways. A more recent tech-forward iteration comes from German firm Naturawall, which has designed "plant walls"—galvanized steel frames with a relatively slim profile, filled with soil and sprouting a thick layer of foliage and flowers. The walls, currently in use in some German cities, are said to block sound levels roughly equivalent to typical city traffic. Other companies, including Michigan-based LiveWall, are undertaking similar projects around the world.

Some solutions to urban noise pollution take their cue from nature, including plant walls that can block sound levels equivalent to typical city traffic. Credit: Courtesy of Naturawall.

None of these strategies offers a silver bullet. But Oiamo, like Bronzaft and Walker, emphasizes that at this point, there is plenty of expertise to draw upon to improve our built soundscapes. Newer technologies are helping define the issues with greater nuance and offering fresh solutions. While sensors helping issue tickets for noise violations may not represent the kind of holistic approach Walker or Bronzaft has in mind, they're a start. As the subject gets more attention and technological options proliferate, soundscape experts are sensing the potential for real, if incremental, progress. "There's a million things to do," says Oiamo. That's the challenge—and the opportunity.

Rob Walker is a journalist covering design, technology, and other subjects. He is the author of *The Art of Noticing*. His newsletter is at robwalker.substack.com.



This interview has been edited for length and clarity. The full conversation is available as a *Land Matters* podcast: **www.lincolninst.edu/publications/podcasts-videos**.

Jesse Arreguín was elected mayor of Berkeley, California, in 2016, becoming the first Latino to hold the office and, at 32, the youngest mayor in a century. The son and grandson of farmworkers, Arreguín grew up in San Francisco. At nine, he helped lead efforts to name a city street after activist Cesar Chavez, beginning a lifelong commitment to social justice. After Arreguín graduated from the University of California, Berkeley, he stayed in the city, serving on boards including the Housing Advisory Commission, Rent Stabilization Board, Zoning Adjustments Board, Planning Commission, and City Council.

As mayor, Arreguín—who is also president of the Association of Bay Area Governments—has prioritized affordable housing, infrastructure, and education. He recently met with Senior Fellow Anthony Flint at City Hall to talk about this city of 125,000, with a focus on housing and the task of building more of it. Fittingly, the sounds of construction could be heard outside the fifth-floor office suite.

Addressing Affordability in Berkeley

ANTHONY FLINT: *It seems like Berkeley has become a national symbol of the YIMBY/NIMBY [Yes in My Back Yard/Not in My Back Yard] divide. What should developers be contributing to increase supply, provide different housing options, and increase density at appropriate locations?*

JESSE ARREGUÍN: I think a lot needs to be done by government, and we're seeing a lot of leadership being demonstrated by our governor, by the state legislature, by our attorney general, who established a housing strike force to enforce state housing laws, and by regional and local government. In Berkeley, over the past several years, we have taken significant steps to pass laws to streamline production and encourage a variety of different housing options in our community.

We've also made a commitment that we are going to end exclusionary zoning. I think part of the reason why Berkeley is a symbol of the debate happening in cities throughout the country is because Berkeley is the birthplace of exclusionary zoning. In 1916, the city adopted its first zoning ordinance to zone the neighborhoods in the Elmwood District as single-family to prevent the construction of a dance hall.

Not surprisingly, many people who would frequent that dance hall would predominantly be people of color. Sadly, in Berkeley, single-family zoning was founded on the foundation of racial exclusion.

My perspective on zoning, on housing issues, has evolved over the years, because the crisis in Berkeley and in California has worsened significantly in the past five years. We have increasing numbers of people who are experiencing homelessness, tent encampments on our streets, working families who can't afford to live in the community they work in, students who can't afford to live in the community they go to school in. The status quo is not working, and we need to take bold action.

I think developers are eager to see leadership on the part of government. We need to meet them at the middle and we have to do what we can to make it easier for them to build. But at the same time, we have to make sure that they are providing community benefits while we are seeing new market-rate construction, particularly in communities where we've seen significant amounts of displacement and gentrification.

We have historically Black neighborhoods where we're seeing homes sell at $2 million. Our Black population has declined from 20 percent in 1970 to seven percent now. I think that is a direct result of the decisions that government made to not build housing, and of the astronomical cost of housing in Berkeley.

AF: *Let's talk about gentrification and real estate speculation, a problem in many cities. Los Angeles recently started a program of land banking parcels near transit stations. Is that the kind of thing that is going to be necessary when you're obviously in white-hot market conditions here?*

JA: I think so, and we are prioritizing public land for affordable housing. We've converted parking lots to affordable housing projects. We have one being constructed right up the street, 140 units of affordable housing and permanent supportive housing—the largest project we've ever built for housing the homeless. We need to prioritize public land for public good. There's no question about that.

I do agree we need to look at land banking. We need to provide money so nonprofit developers can buy parcels to keep them permanently affordable. We need to look at how we can support land trusts, not just buying properties but buying buildings to keep them permanently affordable. That is part of Berkeley's housing strategy. It's not just building new construction, but also the preservation of existing, naturally occurring affordable housing.

I think we need to focus on the three P's, and I say this often: production of new housing; preservation of existing, naturally occurring affordable housing; and protection of existing residents from displacement.

We have working families who can't afford to live in the community they work in, students who can't afford to live in the community they go to school in. The status quo is not working, and we need to take bold action.

AF: *How might a vacancy tax, similar to what we see in San Francisco and Oakland, address this issue of the burgeoning value of land?*

JA: We actually recently placed on the ballot a residential vacancy tax, which is a little bit different from Oakland's; it doesn't focus on vacant parcels, but it's focused on vacant homes and vacant residential units. There are some who have said, "Well, we have thousands of vacant units, and therefore, we don't need to build more housing." That's absurd. We need to

Left: Berkeley, California, with San Francisco visible in the background. Credit: Sundry Photography via iStock/Getty Images Plus.
Inset: Courtesy of Jesse Arreguín.

build housing, and we also need to put housing that is off the market back on the market.

The more that we can address actions by speculators and by scofflaws—I would characterize people who keep properties blighted and vacant for many years as scofflaws—it will address the artificial constraining of the market and will put more units back on the market. We spent a lot of time crafting this vacancy tax and really thought through the situations in which units could be vacant legitimately. The focus is not on small property owners but on owners of large rental properties, because part of what we are seeing is, frankly, speculation of the market.

We hope at some point we don't have to charge a tax, because all the housing is being rented or is being used. That's the goal of the vacancy tax, not to penalize but to incentivize owners of multifamily properties to use the properties for their intended purpose.

I just have to say once again that this is not a panacea, this is not the solution to the housing crisis, and that we need to build new housing. What we have is a crisis that is decades in the making through deliberate actions on the part of government, through racial segregation or redlining, through fierce resistance to building housing, and through policies that have constrained the production of housing.

What we have is a crisis that is decades in the making through deliberate actions on the part of government, through racial segregation or redlining, through fierce resistance to building housing, and through policies that have constrained the production of housing.

AF: *As a hub of innovation, Berkeley has a thriving economy. Do you believe it's going to be possible for more workers in Berkeley to be able to live in Berkeley, or is there a built-in imbalance that you just have to manage and come to terms with?*

JA: I think it's possible . . . but that's going to require that we build thousands and thousands of units of housing, that we prioritize building housing around our transit stations, that we look at upzoning low-density commercial neighborhoods, that we look at building multifamily housing in residential neighborhoods. Every part of our city needs to meet its responsibility to create more housing. No part of our community can be walled off to new people living here.

I really do think that gets to the core of who we are, who we say we are as a city. Are we a city of equity and inclusivity? If we are, then we need to welcome new people living in our community. We create those opportunities for people to live here: people who previously lived here and were displaced, people who work here but can't afford to live here. And obviously, there's a climate benefit we can give people to not have to drive an hour, two hours to get to Berkeley. That reduces those cars on the road, reduces greenhouse gas emissions, and helps us mitigate the impacts of climate change, and building dense, transit-oriented development is a critical part of taking bold climate action. Our land use policies and our actions to encourage more dense housing are really critical climate action strategies.

Berkeley is expanding its housing supply as part of an effort to address affordability. Credit: Jessica Christian/*San Francisco Chronicle*/Polaris.

A cyclist uses a dedicated bike lane on Telegraph Avenue, Berkeley. Credit: Andrea Kissack/Courtesy of KQED.

AF: *Could you talk about the importance of bicycle and pedestrian safety in your view of how the city functions and how Berkeley is doing in that regard?*

JA: Because we have such high numbers of people who bike to work and walk and use alternative modes of transportation, we need to make it safer and easier for people to get around town. Sadly, we've seen an increasing number of collisions between cars and bicyclists, and pedestrians.

Like many communities, we've adopted a vision zero policy that's focused on reducing traffic injuries and fatalities. We are looking at how we can redesign and reconstruct our streets to make them safer for people who walk and bike. Then, obviously, being the home of the University of California, we have a lot of young people who are constantly walking, biking around, and we need to make it safer for students and for our residents to get out of their cars and to choose non–carbon intensive modes of mobility.

AF: *On climate, what else can Berkeley do? How is this region addressing the climate crisis?*

JA: I think the best way for Berkeley to address the climate crisis is through recognizing, one, it's not a crisis, it's an emergency—and we see the real material effects of it here in California. We've had some of the most devastating wildfires in California history over the last five years, [and] Berkeley is not immune to the threat of wildfire. That's a pretty telltale sign that the climate emergency is here, it's not going away, and we have to recognize that we need to take bold action.

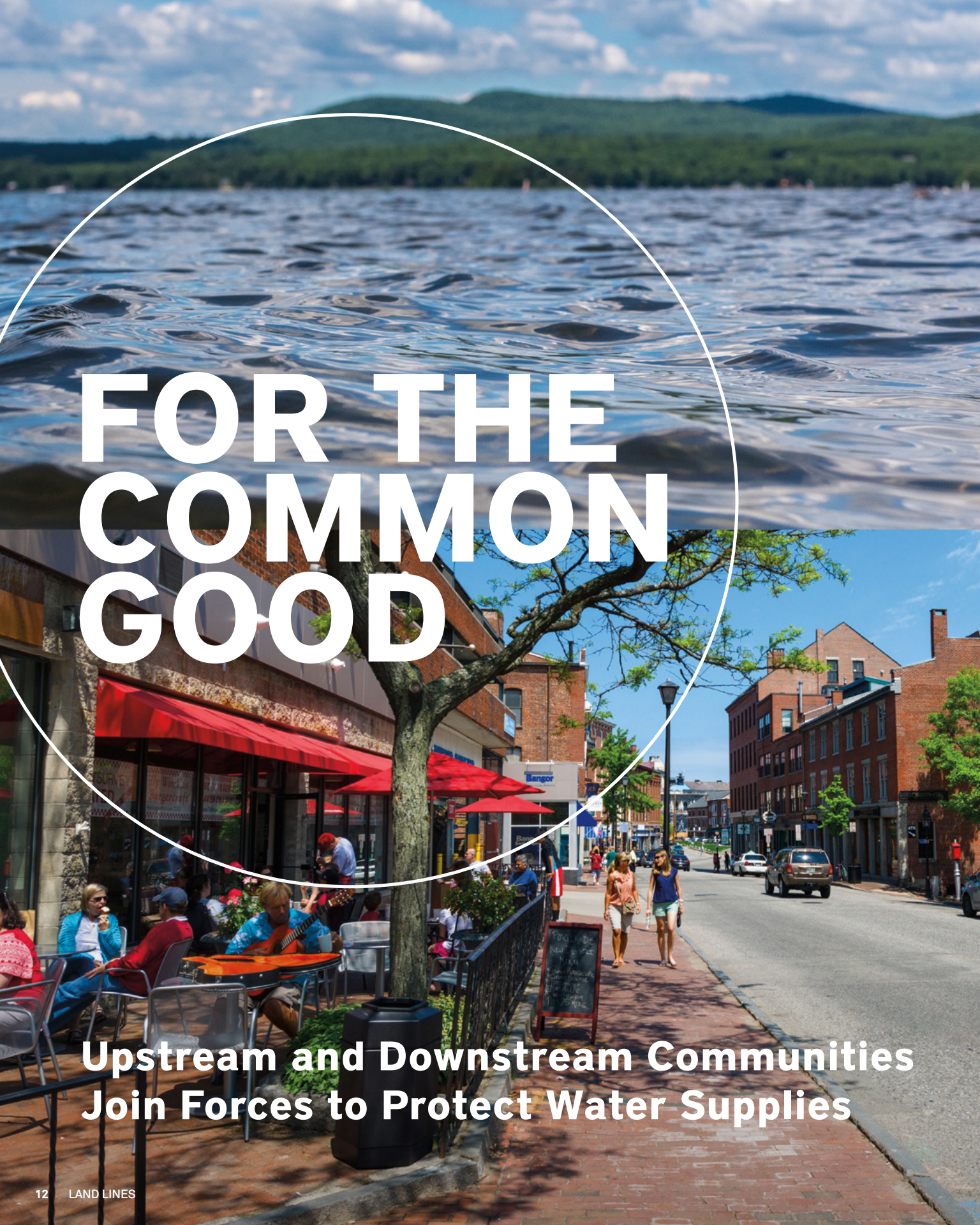
I'm proud that Berkeley has really been a leader in combating climate change. We were one of the first cities to adopt a climate action plan. Obviously, building dense infill housing is a critical part of that.

We do need to promote more electric mobility, whether it's through micro-mobility or through converting heavy-duty and light-duty vehicles to electric, and California's really been a leader at that. While there are very ambitious targets that the state has set to transition our vehicle fleet to electric, we don't have the infrastructure to support that yet. We hope with the new federal bipartisan infrastructure law and the climate law that was just passed that there'll be significantly more resources available that we can leverage to expand that infrastructure in California.

Electrifying our buildings is important too, and Berkeley was the first city in California to adopt the ban on natural gas and require that newly constructed buildings be all-electric. We're also looking at how we can get existing buildings to be electric, which is much tougher. . . . All those things are important, but we also have to adapt to climate change . . . whether it's how we address wildfire risk or sea-level rise. Berkeley's along the San Francisco Bay. We know that parts of our city, unless we do something, are going to see significant flooding and inundation.

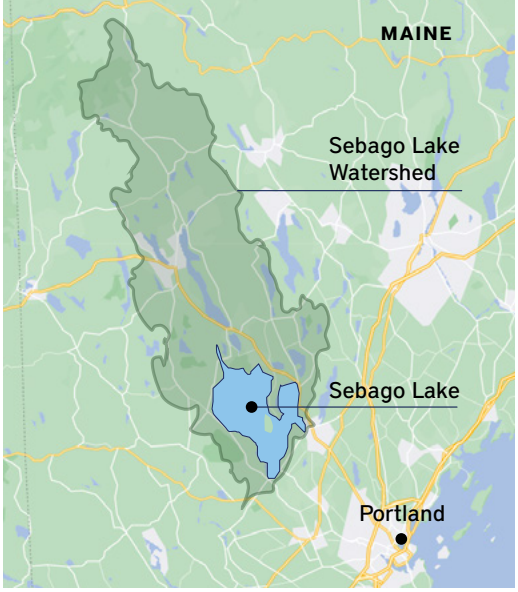
That's where I think the regional approach comes in. These [issues] can't be solved by one city. A lot of work's been done at the Metropolitan Transportation Commission and Association of Bay Area Governments—our regional planning agency and council of governments—to bring government agencies together to explore strategies. I think that's an area where regionalism and regional government's going to make a difference.

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



FOR THE COMMON GOOD

Upstream and Downstream Communities Join Forces to Protect Water Supplies



By Heather Hansman

TWENTY MILES UPSTREAM of Portland, Maine, lies Sebago Lake, the state's deepest and second-biggest body of water. The lake provides drinking water to 16 percent of Maine's population, including residents of Portland, the state's largest city. It holds nearly a trillion gallons of clear, cold water. Portland's water utility has earned one of only 50 federal filtration exemptions in the country, which means the water, although treated to ward off microorganisms, does not have to be filtered before it flows into the city's taps.

"The primary reason it's so pure is that most of the watershed is still forested," says Karen Young, director of Sebago Clean Waters, a coalition working to protect the area. Eighty-four percent of the 234,000-acre watershed is covered in forests—a mix of pine, oak, maple, and other species that filter water and help make this system work so well. But those forests face threats. Between 1987 and 2009, the watershed lost about 3.5 percent of its forest cover. Just 10 percent of the area was conserved. In 2009, 2014, and 2022, the U.S. Forest Service ranked the Sebago watershed as one of the nation's most vulnerable, due to threats from development.

Over the last couple of decades, conservation groups began to worry about the future of this critical resource—and the Portland Water District (PWD) was worried, too. An independent utility that serves more than 200,000 people in Greater Portland, PWD purchased 1,700 acres around the water intake in 2005 and adopted a land preservation policy in 2007. In 2013, it established a program to help support conservation projects undertaken by local and regional land trusts.

Most of these organizations were working independently until 2015, when The Nature Conservancy brought them together to develop a conservation plan for the lake's largest tributary, the Crooked River. That convening evolved into the Sebago Clean Waters coalition, which includes nine local and national conservation groups, the water district, and supporters from the business community. As they explored creative ways to protect the lake and the land around it, the idea of creating a water fund surfaced.

Water funds are private-public partnerships in which downstream beneficiaries like utilities and businesses invest in upstream conservation projects to protect a water source—and, by extension, to ensure that the supply that reaches users is as clean and plentiful as possible. In 2016, Spencer Meyer of the Highstead Foundation—one of the groups that founded Sebago Clean Waters—took a trip to Quito, Ecuador, with The Nature Conservancy. The group visited with representatives of the Fund for the Protection of Water (FONAG), a leading example of this novel source water protection model. Meyer saw some similarities to the situation in Maine.

"We thought, 'What if we could bring the partners together as a whole system to accelerate the pace of conservation?'" he says. "And could we apply that model to a healthy watershed, to take a proactive position and build this financial model in a place where it isn't too late?"

A water fund is a financial tool, but it's also a governance mechanism and management framework that brings multiple stakeholders to the table. Quito's fund, launched in 2000, is the longest-standing one in the world. Similar projects have proliferated across the globe, particularly in Latin America and Africa. According to The Nature Conservancy, more than 43 water funds are operating in 13 countries on four continents, with at least 35 more in the works.

Sebago Lake (top) provides water for residents of southern Maine communities including Portland (bottom). Credits (top to bottom): Phil Sunkel via iStock/Getty Images Plus, Ian Dagnall via Alamy Stock Photo.

The Importance of Healthy Watersheds

Globally, clean water is our most important resource. When upstream watersheds are healthy, they collect, store, and filter water. That provides a resource that can, in addition to meeting basic hydration and sanitation needs, support climate change adaptation, food security, and community resilience. When watersheds are not healthy, sediment clogs up water filtration systems, pollutants flow downstream, and ecosystems become degraded.

That difference is crucial. According to a Nature Conservancy report, more than half the world's cities and 75 percent of irrigated agriculture are likely already facing recurring water shortages (Richter 2016). Climate change is fueling extreme drought, from the U.S. West to Australia, and pollution from sources like nitrogen and phosphorus has grown ninefold in the last half century. In many cities, the source of water is far away and under different jurisdiction, which makes regulation and treatment challenging.

The Nature Conservancy also estimates that 1.7 billion people living in the world's largest cities currently depend on water flowing from fragile source watersheds hundreds of miles away (Abell et al. 2017). That puts strain on both ecological systems and infrastructure, and demand is only growing. By 2050, two-thirds of the global population will live in those cities. That level of demand simply may not be sustainable, especially in a rapidly changing climate. Water funds can be creative, multi-layered solutions to two urgent, interlocking issues: water quality and quantity.

"Water funds sit at the intersection of land, water, and climate change," says Chandni Navalkha, associate director of Sustainably Managed Land and Water Resources at the Lincoln Institute of Land Policy. "They are an example of the kind of cross-sectoral, multi-stakeholder governance and collaboration that is required to maintain water security in a changing climate."

Navalkha recently oversaw the development of a case study of the Sebago Clean Waters initiative, which the Lincoln Institute will distribute through its International Land Conservation Network (Sargent 2022). Changing the way water has been historically managed isn't easy, particularly because it's tangled up in issues like city planning, economic growth, and public health. So groups like the Lincoln Institute and The Nature Conservancy are working to spread the water fund model by showing the science behind source water protection, giving communities tools to find ecosystem-specific solutions, and sharing the experiences of places like Portland and Quito.

Water funds have been created in the United States, Mexico, Guatemala, Dominican Republic, Panama, Colombia, Ecuador, Peru, Brazil, Chile, South Africa, Kenya, and China. The map also indicates countries where funds are under development. Credit: Courtesy of The Nature Conservancy.

The city of Quito, Ecuador, sources its water from several protected areas, including Cayambe Coca National Park, visible in the background. Credit: SL_Photography via iStock/Getty Images Plus.

Lessons from Quito

In the late 1990s, officials in the Metropolitan District of Quito started to worry that they were running out of water to support the city's 2.6 million residents. The upstream ecosystems that filled the city's aquifers were eroding, and those impacts were trickling downstream.

A full 80 percent of the city's water supply originated from protected areas within its watershed: the Antisana Ecological Reserve, Cayambe Coca National Park, and Cotopaxi National Park.

"But they were only paper parks," says Silvia Benitez, who works for The Nature Conservancy as water security manager for the Latin American Region. Instead of being protected, the area's *páramos*—biodiverse high-altitude grasslands that are home to a range of rare endemic species and filter the upstream water supply—were facing multiple threats from livestock grazing, unsustainable agriculture, and construction. Where conservation was an option, lack of funding made it difficult to achieve.

Benitez says water managers knew the situation needed to be addressed, so the Municipal Sewer and Potable Water Company of Quito and The Nature Conservancy set up a fund to support the upstream ecosystem with $21,000 in seed money. Over the next few years they built a board of public, private, and NGO watershed actors, including Quito Power Company, National Brewery, Consortium CAMAREN, which provides social and environmental policy training, and the Tesalia Springs Company, a multinational beverage corporation. All of those stakeholders had a vested interest in water, and each contributed to the trust every year.

Today, FONAG is regulated by the Securities Market Law of Ecuador and has a growing endowment worth $22 million. That funding is used to support upstream environmental projects like agricultural training and plant restoration in the *páramos*, which helps limit sedimentation.

"It's a financial mechanism that harnesses investments from private and public sectors to protect and restore forests and ecosystems," says Adriana Soto, The Nature Conservancy's regional director for Colombia, Ecuador, and Peru. It's also a forward-thinking way to manage water, says Soto, who was previously vice minister of Environment and Sustainable Development of Colombia and serves on the board of the Lincoln Institute.

Traditional water infrastructure—often called gray infrastructure—consists of pipes, water filtration systems, and chemical treatments,

In the late 1990s, officials in Quito started to worry that they were running out of water to support the city's 2.6 million residents. The upstream ecosystems that filled the city's aquifers were eroding, and those impacts were trickling downstream.

which are designed to purify water before it's used. Gray infrastructure has long been relied on to ensure that water was potable and accessible. But it's expensive and energy intensive, it can negatively impact wildlife and ecosystems, and it breaks down over time. Climate change is also posing threats to gray infrastructure; for instance, intensifying wildfires have led to increased sedimentation that chokes existing filtration plants, and virulent storm cycles have overwhelmed water treatment plants and other key pieces of infrastructure.

By contrast, green infrastructure is a water management approach that takes its cue from nature. Protecting upstream water sources is a form of green infrastructure investment that can help alleviate the pressure on water systems. There are almost as many ways to manage source water as there are water sources, but The Nature Conservancy's "Urban Water Blueprint" report, which surveyed more than 2,000 watersheds, identifies five archetypes: forest protection, reforestation, agricultural best management practices, riparian restoration, and forest fuel reduction (McDonald and Shemie 2014).

For instance, in the *páramos* above Quito, FONAG funded work to keep cattle off the most fragile grasslands and employed guards to stop rogue burning, because rebuilding the ecosystem was a top priority. Working across nearly 2,000 square miles, the fund has now protected more than 70,000 acres of land. This effort has benefited more than 3,500 families, providing funding to support sustainable, profitable farming operations.

"One of the beauties of the strategy is the social and economic results," Soto says. "It's not just tackling water regulation, it tackles climate change resiliency, biodiversity conservation, and it strengthens communities and creates gender equality. Most of the farms are led by women."

Cattle graze in the grasslands above Quito. The Fund for the Protection of Water (FONAG) has worked to keep cattle off the most sensitive areas and support more sustainable farming practices. Credit: Mark A. Paulda via Moment/Getty Images.

Quito's model inspired a swell of other water funds, many launched by The Nature Conservancy. Like these examples, each has place-specific strategies and funding structures:

GREATER CAPE TOWN WATER FUND

In 2021, the **Greater Cape Town Water Fund** invested $4.25 million in removing invasive plants such as gum, pine, and eucalyptus trees, which were absorbing an estimated 15 billion gallons of water each year from this drought-stricken watershed—equal to a two-month water supply. More heavily engineered solutions like desalination plants or wastewater reuse systems would have cost 10 times as much, The Nature Conservancy estimated.

Vegetation above Cape Town, South Africa. Credit: Roshni Lodhia/ Courtesy of The Nature Conservancy.

UPPER TANA–NAIROBI WATER FUND

Since the **Upper Tana–Nairobi Water Fund** launched in 2015, organizers have worked with tens of thousands of the watershed's 300,000 small farms to keep sediment from running down the region's steep slopes into the Tana River, which provides water for 95 percent of Nairobi's 4 million residents. The effort has reduced sediment concentration by over 50 percent, increased annual water yields during the dry season by up to 15 percent, and increased agricultural yields by up to $3 million per year. In 2021, the fund became an independent, Kenyan-registered entity.

A representative of the Upper Tana–Nairobi Water Fund. Credit: Nick Hall.

LONGWU WATER FUND

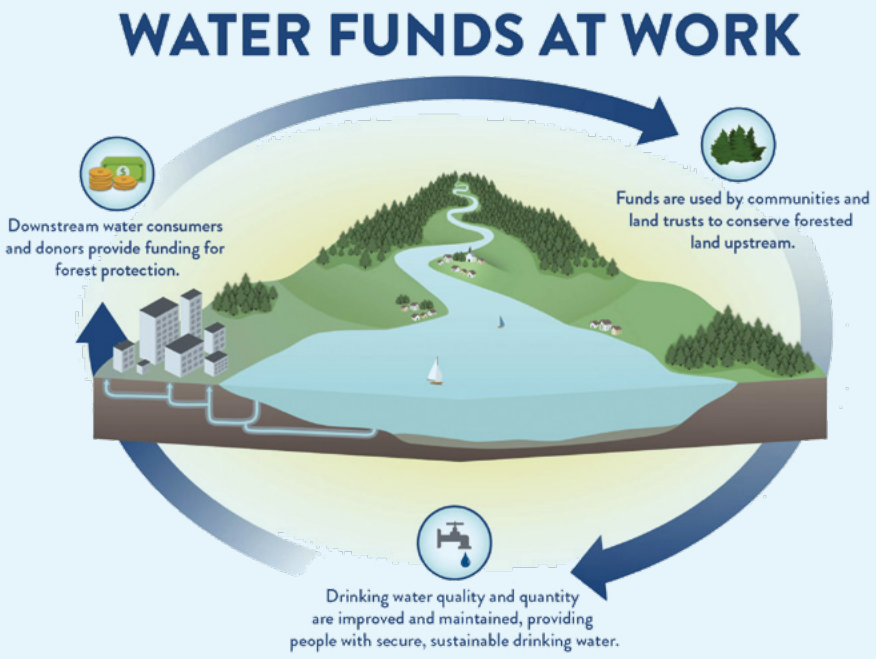
The chemicals used in conventional bamboo production were polluting China's Longwu Reservoir, which provides drinking water to two villages of 3,000 people. With an initial investment of $50,000, the **Longwu Water Fund** has helped local farmers adopt organic and integrated farming methods, now used in 70 percent of the area's bamboo forests; promote ecotourism; and provide environmental education programs. In 2021, the water utility and local government agreed to pay into the fund on behalf of all water users.

Longwu Reservoir. Credit: Government of Huangfu Town.

ENVIRONMENTAL AND FINANCIAL BENEFITS OF WATER FUNDS

Water funds support conservation projects that address a range of issues, including sedimentation and turbidity, nutrient build-up, and aquifer recharge. They also create social and environmental cobenefits, like protecting and regenerating habitat and sequestering emissions.

There are financial upsides as well: according to The Nature Conservancy, these investments in land management can provide more than $2 in benefits for every $1 invested over 30 years. One in six cities could recoup the costs of investing in upstream conservation through savings in annual water treatment costs alone.



Credit: Sebago Clean Waters.

Measuring Progress

Creating a water fund requires establishing governance systems, securing funding, identifying conservation goals, and defining benchmarks for measuring progress. "The business case development is hard: how much money, where is it going to be invested," Soto says.

Part of the business case is demonstrating the ecological and financial benefit of a fund. Soto says that's the biggest challenge, because the benefits of conservation are long term, and don't present themselves immediately.

"Water is difficult," she says. "The challenge is not only time—we have to prove the case over many years—but also the aggregated result. How much of the water quality or quantity is because of the water fund?" She says FONAG struggled to find a way to quantify that, but researchers from San Francisco de Quito University helped set up a monitoring system that tracked water quality and quantity. That system has been used to mark progress and to show investors the direct benefits of this work.

"It's not an easy sell, especially when you're talking about committing funding for 50 or 70 years," Benitez says. "But now, 20 years later, we have a lot of tools to show the benefits of nature-based solutions."

She says that over those years, as The Nature Conservancy has introduced water funds in Colombia, Brazil, and other countries, they've learned to show potential partners concrete, measurable outcomes, and they've gathered tools and science to back up the work.

Scaling Up

Quito's project has been considered a success over the years, but while building a single water fund is one thing, scaling the concept is another. As the water fund model has expanded to other countries and continents, challenges have come up.

Changing the way water institutions think and operate takes time and negotiation. On the financial side, transaction and set-up costs can be high, and there's no clear framework to compare the costs of nature-based solutions and gray infrastructure. Logistically, setting up a fund is different every time; Cape Town's invasive species problem is different, for example, from Quito's *páramo* protection needs.

To address these challenges, The Nature Conservancy—along with the Inter-American Development Bank, the FEMSA Foundation, the Global Environment Facility, and the International Climate Initiative—formed the Latin America Water Funds Partnership in 2011. The goal of the partnership, which is described in *From the Ground Up*, a Lincoln Institute Policy Focus Report (Levitt and Navalkha 2022), is to scale the development of water funds in the region and provide a global model for how to help urban centers with source water protection.

A year after its launch, the partnership published a manual intended to provide resources that could guide work everywhere, even though each place faced specific challenges (TNC 2012). "We have water funds that work with indigenous groups upstream, and we have other funds that have more large landowners, or small farmers," Benitez says. "Our common purpose is to establish agreement with the groups and set up the responsibilities of the fund."

That's different in every case, but there are certain elements that can help make a water fund successful, like political involvement. For instance, Soto says that in Bogotá, Medellín, and Cartagena, fund organizers made sure to involve Colombia's Ministry of Environment and Ministry of Housing, which is in charge of graywater. "Having them on board provides a platform to facilitate policy change, so we don't start from scratch," she says. The Nature Conservancy also offers strategies to engage companies, and to show them how supporting water funds reduces their long-term risk.

In 2018, The Nature Conservancy took the framework a step further, building a Water Funds Toolbox designed to guide potential partners through five stages of a project: feasibility, design, creation, operation, and consolidation (TNC 2018). The toolbox, which leans on 20 years of accrued knowledge, shows how and where a water fund can help with water quality and availability, and provides a framework for the financial and conservation side of planning, too.

The toolbox, which leans on 20 years of accrued knowledge, shows how and where a water fund can help with water quality and availability, and provides a framework for the financial and conservation side of planning, too.

The Upper Tana–Nairobi Water Fund is working to stabilize and improve water supplies in Nairobi, where the municipal utility can meet only two-thirds of current demand. Credit: Nick Hall.

Maine Adopts the Model

In Maine, the members of Sebago Clean Waters took that toolbox and ran with it. "From the very beginning, we strived to design Sebago Clean Waters as a replicable model for other coalitions, regions, and water funds to learn from," said Meyer, of the Highstead Foundation.

The coalition assessed the fund's feasibility, commissioning a study by the University of Maine. The study found that reducing area forest cover by even 3 percent could noticeably increase pollutants. If forest cover decreased by 10 percent, it would cause the watershed to fall below federal filtration standards, the study said: "Protecting the filtration-avoidance waiver saves PWD and its customers an estimated $15 million per year in expected additional annual filtration plant costs" (Daigneault and Strong 2018).

The economic argument was strong. The researchers found that every dollar invested in forestland conservation is likely to yield between $4.80 and $8.90 in benefits, including the preservation of water quality. If a filtration plant became necessary, however, PWD would need to increase water rates by about 84 percent to offset the costs of construction. There were ecological benefits to conserving the watershed, too, like providing habitat for trout and salmon, reducing erosion, and managing floods.

Sebago Clean Waters came up with a plan to ensure that a total of 25 percent of the watershed —35,000 acres—was conserved over the course of 15 years. They started with projects like the 1,400-acre Tiger Hill Community Forest in the town of Sebago. That tract was protected through a partnership between the Loon Echo Land Trust, a member of the coalition that has worked to protect the northern Sebago Lake region since 1987, and the Trust for Public Land. In 2021, Sebago Clean Waters announced its participation in a deal that would protect more than 12,000 acres in Oxford County, including the headwaters of the Crooked River, the lake's main tributary. The amount of protected land in the watershed has increased from 10 percent to 15 percent.

Land conservation isn't cheap or easy, especially in New England, where much of the lakeside land has long been in private hands. Achieving the water fund's goals will take an

"Drinking water is so compelling, it's not a hard sell to talk to people about protecting it . . . . They understand the benefit as a business and as a community member."

Sebago Clean Waters is working to ensure that 25 percent of the Sebago Lake watershed is protected, starting with projects including the conservation of Tiger Hill Community Forest. Credit: Jerry and Marcy Monkman/EcoPhotography.

estimated $15 million. But the fund is gaining momentum: building on an initial capacity-building grant of $350,000 from the U.S. Endowment for Forestry and Communities; private and corporate funding; and a commitment by the Portland Water District to provide up to 25 percent of funding for each watershed conservation project that meets its criteria, the coalition recently landed an $8 million Regional Conservation Partnership Program award from the USDA.

Local businesses have also stepped up. In 2019, Portland's Allagash Brewing offered to donate 10 cents from every barrel of beer it brewed, a total of about $10,000 a year. Allagash was the first of about 10 companies—including four other breweries—that have joined the coalition. MaineHealth, a statewide hospital network, just got involved as well.

"Drinking water is so compelling, it's not a hard sell to talk to people about protecting it—particularly the breweries, because beer is 90 percent water," Young says. "They understand the benefit as a business and as a community member." She's been surprised at the reasons so many partners have come on board. Many aren't doing it because of their bottom line; they're concerned with sustainability, and with supporting the communities where their employees live.

Sebago Clean Waters has accomplished a great deal, but its members are very aware of the time-sensitive need to protect this relatively pristine resource. After all, conserving land and water is easier than restoring them. Once a clean water source is gone, it's hard to bring back.

As the water fund model spreads, it's illustrating the real potential of upstream-downstream partnerships to make meaningful change. This work is not simple or immediate, but it can have lasting positive impacts in watersheds and communities around the world. Meyer said the model holds great promise: "It's powerful to see how far a trust-based partnership can go."

Heather Hansman is a Colorado-based journalist and the author of the book *Downriver*. She's a Registered Maine Guide and a lover of the state's rivers.

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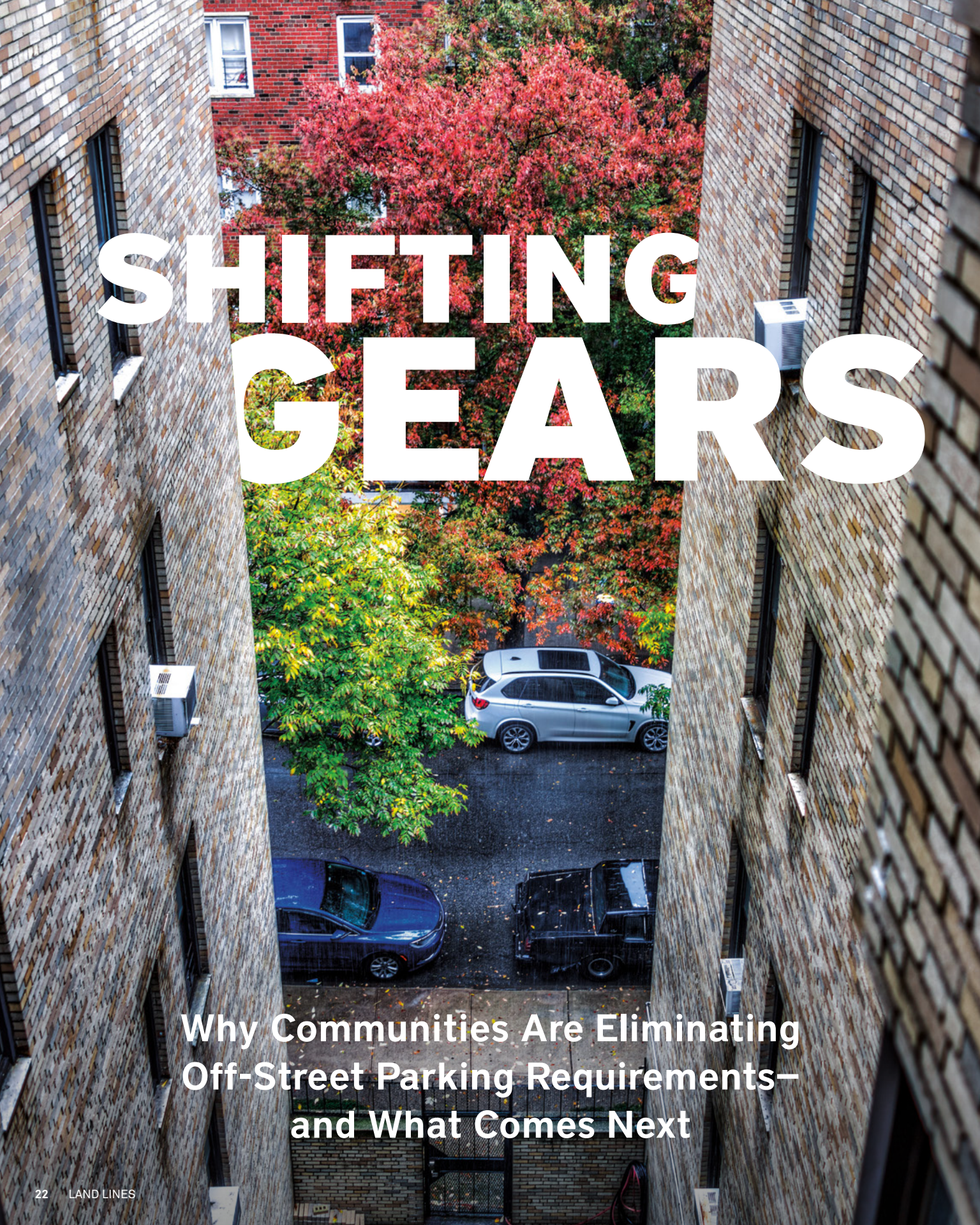


SHIFTING GEARS

Why Communities Are Eliminating Off-Street Parking Requirements—and What Comes Next

By Catie Gould

COLUMBUS, OHIO, INVENTED THE FIRST KNOWN off-street parking requirement for an apartment building in 1923. After nearly a hundred years, the results are in, and they're not good.

Last year, an assessment of the local zoning code—commissioned by the city as part of a comprehensive code revision process—concluded that off-street parking requirements were "not effective" and "often poorly matched to true parking demand."

That mismatch has gotten worse over time. Today's parking requirements in Columbus are far higher than their cousins from the city's midcentury zoning code. In 1954, an apartment building with 100 one-bedroom units was required to have 100 parking spaces; today it has to have 150. For a 2,500-square-foot restaurant, nine required parking spaces became 34, in the 90 percent of the city not covered by special overlay districts. These ratios are out of step with the local market, leading builders to request parking reductions more than any other type of zoning variance. City and regional plans have recommended reducing parking requirements and making them more consistent (LWC 2021).

Columbus is not alone. Across the United States, decades of similar parking requirements have led to a glut: researchers estimate that for every car in the country, there are at least three parking spaces—and some have suggested the number is closer to eight spaces.

This oversupply has created a host of problems: parking requirements can inflate housing costs, block buildings from being adapted to new uses, and contribute to sprawl, making additional driving (and parking) necessary. They create an administrative burden. And the impervious surfaces of parking lots increase the risk of flooding and contribute to the urban heat island effect.

But there is good news: of all the harms traditional zoning has inflicted on communities, parking requirements are the easiest to fix, said Sara Bronin, former chair of the Hartford, Connecticut, Planning and Zoning Commission. Bronin was at the helm in 2017, when Hartford became one of the first cities in the United States to eliminate residential and commercial parking mandates. The year before, city leaders had tested the waters by eliminating requirements in the downtown area, a move that yielded new development projects and new proposals for reuse. "Every community should be eliminating their parking requirements," Bronin said.

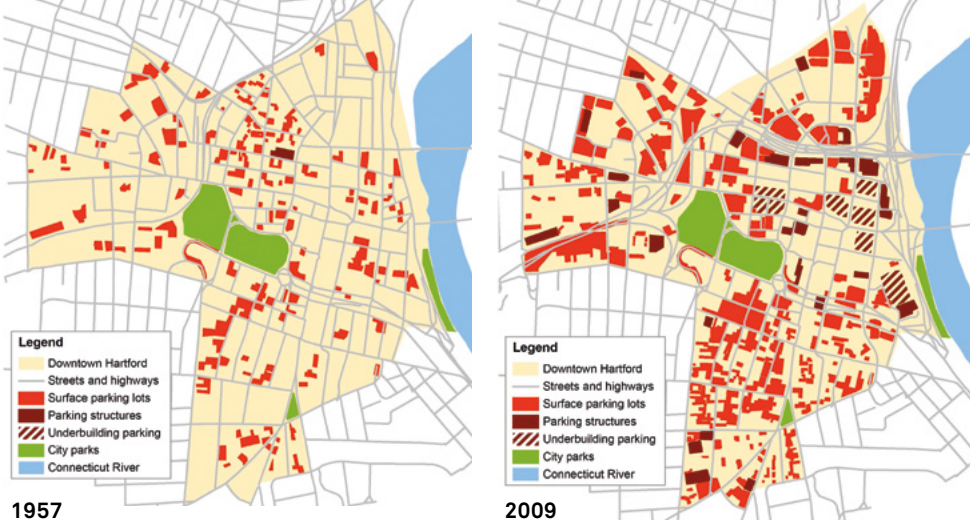
Each year, more cities are eliminating or reducing such mandates. In 2021, cities from Minneapolis to Jackson, Tennessee, eliminated minimum parking requirements from their zoning codes. In the week that this article was drafted alone, cities from Spokane to Chicago to Burlington, Vermont, rolled back parking mandates.

Communities might reduce their parking requirements because they are trying to reinvent themselves by attracting new businesses and development, accommodate population growth with space-efficient infill, or focus more on transit and walkability. Regardless of the reason, parking reform advocates say this land use regulation could finally be on its way out.

"We're going to look back at this as just this weird, late-20th century aberration," predicts Patrick Siegman, an economist and planner who has been studying parking since 1992, including as a partner at the national transportation planning firm Nelson Nygaard. "We created something wildly inefficient."

Across the United States, decades of off-street parking requirements have led to a glut: researchers estimate that for every car in the country, there are at least three parking spaces.

Credit: krblokhin via iStock/Getty Images Plus.



Researchers have determined that the land dedicated to surface parking lots in downtown Hartford, Connecticut, tripled between 1960 and 2000. Credit: Christopher McCahill and Norman Garrick.

Hartford Leads the Way

Like many industrial cities in the United States, Hartford saw dramatic population decline during the second half of the 20th century. In 1960, half of the people working in Hartford lived there, many walking or taking transit to jobs downtown; by 1980, less than a quarter of its workforce called the city home. Many white residents had fled for the suburbs and the overall population was declining. The repercussions of this demographic and economic shift are visible in the city's bounty of parking lots: to accommodate the increase in car commuters, the city essentially paved over swaths of its downtown.

As historian Daniel Sterner put it, "Hartford is famous for having so much torn down" (Gosselin 2013). Not even the city's first skyscraper, built in 1912, survived the demolition boom. It was razed to make way for a taller office tower, but those plans were abandoned in 1990 as the country entered a recession. The prominent corner lot became, and remains, surface parking.

University of Connecticut Professor Norman Garrick and his team found that from 1960 to 2000, the amount of land dedicated to parking lots in the downtown business district tripled, nearly equaling the amount of land underneath all the adjacent buildings. "The increase in parking was part of the collapse of the city," Garrick said. "It's typical of a lot of American cities."

Even without the research, there was little debate that Hartford had an oversupply of parking. "I don't think every city needs a full-on parking history, or parking analysis," said Bronin. "Most people should be able to just look around and say, 'there's a lot of parking in this city.'"

The overabundance of parking came at a great cost, Garrick's team found. In a 2014 report, they estimated that the city was missing out on property tax revenue to the tune of $1,200 per downtown parking space, or about $50 million a year. That was a significant amount for a city whose downtown buildings were generating $75 million in annual tax revenue (Blanc et al. 2014).

Attracting investment is critically important for Connecticut's capital city—and particularly challenging. More than half of the city's real estate is nontaxable, because the land is owned by the government or nonprofit institutions. The rest is subject to the highest property tax rate in the state. Eliminating parking requirements citywide is one way to create a more flexible, inviting environment for development.

"It's easy to say we have no parking minimums, as opposed to 'what zone?'," said Aaron Gill, current vice chair of Hartford's Planning and Zoning Commission. The biggest hurdle now is convincing developers they have new options, Gill said. He encourages developers to revisit parcels they might have discounted in the past, and to review how much parking is actually being used in previous developments.

The strategy seems to be working. The quasi-public Capital Region Development Authority (CRDA) has funded more than 2,800 new homes downtown since 2012, aiming to build a critical mass of residents to support retail and other services. Mike Freimuth, executive director of the CRDA, said the new zoning code has helped reduce costs and increased the use of existing parking garages.

One of the CRDA projects, Teachers Village, involved converting an office building that had been vacant for 20 years into housing for area educators. Thirty percent of the apartments were designated as affordable. Prior to the code change, more than one parking space would have been required for each unit, but the renovated building has only 18 underground parking spaces for 60 households. The spaces are leased separately from the apartments, saving money for those who don't need a parking spot. According to estimates based on U.S. Census data, more than 30 percent of Hartford households don't even own a car (Maciag 2014).

Other redevelopment projects have cut deals with adjacent parking garages, which are also adapting to the new world of remote work, to provide an off-street parking option for residents for an additional fee. Two derelict commercial buildings on Pearl Street, which Freimuth used to joke were the largest pigeon coops in the state, went that route when the buildings were renovated into 258 new homes. A few blocks away, a former Steiger's department store is being converted into 97 new apartments with commercial space below.

Eliminating parking requirements citywide is one way to create a more flexible, inviting environment for development: "It's easy to say we have no parking minimums, as opposed to 'what zone?'"

The CRDA is also involved in an ambitious project known as Bushnell South, which aims to convert a 20-acre area dominated by surface parking into a vibrant, walkable, mixed-use neighborhood with up to 1,200 apartments and townhouses, restaurants and retail, green space, and cultural attractions. The city was reviewing proposals from developers this summer with the goal of moving forward this fall. Although some developers have expressed concern that the city is building more residential space than the market can support, Freimuth is eager to proceed. "This land has been laying fallow for 50 years," he told the *Hartford Courant* (Gosselin 2022). "Why do we have to keep on waiting?"

Planners hope to convert an area of downtown Hartford currently dominated by surface parking (left) into a mixed-use neighborhood known as Bushnell South (right). Credits (left to right): Mark Mirko/*Hartford Courant*, Goody Clancy/Bushnell South Planning Consortium.

The Benefits of a Citywide Shift

On the edge of downtown Fayetteville, Arkansas, a building that had stood vacant for nearly 40 years now houses a local restaurant with a rooftop patio. Down the road, a formerly abandoned gas station is back in use as retail space. The reuse of these once-forgotten properties was made possible several years ago, when Fayetteville's city council voted to remove commercial parking requirements citywide.

While most cities start with reducing parking mandates in a central business district, like Hartford did, planners in Fayetteville were fielding requests about properties throughout the city, and opted against defining a smaller boundary. At 44 square miles, Fayetteville is nearly 2.5 times larger than Hartford, with 70 percent of the population.

"As a city planner, you receive phone calls about what's possible with this property," Fayetteville planner Quin Thompson explained. "What I began to see was the same properties over and over again. Some of those properties were downtown, but a lot weren't." None of the parcels had enough space to meet the parking requirements in place at the time.

The planning staff approached the city council with the idea of eliminating commercial parking requirements citywide. Some of these properties were so constrained, they explained, it was impossible to imagine how they could be redeveloped under the current rules. They also said investors taking on the financial risk of a project were best suited to determine their own parking needs, and would act as a backstop even when the city was no longer regulating off-street parking spaces. In October 2015, Fayetteville's city council agreed.

What happened next? "The buildings that I had identified as being perpetually and perhaps permanently unusable were very quickly purchased and redeveloped, and are in use right now," said Thompson. "I can't think of any that are still out there that I had used as case studies that haven't been redeveloped."

The elimination of commercial parking requirements in Fayetteville, Arkansas, made new projects possible, including the conversion of a long-vacant building (inset) into the busy Feed and Folly restaurant. Credits: Courtesy of Feed and Folly; Katie Mihalevich, Realtor® (inset).

Thompson and his colleagues were right that the distinction between parking needs in a central city versus outlying neighborhoods can be arbitrary. In the lead-up to the removal of parking requirements in Edmonton, Alberta, in 2020, a citywide study of 277 sites found no clear geographic trend that related to how full parking lots were, even after factoring in variables like population density, walkability as measured by Walk Score, or drive-alone rate. Of all the sites surveyed, only 7 percent neared capacity at the busiest times of day. It was far more common for parking lots to remain half empty, as was the case for 47 percent of observed sites (Nelson Nygaard 2019).

In Fayetteville and other cities, eliminating parking minimums citywide has had another benefit: reducing administrative work and freeing up city staff to work on other things. "One of the

things you find in American cities is that they've got all of these college-educated planners, many of whom actually have graduate degrees, and what they're doing is spending hour after hour processing parking variances," explained Siegman.

Kevin Robinson was one of those planners, until he was hired as director of Planning and Development Services for Albemarle, North Carolina. To his surprise, the city had almost no parking requirements, having eliminated virtually all of them two decades prior. "However you came about it," he recalls telling city officials, "I think you're on the right track."

Towns where he had worked previously had only reduced parking requirements in central business districts, not citywide. "From an administrative standpoint, it's a heck of a lot easier to deal with," said Robinson.

"Quite honestly, a lot of times [parking minimums] are very arbitrary numbers," Robinson said. Now that he no longer has to enforce them, he has more time to spend on other aspects of development—including a downtown parking plan. He has plenty of data to rebut complaints that there isn't enough parking. Even at peak hours, public parking never gets more than half full, his heatmaps indicate.

Robinson acknowledges that eliminating parking minimums wasn't a cure-all: "We are still seeing far more parking being built than is absolutely necessary." (See sidebar to learn how the shift has played out in other cities.)

Construction in Albemarle is picking up as people get priced out of nearby cities like Charlotte. In the last two years, this small city of 16,000 has approved permits for 3,000 new housing units, with another 1,000 in the works, including middle housing like duplexes and townhouses.

Robinson is nervous that the parking requirements, which were discarded at a time when the city wasn't growing, might return as development accelerates. "I'm trying to keep them from going in that direction," he said. His concerns aren't unfounded, as the experience of another city shows.

"The buildings that I had identified as being perpetually and perhaps permanently unusable were very quickly purchased and redeveloped, and are in use right now."

Left to the Market, How Much Parking Gets Built?

In Buffalo, New York, which struck down parking requirements in April 2017, a review of 36 major developments showed that 53 percent of projects still opted to include at least as many parking spaces as the previous code had required. The developers who did propose building less parking averaged 60 fewer parking spaces than the old minimum required, avoiding over eight acres of unnecessary asphalt and saving up to $30 million in construction costs.

Seattle saw similar results after eliminating parking requirements near transit in 2012. A study of 868 residential developments permitted in the following five years found that 70 percent of new buildings in areas not subject to parking requirements still chose to have on-site parking. Collectively, the new buildings included 40 percent fewer parking spaces than would have previously been required, saving an estimated $537 million in construction costs and freeing up 144 acres of land.

Sources: "What Happened When Buffalo Changed Its Parking Rules," Streetsblog (June 2021); "Seattle's Reduced Parking Minimums Cut 18,000 Stalls and Saved Over $500 Million," State Smart Transportation Initiative (February 2021).

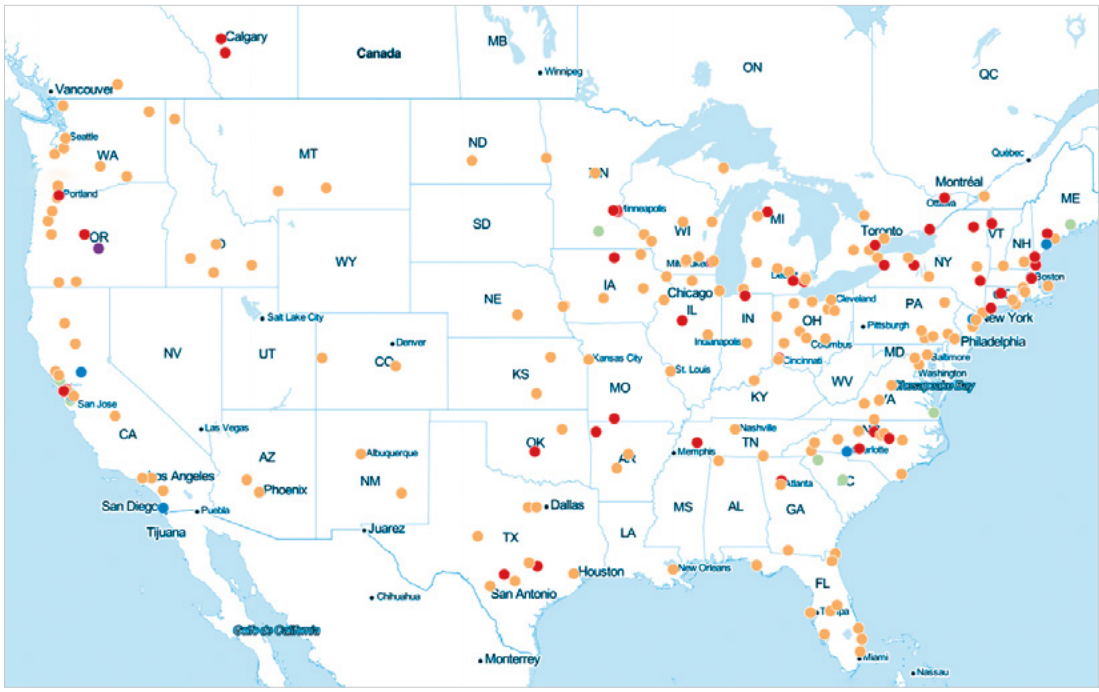
When Mandates Make a U-Turn

It took almost a decade for a new apartment building with no parking to arrive in Portland after the city waived requirements near transit in 2002. The political backlash came more swiftly. As Portland's rental market tightened, the city found itself with the second-lowest vacancy rate in the country in 2012. Apartment construction was booming, and buildings without off-street parking were becoming increasingly common.

Then controversy erupted. The epicenter was a 13-block section of Division Street, a car-oriented commercial corridor experiencing a building boom. By the time the issue made it to the front pages of *Willamette Week,* the local weekly paper, 11 new multifamily buildings were under development, seven with no parking at all.

A city-commissioned survey of 115 residents of new apartment buildings would show that 72 percent of the respondents owned cars, with the majority parking on neighborhood streets (Mesh 2012a). Even though the same survey showed that the areas around the buildings had plenty of available parking, neighbors didn't perceive it that way. Mayor Charlie Hales, who had championed the removal of parking mandates as a council member in 2002, even floated the idea of instituting a building moratorium until the zoning code could be sorted out. Hales told *Willamette Week* that he had anticipated developers might build one parking spot instead

It took almost a decade for a new apartment building with no parking to arrive in Portland after the city waived requirements near transit in 2002. The political backlash came more swiftly.



Communities across the United States and Canada have modified or eliminated their off-street parking requirements. Credit: Parking Reform Network.

Scope of Reform

- Regional
- Citywide
- City Center/District
- Transit Oriented
- Main Street/Special

of two, but hadn't imagined banks would finance housing with no parking at all (Mesh 2012b).

In response to the outcry, Portland's city council reinstituted a parking requirement for multifamily developments with more than 30 units. Those larger buildings would need to provide one parking space for every three or four units, depending on the building size. "That was the strategic retreat," Hales explained. "We decided to adjust our ideal slightly to a watered-down version in order to reduce the controversy."

Hales, who is no longer mayor, still believes strongly in eliminating parking requirements. "There's some things we really don't need to regulate," he said recently. "Minimum number of parking spaces is one of them." Given the political pressure of the time, he has a hard time imagining how things could have worked out differently.

While supporters of parking mandates prevailed in that case, the matter was far from settled. Several years after the brouhaha, regulated affordable housing near transit regained its exemption from parking requirements, after rising rents and economic displacement prompted Portland to declare a housing state of emergency and elect a tenant advocate to city council. Portland adopted an inclusionary zoning policy that same year, requiring multifamily buildings to set aside units for affordable housing—and waiving residential parking requirements for those buildings.

Looking back, Portland activist Tony Jordan, who went on to launch the national Parking Reform Network, thinks the city was foolish to derail the housing construction wave. "Why would you do anything" to make developers think twice about investing in larger buildings, he asked. The way the code was written, adding one more unit to a 30-unit building came with a penalty of six parking spaces, incentivizing builders to stay under the limit. "Even if we only lost 60 apartments," Jordan said, "that's a housing subsidy that we just threw away—and for what?"

Raleigh, North Carolina. Credit: Rose-Marie Murray via Alamy Stock Photo.

Communities with No Parking Minimums

According to the Parking Reform Network, the following communities do not have citywide minimum parking requirements (dates of implementation indicated when known). Learn more about these and other changes to U.S. parking mandates at **www.parkingreform.org.**

- **California:** Alameda (2021), San Francisco (2018), Emeryville (2019)
- **Connecticut:** Bridgeport (2022), Hartford (2017)
- **Georgia:** Dunwoody (2019)
- **Indiana:** South Bend (2021)
- **Michigan:** Ann Arbor (2022), Mancelona, Ecorse (2020), River Rouge (2021)
- **Minnesota:** Minneapolis (2021), St. Paul (2021)
- **Missouri:** Branson
- **New Hampshire:** Seabrook (2019), Dover (2015)
- **New York:** Buffalo (2017), Canandaigua, Hudson (2019), Saranac Lake (2016)
- **North Carolina:** Raleigh (2022)
- **Tennessee:** Jackson (2021)
- **Texas:** Bandera, Bastrop (2019)
- **Alberta:** Edmonton (2020), High River (2021)

Stopping Parking Spillover

When parking complaints bubbled up in Portland's Northwest neighborhood in 2016, the city was ready to try a different strategy: directly managing on-street parking. A local parking advisory committee had petitioned Portland's city council to apply the citywide parking requirements to the growing district, which had historically been exempted. But when a study showed that those regulations would have made 23 percent of newly constructed homes in the neighborhood illegal, the council opted to improve the district's fledgling parking permit program instead.

"When city staff manage on-street parking properly, they can prevent that on-street parking from getting overcrowded with a 99 percent success rate," said Siegman, who has spent much of his career studying spillover parking concerns. The problem, he said, is that almost no one has training in how to manage street parking in a way that is both effective and politically popular. On-street parking management is not part of the core curriculum for planners or transportation engineers.

"What you're essentially doing with on-street parking spaces is taking a valuable resource that belongs to the public and setting up rights to determine who gets to use it," said Siegman. Any hotel manager knows that once the keys are gone, there is no vacancy. Yet cities often hand out multiple residential permits for every street space, and wait until the problem is so bad that neighbors have to petition for curbside management.

When a neighborhood has more drivers seeking permits than there are on-street spaces, there are a number of ways to ensure balance. Boundaries for a parking district could exclude new buildings or households with driveways, or restrict the number of permits to the street frontage of the lot—forcing developers and incoming residents to make a plan for storing cars off-site.

Officials in Vancouver addressed curb congestion by raising the price of on-street parking permits. Credit: Elena_Alex_Ferns via Alamy Stock Photo.

Siegman estimates the costs of setting up an effective parking permit program could be somewhere in the neighborhood of $100,000—a bargain compared to the cost of building parking, which can run as much as $50,000 per space. "There are all kinds of different feelings about what's fair," Siegman said, "but you can often come to a solution that has durable majority political support."

That's what officials in Vancouver, British Columbia, did in 2017 to resolve crowded curbs in the West End. Despite 94 percent of residents having access to an off-street parking space, many still preferred to park on the street. Over 6,000 drivers had opted for the $6 a month permit for the chance to park in one of the 2,747 on-street spaces. When the city raised permit prices to $30 per month—more in line with what private garages charged—and installed more parking meters, curb congestion cleared up. Before that change, only one out of five blocks met the city's standards of being less than 85 percent full at the busiest times of day. Within two years of the pricing adjustments, all of the blocks measured below that threshold, making it far easier to find a parking space.

The Next Wave of Parking Reform

More and more, champions of eliminating parking mandates are getting elected to offices and planning commissions, according to Jordan, of the Parking Reform Network. "One person can really get the idea and push it through," he said. The growing number of cities that have taken this deregulatory action (see map and sidebar on pages 28–29) provides political cover for policy makers who have been hesitant to go first.

But parking reform advocates say change should and will happen beyond the local level. Since "the perceived benefits of instituting parking regulations [have been] almost entirely local," Siegman said, he thinks almost all of the productive reform to get rid of minimum parking laws is going to come from the regional, state, or national level.

A wave of legislation against parking mandates has been gathering momentum on the West Coast. In 2020, Washington State quietly capped excessive parking requirements near transit for market-rate and affordable housing. California's third attempt to limit local parking requirements near public transit succeeded in September with the signing of AB 2097. That came on the heels of another statewide rollback in Oregon, where a state land use commission struck down parking mandates for projects near transit, affordable housing, and small homes across the state's eight largest metro regions, which house 60 percent of Oregon's population.

By July 2023, nearly 50 cities in Oregon will need to choose between wholly eliminating minimum parking requirements or implementing a suite of other tools to manage parking and comply with the new administrative rule. They are sure to have lots of company, as municipalities and states across the nation weigh the harm these regulations have caused against the 20th century dream of free and easy parking.

Aaron Gill, of the Hartford Planning and Zoning Commission, has some simple advice for jurisdictions considering removing parking minimums: "I would say just do it. Don't waste time having a discussion as to if it's going to work or not. The reality is we have way too much parking in this country."

Municipalities and states across the nation are weighing the harm these regulations have caused against the 20th century dream of free and easy parking.

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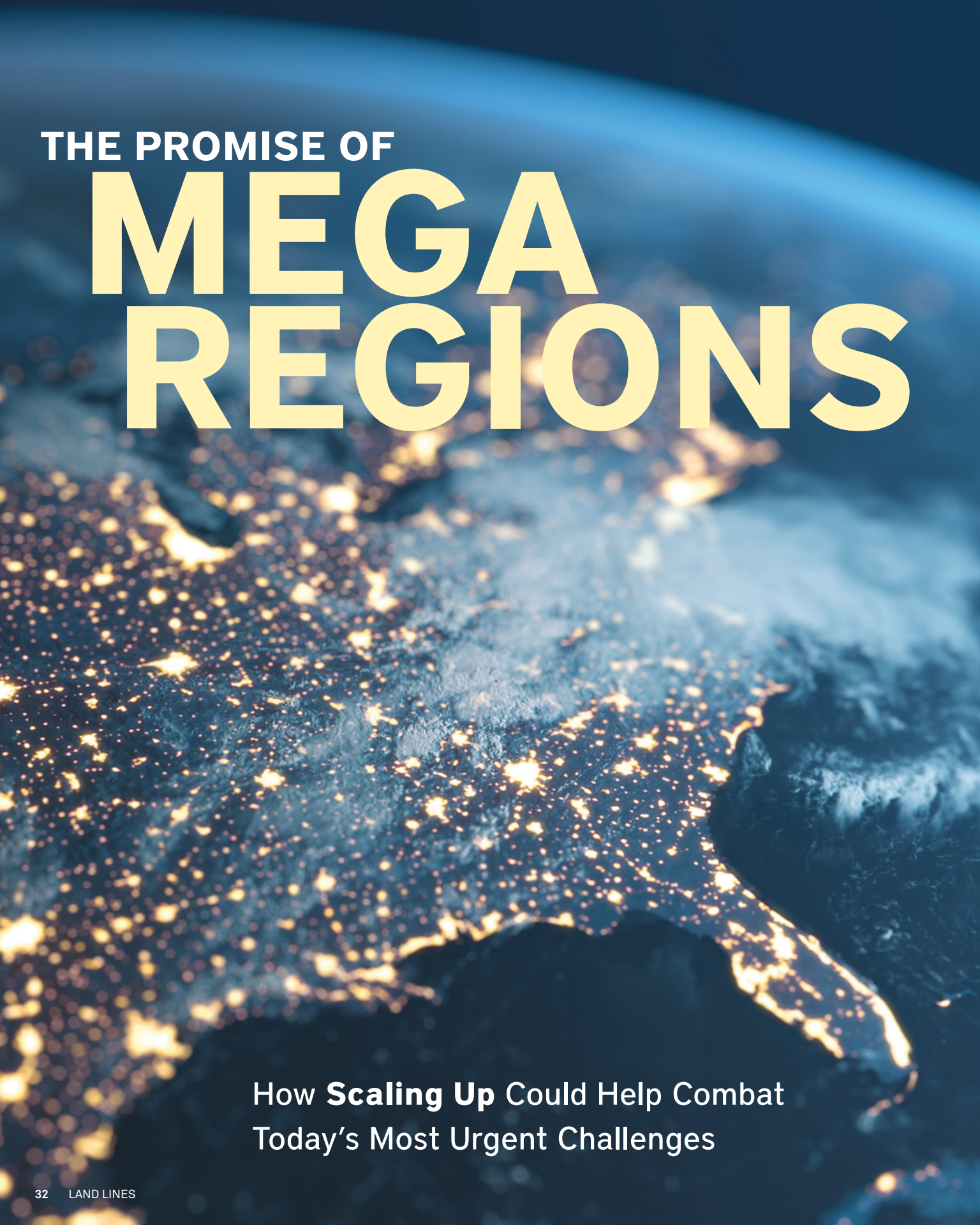


THE PROMISE OF MEGA REGIONS

How **Scaling Up** Could Help Combat Today's Most Urgent Challenges

By Matt Jenkins

IN NORTHERN CALIFORNIA, three regional agencies representing some 11 million people are banding together to address long-term transportation planning issues. In the Northeast, a dozen states are collaborating on an effort to bring down greenhouse gas emissions. And in other places across the United States, from the Southwest to the Midwest, governments and organizations in large metropolitan areas are using regional strategies to address challenges that cross jurisdictional boundaries.

It's an approach that planners have been encouraging for some time, as expanding U.S. metro areas seemed increasingly destined to merge. Jonathan Barnett remembers attending a conference in London in 2004, and watching as maps of expected urban growth and regional development in the United States flashed onto a screen. At the time, Barnett was the director of the Urban Design Program at the University of Pennsylvania. He and his colleagues had been pondering the implications of Census Bureau projections that the U.S. population might grow 50 percent or more by 2050, an increase of more than 100 million people.

"What popped out at everybody in the room was that there was a pattern emerging in the maps of where these people were going to go," Barnett says. "You can see [these urban patterns] from space, and it's a little like looking at the stars and seeing Orion and Sagittarius. We realized that something important was happening."

Bob Yaro was in the room that day, too. "You could see that, across the country, the suburbs of one metropolitan region were merging with the suburbs of the next metropolitan region," recalls Yaro, who led the Regional Plan Association at the time while teaching at the University of Pennsylvania. "Physically, these places were becoming integrated with each other. And then when we looked at economic and demographic trends, you could see that in fact the lives of these cities and metropolitan areas were merging with their neighbors."

This was hardly the first time that geographers and planners had taken note of the way linked metropolitan areas can share economies, natural resource systems, infrastructure, history, and culture. But by the turn of the 21st century, the scope and pace of the phenomenon were reaching new levels in the United States.

Not long after the conference in London, Armando Carbonell—who retired from the Lincoln Institute this year after leading its urban planning program for more than two decades—gave the phenomenon a name that would stick: megaregions.

A band of planners, including Yaro, Barnett, and others, has picked up the banner of megaregions, arguing that these urban areas have an outsize importance nationally. "More than eight in 10 Americans live in these places, and it's over 90 percent of the economy of the country," Yaro says. "So it's very clear that if these places don't succeed or aren't operating at their full potential, the whole country's economy and livability will suffer."

"More than eight in 10 Americans live in these places, and it's over 90 percent of the economy of the country. So it's very clear that if these places don't succeed or aren't operating at their full potential, the whole country's economy and livability will suffer."

Credit: DKosig via iStock.

What Constitutes a Megaregion

For more than a century, the heavily populated region stretching from Boston to Washington, DC, has drawn the attention of geographers. In his 1915 book *Cities in Evolution*, Patrick Geddes gave the swath of urban development running from Boston to New York the decidedly unlovely term "conurbation." In 1961, French geographer Jean Gottman called the region a "megalopolis." And in 1967, Herman Kahn gave the whole corridor the equally unlovely name "BosWash."

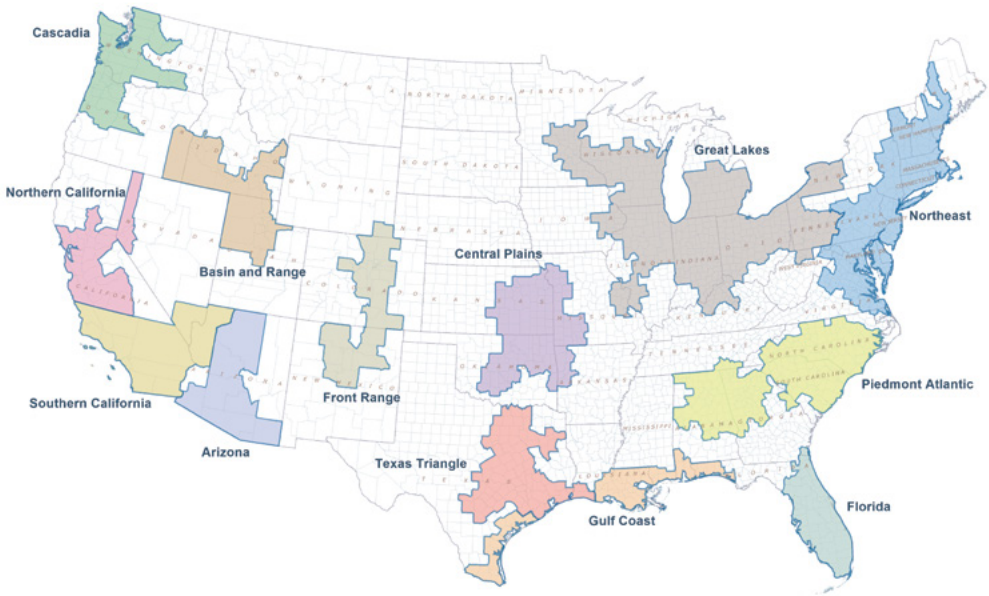
It would take another three decades before these boundary-busting phenomena began receiving more comprehensive academic attention, but the pace has been picking up over the last 20 years as the University of Pennsylvania, the Lincoln Institute, and others have worked to advance people's understanding of what mega-regions are and how they function.

Definitions vary of what, exactly, constitutes a megaregion, but they are generally defined as regional economies that clearly extend beyond an individual metropolitan area. "I think of megaregions as a way of thinking about space, more than as real things that are out there," says Carbonell. "I see it as a construct and a tool, [but] megaregions are not fixed and they change."

Credit: Drazen via iStock.

This spring, the Lincoln Institute published *Megaregions and America's Future*, by Robert Yaro, president of the North Atlantic Rail Alliance; Ming Zhang, director of Community and Regional Planning at the University of Texas at Austin; and Frederick Steiner, dean of the University of Pennsylvania's Stuart Weitzman School of Design. The book argues that megaregions can, if properly and creatively governed, strengthen climate resilience, natural resource management, economic competitiveness, and equity at the local, regional, and national levels.

Learn more at **www.lincolninst.edu/publications/books/megaregions-americas-future.**



The 13 U.S. megaregions identified in the recently published Lincoln Institute book *Megaregions and America's Future*. Credit: Ming Zhang.

Researchers have used a variety of innovative approaches to identify and delineate individual megaregions. One analysis looked at the commuting habits of more than 4.2 million Americans to identify megaregions (Nelson and Rae 2016). Another used satellite imagery to identify contiguously lighted urban agglomerations across the globe, then—with a sort of Seussian whimsy—gave those places names like So-Flo, Chi-Pitts, Char-Lanta, Tor-Buff-Chester, and Am-Brus-Twerp (Florida, Gulden, and Mellander 2008). To estimate economic activity in each megaregion, that study combined the satellite-imaged light footprints with population and GDP data, extrapolating a "Light-based Regional Product." It also used the number of patent registrations and highly cited scientific authors in each megaregion as a measure of technological and scientific innovation.

At this point, researchers have identified about 40 megaregions around the world (see sidebar). In *Megaregions and America's Future*, the authors focus on 13 megaregions in the United States (see map). Those are the venerable Northeast; Piedmont Atlantic, a southern stretch that includes sections of Georgia, Alabama, Tennessee, and the Carolinas; Florida; Great Lakes; Gulf Coast; Central Plains; Texas Triangle; Front Range in Colorado; Basin and Range (Utah and Idaho); Cascadia (the Pacific Northwest from Portland to Vancouver, BC); Northern California; Southern California; and Arizona's Sun Corridor (Yaro, Zhang, and Steiner 2022).

Many of these megaregions have economies that put them within the rankings of the world's biggest national economies. In 2018, for example, the Northeast megaregion had a GDP of $4.54 trillion—more than that of Germany. The same year, the nearly $1.8 trillion GDP of the Southern California megaregion was larger than that of Canada.

In many ways, a megaregion is an increasingly spontaneous and organic unit of organization, one that presents more opportunity than the traditional political divisions that it transcends.

MEGAREGIONS AROUND THE GLOBE

Scholars have identified more than 40 megaregions around the world, and several more are rapidly forming in China, India, and Southeast Asia. Established megaregions include:

Pentagon, Europe. This region, whose outlines are defined by Paris, London, Hamburg, Munich, and Milan, was identified as an economic and transportation hub in 1999. It covers about 20 percent of the continent and is responsible for 60 percent of its economic output. Several other megaregion models have also been applied and explored in Europe.

Tokaido, Japan. The corridor between Tokyo and Osaka is home to more than half of the country's population. Its cities are linked by the Shinkansen high-speed rail network, which has reduced travel time between Tokyo and Osaka from eight hours in the early 20th century to two and a half hours today; a bullet train in development will further reduce the trip to one hour.

Pearl River Delta, China. The most densely populated urban area in the world, the Pearl River Delta includes Guangzhou, Shenzhen, and Hong Kong. The Chinese government has invested several hundred billion dollars in high-speed rail designed to strengthen connections within and among the Pearl River Delta, Yangtze River Delta, the region around Beijing and Tianjin, and burgeoning megaregions in coastal and inland areas.

A high-speed Shinkansen train in Japan. Credit: Yongyuan Dai via iStock.

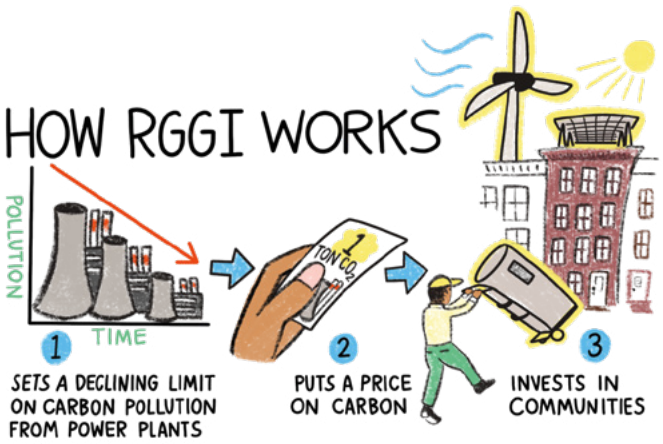
Collaborating to Mitigate Climate Change

One of the most prominent examples of successful initiatives that span a megaregion is the Regional Greenhouse Gas Initiative (RGGI), a cooperative effort to cap and reduce power sector carbon dioxide emissions in New England and the Mid-Atlantic. Known in shorthand as "Reggie," it is the first mandatory cap and trade program for greenhouse gas emissions in the country and now spans 12 states.

At the turn of the 21st century, efforts to establish a national cap and trade framework for greenhouse gas emissions were fizzling. In 2003, then–New York Governor George Pataki sent a letter to the governors of other states in the Northeast proposing a bipartisan effort to fight climate change. In 2005, the initial agreement to implement RGGI was signed by the governors of Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York, and Vermont. In 2007, Massachusetts, Rhode Island, and Maryland signed on.

"I think for the states that recognized that climate change was real and a problem, there was a desire and an appetite to take some leadership," says Bruce Ho, who heads the Natural Resource Defense Council's work on RGGI. "Climate change is a global problem, and we need to be acting as much as possible in a coordinated way. But at the same time, there's a recognition that you have to start somewhere."

Even as climate change efforts at the federal level foundered, RGGI got stronger and expanded. In 2014, the participating states reduced the emissions cap by 40 percent and committed to further year-by-year reductions. Then in 2017, the states agreed to aim for an even steeper decline in emissions, and also agreed to extend those emissions reduction efforts through at least 2030.



The Regional Greenhouse Gas Initiative, a carbon trading program that spans a dozen Northeast states, has been called a model for the nation. Credit: Jessica Russo/Natural Resources Defense Council.

Since RGGI began, power plant emissions have decreased by more than 50 percent—twice as much as the national decrease during the same time—and the program has raised over $4 billion by auctioning carbon allowances. That money has been invested in local energy efficiency programs, renewable energy, and other initiatives. Virginia, for example, dedicates half of its RGGI funding to low-income energy efficiency programs and puts 45 percent toward flood preparedness and sea-level rise mitigation in coastal communities.

While not immune to criticism, RGGI is "an early example of a megaregion-scale initiative that has held up quite well," says Carbonell—and it continues to gain momentum. Although then–Governor Chris Christie withdrew New Jersey from RGGI in 2012, the state rejoined in 2020. Virginia joined in 2021, and Pennsylvania followed this year. Leaders in North Carolina, spurred by a citizens' rulemaking petition, are now considering joining RGGI as well.

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Hopes for High-Speed Rail

One of the key challenges of megaregions is how people get around within them. Because megaregions can run 300 to 800 miles across, they demand an approach to transportation that has largely been ignored in the United States.

"They're too small to be efficiently traversed by air, and too large to be easily traversed by road," Yaro says. "And then on top of that, the airports, airspace, and the interstate highway links in these places are highly congested."

Putting a new emphasis on high-speed rail, which can reach speeds over 200 miles per hour, will help relieve a transportation system that is under strain nationwide, says Yaro, who is now president of the North Atlantic Rail Alliance, a group advocating a high-speed and high-performance "rail-enabled economic development strategy" for New York and New England. In addition to reducing congestion, high-speed rail can decrease emissions; it can also spur economic development by connecting people with jobs and other opportunities throughout a region.

Plenty of successful examples of high-speed rail systems exist worldwide. In Japan, for example, the world's first high-speed rail line—the famous Shinkansen, or bullet train—has linked Tokyo, Nagoya, and Osaka into a single megaregion. The system, which now carries over 420,000 passengers each weekday, will mark its 60th year of service in 2024. In Europe, nine countries now operate high-speed rail on more than 5,500 miles of track. Perhaps no country has embraced high-speed rail as enthusiastically as China. Since just 2008, its government has built a system that reaches practically every corner of the sprawling country on more than 23,500 miles of track—and counting.

In the United States, an early realization of the concept's potential has been slow to gain traction. In 1966, U.S. Senator Claiborne Pell of Rhode Island proposed a high-speed line between Boston and Washington in his book, *Megalopolis Unbound: The Supercity and the Transportation of Tomorrow*. In 2000, Amtrak started Acela service between Boston and Washington. Because it reaches 150 miles per hour, it qualifies as high-speed rail—yet it hits that upper limit over only about 34 miles of the 457-mile route. The Acela's average speed is just 70 miles per hour.

Plans for intercity high-speed rail have been considered or are underway in other regions; the Texas Central Line would connect Dallas and Houston, while the Brightline West project would link Southern California to Las Vegas. Elsewhere in California, construction is underway on an ambitious line that will connect San Francisco and Los Angeles, with a second phase extending the line north to Sacramento and south to San Diego. But challenges related to funding, politics, and logistics have meant that high-speed rail has barely made it out of the blocks.

Early versions of last year's infrastructure bill included $10 billion for high-speed rail, but that was cut during negotiations. While proponents keep pushing for meaningful federal investment in a high-speed network, megaregions can also benefit from investments in existing systems—or "fast-enough rail," as Barnett dubs it in his book *Designing the Megaregion*: "There are many transportation improvements that can be made incrementally to give a much better structure to the evolving megaregions" (Barnett 2020).

Members of the "I Will Ride" campaign, which educates students about high-speed rail in California, at a spring 2022 STEM competition. Credit: California High-Speed Rail Authority.

Sharing Solutions in California

The Northern California Megaregion extends across the cities of the San Francisco Bay Area, Sacramento, and the San Joaquin Valley. The region has seen a dramatic increase in commuters from inland communities like Tracy and Stockton to jobs in the Bay Area, and has some of the nation's longest average commute times.

James Corless heads the Sacramento Area Council of Governments, but previously worked for the Metropolitan Transportation Commission, the agency responsible for planning and financing regional transportation in the Bay Area. In the mid-2000s, he says, regional agencies began looking at the swath of cities running from the Bay Area to Sacramento as an emerging megaregion, and gave it a name that put it squarely in the ranks of places like So-Flo and Char-Lanta. "We actually coined the phrase 'San Framento,'" Corless says. "Everybody hated it. But it got people's attention."

"At first, we were struggling a little bit to find our focus," Corless says. Gradually, though, the participating entities began asking a simple question: "Where are we stronger together?"

In 2015, the Metropolitan Transportation Commission, Sacramento Area Council of Governments, and San Joaquin Council of Governments signed an MOU to create a Megaregion Working Group. Their goal: to collaborate on issues that transcended the boundaries of the 16 counties and 136 cities they collectively represented.

It took a while for the effort to gain momentum, precisely because of the sprawling nature of the megaregion. "I kept seeing these megaregion meetings pop up on my calendar and then get canceled," Corless says. "Because for elected officials to get together from across these 16 counties, it requires an entire day of travel."

Traffic approaching San Francisco. Officials from the Bay Area, Sacramento, and the San Joaquin Valley have formed a megaregion working group to address transportation and planning. Credit: peeterv via iStock.

The arrival of COVID, and the resulting turn toward conducting government business via Zoom, helped bridge that distance and give the effort momentum. "At first, we were struggling a little bit to find our focus," Corless says. Gradually, though, the participating entities began asking a simple question: "Where are we stronger together?"

Late in 2021, the Megaregion Working Group announced a list of a dozen transportation-focused projects, from highway improvements to expansion of three regional rail lines. The California high-speed rail system that's under construction—but far from completion—doesn't much play into the working group's plans, Corless says. "I have no doubt that high-speed rail will be a game changer," he says. But "if we could just get reliable medium-speed rail, we'll take that."

In fact, much of the megaregional effort is more quotidian than flashy infrastructure projects. The partners are focusing on integrating their regional plans and synchronizing their long-range planning cycles. "Because so much of our travel and even our housing markets are now intertwined," Corless says, "if we're looking out at the next 25 years, we need to be in sync."

The concept of megaregions is coming of age, Corless says, in much the same way that the rise of metropolitan planning organizations helped meet new challenges in the 1960s. "Once American cities suburbanized," he says, "you couldn't rely on the central city to do everything. People were more mobile, economies were bigger, and the issues transcended local city and county boundaries."

Moving Megaregions Forward

What will it take to push the megaregion concept—which essentially invites those metropolitan planning organizations to an even bigger table—more squarely into the public consciousness and the policy realm?

Bob Yaro thinks one answer is the climate crisis, which could push regions to work together in new ways. "I think it takes a crisis to do anything big in this country," Yaro says. "You read these stories about whole counties running out of water. And that's only going to get worse. [To address] the climate issue, you need both adaptation and mitigation strategies, and those mitigation strategies probably become most efficacious at the megaregion scale."

The RGGI initiative in the Northeast offers one example of how that kind of collaboration can work; the current water crisis in the desert Southwest offers another. There, tough times have, somewhat paradoxically, made for closer connections. Communities and governments have looked toward their neighbors and realized that they can do more together.

The seven U.S. states that rely on water from the Colorado River, along with Mexico, have historically had an extremely contentious relationship. Yet, while recent headlines scream about impending water catastrophe, those parties have for more than 20 years been quietly working together on agreements intended to minimize the collective damage that they might suffer. A sense of partnership, however tenuous and prone to ongoing tensions, has been supplanting longstanding parochial attitudes toward the river.

As metro regions melt together and global challenges ramp up, a growing sense of shared fate with historically distant neighbors could help tackle all kinds of problems that might once have seemed insurmountable.

"I think one of the things we need to do is redefine 'home,' and the Southwest is Exhibit A on why that needs to happen," Yaro says. "I think it's redefining home at this larger scale. The final boundaries are going to depend on an individual community's sense of association with their neighbors—but the place doesn't succeed unless we do that."

Matt Jenkins is a freelance writer who has contributed to the *New York Times, Smithsonian, Men's Journal*, and numerous other publications.

Signatories to the Colorado River Basin Drought Contingency Plan, representing the U.S. government and states across the region, gather at Hoover Dam in 2019. As climate change has accelerated threats to the river, efforts to collaborate in the region have become more commonplace. Credit: U.S. Bureau of Reclamation.

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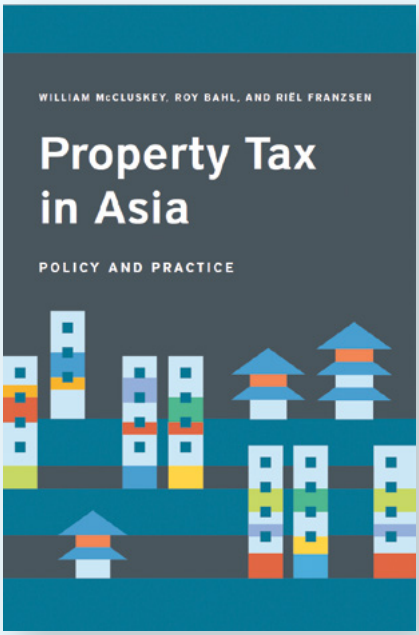
NEW PUBLICATION

Property Tax in Asia: Policy and Practice



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Property Tax in Asia is the latest in a series of Lincoln Institute books analyzing the property tax across continents, including *Property Tax in Africa* (2017) and *Property Tax Systems in Latin America and the Caribbean* (published in Spanish, 2016).

Edited by William McCluskey, Roy Bahl, and Riël Franzsen

The property tax has great potential as a source of local government revenue in Asia, but its implementation has been uneven. The Lincoln Institute's new book *Property Tax in Asia: Policy and Practice* provides the first comprehensive analysis of how this essential fiscal instrument has performed throughout the world's largest continent.

Written by a team of leading experts and edited by William McCluskey, Roy Bahl, and Riël Franzsen, the book provides a comparative analysis and detailed recommendations for scholars and policy makers. With 13 in-depth case studies covering a region that is home to nearly half the world's population, the book provides the most thorough review to date of the laws, administrative practices, reform proposals, technologies, and political debates that shape the property tax across countries of all sizes and income levels.

"Our case studies of these 13 countries and regions found that methods to modernize the property tax vary widely among them, including how they capture its advantage as a revenue-raising measure and make it an instrument for rationalizing land use policy and promoting social equity," the editors write.

The book finds that, in general, wealthier countries such as Japan, Korea, and Singapore have well-functioning property tax systems, although they face challenges—for example, unclear ownership of Japan's growing number of abandoned homes. In China and Vietnam, which do not allow private ownership of land, local governments rely heavily on one-time land use fees, which are less reliable and stable than recurrent taxes. In addition, many lower-income areas suffer from narrow tax bases, under-valuation of property, poor compliance, and political challenges. Acknowledging that conditions vary widely, the book recommends 10 directions for reform, ranging from clarifying governmental roles to harnessing the power of information technology.

William McCluskey is an Extraordinary Professor at the African Tax Institute at the University of Pretoria, South Africa.

Roy Bahl is Emeritus Regents Professor of Economics and founding dean of the Andrew Young School of Policy Studies at Georgia State University. He also is an Extraordinary Professor of economics at the African Tax Institute at the University of Pretoria.

Riël Franzsen is a professor and director of the African Tax Institute at the University of Pretoria, where he holds the South African Research Chair in Tax Policy and Governance.

"This is an authoritative sourcebook and a must-read for all those interested in revenue generation, especially during this time of fiscal constraints. . . . the book provides invaluable lessons for academics, policy makers, and practitioners."

— **Deborah Wetzel**, former Senior Director for Governance, the World Bank; Senior Fellow, Governance, Institute for State Effectiveness

The Lincoln Institute works with the State Land Service in the Ministry of Justice in **Riga, Latvia**, to offer expert assistance on property tax issues such as mass valuation, residential property tax relief, and taxation as a land policy tool. The Latvian property tax is a form of land value taxation, with land and buildings taxed at different rates. The Lincoln Institute has presented the State Land Service's statistical approaches to land valuation to international audiences interested in estimating land values in developed areas where vacant land sales are scarce.

To learn more about the Lincoln Institute's property tax work, visit **www.lincolninst.edu/efficient-equitable-tax-systems.**

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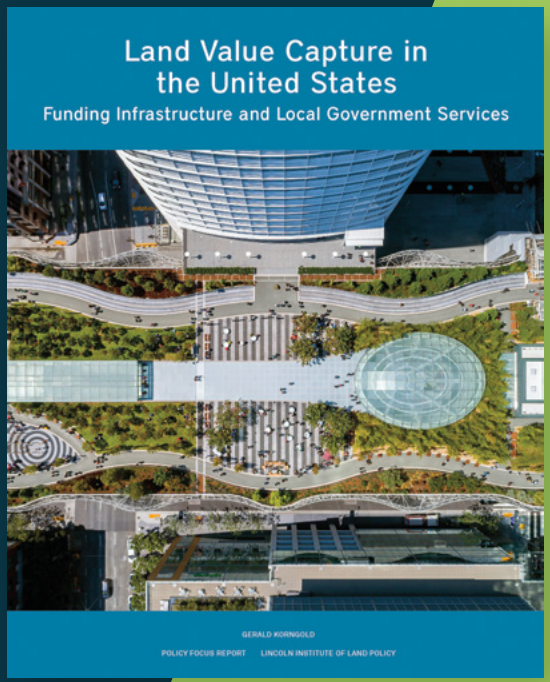

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