Land Lines

QUARTERLY MAGAZINE OF THE LINCOLN INSTITUTE OF LAND POLICY

APRIL 2023

Planning for Climate Uncertainty

Housing Affordability and Equity in Five U.S. Cities

The Fire Is Over, But Here Comes the Flood

Land Lines

APRIL 2023 | VOL 35 | NO 2

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THE LINCOLN INSTITUTE OF LAND POLICY seeks to improve quality of life through the effective use, taxation, and stewardship of land. A nonprofit private operating foundation whose origins date to 1946, the Lincoln Institute researches and recommends creative approaches to land as a solution to economic, social, and environmental challenges. Through education, training, publications, and events, we integrate theory and practice to inform public policy decisions worldwide.

Land Lines is published as a digital monthly and print quarterly magazine to report on Lincoln Institute–sponsored programs and related topics.

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LINCOLN INSTITUTE
OF LAND POLICY

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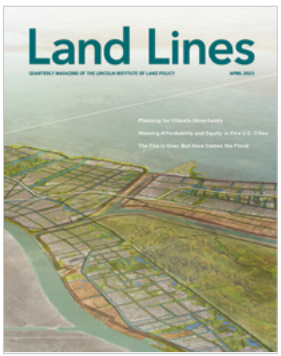


Illustration from the Greater New Orleans Urban Water Plan. The plan envisions a region strengthened by blueways and greenways. Credit: Waggonner & Ball.

PRESIDENT'S MESSAGE GEORGE W. MCCARTHY

Shall I Compare Thee to a Land Value Increment Tax?

WE'VE BEEN at the land policy game for a long time at the Lincoln Institute. A couple of years ago, we celebrated the 75th anniversary of this enterprise that began life as the Lincoln Foundation and evolved into the Lincoln Institute of Land Policy. Next year, we will celebrate the 50th anniversary of the founding of the Lincoln Institute itself—the original "little red schoolhouse" established by David Lincoln in 1974. The institute was created to deliver training and research directly, rather than pursuing ephemeral efforts to persuade universities to build land policy research and training into their curricula. I know David would be thrilled that in our 50th year we plan to introduce the first Masters in Land Policy (MLP) offered in the United States, made possible through our recently formalized affiliation with Claremont Lincoln University.

Over the decades, we've built an impressive body of scholarship that will anchor the MLP program with unique content. We will introduce students to important new tools they can use to address pressing global challenges such as the climate crisis, mass extinctions, or public financial insolvency. Students will learn how land use planning can help minimize the climate impact of cities or assist in decarbonizing electric grids; how to conserve, in perpetuity, private land holdings that connect publicly protected lands, supporting the creation of the large habitats needed for endangered species to survive; or how to mobilize revenue from land to support the operations of local or national governments.

As much as we know about land policy, some fundamental elements continue to elude us. For example, while we know the value of land is determined by a panoply of factors—and that public actions such as investments in infrastructure and zoning reform have a strong influence on land prices—it's still embarrassingly difficult to predict land values with any precision. That said, I can assert confidently that the Lincoln Institute knows as much about the determinants of land value as anyone on the planet. Every year we learn more and more about measuring and predicting land prices with improving accuracy. New technologies are a huge help as we push the envelope on new methods for ascertaining land values. Technology is accelerating all of our advancements in land economics. Stay tuned.

Incredibly, there is an even more fundamental, and more embarrassing, gap in our fluency on land policy. During a regular review of the mission and vision of the Lincoln Institute at a recent board meeting, we had to confront the alarming fact that we have no adequate definition of the term "land policy." This is a big communications and branding problem. While "land" and "policy" evoke almost instant associations for our audiences, combining the two invariably results in head-scratching and confusion.

We had to confront the alarming fact that we have no adequate definition of the term "land policy." While "land" and "policy" evoke almost instant associations for our audiences, combining the two invariably results in head-scratching and confusion.

I've wrestled with this communications challenge since I arrived at the Lincoln Institute nine years ago. The challenge is especially acute at weddings or holidays when family or friends ask me what I do for a living. The discussion typically goes like this:

"So, Mac, what are you doing now?"
"I run a land policy think tank in Cambridge."

"What do you do there?"
"We commission research, provide training, and help governments use land policy to address things like the affordable housing crisis or help them to prepare for climate change."

"What do you mean by land policy?"
"I think of it as the rules of the game that define the relationship between people and place."

"Huh?"
"It's the way we reconcile individual interests in the ownership of property with our need to manage it for public good."

"You mean, like zoning?"
"Yeah, but it's more than zoning. It's a lot of things. It's the widespread use of conservation easements to preserve private land to support endangered species or sequester carbon. It's coordinating land use planning and water management so that all communities can survive in the arid Southwest. It's helping governments mobilize revenue from land to fund schools and fix the roads. It's using remote sensing to figure out which people are at risk of sea-level rise and finding new places for them to live. It's helping cities in the developing world deal with the slums that choke them. It's helping new civic coalitions make smart investments in land and housing to improve community health outcomes. It's figuring out automated ways for tax assessors to estimate property values for tax bills."

"That's a lot of things. Don't you have a simpler description of land policy, like an elevator pitch?"
"We usually run out of floors."

For some reason, people have an easier time understanding careers that involve nuclear nonproliferation or monoclonal antibodies than they do understanding land policy. But the board and management of the Lincoln Institute are nothing if not problem solvers. We decided to focus our collective intellect on forging a simple explanation of land policy. After a day and a half with no detectable progress, we decided to do what any college student with writer's block would do: consult artificial intelligence. But instead of starting with an ordinary elevator pitch, we decided to channel the world's greatest authority on the English language—see below.

We asked ChatGPT to write a sonnet about land policy in the style of William Shakespeare. Fifteen seconds later, we got something both amazing and terrifying:

Upon fair fields, where crops do flourish bright,
And bounteous harvests bring forth wealth untold,
We oft forget the plight of those less bold,
Who toil and struggle for a patch of light.

But land is more than soil and crops to grow,
It's where our homes and hearts are built with care,
And thus, its use and stewardship doth bear
A weight that none can lightly let it go.

So let us not in greed and haste proceed,
But weigh the needs of all with equal care,
And let the land provide for all in need.

For when we balance use and stewardship,
We'll find the land will flourish and be fair,
And all shall prosper in its bounteous grip.

That sonnet is an elevator pitch for the ages. It artfully and economically describes the challenge of reconciling individual interests and collective needs. It also addresses sustainability succinctly by referencing economy (wealth untold), equity (weighing the needs of all), and the environment (the balance of use and stewardship). It captures the mission of the Lincoln Institute in far more subtle and creative ways than I ever could.

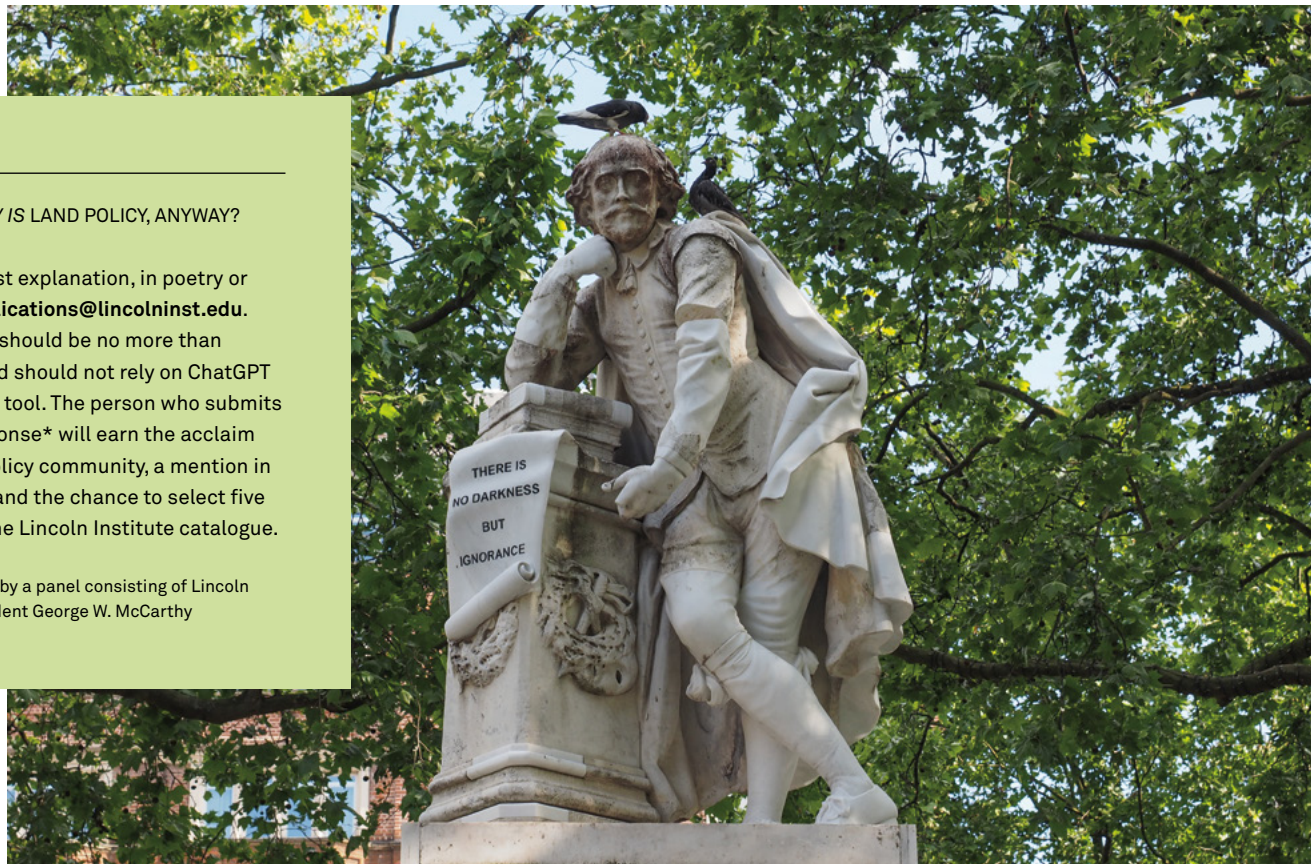
But the sonnet is Shakespearean, and therefore a tad inaccessible for the more prosaic among us. So as I was writing this column, I asked ChatGPT for its simplest explanation of "land policy." This is what I got:

Land policy refers to the rules and regulations that govern the use, ownership, and management of land. It involves making decisions about how land should be used, who should have access to it, and what activities are permitted on it. Land policy can affect a wide range of issues, from urban development and environmental conservation to property rights and social equity. Its goal is to balance the interests of different stakeholders and ensure that land is used in ways that benefit society as a whole.

Yup, a great elevator pitch. The Luddite in me wants to ban the use of this devilish machine.

On the other hand, it is a perfect example of technology accelerating our linguistic advancements in land policy in the same way that technology is advancing our ability to estimate and predict the value of land. But to accelerate our progress, we need to advance from here. Maybe the bot's sonnet and elevator pitch are not perfect. Maybe we humans can do better. So I put this challenge to you, dear readers: I already gave you my definition of land policy. Please give us yours, following the guidelines below. I'll share my favorites in an upcoming column.

The Bard reflects on the intricacies of land policy. Credit: claudiodivizia via iStock/Getty Images Plus.



WHAT EXACTLY *IS* LAND POLICY, ANYWAY?

Send your best explanation, in poetry or prose, to **publications@lincolninst.edu**. Submissions should be no more than 100 words and should not rely on ChatGPT or any similar tool. The person who submits the best response* will earn the acclaim of the land policy community, a mention in this column, and the chance to select five books from the Lincoln Institute catalogue.

*as determined by a panel consisting of Lincoln Institute President George W. McCarthy

E-Bikes and Equity

Shared Mobility, an equitable transportation nonprofit based in Buffalo, New York, has helped several communities start e-bike libraries, which provide free rentals, repairs, and other services. Shared Mobility team members Shane Paul and Tyler Madell, at right, visit with members of the nonprofit Pacoima Beautiful to help build an e-bike library in Pacoima, California. Credit: Patrick Cray.

WHEN THE FIRST commercial U.S. bike-sharing program launched in 2008, the value proposition was clear. Putting more bikes on the streets was meant to reduce automobile usage and carbon emissions, provide urban residents and tourists with a flexible form of transportation, and offer a public health benefit to boot.

Over the next decade, bike sharing quickly expanded across the country. But because bike-share programs often rely on corporate funding or are operated by profit-driven micromobility businesses, they've rarely been available in low-income neighborhoods or cities that would benefit from having access to more transportation options. Recently, this familiar pattern has gotten a jolt from the rising popularity of e-bikes—that is, bicycles equipped with electric-battery technology that supplements or at times replaces traditional pedal power—and from cities and cycling advocates putting different spins on the usual bike-share schemes.

Over the last couple of years, bike-sharing experiments geared toward lower-income residents and communities have launched or been announced in cities including Denver, Oakland, Buffalo, New York; Youngstown, Ohio; and Worcester, Massachusetts.

Sales of e-bikes are booming worldwide, and the technology is proving to be a game changer. "All bike shares should be electric," says John MacArthur, sustainable transportation program manager at Portland State University's Transportation Research and Education Center (TREC), which released a report on the equity of bike-sharing in 2020. "I'm totally convinced of this."

The key reason, MacArthur says, is that e-bikes have a track record of breaking long-standing barriers around who bikes. They attract older adults, people with physical limitations, individuals who haven't biked since childhood, and those who have never identified with the sport or culture of bicycling. With traditional bikes, he says, "you will only reach a certain number of people."

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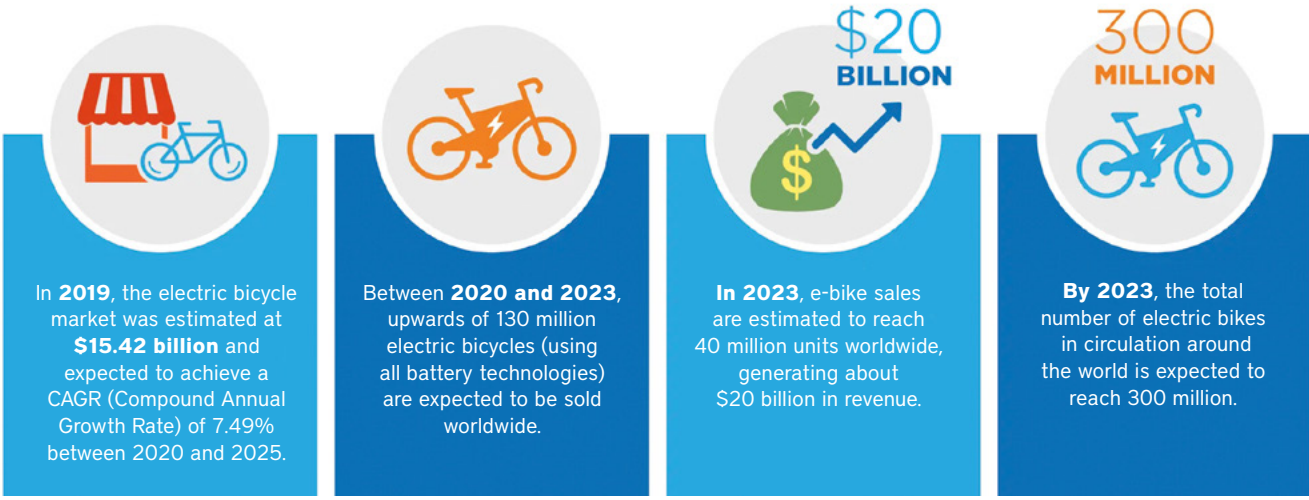


Electric bicycle sales are booming globally, with e-bikes outselling electric vehicles two to one in the United States in 2022. Credit: Courtesy of ebicycles.com (www.ebicycles.com/ebike-facts-statistics).

In cities like Portland and New York that have built out all-electric or primarily electric fleets, users "ride them farther and ride them more often," MacArthur says. A typical bike-share ride is about three-and-half miles, TREC found; e-bike trips tend to extend beyond five miles, and approaching twice that isn't uncommon.

This can have a spatial and economic impact, potentially expanding access to neighborhoods, jobs, and services. "Bike-share equity" has become a recognized issue, and nonprofits and local entrepreneurs are stepping in to meet the needs of traditionally underserved communities and geographies. All of the recent initiatives have at least the partial goal of not only expanding transportation options, but also providing the boost to neighborhood vitality and economic independence that can come with it.

"Historical land use, banking, and other policies have led to a country with a very uneven geography of opportunity," says Jessie Grogan, associate director of Reduced Poverty and Spatial Inequality at the Lincoln Institute. "The correlation between neighborhood assets and racial and ethnic segregation was not accidental—so undoing it won't be either. While we need to work on making all neighborhoods places of opportunity, e-bikes can be an essential bridge between high- and low-opportunity places in the meantime. A cheap or free and convenient ride to another community for a good job, or a good school, or a recreational opportunity could be a lifeline for people in underserved neighborhoods."

Shared Mobility, an equitable transportation nonprofit based in Buffalo, New York, is among the entities trying to help local partners fill the gaps. In 2020, the organization acquired about 3,000 e-bikes that Uber was planning to scrap after selling off its Jump-branded bike-share business. The group partnered with the city's East Side Bike Club (ESBC) to use some of the bikes to start an e-bike library in Buffalo, serving a low-income area with a predominantly Black population. E-bike libraries provide free bike rentals and bike-related education to community members; among other bike repair services and educational programs, ESBC now offers free weeklong use of its e-bikes. Shared Mobility has worked with partners in other communities in New York, California, and North Carolina to seed e-bike libraries in those places.

Michael Galligano, CEO of Shared Mobility, says the kind of community engagement ESBC and other groups are involved in can help them land grants and funding to sustain these programs. But he also argues that bike and e-bike programs should be treated by municipalities as a form of public transportation—and both planned for and funded accordingly. "Where does public transit stop?" he asks. "We think it's not just buses and trains. It's also biking, walking, car sharing, ride hailing."

Galligano points to the Capital District Transit Authority, which serves Albany, New York, and surrounding municipalities, as an example of a long-time Shared Mobility collaborator that thinks this way—and will partially fund its own upcoming e-bike share program with transit dollars. In Massachusetts, meanwhile, the state government has pledged $5 million to fund initiatives that make clean-energy transportation options like e-bikes more accessible to low-income populations; this will allow the city of Worcester to give e-bikes to 100 residents as part of a two-year study to learn more about the use and impacts of the technology.

Another e-bike initiative in a legacy city is relying on a hybrid funding approach. YoGo Bikeshare launches in Youngstown, Ohio, this spring with about 30 e-bikes distributed among four docking stations. The Black-owned business, funded by a loan from the Youngstown Business Incubator and an investment by its owners, is meeting a need in a city that other micro-mobility companies have passed over.

"Transportation in communities like Youngstown is a particular challenge, since decades of population and economic decline have led them to have very large and spread-out cities relative to their population size," Grogan notes. "Poorer cities are also generally not very well-served by transit, so it's particularly important to invest in mobility options in places like Youngstown."

The philanthropic community is also getting involved with expanding e-bike access. MacArthur points to the work of Better Bike Share, funded by the JPB Foundation, which has an explicit goal of increasing "access to and use of shared micro-mobility systems in low-income and BIPOC communities." Its most high-profile city partner is Philadelphia; efforts there over the past decade to build a more inclusive bike-share system have set an example, MacArthur says, and Better Bike Share grants have now funded multiple projects across the country.

Clearly all these experiments are smaller-scale, incremental steps, not massive citywide transportation projects or comprehensive infrastructure overhauls. But incremental change can add up. At a minimum, the advent of the e-bike as a tool for expanding access to economic opportunity represents a chance to draw in more widespread popular support for transportation alternatives. And twinning the technology with neighborhood-level programs that double as community hubs, like ESBC in Buffalo, may be a useful way to reinforce that goal. Even if people are drawn in for recreation, or pure curiosity, MacArthur says, that introduction can be a gateway to seeing e-bikes as a useful means of transport, and can help inspire ambassadors to spread that message.

YoGo Bikeshare launches in Youngstown, Ohio, this spring with about 30 e-bikes distributed among four docking stations. The Black-owned business, funded by a loan from the Youngstown Business Incubator and an investment by its owners, is meeting a need in a city that other micro-mobility companies have passed over.

For more than a decade, most of the attention on bike-sharing programs was focused on decreasing vehicle miles traveled and carbon emissions while increasing profits. But an evolution seems to be underway, as access to bikes expands, perceptions begin to shift, and the economic and equity-related benefits of e-bikes become clearer. The ultimate goal of bike-sharing, Galligano says, is to add to the "repertoire of transportation options"—and if this new technology is inspiring fresh experiments and reaching new audiences, so much the better: "It's not one size fits all."

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.

Top: Seoul, South Korea. Credit: fotoVoyager via E+/Getty Images.
Inset: Oh Se-hoon. Credit: Seoul Metropolitan Government.

Oh Se-hoon was elected in April 2021 to serve as the 38th mayor of Seoul. A lawyer by profession, he had previously served two terms as mayor from 2006 to 2011, and was a member of the National Assembly of South Korea from 2000 to 2004. Oh studied at Korea University, graduated from Korea University's School of Law, and was a fellow at the Graduate School of Social Science and Public Policy at King's College London, where he focused on job creation and economic growth in major cities around the world. During his first stint as mayor, Oh introduced initiatives related to housing and governance that earned recognition from the UN. Oh's election victory in 2021 was attributed in part to dissatisfaction over housing costs, which he promised to address. In late 2022, a stampede in Seoul's Itaewon district killed 159 people and attracted global media attention; the mayor offered a tearful public apology, pledging to improve public safety. He recently connected with Senior Fellow Anthony Flint by email, with the help of a translator.

A Second Time Around in Seoul

ANTHONY FLINT: *What is your vision for the redevelopment of the city and the creation of more meaningful public space and parks, including plans for the transformation of the former U.S. military base at Yongsan?*

OH SE-HOON: Seoul has emerged as a globally competitive metropolis thanks to urban development. In the decade leading up to 2021, the city prioritized conservation, not convenient and comfortable public spaces. Seoul will pursue a recreation strategy and implement initiatives to break down barriers between conservation and development, redefining urban planning. The vision of Seoul's urban planning is to transform the city into an attractive, [economically active] city with expanded green space in the downtown area, including the Han River, and to develop a wide range of recreational and cultural facilities. The objective is to create an "emotional city" where culture and art are integrated into people's daily lives, and nature serves as a backdrop for reflection.

Yongsan is the last piece of land in Seoul that is available for future development. It will serve as the political, economic, and ecological epicenter of [the]

future Seoul and Korea. After the presidential office was relocated to this area [in 2022], it became the focal point of Korean politics. The former train depot will be transformed into an international business district. The relocation of the U.S. military base is 31 percent complete. It is difficult to pinpoint the exact date when the transfer will be completed, but the area will be transformed into hundreds of acres of green space, a place of rest and tranquility for citizens.

In April 2022, Seoul announced the Green Urban Space Recreation Strategy. It decreases the building-to-land ratio and raises the floor area ratio, easing building restrictions in the urban core. This is expected to quadruple the current ratio of urban green space from 3.7 percent to over 15 percent. Priority is given to revitalizing the outdated Jongmyo and Toegye-ro area (the Sewoon Shopping Center district). In August 2022, Seoul unveiled the Great Sunset Han River Project, which will usher in an era of 30 million international visitors. The project aims to make the Han River a popular urban space by enhancing its allure and convenience. [The plans include] a mega Ferris wheel, Nodeul Art Island, and a floating performance stage. In February, Seoul announced the Urban and Architectural Design Innovation initiative, which aims to increase the city's competitiveness through innovatively designed buildings. Business plans will prioritize design elements to encourage creative public building design.

AF: *You have said there needs to be a better range of housing options, particularly for young individual renters. How are you addressing the problem of housing affordability?*

OS: Housing problems prevent individuals from climbing the social ladder. Housing is the most expensive component of essentials such as food, clothing, and shelter, [and] is becoming a source of pain and anxiety for citizens, particularly young people. According to a Seoul Metropolitan Government survey, *jeonse* [a long-term lease requiring a large deposit up front] loans for young people have increased sixfold in the last four years, and 59.4 percent of young single-person households live in rental housing.

Seoul is pursuing various housing and housing support policies to help young people participate in social and economic activities without worrying about housing, including providing public housing; improving the quality of rental housing; and providing private youth housing at below-market rates to help them accumulate assets and start their own families.

Generation-integrated housing, which can house parents, children, and grandchildren, can help address daily challenges and social issues such as rapid aging and child care. We also intend to provide senior-friendly public housing with residential, medical, and convenience amenities. The government's ultimate objective is to stabilize home prices.

AF: *What are the key elements of Seoul's current climate action plan, and how do you envision that being a model for other cities?*

OS: In response to the climate crisis, the Seoul Metropolitan Government established the 2050 Seoul Climate Action Plan to achieve carbon neutrality by 2050. The plan was submitted to the

A young Seoul renter outside her apartment building. The city is working to make housing more affordable. Credit: Kim Hong-Ji/REUTERS via Alamy Stock Photo.

C40 Cities Climate Leadership Group and received C40's final approval in June 2021. The plan, which aims to create a sustainable city where people, nature, and the future coexist, has outlined policies in five major areas: [build and retrofit] one million low-carbon buildings by 2026; expand electric vehicle supply to 400,000 units and install EV chargers by 2026; provide various renewable energy sources (such as fuel cells, geothermal, hydrothermal, and solar); reduce waste, promote recycling, and prohibit direct landfilling; and expand urban parks and forests to mitigate greenhouse gas emissions and enhance urban resiliency.

The plan aims to reduce greenhouse gas emissions by 30 percent compared to 2005 levels by 2026. It will take a concerted effort on a global scale to solve the climate crisis. Seoul will share its best practices with mayors of cities worldwide and engage in dialogue with them to combat the climate crisis.

AF: *Tell us about how Seoul has become a smart city, including the use of robotics and apps, and your exploration into virtual reality.*

OS: Seoul is a global smart city that has been an outstanding leader in fields such as e-government, where it has been named the best e-government for seven years in a row. We aspire to be an inclusive and sustainable smart city. . . . Currently, 16 self-driving vehicles are on the road at all times in four areas: Sangam, Gangnam, Cheonggyecheon, and the Blue House (Gyeongbokgung Palace, the former presidential residence). Seoul aims to offer autonomous vehicle service across the city by 2026 and become a global standard model city for autonomous driving.

The Seoul Metropolitan Government [also] implemented robots and AI technologies across its public administration. The robotic public servant "Robo Manager" handles simple administrative tasks, such as the delivery of documents. "Assistant Manager Seouri," a virtual public official and internal chatbot, has been introduced to help employees with complex business procedures. Metaverse Seoul was named one of the best inventions of 2022 by *Time* magazine. It was the only [public-sector invention on the list]. Metaverse Seoul is a place where anyone can equally enjoy Seoul, since it is not limited in time or space and does not have discriminating elements such as gender, disability, or occupation. Seoul intends to implement the metaverse ecosystem across all of its administrative services, including the economy, culture, tourism, and citizen complaints.

In collaboration with the World Smart Cities Organization, Seoul recently established the Seoul Smart City Prize. The winner will be announced in September. The prize is intended to promote Seoul's core values as well as to discover inclusive and innovative projects to share with the world.

The municipal tool Metaverse Seoul was named one of the best inventions of 2022 by *Time* magazine, which called it "the first platform of its kind developed by a city." Credit: Seoul Metropolitan Government.

AF: *You have traveled to South America and Africa to talk about city administration. What did you tell them about managing the modern city?*

OS: I traveled to Lima, Peru, and Kigali, Rwanda, several years ago as part of a Korea International Cooperation Agency advisory group. Lima was highly interested in Seoul. I discussed my experiences with the Han River Renaissance Project and housing. I also discussed the Women-Friendly City project, which [aimed to implement] women-friendly facilities . . . including pedestrian roads, parks, restrooms, housing, and public transportation. I went to the sites where Lima's major projects, such as the Rimac River Project and the Costa Verde Project, were being carried out. And I organized a seminar to examine housing policies including site development and rental policy.

At the time of my visit in 2014, Kigali was still working hard to heal the wounds left by the atrocious genocide that had killed one million people 20 years prior. I was impressed by how they were overcoming the tragic history, declaring *Kwibuka*, "let us remember," rather than seeking vengeance. I admired how they transformed their hatred into reconciliation. Urban reconstruction is a major concern in Rwanda, so I passed on my experience in urban planning, housing, and tourism—especially the importance and growth potential of tourism. From Peru to Rwanda, during overseas advisory activities and volunteering, I learned firsthand how "you learn as you teach, and you receive as you give." It reminded me of how important it is for a leader to be inclusive and reconciliatory.

AF: *What is your view of land value capture in private real estate development, and how it can be used to finance infrastructure, housing, and other needs?*

OS: In exchange for infrastructure during private real estate development, the Seoul Metropolitan Government provides floor-area-ratio incentives. Through this exchange, the government may acquire infrastructure such as roads and parks and essential community amenities such as libraries, childcare facilities, cultural facilities, and youth facilities, as well as public rental housing and public rental industrial facilities. Between August 2015 and January 2023, [these policy incentives yielded] 357 public contribution facilities equivalent to approximately $5 billion. Furthermore, the revised National Land Planning Act, which went into effect in July 2021, allows for both in-kind items such as facilities and cash payments that can be used throughout Seoul. The Seoul Metropolitan Government will use these funds to cover operating expenses for essential facilities, the expansion of roads and railways, and new transportation projects.

"From Peru to Rwanda . . . I learned firsthand how 'you learn as you teach, and you receive as you give.' It reminded me of how important it is for a leader to be inclusive and reconciliatory."

The current zoning system will be revamped to maximize land efficiency in underutilized spaces. It will pursue two pillars of urban competitiveness: integrating residential and commercial uses and expanding urban green space. Seoul is abolishing the rigid 35-floor regulation [on residential buildings] that acted as a headwind against change, easing building regulations such as height and floor area ratio that impeded urban center development, and expanding parks and green areas.

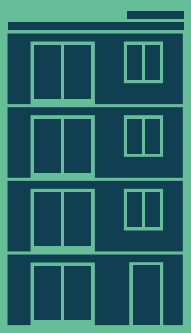
Seoul is reinventing itself in ways other than just modifying its urban planning practices. With the city's attractiveness in mind, the Seoul Metropolitan Government comprehensively considers factors that significantly impact a person's happiness, such as leisure, health, safety, and environment, as it builds the city.

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

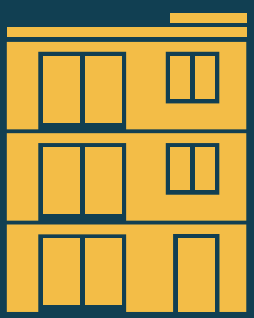


STRUCTURAL CHANGE

3C Initiative Promotes Housing Affordability and Racial Equity in Five U.S. Cities






By Amanda Abrams

IN 2021, the *Los Angeles Times* reported that some of the city's newest million-dollar neighborhoods were in South LA. Many residents of the historically Black community were shocked.

Not Kristin Johnson. The South LA native and her husband have been trying to buy a home in the area for a while now, but haven't been able to afford one. They both work, and have spent several years improving their credit and growing their savings. But housing prices keep moving out of reach.

Back in 1965, Johnson's grandparents bought a house in the Crenshaw area of South LA, largely on one salary. The house cost $16,500. Today, it's worth almost $1 million.

Johnson's mother spent her teenage years in that house. She watched the last remaining white families flee and the neighborhood's Black residents lose retail stores, manufacturing jobs, and essential services. Now white people are coming back, and investment is too; a Metro rail line going through the neighborhood opened this fall, and the new SoFi Stadium, home to the LA Rams, is 10 minutes away. Those changes will likely drive housing prices even higher.

"A lot of folks who aren't Black or brown are moving in and scooping up houses," says Johnson. "But even with first-time homebuyer programs, I'm still not able to afford a home in the area where I was born and raised."

Cities around the country are facing severe housing challenges, and communities of color are especially hard hit. Many have been struggling for years, but the pandemic exacerbated the situation, leading to surging home prices and rising rents, particularly in big cities. Those increases have slowed somewhat since mid-2022, but they haven't stopped, and residents are fighting simply to maintain their footholds, let alone buy homes and grow their wealth.

There's a giant gap in U.S. homeownership rates—almost 75 percent of white households own their homes, compared to 45 percent of Black households and 48 percent of Hispanic households—and it's a big source of the nation's racial wealth disparity. But affordable single-family homes that could begin to address that problem aren't being produced at anything close to the scale needed.

Efforts to preserve and expand affordable housing while building community wealth have faced challenges ranging from restrictive local development policies to construction slowdowns caused by staffing and supply chain issues. The Center for Community Investment's Connecting Capital and Community initiative (3C), established in partnership with JPMorgan Chase, seeks to address these challenges using a fundamentally different approach.

Launched in 2021, the project currently includes teams in five major U.S. cities: Chicago, Los Angeles, Miami, Seattle, and Washington, DC. Each team is creating localized, customized strategies to increase its city's stock of affordable rental or for-sale housing, while also building wealth for Black and Latino communities. The teams, which include residents as full partners, are bringing together stakeholders across nonprofit, public, and private sectors; designing innovative projects that can influence capital flows, policies, and practices; and testing new ways to tackle the housing supply and homeownership crisis that can inform efforts in other cities.

The project includes teams in Chicago, Los Angeles, Miami, Seattle, and Washington, DC. Each team is creating localized strategies to increase its city's stock of affordable rental or for-sale housing, while also building wealth for Black and Latino communities.

Credit: smartboy10 via DigitalVision Vectors/Getty Images.

A National Problem with Local Solutions

The 3C initiative emerged as a way to examine barriers within the housing system that have limited both access to housing and the supply of housing, and to identify tools and strategies for overcoming those barriers that can help support and advance Black and Latino communities.

"We know that communities need a variety of housing types," says Omar Carrillo Tinajero, director of partnerships and initiatives at the Center for Community Investment (CCI). "If we're supporting thriving communities, and if in particular we care about communities that have been underinvested and disinvested, we need to ensure that we're using a variety of tools."

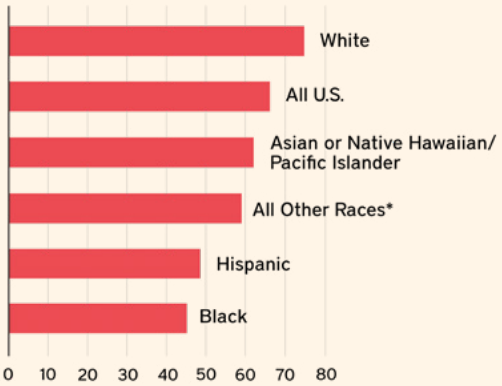
3C is part of a $400 million, five-year philanthropic commitment by JPMorgan Chase to support Black, Latino, and Hispanic households. CCI and JPMorgan Chase crafted the program based on insights from their place-based development work, and it is designed to support a holistic examination of investments, not one-time projects. "We want to advance systems change, which is critical for inclusive growth in communities," says Mercedeh Mortazavi, vice president for global philanthropy at JPMorgan Chase. "Our investments will help test new innovations, bring people together to think collaboratively, and aim to be successfully scaled across the country."

In each city, a lead organization spent significant time in 2021 gathering stakeholders from the nonprofit, municipal, philanthropic, and corporate sectors, as well as from community groups representing local residents, to form a core team.

Together, team members settled on shared priorities and began scrutinizing their local environments to identify gaps and potential solutions. They looked for land use patterns that might support small-scale development—high numbers of vacant lots, for example, or historical housing styles that support both homeowners and renters—as well as for potentially useful tools and resources, then crafted plans around those findings. Some teams are aiming to increase the housing stock available to low-income families for purchase; others are trying to fight gentrification-related displacement by building affordable rental homes.

Despite addressing different issues, the five groups have found common ground. This is true both in practice, as they prioritize partnering with developers of color and collaborating with local residents, and on a strategic level, as they research innovative lending, land use, and ownership models that could help transform housing and wealth-building opportunities in their communities.

U.S. HOMEOWNERSHIP RATES BY RACE AND ETHNICITY



* Includes people who reported American Indian or Alaska Native regardless of whether they reported any other race, as well as all combinations of two or more races.

Decades of discriminatory housing and lending policies have led to dramatic differences in homeownership rates by race and ethnicity in the United States. Source: U.S. Census (2022).

"If we're supporting thriving communities, and if in particular we care about communities that have been underinvested and disinvested, we need to ensure that we're using a variety of tools."

A Framework for Action

Although 3C is new, the process the teams are using to focus their efforts is time tested. Fundamental concepts like aligning priorities and partnering with a project's end users—in this case, community members—are part of the capital absorption framework, a tool developed by Robin Hacke, CCI's executive director, and Marian Urquilla, the organization's cofounder.

Using the capital absorption framework, many communities have addressed local economic and social challenges like affordable housing by developing shared goals, encouraging a stream of developments rather than focusing on single projects, and improving the enabling environment of pertinent policies and processes that can smooth and speed up that preservation and development pipeline.

"Ultimately, it's about trying to reorganize, redesign, and reshape how a community imagines its future and lays down track to get there," says Urquilla. "It's very hard work—but it will pay dividends down the line."

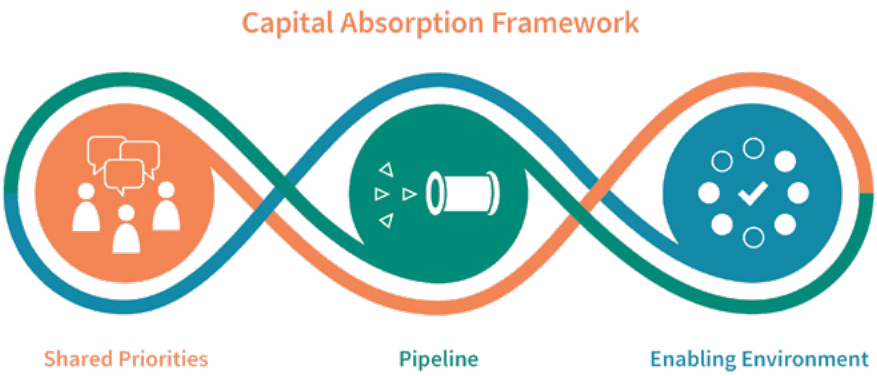
Dana Jackson has seen this approach bear real fruit. Jackson, a consultant from Louisville, Kentucky, who has over 25 years of experience in grassroots organizing and policy making, is 3C's lead faculty. She coaches the Miami and Chicago teams and leads workshops where all five teams work through exercises focused on their specific environments and the needs of all stakeholders.

In those sessions, says Jackson, each group might be asked to outline its city's housing system and all the steps involved in developing a home and getting homebuyers or tenants in place. That leads to questions like, "Where does it get bunged up or hung up, and how might we, with a set of partners, make some shifts in that system?" relates Jackson. "I've seen teams get really clear on what the system pinches are, and then craft a strategy to address that."

She agrees with Urquilla that it's not an easy process. But it's important groundwork for accomplishing the 3C initiative's objective: to develop city-specific housing approaches that demonstrate a way to build affordable housing more easily and equitably—and that can inform efforts elsewhere.

The five cities and their team members all began in different places. Some cities are home to high-capacity nonprofit organizations and existing infrastructure that supports their work, while others have sometimes struggled to connect with resources. Some team members had worked together before and were able to hit the ground running, while others needed time to learn about each other and the best ways to get things done.

The groups have taken different approaches to developing the projects they hope will strengthen affordability and equity in their cities. Here's a look at the work underway in three of the 3C cities: Chicago, Miami, and Los Angeles.



The Center for Community Investment's Capital Absorption Framework has helped communities address local economic and social challenges including housing affordability. Credit: CCI.

Left: Two-flat housing in Humboldt Park, one of two focus areas for the 3C initiative in Chicago. Right: Community mural in Humboldt Park. Credits (left to right): stevegeer via iStock/Getty Images Plus, City of Chicago.

Chicago: Lowering the Homeownership Threshold

Early in the 3C process, the Chicago team's members knew they wanted to focus on expanding homeownership. The city's homeownership rates for Black and Hispanic families, 35 percent and 43 percent, respectively, are below the national averages (see Figure 1).

They also knew they wanted to work with two-flats and four-flats, iconic Chicago housing styles developed in the early 1900s to accommodate immigrants and Black migrants from the South. These traditionally affordable housing options, which comprise a quarter of the city's current housing stock, have dwindled as people converted them to single-family homes or replaced them with new developments.

The question facing the Chicago team was, what neighborhoods should they focus on as they developed their initial demonstration project? "We wanted to be thoughtful and strategic about where we could make an impact," says Lynnette McRae, director of the 3C initiative at the Chicago Community Trust, which is the program's lead organization. The team wanted to pick areas whose residents were already working toward homeownership, and places that had an existing fabric of two-flats and four-flats as well as vacant lots where more could be built.

Eventually, the team decided to focus on Garfield Park and Humboldt Park, both majority Black and Latino communities. Garfield Park is already part of a couple of major redevelopment efforts—one led by the city, another by a coalition of nonprofits—that 3C's work could leverage and amplify.

The group ran into a roadblock fairly quickly. Efforts to expand homeownership usually target families earning at least 80 percent of area median income (AMI). But Garfield Park and Humboldt Park are low-income communities where most households earn significantly below that.

"Doing an affordable housing project at 100 percent of AMI—that might check a lot of people's boxes, but we know the vast majority of our residents earn under 60 percent of AMI," says Mike Tomas, executive director of the Garfield Park Community Council. He and Humboldt Park representatives, as members of the 3C team, pushed for options that could serve more residents.

That point created some tension—"healthy tension," Tomas calls it—but in the end, the question of how to serve lower-income residents interested in pursuing homeownership has become the central mission of the Chicago team's work.

This year, the team is moving into a deeper engagement phase, says Ashlee Cunningham, initiative director at CCI, who advises the Chicago

FIGURE 1

AFFORDABILITY AND EQUITY IN 3C CITIES

	Population (2020 est.)	Population growth, 2010–2020	Median sale price for single-family home, January 2023	Homeownership rates (white | Black | Hispanic)	Percentage of renter households that are cost burdened*
National	331.5 million	7%	$383,000	75% | 45% | 48%	40%
Chicago	2.7 million	2%	$261,000	54% | 35% | 43%	48%
Los Angeles	3.9 million	3%	$1,050,000	43% | 27% | 29%	59%
Miami	442,000	11%	$570,000	43% | 22% | 31%	67%
Seattle	737,000	21%	$850,000	51% | 26% | 27%	41%
Washington, DC	690,000	15%	$849,000	53% | 37% | 32%	47%

Note: All figures are rounded.

*Cost-burdened households pay more than 30 percent of their income for rent and utilities. These figures include severely cost-burdened households, which pay more than 50 percent of their income for these expenses.

Sources: Population and population growth: U.S. Census; median sale prices: Redfin; homeownership rates: Institute for Housing Studies at DePaul University, Prosperity Now, Urban Institute, U.S. Census; cost-burdened households: U.S. Census, Prosperity Now. Additional information was provided by the participating cities.

team. "Now it's time for them to build the pipeline of buyers, start thinking about housing typologies, and look more strategically at what the funding opportunities and needs are."

The team is hoping to develop a set of solutions that expands homeownership at both 60–80 percent of AMI and 80–120 percent—but successfully reaching that lower range will require solving three key problems. Can the program better identify and prepare potential homeowners through housing counseling? Can creating a flexible lending pool help provide lower-income families with mortgages? And can the team work with developers and the city to acquire land and build more affordable units, so the inventory is there when buyers are ready?

They're difficult questions, but the team is up for the challenge, says Donna Clarke, chief operating officer of Neighborhood Housing Services of Chicago, a team member that provides financial assistance, education, and support to help middle-class and working-class families purchase and maintain homes: "It pushes us to find solutions and be innovative."

When the work of 3C is done, says Cunningham, "we'll be able to say that this team has created a culture of homeownership, promoted equal access to capital, and expanded an affordable housing inventory. And through those three things, they will create a model for other communities."

Chicago city staff work with Garfield Park residents to map future housing sites. Credit: Garfield Park Community Council.

During a south Florida housing tour in 2022, HUD Secretary Marcia Fudge declared Miami the epicenter of the nation's affordability crisis. The city tends to favor large private developers. Credits (left to right): U.S. Department of Housing and Urban Development via Flickr, Nicolas McComber via iStock/Getty Images.

Miami: Betting Big on Small-Scale Development

Last summer, HUD Secretary Marcia Fudge declared Miami "the epicenter of the housing crisis in this country." That's not only the result of typical pressures like low supply and gentrification. Financial and regulatory aspects of Florida's housing environment tend to favor large private developers, and therefore Miami doesn't have a well-rounded ecosystem that includes small or nonprofit housing developers or experienced CDFIs.

Last summer, HUD Secretary Marcia Fudge declared Miami "the epicenter of the housing crisis in this country."

In 2018, the organization Miami Homes for All brought together local stakeholders to consider those needs, launching the Greater Miami Housing Alliance to further address them. That coalition worked productively for two years, coming up with a set of policy recommendations for city and state leaders. So when 3C launched in 2021, the Miami team, which includes many participants from the earlier effort, had a head start.

Now, however, the team needed to find projects that could illustrate the benefits of the policy changes its members had recommended. "So much had already been done by the Greater Miami Housing Alliance. But we need to be able to build out that approach" to demonstrate what those recommendations could look like in practice, says Lisa Martinez, who leads the Miami team.

The group determined that it wanted to focus on anti-displacement strategies in predominantly Black communities through housing preservation and the construction of small-scale developments. Its members canvassed current housing-related projects throughout the region, eventually choosing to invest in five that illustrate key needs and offer the promise of important learnings.

The five projects they selected are very different. One uses public land for a community land trust model providing homeownership opportunities. Another offers rehabilitation assistance to small-unit landlords facing code violations and fines. Two projects are doing rehab or super-small-scale development but need predevelopment funding. And the fifth is aiming to include low-cost office space in an affordable housing development.

They're currently all in different stages, with the first one slated to be done by early 2024. 3C will provide funding and project management to help each project get across the finish line. "Each of these deals will encounter barriers we'll have to overcome," says Annie Lord, executive director of Miami Homes for All, the team's lead organization.

The goal is to make policy makers and financial institutions aware of the projects once they're fully underway, highlighting how money from 3C has been critical to their progress and illustrating how new funding sources from the city—to assist builders in acquiring land, for example, or to help local small-unit landlords renovate their buildings—could make all the difference.

As the projects evolve, the 3C team is working with community members in the neighborhoods where that work is occurring. Because of gentrification, some residents are suspicious of any development activity.

Santra Denis is the executive director of the Miami Workers Center and a core team member. She's invited people from several neighborhoods to join a residents' council, aiming to give them a clear voice in decision-making processes. "We're definitely going to be bringing it all back to the tenants," she says. "We'll be talking to them, getting intel, making sure [these developments] feel good to them." That, she says, is the only way the initiative can work.

"We're definitely going to be bringing it all back to the tenants. We'll be talking to them, getting intel, making sure [these developments] feel good to them."

A protest organized by the Miami Workers Center in 2022 called for better tenant protections in the city. Credit: Miami Workers Center.

Los Angeles: Diversifying Housing Types

In Los Angeles, the 3C team is working in South LA, where it will prioritize new construction for homeownership, as well as preservation of existing affordable rental units.

But LA has some built-in limitations—namely, the high cost of land. Building new affordable single-family homes on individual lots is simply not feasible there, and group members spent months investigating ways to lower prices. Could they take advantage of SB9, California's new law allowing homeowners to quadruple density on their properties? Could shared-ownership models help buyers build wealth?

In the end, they settled on something seemingly more conventional: condos. "Which might not sound that innovative, but it is for South LA. No condos exist there," says Alejandro Gonzalez, program manager for LA's 3C initiative. Condos can be purchased with conventional mortgages, and the community is full of underbuilt parking lots and low-rise strip malls that could be repurposed for higher-density housing.

But even factoring in land use incentives and down payment assistance to get first-time buyers into the units, local costs are so high that the LA team couldn't find a way to make mortgages available to residents earning less than 80 percent of AMI, which was a goal of many team members.

"Our biggest challenge has been the desire of many of our community-based partners to serve folks under 80 percent—which we all want to do," says Tom de Simone, executive director of Genesis LA, a large CDFI that leads the team. The group repeatedly discussed the issue, with some members pointing out that even LA residents who earn 100 percent of AMI struggle to afford homes, and that offering condos at that price point would allow some Black professionals to remain in the South LA neighborhood who would otherwise be priced out.

South LA has seen many changes in recent years, including the 2020 construction of SoFi Stadium. Credit: Mark Holtzman Photography.

Marsha Mitchell was one of the team members involved in these discussions. Mitchell, director of communications at Community Coalition, an organization working to transform the social and economic conditions of the neighborhood, says she understands the financial realities in the city that ultimately helped shape the group's approach—and notes that she appreciated the back and forth. "Just the fact that we had those discussions, it's really important."

De Simone says the debate influenced him as well. "It was an eye opener. Maybe we can't get 100 percent of the units under 80 [percent AMI], but we need to try for some," he says. He thinks small savings coming from reduced parking, density bonuses, or modular construction could lower prices just enough to make units more affordable. And he muses that if local elected officials see the feasibility of investing in condos to expand the supply of affordable homes, they might eventually commit public funding that could further lower the cost for renters and homebuyers.

The team is also focused on preserving multifamily rentals, but that work won't start until later this year, when a new state funding source becomes available. For now, the group has its hands full acquiring property suitable for condo construction and finalizing the first project's design—steps that will be informed, as all the decisions to date have been, by dialogue and consensus building.

That focus on community and consensus building is a defining characteristic of the 3C initiative, and it will continue to guide the discussions and decisions of all five teams.

LA Metro's Expo/Crenshaw station is the origin point for a new rail line through South LA. Housing advocates are concerned that the transit improvement could drive home prices higher. Credit: Laser1987 via iStock Editorial/Getty Images Plus.

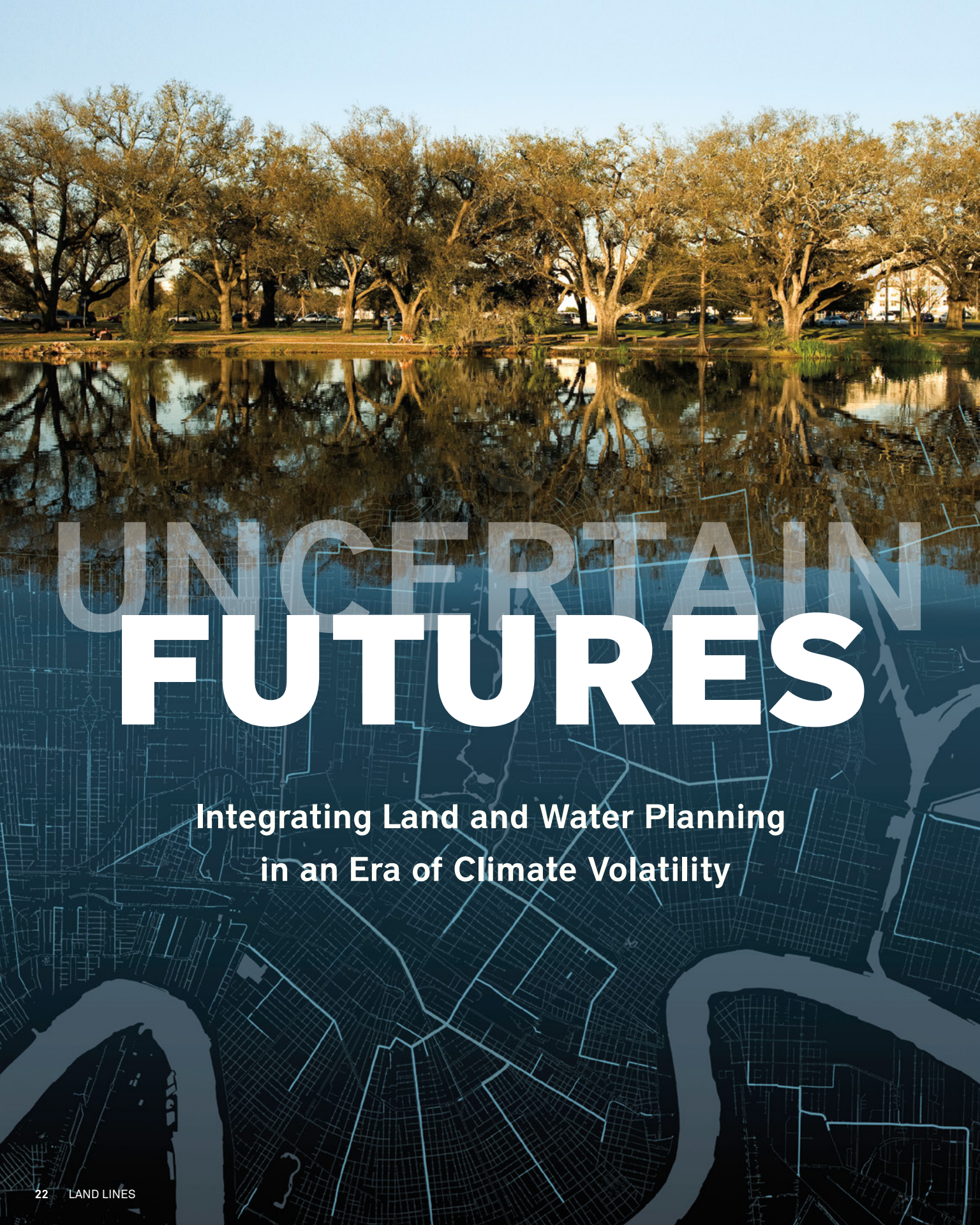
"A lot of times, the community is an afterthought," says Mitchell. "That's one thing that makes this project different."

In all five cities, 3C program leaders are determined to address the country's affordable housing crisis in a new way. While they recognize the shared systemic challenges facing communities of color across the country, they view every city as a unique environment whose neighborhoods, history, policy environment, and culture all play important roles in the creation of new housing models—and whose policy makers, practitioners, and residents are best positioned to craft strategies and solutions that will work in their communities.

Amanda Abrams is a freelance journalist in Durham, North Carolina.

ABOUT THE CENTER FOR COMMUNITY INVESTMENT

The Center for Community Investment (CCI) at the Lincoln Institute of Land Policy helps communities create equitable, effective investment systems that can achieve their visions so all residents flourish. CCI equips community leaders with the capital absorption, adaptive leadership, and racial equity skills to transform their investment systems. To learn more, visit **centerforcommunityinvestment.org**.



UNCERTAIN FUTURES

Integrating Land and Water Planning in an Era of Climate Volatility

By Heather Hansman

"CLIMATE CHANGE IS WATER CHANGE." It's an adage that has caught on in certain circles, as our shifting global systems affect every part of the water cycle. In the United States, that has looked like record drought and aridification in the West, massive flooding in the Midwest, and superstorms in the East. Those climatic changes have also created secondary impacts, like land subsidence, longer wildfire seasons, and contaminated water supplies. And all these effects are complicated by factors ranging from population growth to aging infrastructure.

As these impacts hit every corner of the country, planners and water managers are finding new ways to address them, working together to build resilience in the face of an increasingly volatile climate.

Planning for a future that could include an unpredictable combination of drought, flooding, pollution, and other water-related issues takes a significant shift, says Bill Cesanek of the American Planning Association's Water and Planning Network. "Historically, U.S. communities have dealt with land use planning and water management in separate silos," Cesanek says. "But now we know we have to manage them using an integrated approach."

Traditionally, he explains, water departments and planners have often worked within different geopolitical boundaries, management structures, and timelines, even as their work has overlapped on the ground. But with communities growing rapidly, especially in the South, and climate change exacerbating water-related risks, planning is becoming more complex, and the need for collaboration more urgent.

"We need an integrated and multidisciplinary approach," agrees Brenda Bateman, director of the Oregon Department of Land Conservation and Development. Bateman is chair of the American Water Resources Association's Land and Water Specialty Conference, an event focused on connecting land and water for healthy communities. "These problems are so thorny that if we try to solve them one by one, or in a vacuum, we end up with solutions or results that don't stick. They're tied together regardless of how our budgets and bureaucracies work."

"These problems are so thorny that if we try to solve them one by one, or in a vacuum, we end up with solutions or results that don't stick."

The goal of improving planning and resource management processes so they are more integrated, resilient, flexible, and creative is complicated by regional differences—"what works in California won't necessarily work in New Jersey," Cesanek says. And since the nature of climate volatility means what works in California today won't necessarily work in the future, planners and water managers have to prepare for many possible scenarios. "In the planning world, it used to be, 'let's envision the highly desirable future we want, and build to that,'" says Jim Holway, director of the Lincoln Institute's Babbitt Center for Land and Water Policy. "Now we have to put in place policies that will be robust across different futures—not just desirable ones—and bring in programs that are more adaptive. This is a shift in approach."

Anticipating potential futures and changing practices to account for uncertainty is tricky, but not impossible. And despite the local nature of planning and resource management, shared practices and strategies can work across the country. Here's how three communities facing different challenges are adapting their approaches and practices to prepare for a changing future.

Credit: Greater New Orleans Urban Water Plan, Waggonner & Ball.

New Orleans: Living with Water

Few cities have spent as much time and energy fighting water as New Orleans. The city was built on a natural levee along the Mississippi River, a prized location that offered obvious economic and environmental benefits. But centuries of efforts to engineer the river and drain the surrounding swamps led to land subsidence so severe that some neighborhoods are up to 11 feet below sea level, making them prone to frequent flooding. New Orleans is also one of the rainiest places in the country, with five feet of annual precipitation, and is vulnerable to the increasingly strong hurricanes that frequent the Gulf Coast.

When Hurricane Katrina hit in 2005, inundating 80 percent of the city, it explicitly revealed a truth that had been gradually coming to light: New Orleans couldn't use its historical approaches to fight the stronger storms and rising waters of climate change. It had to think differently.

"Katrina was a tipping point," says Ed Blakely, a global urban policy expert who led the city's recovery effort. Blakely says the city's previous approach to water—attempting to overpower it rather than planning around natural streamflow and flood patterns—reflected a common urban pattern in the United States: "We have not used history to plan settlement."

As the urgent work of recovery got underway, a new approach to long-term planning began to emerge as well. With support from a state community resilience fund powered by federal disaster recovery dollars, the region's economic development organization, Greater New Orleans, Inc. (GNO) commissioned a project that would help the city reimagine its relationship to water.

Inspired by the Dutch approach to water management, which hinges on collaborating across disciplines and viewing water as an asset, the Greater New Orleans Urban Water Plan drew on local, national, and international expertise, envisioning nature-inspired systems and strategies that could help manage stormwater more effectively and contribute to the health of residents, ecosystems, and the economy. The green infrastructure proposals in the plan ranged from small-scale retrofits like bioswales and permeable pavement to the more comprehensive, strategic use of parks, canals, and waterways to slow and store water (Waggonner & Ball 2013).

The ambitious plan intentionally focused on physical space, not policy or politics, explains Andy Sternad, an architect and resilience expert who was a lead author of the plan for New Orleans–based firm Waggonner & Ball. It won acclaim from organizations including C40 Cities and APA, which gave it a National Planning Excellence Award in 2015, in part due to its collaborative nature. "Planners have been instrumental in communicating with designers and engineers about the spatial, socioeconomic, political, and cultural impacts of the plan," APA noted in its award description. "They have also been successful in integrating the Urban Water Plan with the Louisiana Coastal Master Plan and other local planning processes."

"The water plan facilitated a new way for us to approach water, locally and regionally," says

Centuries of efforts to fight water are giving way to a new philosophy in New Orleans. Credit: pawel.gaul via E+/Getty images.

This illustration from the Greater New Orleans Urban Water Plan shows how redesigning streets with elements like rain gardens and pervious pavement can help slow and store stormwater. Credit: Waggonner & Ball.

Robin Barnes, a New Orleans–based economic recovery and resilience consultant who is the former executive vice president and COO of GNO, Inc. "It provides us with information and schematics and instructions about everything from materials to specific demonstration projects, and it illustrates how living with water can work."

Barnes has been a director on the Sewerage & Water Board of New Orleans (SWBNO) since 2014, and says she has seen the plan's guiding philosophy seep into operations citywide and regionally. The idea of living with water can be seen in everything from stormwater storage requirements for new construction and pilot projects funded by the SWBNO to broader initiatives such as the Gentilly Resilience District, a multi-pronged effort to reduce flood risk and support revitalization across an entire neighborhood. The city has received significant federal funding for green infrastructure, including a major award from the U.S. Department of Housing and Urban Development's National Disaster Resilience Competition.

The city's master plan envisions that by 2030, New Orleans will become "a city that celebrates its relationship to water" (City of New Orleans 2018). The plan prioritizes water conservation, sustainable stormwater management, and the protection of wetlands and other areas needed for water storage. It endorses land use approaches that were key elements of the post-Katrina rebuilding effort, says Blakely, such as density, infill development, and building on high ground.

Recommendations like those are constructive outcomes of the devastation caused by Katrina. So are community-level conversations about water management and resilience that continue to evolve, led in part by the Water Collaborative of Greater New Orleans, which formed after the release of the water plan.

Like many cities, New Orleans has faced challenges as it works to implement these ideas, from the pandemic to political transitions. There is still much work to be done, but other flood-prone places across the country have begun to embrace the New Orleans mindset; Sternad and his Waggonner & Ball colleagues have brought the Living with Water approach to cities including Houston, Miami, Charleston, Hampton, Virginia, and Bridgeport, Connecticut.

"We are poised to lead future climate solutions, in part because the things we experience here provide valuable lessons for other cities," Sternad says. "It's OK to live in a place that floods sometimes, as long as the culture, and eventually the infrastructure, can adapt."

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Evans, Colorado: Preparing for Scarcity

The northern Colorado city of Evans has a population of 21,000, a projected growth rate of 3 percent per year, and a reliable supply of water from the region's river basins. But demand for water is projected to come close to the limits of that supply by the end of the decade, especially as the state faces drying and warming due to climate change. As the city grows, its municipal departments are trying to work together to make sure that demand doesn't exceed supply.

"We're going into a period where we have increasing demand for water, but the pie is shrinking," says Anne Best Johnson, former community development director in Evans. "It's one thing to divide up a growing pie, but it's harder and harder to divide a shrinking pie."

In 2019, the city completed a Municipal Water Efficiency Plan, a guide for its water conservation measures (City of Evans 2019). That plan identified 34 water conservation activities that the city will prioritize for implementation, ranging from outdoor watering and landscape design ordinances to requirements for things like wind and rain sensors for new developments, and water-efficient fixture retrofits for existing buildings. If all the steps are implemented, projections suggest the city could see total water savings of up to 17 percent by 2028 compared to projected demand.

Around the time the water plan came out, city officials started their decadal update of the city's comprehensive plan. "The timing was important because these documents guide the city for anywhere from 10 to 30 years," says Justine Schoenbacher, the city's water conservation coordinator. Both planning processes incorporated cross-departmental input and extensive public outreach, Schoenbacher adds: "The fact that both plans were updated in a time of heightened awareness around water resource issues was beneficial." She says the timing and collaborative approaches allowed the city to seamlessly integrate the plans and address water resources comprehensively.

Johnson—who left her role in Evans in early 2023 for a similar role in nearby Berthoud—says city officials were able to build principles from the Municipal Water Efficiency Plan into the comprehensive plan, which includes a chapter on water conservation and stewardship, as well as instructions for incorporating water conservation principles into planning (City of Evans 2022).

Aware of rising water demands and shrinking supplies, the City of Evans incorporated drought-tolerant landscaping in a road-widening project completed in 2022. Credit: City of Evans.

The city is phasing in water-wise landscaping (left) at the Evans Community Complex (right), with support from the Denver Botanic Gardens and Northern Water Conservancy District, the regional utility. The project serves conservation and public education goals. Credit: City of Evans.

This puts Evans on a solid path toward a sustainable water supply. But the city didn't do it alone. Johnson says support from other organizations helped the small city maximize its efforts. In 2018, as officials were working on the municipal water plan, they participated in a Growing Water Smart workshop hosted by the Sonoran Institute and the Babbitt Center, which allowed them to learn from other communities and create their own action plan. The city also participated as a pilot community for a Water and Land Use Metrics program coordinated by the Sonoran Institute, which helped them measure their local water conservation data. To help implement their Growing Water Smart action plan, they received technical support from WaterNow Alliance and Western Resource Advocates to administer a water efficiency audit program and a community-wide fixture replacement and installation program. Schoenbacher says that has been key in helping them make tangible progress, and in educating the community about the application and benefits of the water efficiency plan.

As they put the plans into practice, Johnson says city leaders are trying to be proactive and clear about their goals, by talking to the community and gathering data to show what's working well. "A lot of time, money, effort, and citizen input went into our guide for moving forward," she says. "We don't want to have a comp plan that just sits on the shelf." Johnson says the city started with the easiest projects, like fixture retrofits, to show the community that reducing water use didn't have to be painful. Then they started to bring in some of the bigger pieces. Using those tools, they're confident that they can balance population growth and new development while decreasing citywide water use.

The city started with implementing the easiest projects, like fixture retrofits, to show the community that reducing water use didn't have to be painful.

"Change can be very threatening to people. If you offer them opportunities to have success, then you're going to be seen as a community that encourages business while being respectful of your environment and limited resources," Johnson says. Evans, she adds, "wants to have an opportunity to grow and change when it's not a reactionary situation."

Schoenbacher says that's true across the region, where communities need to be planning for scarcity. Communication and early thoughtful action are both key for being prepared, she notes: "We adhere to the motto that's happening across the West: we need to be doing more with less. We're thinking about that potential gap between supply and demand in the long term. What changes can communities make now to preserve our rights and ability to grow in the future?"

Golden Valley, Minnesota: Thinking Beyond Boundaries

Golden Valley City Hall sits beside the Minneapolis suburb's 170-foot-tall water tower. Credit: City of Golden Valley.

A decade ago, planners and water engineers in the Minneapolis suburb of Golden Valley worked in different departments on different floors of city hall. "There was general agreement on the direction that the city was moving, but there was minimal coordination," says Planning Director Jason Zimmerman. To facilitate communication and collaboration in this city of 22,000, which relies primarily on redevelopment to accommodate growth, the city combined planning, engineering, and inspections into one department, creating an open-concept office on a single floor of the building. Today, Zimmerman says, "there is close communication between planning and engineering staff, in relation to redevelopment projects in particular. . . . Planning decisions always acknowledge the requirements and challenges associated with water."

Those challenges have increased as climate change makes storms in the region stronger. "New flood elevations due to more intense rain events have created challenges for properties in low-lying areas," Zimmerman says, noting that planners carefully evaluate aspects like grading when reviewing site plans, in light of the increased runoff caused by extreme weather.

As Golden Valley continues to adjust its practices to meet evolving needs, a state-enabled regional planning agency, the Metropolitan Council, is helping the city address pollution, plan for flooding, and protect the quality of its creeks and lakes by thinking beyond boundaries.

Golden Valley buys its water from the city of Minneapolis, as part of a joint agreement with two other nearby suburbs, Crystal and New Hope. The Metropolitan Council oversees wastewater collection and treatment infrastructure and water supply planning across the area, a relatively unique arrangement that helps communities learn from each other. "We're working with our partners in the region to make sure we have sustainable supplies for the growth that is planned," says Judy Sventek, Met Council's manager of water resources. "People think of Minnesota as a water-rich state with 10,000 lakes, but we do have water supply limitations" including differences in the types and quantities of water communities can access.

In 2005, the council created a Water Supply Planning Unit to bring communities together from across the region. A decade later, this work shaped updates to regional water policy reflected in the 2040 Water Resources Policy Plan—which directly influenced Golden Valley's 2040 Comprehensive Plan and its goals of responding to new and changing development, future water demands, and changing weather patterns (Metropolitan Council 2018, Golden Valley 2020).

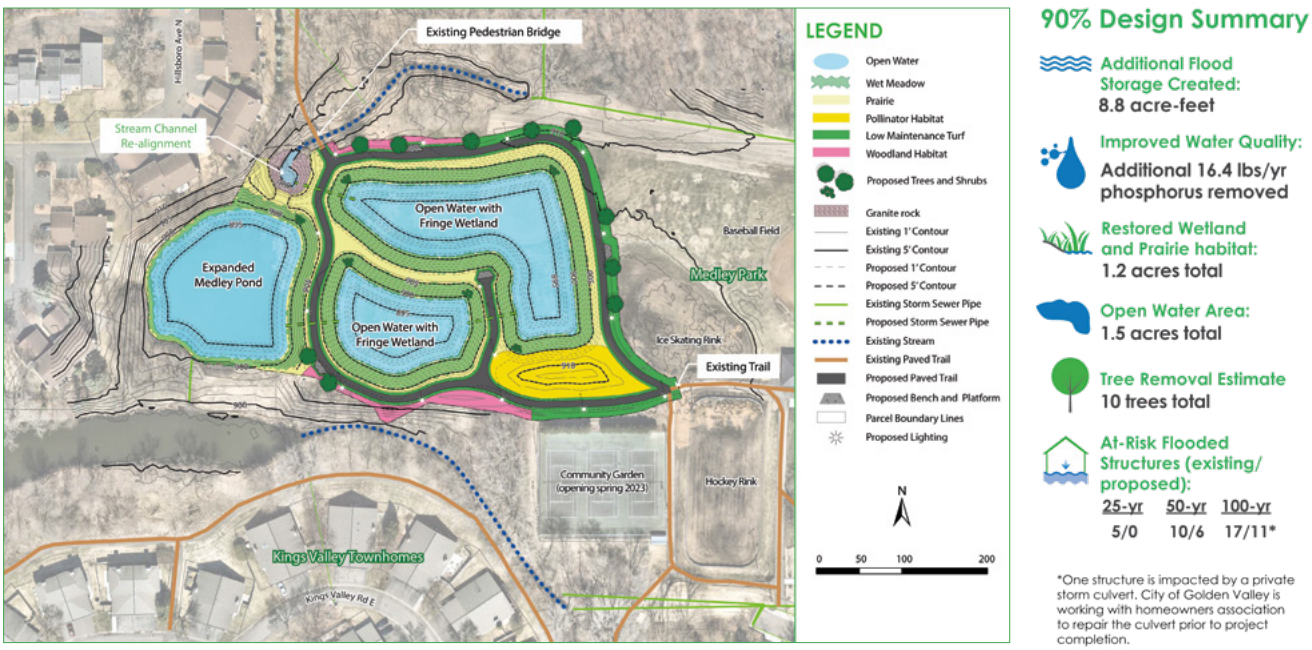
Planners and water engineers in Golden Valley used to work in different departments on different floors of city hall. Creating a combined department and an open-concept office helped facilitate communication and collaboration.

"In the '80s, when most people lived in the urban core around Minneapolis and St. Paul, most residents and businesses relied on surface water," Sventek says. "Now 75 percent of residents in the metro area are using groundwater from wells in the suburbs. We're thinking about the implications of this change as cities continue to grow outward, and we're looking at how climate change affects water supply."

Lanya Ross, a Met Council environmental analyst, says the council's regional vision can help communities like Golden Valley make long-term water-supply plans in the face of changing climate and population dynamics. It also serves as a hub of data on issues like regional groundwater modeling and flooding impacts, which individual communities might not have access to or might not normally consider. In Golden Valley, where Bassett Creek is a critical waterway, leaders can use this shared information to see where stormwater management projects can be most helpful, and how redevelopment projects can help with flood control.

"We can look at the entire region: how do we plan for sustainable water resources together and how do those interactions happen," Ross says. In the face of climate change, communication among neighboring communities can be particularly important on the supply side. It can lead to sharing tools and resources to protect source water, monitor aquifer levels, and address contamination from pollutants like phosphorus and nitrogen that come from agricultural runoff.

Sventek says other states and organizations have looked at the Met Council's approach, especially on the supply side, because planning for watershed health is becoming more relevant and necessary. Having an entity that plans for a region and addresses issues across local boundaries is also helpful for transferring knowledge and thinking about the big picture, she says—and that shows up in the way places like Golden Valley are planning for the future.



Design plans for a stormwater improvement project at Golden Valley's Medley Park. City officials partnered with the local watershed management commission on the project, which aims to reduce flooding and improve water quality while offering economic, recreational, and educational benefits. Credit: City of Golden Valley.

A combined team from the cities of Evans and Greeley, Colorado, attended the Growing Water Smart workshop in 2018. Credit: Sonoran Institute.

The **Growing Water Smart** program introduces communities to strategies and tools that can help them integrate water and land use planning to better adapt to change and uncertainty. A joint program of the Sonoran Institute and the Babbitt Center for Land and Water Policy, Growing Water Smart has reached more than 80 communities in Colorado, Arizona, and Utah, and is expanding to California and along the Mexican border this year.

To learn more, visit **www.growingwatersmart.org** or watch the video at www.lincolninst.edu/growing-water-smart.

To learn more about how communities are incorporating water into their planning processes, check out ***Integrating Land Use and Water Management: Planning and Practice***, a Lincoln Institute Policy Focus Report by Erin Rugland.

Available at **www.lincolninst.edu/publications/policy-focus-reports/integrating-land-use-water-management.**

Connecting land and water for healthy communities is the theme of this year's **American Water Resources Association summer conference**, to be held July 17–19 in Denver. The planning committee for this event includes representatives from the Lincoln Institute's Babbitt Center and many other organizations, agencies, and institutions working to advance the integration of land and water planning.

To learn more, visit **www.awra.org**.

Denver, Colorado. Credit: f11photo via iStock/Getty Images Plus.

Hard Decisions Ahead

The need for big-picture, long-term thinking by policy makers across the country is clear. "There isn't a place that is not subject to some form of disaster in the United States, be it drought, cyclones, or tornados. We've seen flooding year after year," says Blakely, who led the Hurricane Katrina recovery effort in New Orleans. "We need to be catching up to the game, not adding to the destruction."

The threats are different from place to place and ecosystem to ecosystem, but there are broadscale ways to address climate-related disasters. Communities can store and reuse water, instead of relying on manmade infrastructure to fend it off. They can plan for uncertainty, anticipate a range of futures, and implement adaptable long-term plans. They can also collaborate and work across boundaries to manage resources regionally, build resilience, and increase flexibility.

To stay ahead of the game, planners and water managers need to implement changes now, working across departments to integrate land and water planning. "We made a lot of choices that have kicked the can down the road by saying, 'We'll do more monitoring or regulation at a later date.' That time has arrived," says Bateman, chair of this year's AWRA conference (see sidebar). "We're going to have to make some hard decisions. We're going to need leaders who are willing to make those decisions based on science."

Holway says organizations like APA, AWRA, the American Water Works Association, and the Babbitt Center can help communities build the capacity they need to implement solutions by providing tools and support, and by helping them connect across geographic and bureaucratic boundaries. "We're not trying to predict the future, we're trying to prepare for a range of potential future conditions. Building that awareness and working in new ways can start to change the narrative and lay the groundwork for implementing necessary programs," he says. "As you look forward, disasters are going to be a constant. They're going to come one after another, and if that's the future, we need to prepare for that."

Heather Hansman is a freelance journalist, *Outside* magazine's environmental columnist, and the author of the book *Downriver: Into the Future of Water in the West*.

"We made a lot of choices that have kicked the can down the road by saying, 'We'll do more monitoring or regulation at a later date.' That time has arrived."

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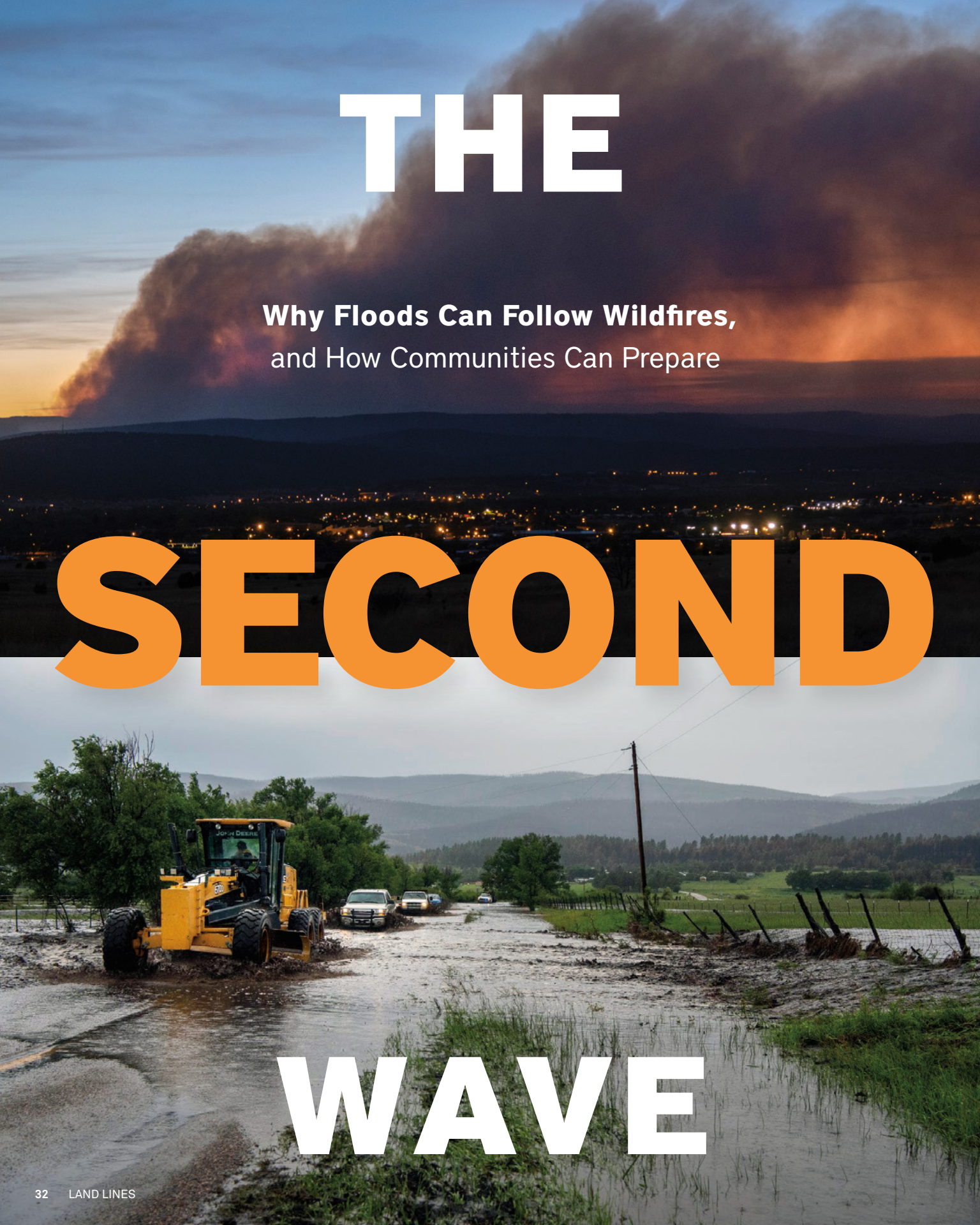
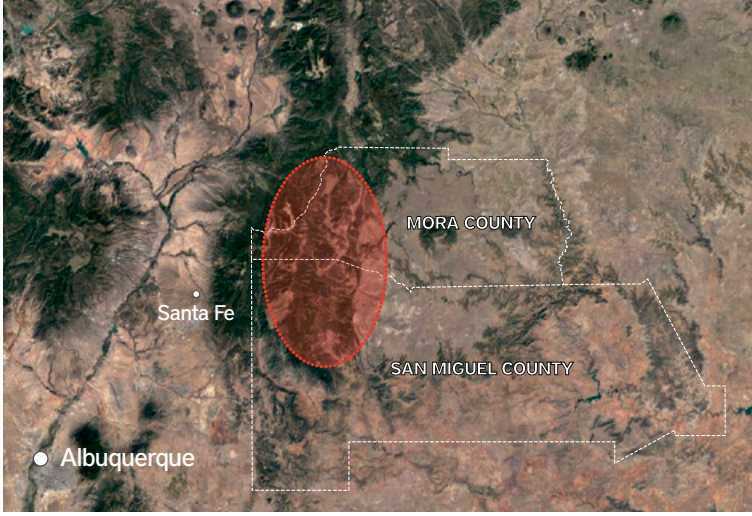
THE SECOND WAVE

Why Floods Can Follow Wildfires,
and How Communities Can Prepare



By Amanda Monthei



Map of the general location of the Hermits Peak–Calf Canyon fire, which burned 340,000 acres in northern New Mexico in 2022. Credit: Google Earth/ Landsat Copernicus.

MOST PEOPLE in the mountainous northeastern corner of New Mexico were looking forward to the arrival of the annual monsoon season last summer. The Hermits Peak–Calf Canyon wildfire had started in April, ultimately burning 340,000 acres and destroying hundreds of properties, and residents were hoping for a reprieve from the smoke and evacuations that had begun to define their lives. But then the monsoon arrived, both unseasonably early and with more intensity than normal.

As the rains pelted soil that had been rendered water-repellent by the fire, mud and water cascaded down the slopes of the Sangre de Cristo Mountains into the waterways, fields, roads, and homes below. Still reeling from the fire, residents were forced to deal with a fresh disaster—in many cases, needing to leave their homes once again.

"Their homes were flooded, their corrals were taken out, their burnt barns were taken out," said Veronica Serna, county commissioner in Mora County, one of the areas hardest hit by the fire and the floods. "One family had a boulder come down and block their whole driveway. They didn't have any water and no way to go out and get water—just imagine not being able to shower in your own home or wash your hands or use a toilet. It was devastating."

Serna recalls another family "whose home kept getting flooded over and over and over. One day we stopped by to check on them, and they were scraping the mud out of their shoes, shoveling mud out of their bedroom. It's just so hard to see that."

The flooding also affected San Miguel County just to the south, damaging homes and infrastructure, polluting wells, and threatening water supplies. "Most people are back within the community, but they're still stressed out about the future, because the flooding is not going to stop," said Ralph Vigil II, a farmer and water commissioner who grew up in San Miguel County and runs a farmers' cooperative there. "I'm afraid that we're going to be dealing with this for years." According to the Federal Emergency Management Agency, flood risk remains elevated for up to five years after a wildfire, until vegetation is restored (FEMA 2020).

Vigil had the opportunity to take a helicopter flight over the burn scar in the fall, after the fire was fully contained and the worst of the flooding had subsided. "You don't really understand the vastness of the damage until you're up there," he said. He was alarmed, and not just by the decimation of landscapes and communities that he's long loved: "I also saw the risk for more fires, and really the signs of what's to come."

As climate change contributes to longer, more intense wildfire seasons, fires are leaving burn scars across the U.S. West, putting nearby communities at risk of flooding. That flooding, which can be catastrophic, can occur long after the fire is over. In the face of these threats, communities can make land use decisions that help build their resilience.

The Hermits Peak–Calf Canyon fire above Las Vegas, New Mexico, in May 2022 (top); state vehicles navigate a flooded road in nearby Rociada three months later (bottom). Credits (top, bottom): Robert Browman/*Albuquerque Journal* via AP; Eddie Moore/*Albuquerque Journal*.

After the Fire, the Deluge

It's apt that the name of the Sangre de Cristo Mountains, which extend from Colorado to their terminus near Santa Fe, translates as "Blood of Christ." The ridges, valleys, and bowls that would have been dwarfed from Vigil's viewpoint in the helicopter make up the bulk of two watersheds that are the lifeblood of downstream communities and farmlands. Some 23,000 people in San Miguel and Mora counties rely on these watersheds for drinking water and agriculture.

Under the right conditions, naturally occurring and prescribed fires support ecosystem health. But the Hermits Peak–Calf Canyon fire, the largest in New Mexico's history, got out of control and caused chaos. Twenty-four percent of the burn area was classified as high-severity fire, causing extensive tree mortality and profound impacts to soil. When trees and vegetation burn in high heat, they release gases that harden the soil into a water-repellent, concrete-like material. That allows rain to run over the forest floor like it would a sloped parking lot, picking up speed and sediment before flooding into the communities below.

"Pre-fire, these forested ecosystems and slopes work like a sponge, but post-fire, nothing is going to stop that rain," says Micah Kiesow, a soil scientist for the Santa Fe National Forest and team lead for the fire's Burned Area Emergency Response (BAER) team. BAER teams assess wildfire damage on federally owned lands. "We saw a tremendous amount of erosion, sedimentation, and debris flows in the most severely burned areas, which eventually makes its way to the drainages and streams below."

When trees and vegetation burn in high heat, they release gases that harden the soil into a water-repellent, concrete-like material. That allows rain to run over the forest floor like it would a sloped parking lot, picking up speed and sediment before flooding into the communities below.

Credit: Federal Emergency Management Agency, National Flood Insurance Program.

A soil scientist from the federal Burned Area Emergency Response (BAER) team inspects a culvert in the Hermits Peak–Calf Canyon burn scar in June 2022. Credit: U.S. Forest Service.

While post-fire flooding affected many communities around the burn area, some of the worst damage occurred in Mora County. The county, one of the poorest in the nation, has about 2,130 homes scattered across nearly 2,000 square miles. Serna estimates that 200 of those homes were burnt over and countless others impacted when ash, water, and sediment flowed into the communities of Mora, Holman, Chacon, and Guadalupita. "It's sad, because our communities had a lot of adobe homes," she said. "Our people have lived here for generations, they have inherited these adobes from their great-, great-, great-grandparents."

Many of those affected were rural farmers. According to Serna, numerous residents had freezers full of high-quality cattle and game meat that had to be thrown away following power outages in the aftermath of the flooding. Meanwhile, the *acequias*—small ditches or canals that divert water from creeks and rivers to provide water to farms and form the foundation of water access in this part of New Mexico—were clogged with wood, rocks, and mud. Over 40 acequias were destroyed in the aftermath of the fire, according to the New Mexico Acequia Association and reporting by *Source New Mexico* (Lohmann 2022). The infrastructure that these remote communities rely on for everything from growing food to accessing critical services suffered profound damage.

In the immediate aftermath of the fire, it was difficult to access federal emergency funding. In later months, however, significant funding opened up for those affected by the fires—some $3.9 billion total, including $2.5 billion from the federal Hermits Peak–Calf Canyon Fire Assistance Act passed in September and $1.4 billion allocated in the 2023 Omnibus Appropriations bill. Total damages for the fire have not been confirmed, but some estimates put it as high as $5 billion.

Despite the influx of funding, "I really don't think [$3.9 billion] is going to be enough," Serna said. "How do you replace trees that were over 100 years old? How do you get all that back? I mean, is there a dollar amount that could do that? How do you buy back time?"

While the recovery effort continues, the risk for more flood damage persists, hinging precipitously on the intensity of future rain and snowmelt events. Mora County officials have begun developing a hazard mitigation plan for potential impacts from fires and flooding in the future. This kind of planning is one of many steps communities need to take to become more resilient in the face of increasingly frequent and severe disasters.

With the wildfire largely contained and heavy rain in the forecast, a rancher worked to protect his property along the Gallinas River. Credit: Nadav Soroker/Searchlight New Mexico.

From Reactive to Proactive

In many cases, communities address the risk of flooding after a fire, but time isn't always on their side. "The challenge in New Mexico is we have a fire season from April to June, immediately followed by a monsoon season," said Brian Williams, director of emergency management in Santa Fe. "That window of time between when the fire season ends and the flooding season begins is weeks, not months. Often it overlaps, and then it's a mad scramble to mitigate those potential impacts as best you can. And the kinds of things that you can do are to some degree limited."

When BAER teams assess the extent of damages in federally owned areas, part of their charge is to determine priorities for immediate mitigation measures—ideally before extreme precipitation arrives. These often-forested ecosystems are prime candidates for aerial seeding and mulching, which can help burned areas begin to recover; restoration of stream channels can also help address flood risk. To prepare for the New Mexico monsoons, the BAER team also recommended and oversaw a number of emergency interventions including installing obstructions in stream channels to redirect debris and sediment and making fixes to bridges and culverts to facilitate vehicle access. These measures likely helped minimize some of the most extreme impacts of the rains, but it's difficult to quantify their effect—and the hard truth is that only so much can be done in the timeline between fire suppression and extreme rain events. Harder still is the fact that that timeline seems to be shrinking in many regions.

A lot of the conversation around post-fire flooding focuses, understandably, on ecosystem recovery measures like those that BAER teams recommend and facilitate. But effectively preparing for the unique challenges of recovery and potential post-fire erosion events also requires significant forethought on the part of communities and homeowners.

Planning and land use decisions can minimize risk before fires occur. On the ground, communities can install infrastructure to help contain or redirect debris flows; retrofit homes with more ignition-resistant materials; and

CLIMATE CHANGE AND WILDFIRE

Climate change is affecting the way fire moves through landscapes—and is also affecting how resilient those landscapes are. Extreme droughts, heat waves, and aridification can dry out forest vegetation, making it burn more easily and faster. Meanwhile, unseasonably hot and dry weather can increase the likelihood of accidental ignitions and drive increasingly destructive rates of fire spread. The combination of dry fuels and shifting weather patterns puts forests and the communities abutting them at increasing risk for both wildfire and devastating post-fire flooding and debris flows; over the past 40 years, the western United States has seen a fourfold increase in large wildfires and the fire season has expanded by two and a half months.

Burned Area Emergency Response (BAER) team members inspect newly planted vegetation in the Calf Canyon burn scar in August 2022. Credit: U.S. Forest Service.

Flood control in the areas affected by the Hermits Peak–Calf Canyon fire included the installation of temporary dams (left) and floating barriers to slow or stop large pieces of debris (right). Credits (left to right): U.S. Army Corps of Engineers, U.S. Forest Service.

identify and improve evacuation routes. They can also reduce hazardous fuels in forests and create defensible space around structures by thinning trees and other vegetation. Some fuel-reduction work, which is an essential forest management tool, comes with risks; the Hermits Peak–Calf Canyon fire was the result of two U.S. Forest Service fires that went awry: a prescribed burn and a pile burning project. The fires combined and spread due to high winds. But under the right conditions, prescribed burns can reduce the risk of wildfire and help maintain ecosystem health.

On a policy level, communities can take steps including prohibiting or limiting development in areas vulnerable to fire and flooding. Where development is allowed, they can mandate the use of certain building materials, such as fire-resistant siding. Local and regional officials can also map wildfire and debris flow risks to help determine when and where to build; develop pre-disaster plans, which allow communities to consider how they will handle recovery challenges such as restoring electricity, providing temporary housing, or managing long-term rebuilding; and proactively budget for projects such as stormwater treatment infrastructure upgrades, which can help communities better cope with flooding. Communities can also engage in scenario planning, a process that can help them identify and plan for various possible futures (see sidebar page 39).

According to a report from the National Institute of Building Sciences, every $1 of public funding spent on hazard mitigation since 1995 is expected to save $6 in future disaster costs (NIBS 2019). After decades of focus on disaster recovery funding, the federal government has begun a shift toward funding pre-disaster planning and mitigation. FEMA has released a pre-disaster planning guide and has made limited funds available for disaster mitigation projects (FEMA 2017). Unfortunately, this kind of advance planning often hinges on the kind of political will and funding that are still much easier to come by after disaster has struck.

"I think the fundamental challenge with all of this, as with most natural hazards, is it's very hard for us to plan ahead for things," said Dr. Kimiko Barrett of Headwaters Economics, a Montana-based nonprofit research group that works to improve community development and land management decisions across the country. "We are by nature reactive and responsive, in contrast to being anticipatory. Even after a wildfire occurs, we have a small window to actually mobilize and enact the transformative change needed before amnesia kicks in, or bias kicks in, where you feel that [because the fire] happened, it will never happen again."

"I think the fundamental challenge with all of this, as with most natural hazards, is it's very hard for us to plan ahead for things. We are by nature reactive and responsive."

A view of the Calf Canyon fire from Mora, New Mexico. The fire and subsequent flooding destroyed many of the area's traditional adobe structures. Credit: REUTERS/Andrew Hay.

A Holistic Approach

As more areas are affected by increasingly destructive wildfires, the threat of erosion and flooding in these landscapes will also increase—and should be factored into planning and land use decisions, Barrett says.

She explains that the principles of holistic land use policy for wildfire resilience are inherently connected to planning for potential post-fire impacts like flooding. The measures typically used to build community resilience to wildfire—things like reducing hazardous fuels near critical infrastructure, planning evacuation routes, considering home density and development patterns in new developments, and mapping risk—also provide intrinsic benefits in the post-fire period.

"[Taking these actions] means communities have a greater chance of surviving a wildfire—therefore, that rebuilding and recovery piece is inherently better situated, because you've put that thought and that deliberate strategic planning in on the front end," Barrett says. "So [planning for wildfire and its impacts] have to be wedded together. The challenge is that federal funding and policy does not often address it in that nature, or within that holistic framing."

Quantifying and addressing the highly localized hazard planning needs of individual communities—from mapping risk to implementing mitigation at a meaningful scale—is also challenging when an area hasn't yet felt the impacts of a wildfire or post-fire disaster. Risk mapping, for example, makes it less challenging to predict where and how a wildfire might impact a landscape; yet it remains challenging to create comprehensive and accurate maps, not only because of the robust data needed to make such predictions, but also because of community resistance.

"There's a lot of pushback—much like you see on sea-level rise and other things in Florida and elsewhere—where politicians, developers, and community leaders are like, 'We don't really want to know—or we might want to know, but we really don't want it publicized,'" said Molly McCabe, CEO of HaydenTanner, an investor advisory firm that focuses on social impact and sustainability in the built environment. "So you have this tension between, 'We want to keep our people safe,' and 'It's also an economic risk.'"

In 2022, the state of Oregon created a statewide wildfire risk map, distributing it to 150,000 residents who lived in areas facing high or extreme risk. Controversy arose quickly:

As more areas are affected by increasingly destructive wildfires, the threat of erosion and flooding in these landscapes will also increase—and should be factored into planning and land use decisions.

homeowners suspected that the map might affect property values and insurance rates, and some worried that it could lead to new building codes or mandates for home hardening—a retrofitting approach that involves steps ranging from replacing windows to trimming nearby trees and shrubs. The Oregon Department of Forestry withdrew the map for further development, but the response was a clear reflection of the challenges related to getting out ahead of risk.

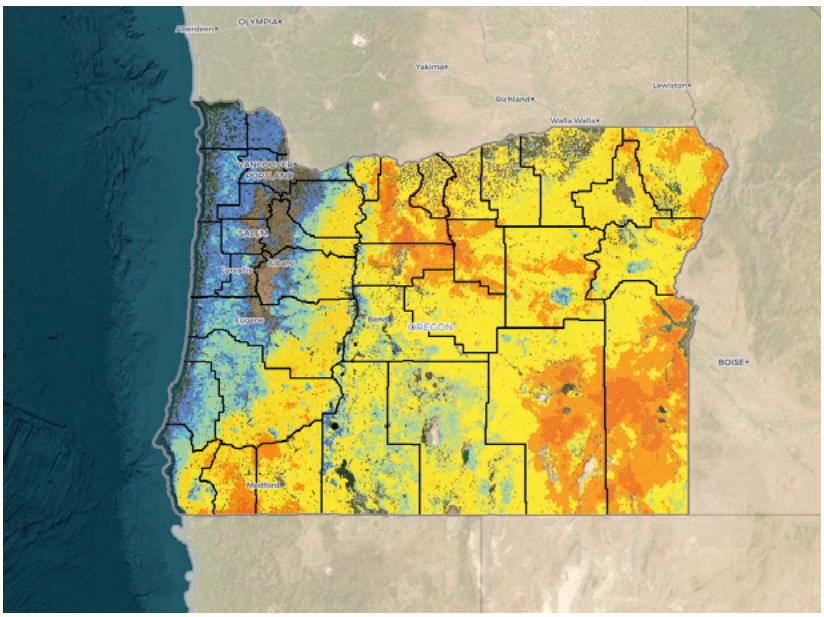
This problem grows even muddier when it comes to planning for erosion and flooding events after wildfires—how can you meaningfully quantify the potential impacts of a disaster that is the result of another disaster, which is also relatively difficult to predict? And how can you garner the essential buy-in of residents who could be financially affected by a better understanding of the risk in certain areas?

Despite these challenges, some communities are making progress, Barrett said: "I can tell you that there are communities that recognize their level of risk, and are addressing it in aggressive ways that go beyond what we're seeing from federal mandates or state regulations."

SCENARIO PLANNING FOR WILDFIRE RESILIENCE

Scenario planning can help communities plan for an uncertain future. The practice guides planners, community members, and other stakeholders through considerations of various futures and how to effectively respond to and plan for them. In the case of wildfires, communities can consider the impacts of a changing climate on factors including public health, housing, equity, the economy, water availability, and quality of life. How could more frequent and intense drought affect wildfire suppression efforts? How can coordinated regional climate policies reduce wildfire risk and improve quality of life? By asking questions like this and exploring multiple possible outcomes, communities can better prepare for the challenges ahead.

To learn more about this planning practice or to get assistance running a scenario planning process, visit the Lincoln Institute's Consortium for Scenario Planning site at **scenarioplanning.io**.



Risk mapping can help communities and property owners better prepare for wildfire. Oregon's Wildfire Risk Explorer tool allows users to filter results based on factors ranging from average flame length to susceptibility. Credit: Oregon Department of Forestry, Oregon State University.

- **Very High** (1-in-50 to 1-in-25)
- **High - Very High** (1-in-100 to 1-in-50)
- **High** (1-in-500 to 1-in-100)
- **Moderate - High** (1-in-1,000 to 1-in-500)
- **Moderate** (1-in-5,000 to 1-in-1,000)
- **Low - Moderate** (1-in-10,000 to 1-in-5,000)
- **Low** (<= 1-in-10,000)
- **Nonburnable/Urban/Barren/Ag/Water**

Communities Taking Action

Barrett said some communities in California have implemented mandates beyond existing state requirements for ignition resistance standards. Portola Valley, for example, adopted a home-hardening ordinance to supplement the state building code, which requires ignition-resistant building materials for new developments in high-risk areas. In 2020, residents in Marin County approved a measure that applies a property tax of 10 cents per square foot to support wildfire prevention efforts. The measure, which includes exemptions for low-income senior citizens, is expected to generate nearly $20 million per year over a 10-year period.

Both Barrett and McCabe mentioned that bond proposals have been a successful—though not yet widely utilized—means for motivated communities to set aside funding for wildfire and post-fire resilience. One particularly notable example is the Flagstaff Watershed Protection Project (FWPP), initiated after the Schultz Fire burned 15,000 acres in the mountains north of the city in 2010. The fire itself had little impact on homes and private property in Flagstaff, but a month later heavy rains triggered debris flows and floods that swept into the valley, causing the death of a young girl and the loss of 85 homes. Two years later, residents approved a $10 million bond that would help protect the watershed and adjacent homes and properties against similar impacts.

FWPP is a partnership between the state, city, and Coconino National Forest intended to help reduce the risk of both wildfire and post-fire flooding. "This has become one of the best examples I've seen out there of a partnership that has really resulted from a pretty devastating event that was post-fire related," Barrett said. "It's just a really good example of what can happen when the right players are there, and of communities and local partners recognizing a risk and acting on it." Last year, voters in Flagstaff showed sustained support for continuing the city's wildfire suppression and stormwater management efforts, with 76 percent approving a proposal to issue $57 million in bonds to invest in water- and fire-related infrastructure.

Flagstaff residents contend with flooding a month after the Schultz Fire in 2010. Voters have since funded collaborative watershed protection efforts by the city, state, and U.S. Forest Service. Credit: Josh Biggs/*Arizona Daily Sun* via AP.

In 2019, workers installed steel mesh netting in San Ysidro Canyon above Montecito, California, to reduce the impact of post-wildfire debris flows. Two years earlier, mudslides had killed 23 residents of the community and destroyed 130 homes. Credit: Christy Gutzeit.

McCabe mentioned Montecito, California, as another notable example of community resilience arising from tragedy. The 2017 Thomas Fire destabilized slopes above Montecito. When these slopes were subjected to a deluge of rain just a few weeks later, 23 people lost their lives and 130 homes were destroyed. Since then, Santa Barbara County officials have developed debris flow risk maps for the area, while a community-led nonprofit called the Project for Resilient Communities facilitated the installation of steel mesh netting to catch debris in drainages above the community.

In Montecito and other communities, McCabe says, "people are voluntarily using grants and other monies to build their homes up on 10-foot elevated pads, so that if they're in a path, the mud flows around them. But I haven't seen any policies that are requiring that for new construction, much less existing construction."

Still, local or regional policy can support such individual actions. Grants or insurance incentives can be offered to homeowners who create defensible space around their home, or to those who retrofit their homes with ignition-resistant materials. Programs like FireWise USA, an initiative of the National Fire Protection Association, can help neighborhoods organize collective fire mitigation projects and hold residents accountable for maintaining properties over time.

Getting buy-in at the local level also hinges on communicating strategically. In Central Washington's Chelan County, public information campaigns around wildfire risk reduction included translators who could engage Spanish-speaking communities. Engaging with non-English speaking and migrant communities, in addition to other communities that are at disproportionate risk of wildfire and post-fire flooding, is an important component of public information campaigns throughout the process—from preparing for wildfire to navigating the recovery stage.

To help residents and officials prepare for future flood events, Santa Barbara County officials have developed debris flow risk maps. Credit: Santa Barbara County Office of Emergency Management.

A Watershed Moment

In 2012, a major wildfire burned 87,000 acres near Fort Collins, Colorado. In the months following the fire, ash and mud choked the Poudre River, which provides drinking water for 135,000 downstream residents. Sediment clogged the pipes of the local water treatment plant, requiring extra clean-up and treatment and leading the city to install sensors that monitor sediment in the river. "We had been privileged and in some ways probably took for granted that these watersheds were providing us consistently clean, clear water, all the time," the city's water quality manager, Jill Oropeza, told a local radio station (Runyon 2020). "That was the first time, for many of us working there, that we had to grapple with the fact that our watersheds are under pressure."

Many communities in the West take great pride in the places where their water comes from. Protecting watersheds from high-severity wildfire—and, thus, debris flows—is an easy sell to the communities that rely on the resources these ecosystems provide.

According to the U.S. Forest Service, the forested watersheds of the United States provide drinking water for 180 million people. Ninety-nine percent of people who rely on public water systems in the United States get at least some of that water from forested ecosystems (USFS 2022). Research suggests that post-wildfire flooding contaminated the drinking water of hundreds of thousands of people in the West between 2017 and 2020 (Romero 2022).

In Mora County, "people sent me photos of turning their water on and having sludge come out," said Serna, the county commissioner. Many wells were destroyed, with some residents only getting their water back online in October and November. The city of Las Vegas, in nearby San Miguel County, almost ran out of water for its 13,000 residents after debris from the fire found its way into the local reservoir. With only 20 days' worth of clean water remaining, the city used emergency state funding to convert a local lake into a short-term back-up water source. Longer-term relief came in the form of $140 million from the omnibus bill that will allow Las Vegas to invest in water treatment and filtration upgrades.

Maria Gilvarry, utilities director for Las Vegas, New Mexico, on a tour of the Gallinas watershed in 2022. Gilvarry said the flooding caused by the Hermits Peak–Calf Canyon fire was "beyond anything we could have fathomed." Credit: Nadav Soroker/Searchlight New Mexico.

In response to situations like these, organizations including the Coalition for the Poudre River Watershed in Fort Collins and the Greater Santa Fe Fireshed Coalition, which focuses on a high-risk area just south of the Hermits Peak–Calf Canyon fire area, are bringing stakeholders together to better understand the risks wildfire poses to water supply and water quality. Many communities in the West take great pride in the places where their water comes from. Protecting watersheds from high-severity wildfire—and, thus, debris flows—is an easy sell to the communities that rely on the resources these ecosystems provide, and building resilience in watersheds inherently builds resilience for downstream communities.

Whether focused on making a watershed more resilient, guiding development to less vulnerable areas, or envisioning and preparing for multiple possible futures, communities can take

many steps to build resilience to wildfire and post-fire flooding. The profound influence of past and present land management decisions on wildfire and flood outcomes makes it increasingly clear that we can better prepare for events that are exacerbated by human actions—and, in some cases, inaction. Adequately planning for wildfires and subsequent debris flows or flooding in the West requires significantly more funding, resources, and creative policy solutions than are currently available, but taking action and making investments on the front end can lead to stronger communities that are better prepared to face future disasters.

Amanda Monthei is a freelance writer, podcast producer, and former wildland firefighter whose work on wildfire adaptation and resilience has been featured in *The Atlantic* and *The Washington Post*, as well as on her podcast *Life with Fire*. She lives in Bellingham, Washington.

The Coalition for the Poudre River Watershed in Fort Collins, Colorado, works to protect the area's ecological health through community collaboration. Credit: Coalition for the Poudre River Watershed.

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Land Value Capture in the United States

By Gerald Korngold

September 2022 / PDF (free), 64 pages
ISBN 978-1-55844-443-0
Paperback ($20), 64 pages
ISBN 978-1-55844-442-3

www.lincolninst.edu/publications/value-capture-united-states-report

AS CITIES AND TOWNS seek funding for transportation, parks, affordable housing, and other public goods, they often overlook one of their most valuable assets—land. A recently published Policy Focus Report from the Lincoln Institute shows how communities can recover and reinvest land value increases that result from public actions. In *Land Value Capture in the United States: Funding Infrastructure and Local Government Services*, Gerald Korngold explains how the major land value capture tools work, and recommends a path forward for leaders who want to implement them.

Korngold provides an in-depth analysis of seven land value capture tools: exactions, impact fees, linkage fees, special assessments, mandatory inclusionary housing, incentive zoning, and transferable development rights. He uses case studies to explain how land value capture, which has been used in various forms around the country for 150 years, can contribute to public policy goals such as equity and sustainability.

For example, in the Northern Virginia suburbs of Washington, DC, commercial property owners agreed to tax themselves more than $700 million to fund a 23-mile extension of the Metrorail system to Dulles International Airport, roughly an eighth of the total cost of the project. The first section of the new line opened in 2014, and the rest opened in late 2022.

In downtown Chicago, the city grants developers permission to construct larger buildings in exchange for voluntary fees, which are calculated based on the size of each project. The city directs 80 percent of that revenue to commercial development in underserved neighborhoods, 10 percent to public improvements near each downtown project, and 10 percent to the restoration of landmarks.

Such policies are possible because transportation infrastructure and zoning for greater density have both been shown to increase the value of land, either by providing access to jobs and amenities, or increasing the profitability of a development, as Korngold documents in the report. "Without land value capture, this increased land value remains exclusively in private hands despite the public actions that created it," Korngold writes. The report is intended for state and local policy makers, urban planners, economic development officials, civic leaders, lawyers, advocates, and other stakeholders.

"Gerald Korngold has produced an analysis of land value capture that will be highly valuable to every municipality. . . . This narrative will prompt policy makers and stakeholders to think anew about how to harness real estate development to deliver important social goods."

— Brian Golden, former director, Boston Planning & Development Agency

Gerald Korngold is a professor of law at New York Law School and serves as a distinguished scholar at the Lincoln Institute of Land Policy. An elected member of the American Law Institute and the American College of Real Estate Lawyers, he has lectured nationally and internationally on land ownership and transactions, land use, and property law.

The **Babbitt Center for Land and Water Policy** works with partners in the U.S. West and other regions to advance water sustainability and resilience. Through research, training, fellowships, and other programs and initiatives, the Babbitt Center promotes and supports the critical integration of land and water policy.

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