Land Lines

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FALL/WINTER 2024

A Clean Energy Boom in Legacy Cities

Could Planners Learn to Love AI?

What Density Really Looks Like

Land Lines

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LINCOLN INSTITUTE
OF LAND POLICY

Contents

FEATURES

Wind turbine, Rupert, West Virginia. Credit: Cavan Images via Getty.

Bridging Theory and Plastics

"I just want to say one word to you.
Just one word."
"Yes, sir."
"Are you listening?"
"Yes, I am."
"Plastics."
"Exactly how do you mean?"
"There's a great future in plastics.
Think about it. Will you think about it?"

WITH APOLOGIES to my millennial friends, I can't help but date myself with this iconic example of unsolicited advice given by Mr. McGuire to Benjamin in *The Graduate*. It captures the thing that bugs me the most about policy think tanks—their habit of providing wholesale unsolicited advice. Think tanks often conjure questions they presume to be relevant, analyze them, and then dispense policy recommendations to unknown audiences.

There's nothing less appealing than unsolicited advice—and unsolicited *policy* advice, even when well-intentioned, undermines the recipient's problem-solving journey and often results in frustration. The advice typically focuses on the desired outcome, not the process one must undertake to get there. Even worse, the adviser bears no responsibility for the outcome. Offering solutions without investment, the adviser risks nothing while the recipient grapples with the potential consequences of acting on the counsel. How exactly was Benjamin supposed to manifest the potential of plastics?

We've been known to do this at the Lincoln Institute. Take the example of land value capture: For decades, we've advised local governments to use this land-based financing tool to mobilize revenue that can help pay for urban infrastructure. We've suggested to municipal funders that they should underwrite loans against future revenue captured from land value increments. We've written papers to introduce governments and funders to the concept, described multiple land value capture tools they can use, and produced case studies of best practices in places like São Paulo. But we haven't often dug in with practitioners to help them decide which land value capture tools are best for their circumstances and learn with them as they adopt and deploy them. That is about to change.

Before I explain how, let me suggest that another useless kind of advice is the "best practice." Advocating "best practices" to solve complex social, economic, or environmental problems ignores the context surrounding the challenge at hand, does not account for the resources or capacities of people and organizations trying to adapt someone else's successful approach, and often leads to frustration and inefficiency when the prescribed solution doesn't align with reality. Best practice thinking stifles innovation and creativity, discourages exploration and experimentation, and often overlooks more appropriate and effective solutions. And who knows if the practice is "best" anyway?

The world is dynamic, and context matters. Relying solely on established norms promotes passive acceptance rather than fostering an environment where individuals question assumptions and actively engage in solving

problems. Rather than blindly adhering to "best practices," a better strategy for tackling complex problems lies in understanding context and adopting a principles-based approach. This champions adaptability and encourages customized solutions to address the unique nuances of each challenge. It compels individuals to weigh various options and make informed decisions grounded in evidence and logic.

So how does this relate to the work of the Lincoln Institute? This fall, with our partner Claremont Lincoln University (CLU), we launched the Lincoln Vibrant Communities program. This new undertaking embodies our best thinking about how to traverse the gap between theory and practice. It prioritizes leadership, action, collaboration, and tangible results. It is a bold and innovative initiative that seeks to transform the way we work, learn, and act together to solve the vexing challenges that cities of all sizes face.

Many communities, particularly those facing economic hardship, lack the capacity (financial and human resources) to implement ambitious development plans. Bureaucratic red tape, outdated regulations, and deeply ingrained power structures impede progress and stifle innovation. Frequently, a lack of trust between residents and local leaders, coupled with limited opportunities for meaningful participation, undermines the effectiveness of development initiatives. More often than not, pressure to produce immediate results leads practitioners to focus on quick fixes rather than long-term, sustainable solutions.

Over the coming decades, we will train a new generation of leaders and equip them with the skills, tools, and resources to transform their cities. We will help these leaders engage cross-sector teams in their communities that can work with residents to take ownership of their futures by solving complex problems collectively. Lincoln Vibrant Communities will furnish the training, tools, resources, and support needed to turn ideas into reality. And we intend to deliver at scale.

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Our new initiative draws inspiration from the best leadership development and challenge-based training programs we've seen, including the Center for Community Investment's Fulcrum Fellow and Community Catalyst programs and NeighborWorks America's Achieving Excellence program. It draws on the superpowers of both CLU and the Lincoln Institute—adapting CLU's leadership training curriculum and relying on the institute's deep well of research, policy tools, and expertise.

Participants in the inaugural Lincoln Vibrant Communities cohort gathered this summer to meet and make plans. Credit: Claremont Lincoln University. Facing page: Still from *The Graduate*/StudioCanal via Flickr.

Lincoln Vibrant Communities begins by identifying and training emerging leaders from diverse backgrounds and sectors. These individuals will complete an intensive six-month leadership development program focused on understanding the complexities of urban challenges, building collaborative leadership skills, developing strategic planning and implementation capabilities, and learning how to leverage community assets and resources. After completing their training, these leaders will return to their respective cities and recruit diverse teams of people representing the public, private, and civic sectors. This cross-sector collaboration is vital for addressing complex challenges that demand multifaceted solutions.

Each team will identify a major challenge their city faces. This could encompass a range of issues, from economic revitalization and affordable housing to environmental sustainability and public safety. The teams will then return for comprehensive team-based training over an additional six months that will equip them with tools and policies developed by the Lincoln Institute; this training will provide a framework for addressing their challenges and building sustainable solutions. With the guidance of experienced coaches, the teams will develop detailed action plans. The teams will then return to their communities and embark on the journey of implementing their plans. Throughout this 18-month process, the teams will receive ongoing support and, most important, coaching from the program to ensure they stay on track and overcome any obstacles they may encounter.

Vibrant Communities participants create a map of their communities and the challenges they face. Credit: Claremont Lincoln University.

Lincoln Vibrant Communities has the potential to be a game-changer in the field of community and economic development. By traversing the space between theory and practice and empowering local leaders to act, the program is designed to produce concrete improvements in participating cities. By tackling major challenges head on, the teams will make a real difference in the lives of local residents. Additionally, the program will build the capacity of local leaders and communities to design solutions for complex challenges that can be deployed again and again. The skills and knowledge gained through Lincoln Vibrant Communities will have a lasting impact, enabling communities to continue making progress long after the program concludes.

This program will culminate in a growing, curated network of dedicated community problem-solvers. Our approach cultivates innovation by prioritizing comprehension and adaptation over rote implementation. It nurtures a spirit of continuous learning, prompting individuals to reflect on their experiences and refine their problem-solving strategies. Lincoln Vibrant Communities is not just about solving problems; it is about building a movement of empowered leaders who are committed to creating vibrant, sustainable, and equitable cities. By bridging the gap between theory and practice, we can unleash the full potential of our communities and create a brighter future for all.

Can AI Improve City Planning?

Credit: Phonlamai Photo via iStock/Getty Images Plus.

IN THE SPIRITED CULTURAL DEBATE over the risks and possibilities of artificial intelligence, the imagined pros and cons have tended toward the sensational. Little mainstream attention has been paid to the technology's potential impact on the everyday tasks that keep our cities humming, things like construction permit reviews, development application processes, and planning code compliance enforcement. But the needs in those areas are quite real—and it turns out experiments to apply newer AI breakthroughs to these kinds of operations are already well underway. Municipalities large and small, from Florida to New England, and Canada to Australia, have announced AI-related pilots and other exploratory efforts.

While the approaches vary, the challenges are practically universal. Determining whether proposed construction or development projects meet all land and building codes is a detail-intensive, often slow process: it can be confusing for applicants, and require extensive back-end work for municipalities and other authorities.

The hope is that AI can help make that process—or "the tedious parts of city planning," as the publication *Government Technology* bluntly put it—speedier and more efficient, as well as more accurate and comprehensible. Ideally, it would even allow planning departments to streamline and reallocate resources.

But as city officials who are actually working with the new technology make clear, there's a long way to go to get to that point. And given that some of AI's most publicized moments to date have involved embarrassing failures (such as Google's AI search tool advising users on the benefits of eating rocks and adding glue to pizza), most are proceeding with caution.

Municipalities large and small, from Florida to New England, and Canada to Australia, have announced AI-related pilots focused on the everyday tasks that keep our cities humming.

There's often a "hype cycle" between a new technology's early promise and its eventual reality, cautions Andreas Boehm, the intelligent cities manager for Kelowna, British Columbia, a city of about 145,000; Boehm's team is charged with seeking new opportunities to leverage tech innovations for the city and its residents. Despite a lot of chatter, we still haven't seen much in the way of "concrete, tangible examples" of AI as a "transformative" force in planning systems, Boehm says. But we may be starting to see real results soon.

Canada is experiencing a housing shortage, Boehm notes, and moving faster on new construction could help. The permitting pipeline is further clogged with inquiries from current property owners about zoning and code issues for more routine projects. For a few years, Kelowna has been using a chatbot to answer common questions, Boehm says. That has helped free up a little time, but the more recent generative version of AI can handle a much broader range of inquiries, phrased in natural language, with precise and specific responses. So Kelowna began working with Microsoft to build a new and much more sophisticated version of the tool incorporating Microsoft's Copilot AI functionality, which the city now uses as an aid for permit applicants.

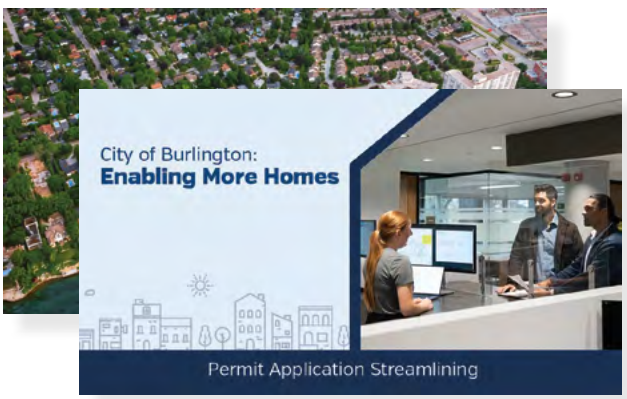
"This is about speeding up these really mundane processes, and then allowing these very highly educated and specialized experts to focus on the things they really need to focus on."

Boehm says the Intelligent Cities team and its consultants worked with a range of residents (including those with no permitting knowledge) as well as experienced builders to develop the tool; it can give high-level responses or point to specific code provisions. It has notably streamlined, and sped up, the application process. "It frees up our staff time" because fewer questions need to be addressed by staff early in the process, Boehm says. "So now they can focus on processing applications that are coming in. And often these applications are much better quality because people are using these AI tools as they're putting these applications together, and getting all the information they need."

Elsewhere in Canada, the city of Burlington, Ontario, near Toronto, has been developing generative AI tools in collaboration with Australian property and tech firm Archistar. Chad MacDonald, Burlington's chief information officer (and previously executive director of digital services), says Burlington, population 200,000, also faces a housing crunch. With little space available for single-family housing construction, its focus is on improving the process of handling larger projects, including industrial and commercial proposals, with an eye toward creating a single platform that would work for all kinds of projects. The system the city is developing aims to integrate not only local zoning and bylaws, but also the Ontario Building Code, which affects all structures in the province.

Testing this system involves checking whether it correctly assesses previously submitted plans whose outcome is known. This process also trains the AI. "Every time we correct an inaccuracy in the algorithm, it actually makes it smarter," MacDonald explains. "So the next time it gets more and more accurate."

City leaders in Burlington, Ontario, launched an AI pilot project intended to help streamline permitting processes and address a local housing crunch. Credits: City of Burlington (top), simonkr via E+/Getty (bottom).



And if the proposed solution to one permit problem could create two more problems in the application, the system is designed to point that out immediately, avoiding a lengthy resubmission process. An "extremely successful" round of testing was completed in May, MacDonald says, and he expects the city's use of the technology to expand.

MacDonald envisions the technology advancing to the point of actually creating code-compliant designs. Won't that put engineers and architects out of business? He counters that, actually, it's vital to keep humans in the loop. "This is about speeding up these really mundane processes," he says, "and then allowing these very highly educated and specialized experts to focus on the things they really need to focus on."

In Honolulu, expanding the use of AI tools is part of a more sweeping plan to use technology to address a significant permitting backlog—in 2021, the city's mayor declared the process "broken" and committed to an overhaul. In 2022, a permit prescreen process involved "an intolerable six-month wait" to reach a reviewer, says Dawn Takeuchi Apuna, director of Honolulu's Department of Planning and Permitting. The city added an AI bot that was able to review some of the prescreen checklist items in a newly streamlined process, and helped cut that wait to two or three days. That success helped lead to a more expansive generative AI pilot with Chicago-based startup CivCheck, a relationship Takeuchi Apuna expects to continue.

"We have learned that there are enormous possibilities of AI in our business processes," she says, "and that the most important piece is the people who are using it." She emphasizes that this is just part of an overhaul that also includes better staff training and improved communication with applicants. "It's a value that you must bring and continue to enforce as part of AI in order to get the best results."

While these early results are promising, plenty of AI challenges and wild cards remain. Some of the startups promising powerful generative AI tools are untested. And as

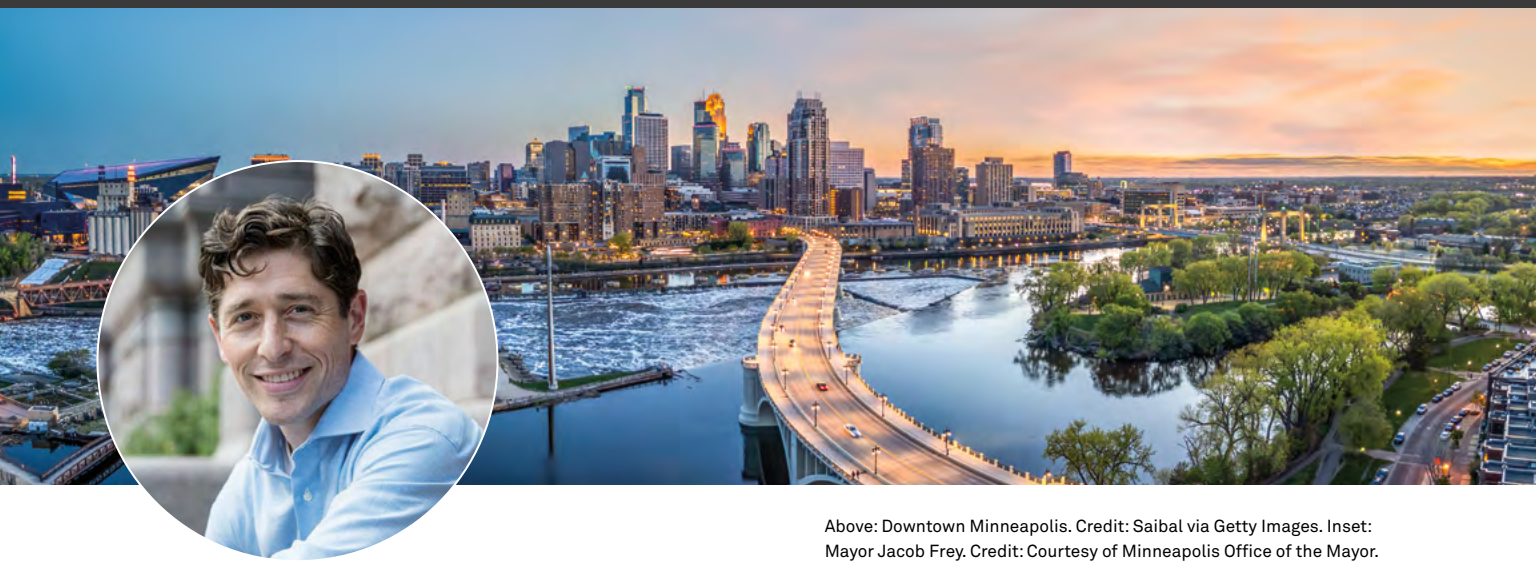
Construction in Honolulu, Hawaii. The city used an AI bot to reduce permit prescreening wait times from six months to a few days. Credit: Ryan Tishken via iStock/Getty Images Plus.

MacDonald points out, the technology isn't cheap. There's also a need to set standards around data collection and privacy. (Kelowna, for example, is working with the nonprofit Montreal AI Ethics Institute on policy and guidance issues.) And of course there are broader public concerns about giving too much control to an automated tool, however seemingly intelligent and teachable that tool may be. "It's not going to replace people," Boehm says. "We're never going to just issue you a building permit from an AI bot."

"It's not going to replace people. We're never going to just issue you a building permit from an AI bot."

In fact, he continues, that concern could be considered an opportunity, if cities use AI thoughtfully and transparently. Although government is often opaque and thus treated with skepticism by many, AI "is a great opportunity to demystify government," Boehm says. "It [can increase the] understanding that this is really about people in the end and supporting them." In other words, in the best-case scenario, AI might improve a knotty but vital bureaucratic process, by giving it a more human touch.

Rob Walker is a journalist covering design, technology, and other subjects. He is the author of *City Tech: 20 Apps, Ideas, and Innovators Changing the Urban Landscape*. His newsletter is at robwalker.substack.com.



Above: Downtown Minneapolis. Credit: Saibal via Getty Images. Inset: Mayor Jacob Frey. Credit: Courtesy of Minneapolis Office of the Mayor.

Jacob Frey is an unabashed transplant. While attending law school at Villanova, the Virginia native came to Minneapolis to run the Twin Cities Marathon and, as he tells it, fell in love with the city. The day after graduating, he drove the 1,200 miles west to Minneapolis, his chosen home.

He started as an employment and civil rights attorney, became a community organizer, served on the city council, and was elected mayor in 2017, overseeing the passage of a pioneering single-family-only zoning ban in 2019, then facing COVID and the police murder of George Floyd in 2020. He was reelected in 2021 and has continued to address the connections among racial equity, affordability, and zoning.

Senior Fellow Anthony Flint interviewed Frey while visiting Minneapolis for the 2024 American Planning Association conference. Frey later joined Flint, Cincinnati Mayor Aftab Pureval, and Scranton Mayor Paige Cognetti for a standing-room-only panel discussion about leading legacy cities.

A Push for Rezoning and Revitalization

This interview, which has been edited for length, can be heard in full on the **Land Matters** *podcast: https://www.lincolninst.edu/multimedia/podcasts/land-matters/jacob-frey-minneapolis.*

ANTHONY FLINT: *Minneapolis has been a pioneer in zoning reform and banning single-family-only zoning. How is it going? Can you talk a little bit about whether increasing supply is a good path to affordability?*

JACOB FREY: There are two critical paths you need to take simultaneously to achieve affordability. The first is subsidy. It's bridging the gap between the market rate and the affordable rate, it's making sure that people who are experiencing homelessness have that next rung on the ladder to pull themselves out. That side of the equation can't be achieved simply through supply; it requires some government intervention. And you need supply in order to have a healthy housing ecosystem . . . and so, about 10 years ago when I first took office as a city council member, I said very clearly that we were going to go to war on surface parking lots. We were going to dramatically add supply and density, and we did. We coupled that with a comprehensive plan which, as you mentioned, got rid of single-family

exclusive zoning, allowing duplexes and triplexes in residential neighborhoods, and then also adding density and height along commercial corridors. All those things have allowed Minneapolis to keep rents down more than just about any other major city in the country. Other cities were seeing double-digit increases, where we were keeping our rent increases to 1 percent and 2 percent. That's with a whole lot of new people moving in. We've dramatically increased supply and it's helped a whole lot.

For years, we were operating under these prescriptive zoning ordinances that explicitly said, we're going to keep the Blacks and the Jews in one portion of the city. When that became illegal to do explicitly, we then started to do the same stuff implicitly through the zoning code, making it so that unless you could own a huge home on a huge parcel, you couldn't live in huge swaths of the city. The tails of those decisions continue to the present. We wanted to push back on that. We're going for a diversity of housing options in every neighborhood, and therefore a diversity of people in every neighborhood. In the last three years, we've built over 1,000 housing units in multifamily buildings on parcels that previously would only allow a single-family home.

We've seen a whole lot of progress . . . and then we got sued. We're going to ultimately win, whether through legislation or through the litigation itself. Everybody should have that opportunity to live in a great city, and we want to create that opportunity for everyone.

New zoning regulations in Minneapolis allow the construction of mutifamily homes on parcels previously limited to single-family properties. Credit: Federal Reserve Bank of Minneapolis.

"We're going for a diversity of housing options in every neighborhood, and therefore a diversity of people in every neighborhood. In the last three years, we've built over 1,000 housing units in multifamily buildings on parcels that previously would only allow a single-family home."

AF: *For people outside of Minneapolis, who did you get sued by, and what was the rationale?*

JF: We got sued by a group of people who said we were doing something that would harm the environment, and I adamantly disagree. One of the best ways to improve the environment, to reduce your individual carbon output, is by living in a great city. Rather than commuting 45 minutes into work from your own single-family home and picket fence out in the suburbs or exurbs, you can walk to the grocery store and take your bicycle to work. If you do take a car, it's fewer miles traveled. The suit is largely saying that we should have conducted an environmental review on this comprehensive plan and the total potential buildout. Let's be real: we can't assume that every single building downtown is going to be 100 stories tall and every single-family home is going to be a triplex, because that is never going to happen. The way they were asking us to calculate this buildout is not operating in reality.

AF: *Turning now to transit and mobility, how are you achieving your vision for sustainable mobility in a historically car-dependent metropolis?*

JF: Our city was built out at a time when people were largely dependent on cars. To the extent that it was built out prior to that time period, the streets and the grids were shifted to make them car-centric. Of course, we recognize that cars are a way people get around, but we want to add options so people can safely and comfortably take their bike to work, we want to make it so

that pedestrians feel comfortable and in fact are prioritized, we want to add public transportation, not just as an option that's available occasionally, but as a convenient one for getting from point A to point B.

We are adding bus rapid transit (BRT) wherever we can. We've seen a dramatic uptick in the number of BRT lines, and over the last 15 years, Minneapolis has grown by about 50,000 people, yet the total vehicle miles traveled and gas emissions have gone down.

We recognize that people are going to take cars and we're going to try to make those cars as sustainable as possible through electric vehicle charging stations. Right now we're adding bus-specific transit lanes as well so that you can take the bus and whip by traffic that you would otherwise be sitting in.

AF: *What is your assessment of land-based financing to fund transit, redevelopment, affordable housing, and parks? The idea is that government action and investments create value in private land and development. Isn't it possible to harness some portion of that increase in value and plow it back into the community? Are you a value capture fan?*

Midcentury urban planners approved the construction of a Kmart blocking Nicollet Avenue, one of the main thoroughfares in Minneapolis. The city is redeveloping the area and reopening the street. Credit: City of Minneapolis.

JF: I think it's not smart to be pro–value capture, pro-TIF or anti–value capture, anti-TIF. It is a very important tool and needs to be balanced. There is a way to enhance a city by using tools such as value capture and TIF to achieve wonderful structures and building and transportation options that would not happen but for government intervention. We've been using it in a number of different ways, including one of the most popular policy moves we've done in the last few years, which is to knock down this old Kmart. To take you back 40 or 50 years, there was a policy decision made to block off Nicollet Avenue and put a big Kmart in a huge parking lot in the middle of it.

It would be somewhat unfair of me to question decisions that were made at that time, because I'm sure 40 years from now, decisions I have made will turn out to be not so smart, but this is one of the worst, in my opinion, urban planning decisions made in our city. We found ways to get land control over that former Kmart. We are knocking the building down. We're opening up the street and breathing new life into this important artery and making sure everything is there, from a park to affordable housing to commercial to market rate. It allows the flow of entrepreneurship and new business growth on that corridor to expand south and north. A big part of what we're using to achieve this large-scale goal is value capture.

It is a tool that should be used, but it's also a tool that shouldn't be used every single time there's a new building that goes up or a new opportunity to be had. It's got to be a balance.

AF: *A task force is looking at changes to the Metropolitan Council, but in what ways is this pioneering arrangement working? Can or should it be replicable, this idea of regional governance?*

JF: You can't think about any city as living in a vacuum. Mayor Carter [of St. Paul] and I joke that it's not like we just protect the water on our side of the Mississippi River; we share. Likewise, we share an economy

that doesn't end where the street ends and the boundary starts.

I've got a responsibility to the city of Minneapolis, and it helps to have a governing body that has a regional focus. We've got a Metropolitan Council appointed largely by the governor that helps us put up light rail that goes through a number of different municipalities. It helps us design bus rapid transit, helps pay for Metropolitan Transit police. To have that regional focus is not just important, it's crucial to furthering a regional mindset and goal.

AF: *What's your view on skyways? Current urban planning practices suggest a focus on the street and activity at the street level. Is there a conflict there? Tell us a little bit about the urban design part of your job.*

JF: If you've got 100,000, 200,000 people coming downtown, and you've got two levels of activity, you're splitting whatever number it is between those two levels. Do I like the splitting of activity? Of course I don't. Nobody does. I'd rather have a concentration of all that bustle and excitement and vibrancy all on one level. But I use the skyways. During the months where it's cold, I go in and I grab a sandwich and I don't feel guilty about it. In fact, I'm really pumped to see the small local business owners that are operating in it.

Skyways have been hit particularly hard in the last few years because of a decrease in the number of workers who come downtown on an annual basis. I will not take any more criticism about the lack of vibrancy downtown or somebody's favorite sandwich shop closing, from the person that's sitting on their couch at home in the suburbs. If you care, then you should be supporting that sandwich shop.

If you want to see vibrance and want to see more foot traffic, your feet should be adding to that traffic. We are increasing the numbers pretty dramatically right now. People are definitely coming back, but it's not happening all in one big burst.

The skyways of Minneapolis extend 10 miles and connect 80 city blocks. Introduced in the 1960s, they were part of an effort to provide a safe, walkable environment that could compete with the increasingly popular suburbs—and protection from the city's notorious winter weather was an added bonus. Credit: Jim Parkin/Alamy Stock Photo.

"I will not take any more criticism about the lack of vibrancy downtown or somebody's favorite sandwich shop closing, from the person that's sitting on their couch at home in the suburbs. If you care, then you should be supporting that sandwich shop."

AF: *It's become a bit of a cliche, but there really is no substitute for being in the office.*

JF: It's the unplanned interactions that ultimately help. I'm largely in Minneapolis because of a coincidence. You meet somebody, you get a job, you get an interview, you find a great city that you fall in love with. These things only happen because you were there to have it happen to you.

Anthony Flint is a senior fellow at the Lincoln Institute of Land Policy, host of the *Land Matters* podcast, and a contributing editor of *Land Lines*. He is the author of *Mayor's Desk: 20 Conversations with Local Leaders Solving Global Problems*.

A Clean Energy Manufacturing Boom for Legacy Cities

REVERSAL OF FORTUNE

By Anthony Flint

IN THE Carondelet neighborhood of St. Louis, where once-busy shipyards gave way to vacancy and blight during the waning decades of the 20th century, a global specialty minerals company is building a $400 million factory to produce highly efficient batteries for energy storage.

Another new factory recently rose up amid the shuttered steel mills and closed coal mines of Weirton, West Virginia, built by a different manufacturer whose battery technology involves mixing iron particles and air.

And in Schenectady, New York—where the production of electric lights, appliances, and engines by Thomas Edison's General Electric company spurred an economic boom that began in the late 1800s and had faded away by the mid-1900s—the first of a class of super-tall, highly efficient onshore wind turbines recently rolled out from a pristine assembly line at a new GE plant.

"It's a win-win for the environment and the local workforce," beamed New York State Assemblymember Angelo Santabarbara in a TikTok video recorded outside the plant, which will ultimately employ 200 people including skilled union labor. The end result, he said, will be "a more affordable, reliable, sustainable, and secure energy future."

All of these projects and dozens more across the country are manifestations of a new federal, place-based industrial policy, fueled by more than $1 trillion in tax credits and grants under the Infrastructure Investment and Jobs Act, American Rescue Plan, CHIPS and Science Act, and most of all, what is essentially sweeping climate action legislation, the Inflation Reduction Act (Boushey 2024).

Facing the urgent need for manufacturing the components of the clean energy transition—electric vehicles, batteries and energy storage, equipment for charging stations, wind turbines, solar panels, and many other pieces of the transition from fossil fuels, like high-capacity carbon-fiber power lines to bolster the nation's overburdened power grid—the Biden administration has made several strategic decisions.

"It's a win-win for the environment and the local workforce. The end result will be a more affordable, reliable, sustainable, and secure energy future."

Facing page: The former Weirton Steel complex in Weirton, West Virginia (top); Form Factory 1, a battery manufacturing facility built by Form Energy on the Weirton Steel grounds (bottom). Credits: Bob Jagendorf via Flickr CC BY-NC 2.0 (top), Form Energy (bottom). This page: An employee at Form Energy. Credit: Form Energy.

First, the White House declared that the United States should not cede all this advanced industry to China, currently the world's leader in producing wind and solar equipment and inexpensive electric vehicles (Tucker et al. 2024). And if these items are to be made in America, administration officials say, it should happen in postindustrial legacy cities and distressed counties—the "places where opportunity has left," as White House climate czar Ali Zaidi said at a Columbia University conference last fall.

Since President Biden took office, companies have announced more than $250 billion in private investments, an unprecedented amount, to manufacture "the nuts and bolts of clean energy," said Ben Beachy, special assistant to the President for Climate Policy, Industrial Sector, and Community Investment. "The administration is committed to ensuring that hard-hit communities and workers reap the rewards of this boom, including deindustrialized communities," Beachy said.

Leaders in legacy cities, which have been struggling with manufacturing and population loss for decades, say they welcome the boost. Many perceive something poetic about the heavily polluting manufacturing processes of a century ago being replaced with industry that both functions sustainably and produces equipment that will help reduce fossil-fuel emissions. The pivot, as much cultural as having to do with economic development, is already leading some to rebrand the Midwest and Southeast as the "Battery Belt."

Leaders in legacy cities say they welcome the boost. Many perceive something poetic about the heavily polluting manufacturing of a century ago being replaced with industry that functions sustainably and will help reduce fossil-fuel emissions.

Form Energy's new manufacturing facility under construction in Weirton, West Virginia (pop. 18,480). The plant, which was completed and opened in 2024, will employ 750 people. Credit: Form Energy.

State and federal officials including US Energy Secretary Jennifer Granholm and US Senator Joe Manchin, both signing at center, mark the groundbreaking of Form Energy's Weirton, West Virginia, plant. Credit: Form Energy.

"Cities like ours were built on energy innovation, but it extracted a price," said Paige Cognetti, mayor of Scranton, Pennsylvania, a city known since the turn of the 20th century for its sooty coal and electricity industries. Cognetti cites Biden's roots in the working-class city as a factor in the initiative to help legacy cities engage in the clean energy transition: "I think he understands that it takes major investment to set up regions for economic success and climate resilience."

Many questions remain about implementation, however, including whether economically distressed regions can conjure the necessary ecosystem to support the new industry—first and foremost a trained workforce, but also other elements such as infrastructure, housing, and vibrant civic and higher education institutions to provide not only training but also research and development.

In addition, the massive amount of federal investment flowing from Washington will require a keen administrative capacity at the state and local level to discover the opportunities, manage transactions, and comply with rules and regulations.

Finally, land use issues are expected to complicate the effort. The amount of space needed by many of the private companies—for building electric vehicles, in particular—is such that the best sites are at the periphery of cities, requiring greenfield development, rather than in the urban core. Urban infill redevelopment is possible, but adaptive reuse and brownfield regeneration involve significantly higher costs.

The challenges are very real, but so is the opportunity (Chyung et al. 2022). While federal spending from the IRA could be disrupted with a change in administrations, repeal would require Congressional action. In the meantime, billions of dollars in federal funding have begun to flow from the first investments of that law. Local, regional, and state governments and their partners should be ready with thoughtful and actionable plans for implementation, said Peter Colohan, director of Federal Strategies at the Lincoln Institute of Land Policy.

"The money and incentives flowing out of the government at a rapid pace are making private investment irresistible—in clean energy, nature-based climate solutions, and advanced manufacturing," he said. Issues of land use and equity will surface regularly, he added, requiring state and local governments, philanthropies, and nonprofit organizations to help "create virtuous circles of community investment, and avoid unintended harms."

"Cities like ours were built on energy extraction, but it came at a price. . . . It takes major investment to set up regions for economic success and climate resilience."

Two Centuries of Subsidies

The history of subsidy in American manufacturing has some twists and turns, but ultimately government has supported industry in one form or another for over two centuries. From the first flour mills in the late 18th century to the advent of the automotive assembly line, manufacturing in the United States fulfilled a market need for goods and supplies that was driven largely by individual entrepreneurship, though generally welcomed with open arms by local officials happy to make sure land transactions, for example, went smoothly to establish factories and nearby worker housing.

During that early era of industrial growth, government also stepped in to provide the infrastructure to support commerce, from a national rail network to ports and canals. Factories were generally located well within city limits, their access to waterways and rail lines making it relatively easy to get the goods to market, both domestic and overseas. The physical imprint of this growth on America's cities was transformational, with blocks-long multistory structures built to employ 10,000 workers or more, and an adjacent density of housing and amenities.

World War II turned the nation's industrial might toward building tanks and planes for the military, and began a tradition of decentralized defense spending, with contractors establishing themselves in Congressional districts that made sure the pipeline of Pentagon funds kept flowing. The Interstate Highway Act of 1959 was another important source of federal investment for cities, powered by the argument that new freeway infrastructure was needed for the swift movement of goods.

As the economies of Japan and Europe came back online in the decades after the war, manufacturing in Rust Belt cities gradually petered out. From the 1950s through the 1970s, private companies increasingly took advantage of cheaper labor overseas, and technological automation in production and distribution thinned the payroll even more. Thus began the decline of once-prosperous cities across a swath from the Mississippi River to the Northeast, from St. Louis to Cleveland, Allentown to Hartford.

From the 1950s to the 1970s, companies increasingly took advantage of cheaper labor overseas, and technological automation thinned the payroll even more. Thus began the decline of once-prosperous cities from the Mississippi River to the Northeast.

The spate of factory closings through the 1970s was devastating, said Alan Mallach, coauthor of *Regenerating America's Legacy Cities*, a Policy Focus Report published by the Lincoln Institute (Mallach and Brachman 2013). "Start with the proposition that in the 1950s and early 1960s, as many as half of all the jobs in cities like Cleveland or Youngstown were in manufacturing, and then factor in that most of the retail and service jobs were supported by the wages factory workers were making, you have to figure that 70 to 80 percent of the local economies in these cities was based on their manufacturing sector. So 'doomed' may be a bit strong, but it comes close."

An early 1900s postcard shows the massive General Electric works in Schenectady, New York, a 645-acre campus with more than 30,000 employees. Credit: Chronicle/Alamy Stock Photo.

When Thomas Edison set up shop in Schenectady, New York, in 1886, the city was home to 13,000 people. By 1892, Edison's endeavor had become General Electric; the company contributed to a boom in the city's population, which peaked at 95,000 in 1930. Today the city has 67,000 residents. Credit: Jacob Boomsma via iStock/ Getty Images.

Add in the phenomenon of white flight, which saw white residents move en masse from downtown urban areas to suburbs, and what is remarkable is that legacy cities survived in any form at all, Mallach said. With both the physical urban environment and the social and economic fabric changing dramatically, he says, "a lot of credit goes to the thousands of working-class and middle-class Black families who moved into the neighborhoods being vacated by white families and stabilized them for the next few decades."

Over the last half-century, certain types of manufacturing continued to be propped up on an ad hoc basis by the US government, in the form of selective tariffs—imposed on foreign competitors to benefit American-made steel, for example—or outright bailouts, as enjoyed by the automotive industry after the Great Recession. Tech companies including Amazon, meanwhile, have frequently been given red-carpet treatment involving significant tax breaks and other incentives as local leaders compete to have businesses set up shop in their city or town.

Notably, it is the energy sector that has benefited from the longest and most robust history of subsidy, beginning with federal rewards for depleting oil wells in the 1920s and continuing with tax breaks and subsidies to this day—conservatively estimated to be $20 billion a year for producers of coal, natural gas, and crude oil (Brind'Amour 2024).

Now that fossil fuels are set to be replaced by renewables including wind, solar, and hydro, the White House is attempting to execute the equivalent of a three-cushion billiards shot: fight climate change by making the transition away from fossil fuels, make clean energy components and systems in America, and restore jobs in struggling places.

"We will not achieve our climate goals without mobilizing trillions of dollars in support of climate action. Properly guided, that wave of investments can flow into good union jobs," said Beachy, from the federal Climate Policy office. "Properly guided, it can flow into communities that have endured decades of divestment. Our climate strategy is a job strategy, it is an equity strategy. That's the basic logic."

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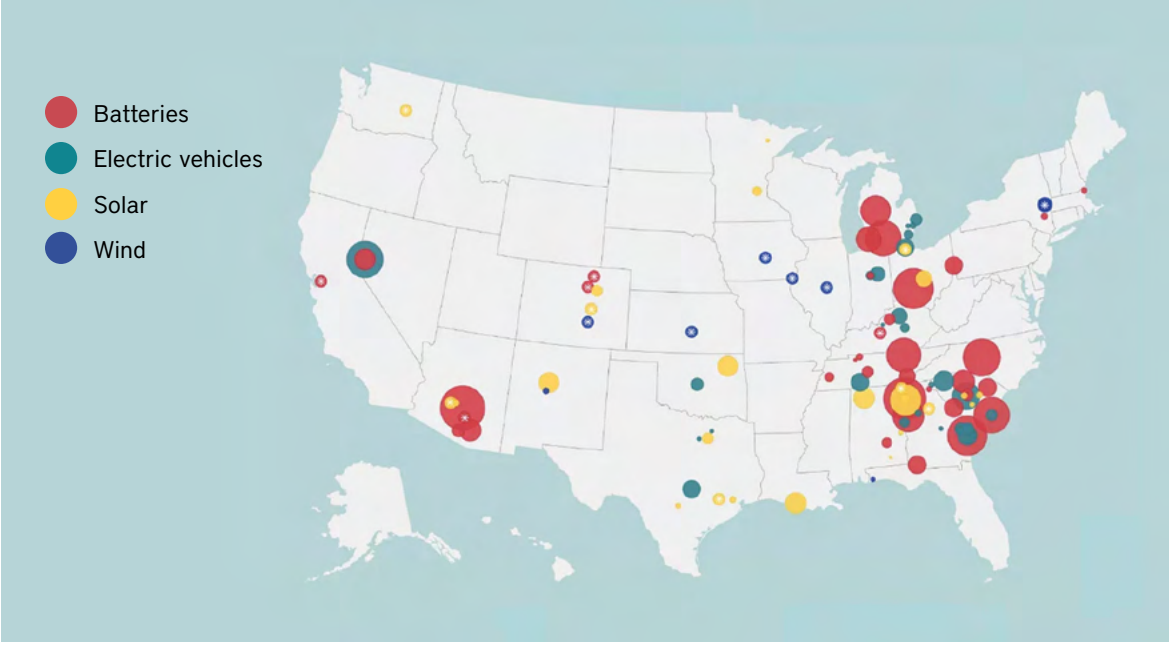

Clean energy factories planned or expansions unveiled in the first year after the passage of the federal Inflation Reduction Act in 2022. Credit: Canary Media. Source: Jack Conness, American Clean Power, Canary Media analysis of public announcements.

Off to a Strong Start

For an initiative that has been operating relatively under the radar, the place-based approach does appear to be off to a strong start. According to two federal government databases, at the Department of Energy and the White House's Investing in America inventory, an estimated 700 clean energy projects are already online or in the works, across sectors including:

- **Batteries and materials.** High-performance batteries are much in demand for increasingly popular EVs, including the Ford F150. Power storage is a huge need in the clean energy grid, to extend and preserve energy provided by renewables. Driven by innovation, battery factories and critical minerals facilities are popping up in Michigan (Our Next Energy), Georgia (Anovion Tech, SK Battery), North Carolina (Albemarle Corp.), and Mississippi, where a new truck battery joint venture will create more than 2,000 jobs—more than any single investment has ever brought to the state.
- **Electric vehicles.** Given the head start of heavily subsidized EV makers in China, as well as a competitive position by the pioneering company Tesla, expanded production in the United States has been halting. Administration officials say there is growing demand, aided by the $7,500 tax credit individuals can claim upon purchase; since the passage of the IRA in 2022, there were a record 1.46 million passenger clean vehicle sales, according to the Treasury Department. In addition to new EV plants, such as Rivian's in Illinois, billions are available for retooling existing automaking facilities and encouraging the manufacture and deployment of the all-important network of charging stations, which are poised become as ubiquitous as gas stations.
- **Wind.** Here again, China is the leading producer of wind turbines, with 60 percent of the world's production capacity. But American companies, like GE Vernova in Schenectady, are making strides in developing more efficient and effective towers, blades, and associated infrastructure to better connect to the grid.

Technological innovations are opening up new possibilities as well, such as less expensive bladeless turbines that capture prevailing winds or turn to harvest wind from different directions.

- **Solar.** The world's fastest-growing source of energy is another difficult challenge, as the cheapest solar panels continue to be made in China—and indeed, the seven major Chinese solar companies recently provided more power to the world than oil companies, according to Bloomberg. But a few standouts have been successful, especially poetic in places that used to produce coal or heavy manufacturing. In Farmington, New Mexico, a solar farm is being built near a decommissioned coal-fired power plant and mine. As with wind technology, solar is evolving rapidly; one company has developed sun-harvesting crystal spheres that would take up a fraction of the space now required for panels.

- **Other ancillary support.** Several programs under the IRA are providing general support for new industry by improving roads, bridges, airports, and drinking water systems, with notable upgrades in the works in Milwaukee, Buffalo, and Allentown. The White House is also intent on bolstering the supply chain of materials like aluminum, which is critical in solar panels, EVs, and power lines—and making sure that the production of those materials is less polluting. As an example, Century Aluminum is receiving funding from the Department of Energy for a $3.9 billion project to build a new, clean primary aluminum smelter in the Mississippi River Basin.

As with wind technology, solar is evolving rapidly; one company has developed sun-harvesting crystal spheres that would take up a fraction of the space now required for panels.

The new generation of clean energy technologies under development includes solar spheres (above) and bladeless rooftop wind energy units (right). Credit: WAVJA (above), Aeromine Technologies (right).

Municipal and state officials including West Virginia Governor Jim Justice (seated) join Form Energy representatives at the 2022 announcement of the company's decision to locate its factory in the state. Credit: Form Energy.

WHERE THE FUNDING IS COMING FROM

On paper, the Biden administration has made available more than $3.6 trillion in federal funding for infrastructure, manufacturing, and community resilience since 2021, including hundreds of billions to support the transition away from fossil fuels (Carey and Shepard 2022). At present, only a fraction of the multiyear spending commitment has been distributed.

- **Inflation Reduction Act (IRA):** The chief feature of this nearly $500 billion law signed by President Biden in 2022, in addition to inflation-curbing measures such as reducing the federal budget deficit and lowering prescription drug prices, is an unprecedented investment in clean energy to combat climate change. A multiyear spending plan based largely on tax credits, the IRA could have a total cost of $1 trillion, according to some estimates.

- **CHIPS and Science Act (CHIPS):** Also signed into law in 2022, the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act is intended to bring microchip manufacturing back to the United States after decades of semiconductors being made overseas, primarily in China. About $60 billion is being directed to strengthen American manufacturing, supply chains, and national security, and invest in research and development for high-tech industry including nanotechnology, clean energy, quantum computing, and artificial intelligence.

- **Infrastructure Investment and Jobs Act (IIJA, also known as the Bipartisan Infrastructure Law):** This law authorizes $1.2 trillion in spending that includes about $550 billion in funding for America's roads and bridges, water infrastructure, internet, and more. The White House describes the legislation, signed into law in 2021, as a boost to US competitiveness that will create jobs and "make our economy more sustainable, resilient, and just."

- **American Rescue Plan Act (ARPA):** This $1.9 trillion national stimulus package, passed by Congress and signed by President Biden, included $30.5 billion in federal funding to support the nation's public transportation systems and other capital investments. The legislation, enacted in 2021, was largely a response to the economic disruption caused by the COVID pandemic.

It is difficult to overstate the unprecedented volume of federal support for these efforts. Keeping track of what funding is available and where it's going has become a cottage industry. In part because the main instrument is the tax credit, the ultimate cost to the federal budget depends on the number of private companies that collaborate with local regions on projects (as well as individual households that take advantage of rebates for EVs, energy efficiency, and climate-friendly systems such as hot- and cold-weather heat pumps).

The baseline figure provided by the Biden administration was that the IRA, a multiyear program, would provide at least $370 billion for the clean energy transition, in spending and tax credits. The Brookings Institution estimates that $780 billion could be coursing through the US economy by 2031 (Bistline, Mehrotra, and Wolfram 2023), while Goldman Sachs calculates the total potential amount at $1.2 trillion.

"It is an extraordinary policy moment," said Mark Muro, senior fellow at Brookings, who coauthored a report listing some 70 distressed counties that have received some kind of investment already (Parilla et al. 2024). "This is a new, modern, distinctly American industrial strategy, rebalancing the economy. This will bring hope and genuine economic activity to places that have been without that for years."

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Supporters point to dozens of ribbon-cuttings for plant openings that have already occurred—part of what they compare to manufacturers coming forward for the war effort 80-plus years ago, as a kind of patriotic national mobilization symbolized by Rosie the Riveter flexing her bicep and proclaiming, "We can do it."

Specialty minerals company ICL broke ground on a $400 million, 140,000-square-foot battery materials plant in St. Louis, Missouri, in 2023. The plant is scheduled to be operational by 2025. Credit: Courtesy of ICL.

GE Vernova team members with onshore wind turbine components in Schenectady, New York. The company invested $50 million to create a wind manufacturing assembly line in an existing plant. Credit: GE Vernova.

Will It Make a Difference?

Although the federal largesse is welcome, some wonder if a single factory can really make a dent in the problems of deep-seated poverty, underperforming schools, vacant properties, and persistent crime that have metastasized over decades in legacy cities.

"Reindustrialization around clean energy and technology is a good thing as far as it goes, but I don't think it goes anywhere as far as its boosters seem to believe," said Mallach. There is much baggage to overcome. Revival in places like Cleveland or St. Louis has been uneven. Some smaller legacy cities have struggled in part due to a lack of robust civic institutions and "eds and meds," the nonprofit anchor institutions providing employment and innovation.

The traditional manufacturing city was sustained by a kind of factory that hardly exists anymore—facilities with large footprints and employing 10,000 people or more. That configuration is not easily replaced, Mallach said. New manufacturing is much less labor intensive.

As an example, he cited a new steel mill in Youngstown, Vallourec Star, which replaced a prior facility. "It probably produces more than the old mill did, but it does it with 700 to 800 workers, not 10,000 to 15,000. And most of those workers sit at consoles operating machinery and robots, which, of course, means that they need a respectable level of computer literacy. Now, 700 jobs matter, but it's a drop in the bucket compared to what's been lost," Mallach said.

Others have concerns at a higher policy level, expressing doubt about the government's ability to pick winners and losers in private markets, and recalling the failure of the solar company Solyndra during the Obama administration (Hufbauer and Jung 2021). Some start-ups don't pan out. Coal miners may not transition to being electricians at a wind turbine factory. Already the EV maker Rivian had to pause construction of a 13 million-square-foot plant in Georgia because of financial losses as the company tries to ramp up production.

"My thinking is that there should be a pretty high bar to clear to justify" government support for private industry, said Colin Grabow, associate director at the Cato Institute. "If there's some need that's not being met by the market, government might intervene," he said, or if there are national security issues at stake, as is the case with microprocessors.

But Grabow questions the emerging industrial policy in practical terms as well, suggesting that the world should have access to the cheapest clean energy possible, whether made in America or not.

"If the overriding goal says, 'hey, we're facing a planetary emergency, and we need to do this transition' . . . if the Chinese want to give us cheap EVs and solar cells and all the rest, then

that should be welcomed. The economy and jobs should take a back seat to that," he said. Still, supporters argue that if there was ever a time to boost the clean energy transition, it is now, with essentially the future of the planet at stake. Many bemoan a perceived pattern in which the clean energy sector is being unreasonably scrutinized and questioned, in light of the government's history of supporting other industries so willingly.

Steering the factories to postindustrial regions is seen as an appropriate measure to address economic inequities, especially those places that were ultimately harmed by the environmental and health impacts of coal mining or other heavily polluting industries.

"Dealing with climate change offers a real chance to take on the inequality that plagues our country as well," said Bill McKibben, a professor at Middlebury College and founder of the climate action organizations 350.org and Third Act. The Biden administration "has been putting factories in places based on real need."

So far, the federal funding to support made-in-America clean energy manufacturing is going to blue and red states alike—and indeed one analysis by Politico showed that most of the projects are in red states (Tamborrino and Siegel 2023).

"We want to be able to see energy—clean energy—produced in every pocket of the country. Blue states, red states, really it helps to save people money, so it's all about green," US Energy Secretary Jennifer Granholm told reporters at a White House briefing last year when discussing how Republican districts were using the clean energy investments.

At least three major challenges remain if the implementation of the place-based industrial policy is to be successful, however. The first is the capacity of state and local governments to take advantage of all the funding and programs that have been very quickly made available.

States and municipalities are scrambling to apply for dozens of new programs to leverage the tax credits and rebates, which requires extensive knowledge of grantwriting and compliance rules. The administration has tried to make the process as user-friendly as possible, and established "direct pay," which extends eligibility for funds to nonprofits and municipalities for the first time. "You qualify, you get a check," senior White House adviser John Podesta told state and local officials at the US Conference of Mayors winter meeting in January in Washington, DC. "We hope you will be evangelists" in spreading the word, he added.

Despite the effort, six out of ten mayors said in a survey by the Boston University Initiative on Cities that bureaucratic complexities were weighing down the process, citing a "challenging grant application process and the public's lack of familiarity with its details" (Goldberg 2024).

Some states like Illinois and Nevada have set up offices to make sure federal funding is efficiently and effectively used. Massachusetts recently also did something similar, to help inform distressed communities of the federal funding opportunities that can help nurture the interest of private investment. Randall Woodfin, the mayor of Birmingham, Alabama, established a "command center" to keep track of applications and deadlines.

Another more complicated hurdle is the need to support the new factories with an ecosystem of workforce training, childcare, and the all-important engagement of nonprofit, civic, and higher education institutions (Katz et al. 2023). And that, in turn, will guide the land use decisions that will unlock economic activity in an equitable manner, said Bruce J. Katz, director of the Nowak Metro Finance Lab at Drexel University.

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"This is a remarkable transition. It's phenomenal. But location matters," said Katz, who is also cofounder of New Localism Advisors, which seeks to help cities design, finance, and deliver transformative initiatives that promote inclusive and sustainable growth. "The devil is in the details as to where the large plants are located, and all these pieces of the puzzle that need to come together, whether it's supply chain, spillover effects, or workforce readiness."

The country "tends to have an invest-first, plan-later perspective on the world," he said, leading to a highly decentralized system. "We turn on the faucet and corporate investment is right there ready. Well, the cities need to have the sites ready."

In addition to determining suitable locations, adds Amy Cotter, director of Urban Sustainability at the Lincoln institute, "cities are going to need to be really intentional about planning for new industry in concert with resilience and inclusion." Thoughtful urban planning, she notes, "can give rise to clean industry in a supportive ecosystem that enhances equitable prosperity for longstanding and new residents alike."

Several state and local governments are setting a foundation for this boom. In Pennsylvania, Governor Josh Shapiro established a $500 million initiative to make sure commercial and industrial sites are ready for development. West Virginia Northern Community College promised to set up courses and internships to prepare students for jobs at Boston Metal, a maker of clean-power alloys.

Technological advances will help. Artificial intelligence can turbo-charge a range of higher education institutions, large or small, to provide research and development support to burgeoning clean energy industries.

A historic marker in Schenectady, New York, notes the arrival of Thomas Edison in 1886. Recent unprecedented federal investments are making a new era of innovation possible. Credit: David Wilson via Flickr CC BY 2.0.

"There's no question universities and research ecosystems can support and inform clean energy manufacturing, and AI can be a huge factor in discovery and innovation and scaling," said John Werner, chief innovation officer at MIT Connection Science, a cross-disciplinary program facilitating networks of entrepreneurs.

Muro, from Brookings, said workforce development and training is key to securing employees who may not have a college degree, who seek fulfilling and rewarding livelihoods that are a step up from the burdensome grind of the fossil-fuel era. "It's not your grandfather's factory work," he says.

Nothing about it will be particularly easy. Trying to grow a supportive ecosystem "is not for the fainthearted," Muro said. "Resources, transportation, wraparound services, support for midnight shifts, childcare. . . . There's a lot to wrestle with in this transition." Still, he says, the moment is unprecedented, and it holds real promise: "Some legacy cities will do a great job and some will struggle, but at least they will be in the mix and will have this opportunity." ◻

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

"Thoughtful urban planning can give rise to clean industry in a supportive ecosystem that enhances equitable prosperity for longstanding and new residents alike."

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What Does 15 Homes Per Acre Look Like—

By Jon Gorey

IT'S A LATE SPRING DAY. Decades-old trees arc over sidewalks that bear chalk drawings made by neighborhood kids. Butterflies flit among the flowers, birds chirp from the treetops, and a dog dutifully warns of an approaching mail carrier. This isn't a country lane or a suburban cul-de-sac with a handful of single-family houses; it's a stretch of Florida Street in Dorchester, Boston's biggest neighborhood, with more than a dozen homes per acre.

This leafy but dense residential neighborhood could easily have been pulled from the pages of a storybook. Indeed, it's just a few blocks from the childhood home of Richard Scarry, author of beloved children's books set in the fictional community of Busytown, such as *What Do People Do All Day*? and *Busy, Busy Town*. The streets here host a variety of housing types—from stately Queen Anne Victorians to more modest one-floor apartments in two- and three-decker houses—that allow people from many walks and stages of life to share a neighborhood, across a range of incomes, family sizes, and lifestyles. The kind of varied characters who populate Busytown.

And yet even the potential for this modest level of neighborhood density—a residential block that holds about 15 homes per acre—seems to leave many Americans wary.

At least, that's a conclusion one could draw from Massachusetts, where a 2021 law requires 177 cities and towns served by the Massachusetts Bay Transit Authority (MBTA) to rezone a small portion of their communities to allow multifamily housing at a minimum of 15 homes

Florida Street, Dorchester, Massachusetts. Credit: Jon Gorey.

The streets here host a variety of housing types that allow people from many stages of life to share a neighborhood. And yet even the potential for this modest level of neighborhood density—a residential block that holds about 15 homes per acre—seems to leave many Americans wary.

and Why Are People So Afraid of It?

per acre by right. ("By right" means that a property owner can build a certain type of project on their lot, in this case multifamily housing, without going through a costly and time-consuming zoning appeals process, provided building codes and other rules are met.)

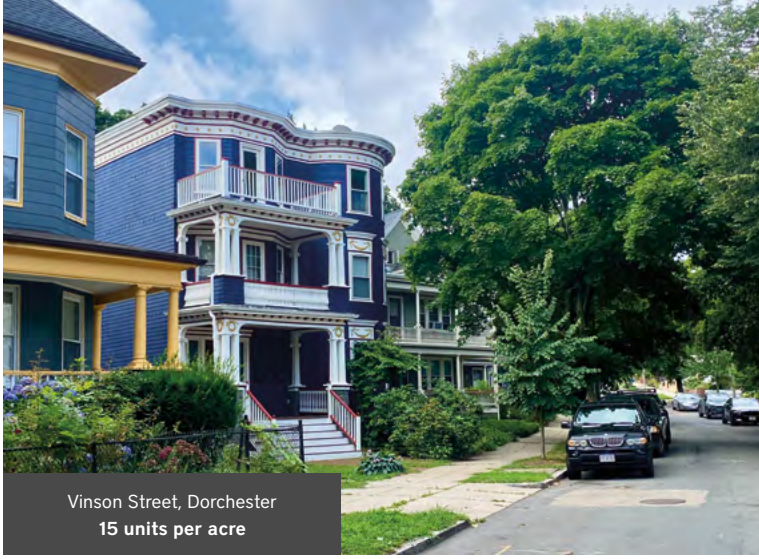
Most communities have so far complied with the MBTA Communities Act, as it's known; by now, people are all too aware of the region's severe housing shortage. But in a state where zoning decisions have long been left to localities—many of which have used that power to exclude people based on race and class through de facto bans on multifamily housing—the requirement has also generated pushback.

Some residents and officials characterize the law as state overreach—even calling it an "invasion"—while others have lodged familiar complaints about "neighborhood character." Whether the objections are personal or political, they've gained traction in a few holdout communities. In Milton, a town of about 28,000 bordering Boston to the south, residents in February voted to overturn an MBTA Communities zoning plan that had already been approved at a town meeting, putting the community in direct violation of the law. The state is now suing the town to comply, withholding grant money until it does.

"The state playing the bad guy can actually make it easier for local elected officials to do what they know needs to be done, but which they don't have the support to do," says Jenny Schuetz, senior fellow at the Brookings Institution and coauthor of a recent Lincoln Institute report on state zoning interventions.

Homeowners are notoriously resistant to neighborhood changes. But is the pushback partly because people find it hard to grasp what those zoning-related numbers translate to in real life? When someone hears "15 units per acre," for instance, are they imagining a 15-unit apartment building on every block?

"Fifteen units per acre is such an abstract concept for so many people—even an *acre* is an abstract concept for a lot of people," says Tom Hopper, director of the Center for Housing Data at the Massachusetts Housing Partnership (MHP). To help community leaders, planners, and residents get a better handle on what those figures look like in the real world, the MHP developed an online tool called Residensity, which allows users to calculate the gross density of virtually any parcel or neighborhood in the state.



A residential street in Dorchester, Boston's biggest neighborhood. Credit: Jon Gorey.

"Because the law was written around units per acre and density, we just saw a huge gap in the understanding of those metrics," Hopper explains. Residensity allows people to "take this out of the abstract and into reality," he says, by comparing the density of places they're already familiar with in real life.

As more states—including California, Oregon, Utah, and Maine—adopt legislative efforts meant to boost housing production and affordability, communicating the reasons, realities, and benefits of such sweeping statewide policies can help overcome local reluctance or resistance.

"When people think about density, they often think of something coming into their community—a skyscraper, a scary building that doesn't belong," says MHP Research Manager Ellen Marya. "So you can use this tool to understand how density works in things you already love about your town, and see that, in some examples, this isn't really a change from what's there."

Visualizing Density

In that spirit, we photographed a number of streets around Greater Boston where the gross neighborhood density is roughly 15 homes per acre or more, to illustrate what that amount of housing looks like at street level.

One caveat: Some of these neighborhoods derive their density from two-family homes (duplexes), which are not considered multi-family housing under the MBTA Communities Act, unless there are two of them on one lot (for a total of four homes). Still, the point remains: While these neighborhoods are much denser than most modern American suburbs, a street built out at 15 homes per acre is unlikely to be mistaken for midtown Manhattan.

These are also older neighborhoods, with varied architecture, mature trees, nearby parks and green spaces, connected streets with sidewalks, and street-level retail close by.

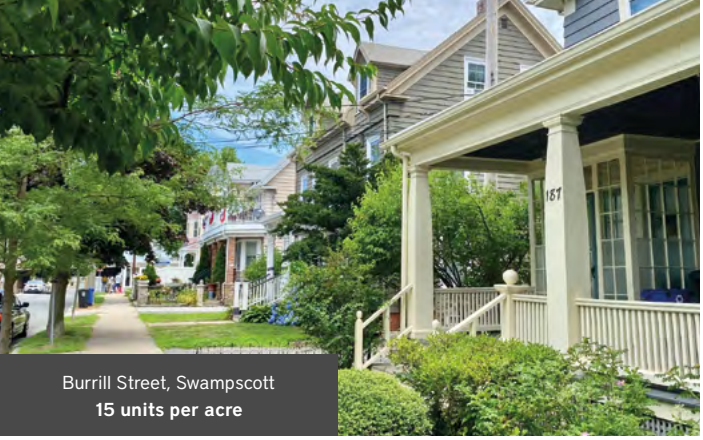
"These are the amenities that make people forget, or not even notice, that a neighborhood is high density," urban designer Julie Campoli wrote in the 2007 Lincoln Institute book *Visualizing Density*.

Campoli's book (and a companion website in development at the Lincoln Institute) includes a catalog of residential neighborhoods across the US, sorted by units per acre. Aerial photography demonstrates what various levels of density look like, ranging from very rural lots to dense downtowns and everything in between—and explores why it's appealing in some instances, but not in others. Examining a spectrum of development patterns, Campoli writes, shows "how design, much more than density, is what shapes the physical character of a place."

Modern developments can often fall short on aesthetics, acknowledges Boston-based policy consultant and local zoning expert Amy Dain. They still deliver urgently needed housing,

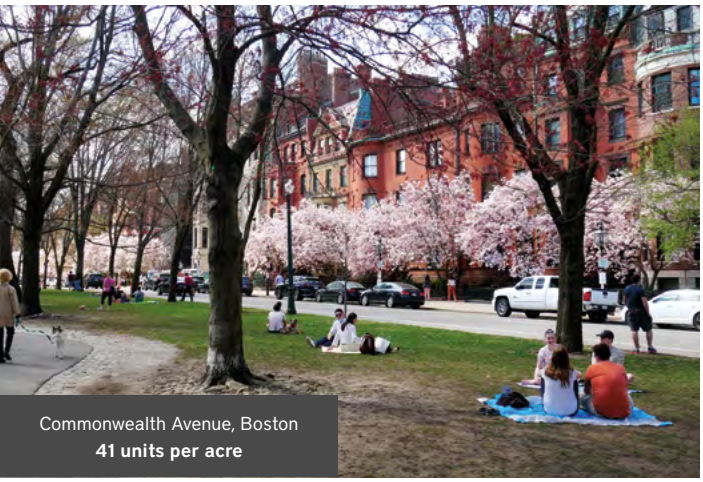
We photographed a number of streets around Greater Boston where the gross neighborhood density is roughly 15 homes per acre or more. . . . While these neighborhoods are much denser than most modern American suburbs, a street built out at 15 homes per acre is unlikely to be mistaken for midtown Manhattan.

Residensity, an interactive tool developed by the Massachusetts Housing Partnership, allows users to find the gross density of any parcel or neighborhood in the state. Credit: MHP.



Burrill Street, Swampscott
15 units per acre

Linnaean Street, Cambridge
22 units per acre



Commonwealth Avenue, Boston
41 units per acre

but boring, cookie-cutter, or looming buildings can elicit complaints and dampen neighborhood enthusiasm for more. "How to regulate for attractive buildings isn't something that anybody has solved," Dain says, "but a lot of people are thinking about it."

For example, some communities require that apartment buildings include first-floor retail space, which can add neighborhood vitality and create a more welcoming street-level experience for pedestrians. But requiring retail doesn't guarantee that a store or restaurant will actually fill that space or succeed there—and a stretch of vacant storefronts can be less inviting than none at all.

Other strategies include a half story or "plus-story" design, Dain says, "which requires the top level to be set back or be under a slanted roof, so from the adjacent sidewalk the building doesn't look as big." Deep but narrow lots tend to incorporate density better than shallow ones with lots of street frontage, Dain notes, and hiding taller structures in the back can add density without affecting sidewalk presence.

In Watertown, a city just west of Boston, "they're talking about demise lines," Dain says, which require interruptions in the facades of big buildings—such as a jog in the footprint or a change in the building material—to mimic the architectural variety of traditional downtown shopping districts, and break up the monotonous streetscape.

In the interest of adding housing at a pleasant, livable scale, Hopper says newly upzoned areas would also benefit from placemaking strategies that incorporate trees, planters, outdoor cafe seating, bike lanes, traffic calming measures, and other amenities that activate public spaces.

"How do we make these great places that live up to the zoning that was just passed?" he asks. "Housing isn't about units, it's about homes. And we want people to experience good things, not just in the homes they live in, but in the neighborhoods where their homes exist."

"Housing isn't about units, it's about homes. And we want people to experience good things, not just in the homes they live in, but in the neighborhoods where their homes exist."

Strictly Flexible

While some critics of the MBTA Communities Act call it a "one-size-fits-all" approach, the law offers towns some flexibility in terms of where and how they upzone.

Different towns have different requirements, depending on their size and whether they host a subway or commuter rail station. But for the most part, the law requires communities to rezone at least one district, within half a mile of a transit station if there is one, to allow multifamily housing by right, at a minimum gross density of 15 units per acre.

In most cases, communities have to upzone at least 50 acres or 1.5 percent of their buildable land in total, and the new zoning needs to allow for a specific increase in total potential housing units over what existed in 2020, ranging from 5 to 25 percent. Here are three examples from around Greater Boston:

- **Somerville** is a compact city north of Boston served by three subway lines. As a rapid transit community, Somerville is required to rezone enough parcels to allow for a 25 percent increase over its 36,269 existing homes—unlocking the zoned potential for another 9,067 possible homes. Ninety percent of those upzoned parcels need to be within half a mile of a transit station.

- Farther north of Boston, the "Witch City" of **Salem** has a commuter rail station, but no subway service, so it's only required to increase its potential housing stock by 15 percent—zoning for the possibility of an additional 3,000 homes or so, with close to half of them near the station.

- West of Boston, **Lexington** is considered an "adjacent community," since the commuter rail stops nearby, but in a neighboring town. As such, it's tasked with rezoning for a potential 10 percent increase in housing units—1,231 more homes on a minimum of 50 acres. The parcels can be located anywhere, since there's no station in town.

While some critics of the MBTA Communities Act call it a "one-size-fits-all" approach, the law actually offers towns some flexibility in terms of where and how they upzone.

Facing page: Examples of density from Swampscott, Cambridge, and Boston. Credits: Jon Gorey (top, middle); Leslee_atFlickr via Flickr CC BY-NC-ND 2.0 (bottom). This page: Musicians perform at Porchfest, a community event in the compact city of Somerville. Credit: Eric Haines via Flickr CC BY 2.0.

Each community plans to meet its goal in a different way. Lexington, the first town to gain state approval for its MBTA Communities plan, chose a dozen different small districts for upzoning, and included affordability provisions for larger projects. Salem, meanwhile, didn't really have to change anything to comply—it had recently rezoned, on its own, an area near its train station large enough to meet the state requirements.

And in Somerville, home to thousands of the Boston area's famously practical and livable triple-decker houses, the city took a broad-brush approach by simply legalizing three-family homes on all residential lots citywide.

Dain, who has been tracking the progress of the MBTA Communities Act in her *Upzone Update* newsletter, says while scofflaw communities grab a lot of headlines, most cities and towns are making good faith efforts to comply with both the letter (or rather, number) and spirit of the law.

"Every community is coming up with unique solutions, because each place has tailored requirements in terms of the unit capacity they need to meet, and how much of it needs to be near the train station and how much could be anywhere," Dain says. "And the real estate looks different in different places, too, in terms of what's near the train station. Sometimes the train station is in a traditional, mixed-use downtown, and in other places, it's in a more industrial area toward the edge of town."

The less flexible part of the law is that they have to do it somewhere, and by the state deadline. And that's getting communities to be proactive about zoning in a way Dain has rarely seen. "A lot of the upzoning that would happen

By incorporating a plus-story design and hiding taller portions in the back, the plans for this 15-unit building in Boston's Dorchester neighborhood ensure that it won't dominate the streetscape. Credit: The Crown on High, rendering courtesy of listing agent Alyssa Lum.

The MBTA Communities Act "is not just good housing policy," notes the Massachusetts Executive Office of Housing and Livable Communities, "it is good climate and transportation policy, too." Credit: BenFrantzDale via Flickr CC BY-SA 2.0.

in the past would happen on a single parcel at a time, and it was usually project oriented," Dain says—meaning the discussion would only come up if someone wanted to redevelop a specific property. "But to rezone really proactively, without there being some kind of proposal put before the town or the sale of a property? It's really unique that so many people are mobilizing across communities to figure it out."

"This is the first time in decades that some of these communities have actually planned in a comprehensive way, or talked about zoning," Hopper says. He's also been encouraged by the number of residents who have spoken up in favor of new housing at community meetings.

When or whether these efforts amount to new housing in the quantities needed to tip the scales of affordability is a longer-term question.

Much of the multifamily housing legalized by the MBTA Communities Act will take years or decades to be built, if it's built at all. Contrary to what some residents fear, the law doesn't require the actual construction of even a single home in a rezoned neighborhood—it's merely meant to pry open the long-locked gates to potential development outside of Boston through land policy. By some estimates, only

"The Massachusetts approach of, 'Transit needs more riders, and we need more housing, let's do both of these things together' could be a model that works in other states. . . . If Massachusetts figures out how to make it work, I think there will be other states that are willing to copy it."

2 percent of viable properties in newly upzoned areas get redeveloped per year.

"Zoning is not a replacement for the will to build housing," Hopper says, noting that it will take a long time for new development to make a dent in the housing shortage. In that way, the law is a crucial if only preliminary step: "It's setting the stage for decades and decades of potential."

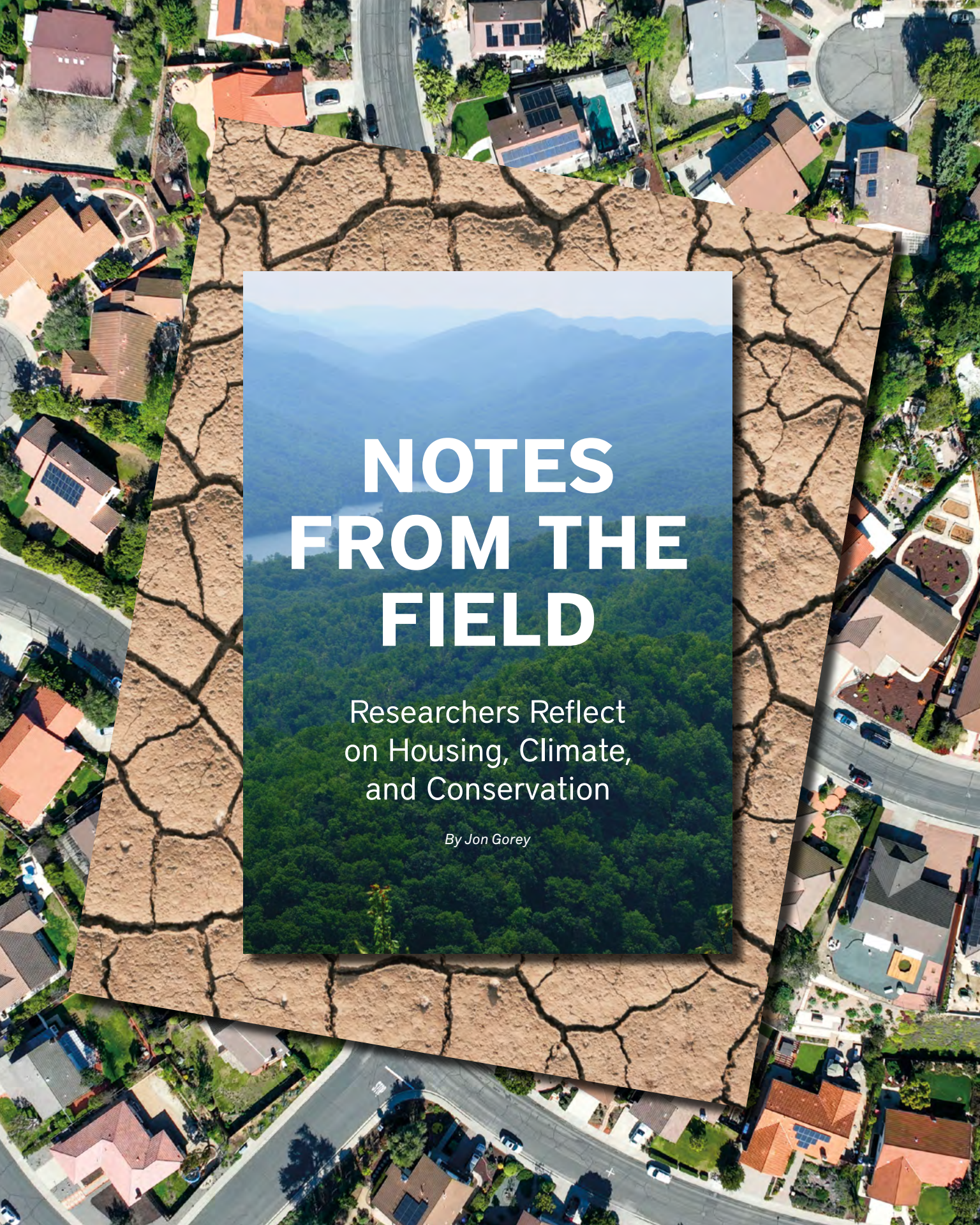
The potential isn't limited to the Boston area, either. As the MBTA Communities Act gets implemented, Schuetz says there's a lot riding on it—and that the Bay State's focus on high-value land near transit could be replicated elsewhere.

"The Massachusetts approach of, 'Transit needs more riders, and we need more housing, let's do both of these things together' could be a model that works in other states," Schuetz says, particularly in the multistate suburbs surrounding New York City and Washington. "There are other places that could be doing this sort of transit-focused, statewide rezoning. And if Massachusetts figures out how to make it work, I think there will be other states that are willing to copy it." ☐

Jon Gorey is a staff writer at the Lincoln Institute of Land Policy.

LEARN MORE

Check out the online version of this article and test your density IQ at **www.lincolninst.edu/data/what-does-15-units-per-acre-look-like**.



NOTES FROM THE FIELD

Researchers Reflect on Housing, Climate, and Conservation

By Jon Gorey

The Lincoln Institute provides a variety of early- and mid-career opportunities for researchers. The following interviews are excerpted from an online series in which we follow up with past Lincoln Institute scholars and fellows to learn more about their work.

When **Sonali Abraham** began studying urban water use and efficiency at the University of California, Los Angeles in 2016, the region was emerging from a years-long drought—making it a great case study in water conservation attitudes and actions. A few years later, she completed her PhD with the help of a Babbitt Center Dissertation Fellowship, which assists doctoral students whose research advances water sustainability and resilience. She's now a senior researcher at the Pacific Institute, an Oakland, California–based nonprofit focused on global water challenges and solutions.

To learn more about the Pacific Institute, visit **www.pacinst.org**.

To learn more about the Babbitt Center, visit **www.babbittcenter.org**.

Studying Solutions to California's Water Crisis

What is the focus of your research?

My dissertation was mainly focused on water efficiency, especially outdoors. The big drought had just come to an end when I got the Babbitt Center Dissertation Fellowship, so there was still an awareness in LA and the southwestern United States that we all need to conserve water. But when it came to outdoor water use, there was this disconnect. You still had people with pretty significant lawn areas or fountains in their yard. LA is a cool case study, because you have both extremes: You have the people who are really good about conserving water and super aware, but you also have people who have the means to not care. I went into it first looking at how people are using water outdoors . . . and then I focused on the commercial sector, because I realized there was a big gap in our understanding of how commercial properties used water.

Padlocked spigots in Los Angeles protect a limited resource. Credit: Andrew Hart via Flickr CC BY-SA 2.0.

I was trying to understand, did commercial spaces reduce water use during the drought? Where are they using their water, what kind of landscapes are they using? And what are the sustainable landscapes that we can put in place that will save water but also look good? We want to try to change this misconception that sustainable landscapes are ugly; they're not just a pile of rocks or random cacti, they're beautiful in their own right. You can have a sustainable landscape that saves water and resources but still have a really beautiful front yard that you can be proud of.

What are you working on now or looking to take on next?

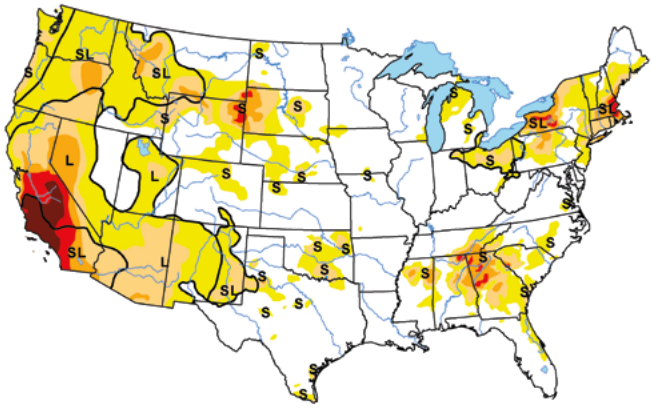
One of the cool projects that I'm working on right now is looking at stormwater capture opportunities around schools in LA. The Los Angeles Unified School District is one of the biggest landowners in LA, and there are a lot of paved areas, so there was a lot of concern about the urban heat island effect on schools because of all the concrete around them and the intense high temperatures. You can take out that impermeable surface and create really healthy environments, helping the children who are attending the school every day, but also helping the environment in the community around it, in so many different ways.

In Los Angeles County there's this program called Measure W that taxes paved or impermeable surfaces per square foot, so there's a big incentive for people to change it out. The school district worked with a local nonprofit, Amigos de los Rios, and did a really good job. It's a beautiful project. They did great stakeholder engagement, it's a great example of how things can be done collaboratively and in a smart way.

"The Los Angeles Unified School District is one of the biggest landowners in LA, and there are a lot of paved areas, so there was a lot of concern about the urban heat island effect on schools because of all the concrete around them and the intense high temperatures. You can take out that impermeable surface and create really healthy environments."

This schoolyard conversion project led by Amigos de los Rios in southern California included the removal of 21,000 square feet of asphalt. Credit: Amigos de los Rios.

US DROUGHT MONITOR



Drought Impact Types

Intensity

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

S: Short Term, typically less than 6 months (e.g., agriculture, grasslands)

L: Long Term, typically greater than six months (e.g., hydrology, ecology)

——— Delineates dominant impacts

A national drought map from August 2016 reveals the severity of the drought experienced in California when Abraham was beginning her research. Credit: National Centers for Environmental Information/National Oceanic and Atmospheric Administration.

You've lived in many places around the world, some with an abundance of water, others facing a worrying scarcity. Have you seen interesting contrasts or similarities in the way people think about water?

The similarity is that people undervalue water in general. Both when you have a lot and when you have a little, people just have this impression of water being limitless. When you see bodies of water, I think there's an impression of it being neverending.

It's been interesting to see the shift in policy focused on where you are. When I was in India doing my undergraduate degree, it wasn't so much about supply or scarcity—sometimes it would be in excess—but about water quality. That's very different from how it's talked about here, or in the Middle East, where I grew up, where it's all about scarcity.

What do you wish more people knew about water conservation?

It's the every-little-action-matters piece. It's boring, but I think it's important. We're doing a study right now at Pacific Institute looking at a national assessment of water efficiency potential—so, how much water can we save across the country if we did X, Y, and Z. These are really basic technology-based changes, like efficient faucets—not behavioral changes—and you'd be surprised at how much of an impact those can make. People easily dismiss those small changes and feel like, 'It's just me, it's just one bathroom,' but those things add up pretty quickly.

When it comes to your work, what keeps you up at night? And what gives you hope?

The equity piece, especially in an international context. The issues facing different regions of the world vary a lot, and water doesn't follow country borders. But the way that people approach problems is often on a very political basis, and that worries me. . . . I am hopeful that there is a path forward as people do more research and the word gets out more that these things have to be managed as a resource for a community as a whole—and that community can be your neighborhood, it can be your city, it can be the world, because it literally crosses all those pieces.

The scale at which things are going is really heartening, the awareness is only going up, and it's going up at a much more rapid pace than when I first started this work. . . . It's unfortunate that climate change is one of the drivers that have led people to become more aware, but it's great that people are getting more aware.

Oji Alexander is the CEO of People's Housing+, a New Orleans nonprofit that aims to close the racial wealth gap by developing affordable homeownership opportunities, providing long-term financial stewardship, and ensuring perpetual affordability through its community land trust and shared ownership arrangements. Alexander participated in the 2022–2023 Fulcrum Fellowship, a one-year program for field-level community leaders run by the Center for Community Investment, a former center of the Lincoln Institute.

To learn more about People's Housing Plus, visit **www.phplusnola.org**.

To learn more about the Center for Community Investment, visit **www.centerforcommunityinvestment.org**.

Expanding Affordable Homeownership in New Orleans

What is the focus of your organization?

People's Housing+ is the result of a strategic merger between three small New Orleans–based affordable housing organizations, two of them Black-led, with similar missions; we partnered pretty often, and it was the same old story of competing for the same limited resources. So we built a larger scale, Black-led organization that's able to provide a greater breadth of services to our community.

Our mission is African American wealth creation, shrinking the racial wealth gap. We do that through affordable real estate development, as we know homeownership is a reliable driver of wealth creation, and by providing stewardship services . . . making sure that [new homeowners] understand the asset they have just acquired, how to keep and maintain that asset, and how to grow that asset, with the goal of being able to transfer that asset.

Oji Alexander, center, with the staff of People's Housing+. The New Orleans–based nonprofit develops affordable housing with the goal of shrinking the racial wealth gap. Credit: People's Housing+.

People's Housing+ is partnering with a local early care and education nonprofit to convert a vacant firehouse into a mixed-use development that will include affordable housing and an early childhood education center. Credit: People's Housing+.

I'd always thought of housing as a transactional process—it was always about building more units, numbers, more and more and more. Before Fulcrum, my goal would have been to be the biggest, most productive affordable housing organization for our size—we have developed more single-family housing, I think, than any organization in South Louisiana, other than Habitat for Humanity. What Fulcrum helped me realize is that our organization alone is not the answer, and it's really helped me think about systems-level change and what we can do. It has completely changed my approach to our work.

What are you working on now, and what do you have planned next?

The 'Plus' in our name is that we're also working toward some shared ownership and community ownership projects, where we have partnered with folks who own land but have not had the resources to get the land back into commerce. We had Hurricane Katrina, and we have a lot of families who are still trying to recover—who have blighted property, who are deemed unbankable by traditional lending institutions. So we partner with organizations, lend our balance sheet and our access to resources, to help them get properties back in commerce, in situations where we can incorporate affordable housing as well. We've got quite a mountain to climb.

We are also working on our first small, multifamily rental, a mixed-use project. It's the historic restoration of a blighted firehouse that was built in the early 1900s in a neighborhood called Central City, a historically African American neighborhood that is really starting to see the effects of gentrification and displacement. The firehouse will have seven permanently affordable rental apartments upstairs, and a 65-seat early childhood development center downstairs, which is the first cohabitation of affordable housing and early childhood education in the city.

What we're looking to start working on is more community ownership, shared ownership, shared equity. We're always looking to provide benefits not just to the direct recipients of our products, but to folks who are already living in the neighborhoods that we're working in.

"We're always looking to provide benefits not just to the recipients of our products, but to the folks who are already living in the neighborhood."

Can you talk about the twin challenges of developing not just affordable housing but also climate-resilient housing, in a city that's particularly vulnerable to climate change?

Because of Hurricane Katrina, we're in a unique position: we're talking about rebuilding a city. And conventional wisdom has been, if we're going to rebuild the city, we've got to build a resilient city. We have always approached it from a practical standpoint. For us, it was always about the families, always about the end user—how can we build a resilient home that's going to have low operating costs. . . . We want to make sure that the end user has a building they can afford to maintain. With some of the mitigation features that we build into the houses, people are realizing discounts on their insurance rates.

We're a city that sits below sea level, and the way our city deals with water is we try to pump it out faster than it rains. So we're building green infrastructure and stormwater management into our homes at no cost to our homeowners. Stormwater management is an area where you're not going to see a lower water bill; it's really a community benefit. And low- and moderate-income folks generally don't have expendable income to provide community benefits. So we want to make sure that we're providing that at no cost.

Building a stormwater garden at a People's Housing+ home. The project was part of an effort to provide climate-resilient landscaping at all of the organization's new properties and combat the city's notorious land subsidence. Credit: People's Housing+.

What do you wish more people knew about affordable housing?

Overwhelmingly, people come to us thinking that there was no way that they could have possibly purchased a home. In addition to what we know about the racial wealth gap from an asset standpoint—those disparities are understood and well known—I think there's also a gap in the wealth of knowledge that comes along with generational wealth. . . . So if there was something I wish the broader community knew, especially the African American community, who has historically—purposefully, through racist housing practices and policies—been denied access to homeownership, it's that there's a pretty simple recipe. And with a little bit of support, in a reasonable timeframe, most folks who have steady work, steady income, can achieve homeownership if they follow that path.

When it comes to your work, what keeps you up at night? And what gives you hope?

What keeps me up at night is the fact that we have to fight so hard for what should be a basic right, which is shelter. The fact that an organization like ours has to exist. What gives me hope, though, is the compound nature of wealth—the impact that one individual home can have on a family from a generational standpoint. There were folks who were raising kids when we first started working with them. Now those kids are graduating or in college and in certain cases actually inheriting these homes. So we're actually starting to see the transfer process. You plant the seed, you water it and give it resources, and then you just watch it grow.

A few years after earning her PhD in public policy from Harvard University, **Jenny Schuetz** participated in the Lincoln Institute Scholars program, which introduces early-career researchers to senior academics and journal editors. Schuetz now studies housing and land use policy as a senior fellow at the Brookings Institution; she's also a lecturer in Georgetown University's urban planning department, and the author of *Fixer Upper: How to Repair America's Broken Housing Systems*.

To learn more about the Brookings Institution, visit **www.brookings.edu**.

To learn more about the Lincoln Scholars program, visit **www.lincolninst.edu/research-fellowship-opportunities**.

Hunting for Housing Solutions

What was your experience with the Lincoln Scholars program?

When I did it, the focus was on matching up relatively early-career scholars with some of the experienced journal editors in the field and getting information on how you get your work into publications. And that was incredibly helpful, because it's sort of a black box when you start out; you send off a paper, and you get back either a "revise and resubmit" or a rejection, but you often don't really understand why. So getting to talk to some journal editors about what makes a compelling paper and how they think about pairing papers with reviewers was really useful.

I love that Lincoln does this. The cohort of junior people that I went through it with, we're all now a little gray-haired and middle-aged, but we still see each other. And it's nice to see newer cohorts coming up. That's a great way for the field to transfer knowledge and to help junior people grow.

What have you been working on more recently, and what are you interested in working on next?

A lot of my research still focuses on the role of zoning and land use regulations in restricting housing supply, and this has become a very hot topic in the last five or six years. One of the things that I'm doing now is working directly with state governments that are passing state level zoning reforms and trying to get those implemented and turned into more housing production. The implementation piece is really important—you don't just write a policy and it implements itself, you have to have actual human beings doing things to implement it.

In fact, I'm just getting ready for a workshop with the Lincoln Institute, where we're bringing

together state housing agencies from seven or eight different states to talk to one another and share what kinds of challenges they're running into, what kinds of successes. It's a great chance for policymakers to talk to their peers in a way that they don't often get to do, and we get to learn in real time what's happening on the ground.

The second big piece of my research is looking at the intersection between housing and climate adaptation. There's quite a bit of research coming out to show that, on average, Americans are moving toward more climate-risky places. We still have this movement away from the Northeast and Midwest toward the Sun Belt, so we are moving to places with extreme heat risk, drought risk, wildfire risk, and then people moving to Florida are moving into hurricane risk.

That's going to have real repercussions for things like insurance markets, which are already seeing spiking premiums, and our national disaster recovery programs. And we really don't have a good handle on why people are doing this.

An apartment for rent in the Boston area. Credit: Jon Gorey.

What's one of the most surprising things you've learned in your research?

That people are overwhelmingly moving toward risky places at a time when disasters are becoming more and more salient and expensive is counterintuitive. And the reasons for it are complicated. Some of it is people don't know what it's like to live in 115 degrees until they move there, or people are overly optimistic [about their exposure to hurricane risk].

But also our policies aren't designed to send the right market signals. It should be a lot more expensive to buy a house and take on a mortgage and buy insurance in places that are really risky—but our policies don't allow that to happen, because we're trying to keep homeownership affordable for middle-income Americans. We want everybody to buy a house and invest in it, and so we have to make it artificially cheap for people to do that, and then it encourages people to buy in the wrong places.

What do you wish more people knew about housing?

One of my longstanding beefs has been that the US leans very heavily on homeownership for wealth building. And as a motivation for that, we have not provided good standards of living and protection for renters, and have made renting seem like it's a second-class option. I think that has led to a lot of subtle discrimination against renters, and a lot of people not taking seriously that we need to make renting a good option. . . . We should just make renting a reasonable option for middle-class households for as long as it suits their needs—that should be an okay option for people at all ages and stages of their life.

"We should just make renting a reasonable option for middle-class households for as long as it suits their needs—that should be an okay option for people at all ages and stages of their life."

Destruction caused by Hurricane Nicole in Daytona Beach, Florida, in November 2022. Credit: felixmizioznikov via iStock/Getty Images Plus.

"Our policies aren't designed to send the right market signals. It should be a lot more expensive to buy a house and take on a mortgage and buy insurance in places that are really risky, but our policies don't allow that."

When it comes to your work, what keeps you up at night? And what gives you hope?

The climate stuff keeps me up at night. One of the chapters in my book was about climate, and I read a lot more than I had previously on this stuff and decided, wow—this needs to be a major focus of my research, because it's so big and important and it's not being talked about in productive ways that get us to better policies.

On the optimistic side, there are two things. One is that we are having a lot more national public conversations about housing, whether that's affordability or insurance premiums. Zoning never got mentioned in broader media discussions or in presidential elections until four years ago, and now it's on the front page of the newspaper a lot. So I think a broader understanding of some of the problems is really helpful for starting to move forward.

And there is so much policy experimentation and energy at the state and local level, so many cities and states that are trying new things. We've done the same thing with our land use for 70 or 80 years, and now suddenly we're trying new stuff, which is great. There's a lot of grassroots energy, and much of this is coming from younger households—which are really motivated to fix this problem—and they are getting engaged with local politics in constructive ways, trying to push their local elected officials to do better. So the kids give me hope.

You've written at length about accessory dwelling units (ADUs), among other things, and now several states have essentially legalized ADUs statewide. What does it feel like when a policy or idea you've written about extensively gets adopted at a high level?

It's pretty rare that you can see your idea directly show up in policy—policymakers talk to a lot of experts, and they get a lot of opinions thrown at them, so it's often very hard to trace your immediate impact. But it's exciting to see ideas take shape. Both to see them translated into policy, but I think, equally, to hear people start talking about them in the ways that we're framing the problem. I like to say we've got two affordability problems: the lack of supply and poor households not earning enough. And that framing has gotten picked up in a lot of places, and they're talking about it in a more constructive way.

As the director of The Nature Conservancy's Center for Resilient Conservation Science, ecologist **Mark Anderson** led a team of scientists in the development and mapping of TNC's national resilient and connected network: linked landscapes uniquely suited to preserving biodiversity and withstanding the impacts of climate change. In 2021, Anderson received the Kingsbury Browne Award and Fellowship, named for the Boston lawyer and former Lincoln Institute fellow whose work led to the creation of the Land Trust Alliance.

To learn more about the Center for Resilient Conservation Science, visit **https://crcs.tnc.org**.

To learn more about the Kingsbury Browne program, visit **www.lincolninst.edu/research-fellowship-opportunities**.

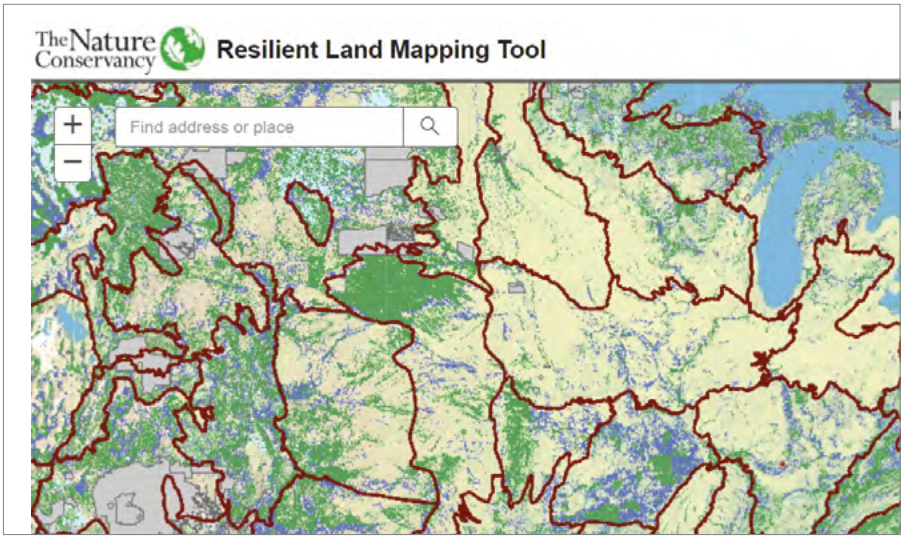
Mapping Our Most Resilient Landscapes

What is the focus of your research?

Conservation of land and water is extremely expensive, and it's long term. What we've really been focused on is making sure we're conserving places that are resilient to climate change—really thinking about biodiversity loss, and where are the places on the ground or in the water that we think will continue to sustain nature, even as the climate changes in ways that we can't fully predict. As we dove deeper and deeper into the science, the beauty of it is that the properties of land and water—the topography, the soil types, the way water moves and collects—actually build resilience into the system. When you hear about a climate disaster, for example, a drought or a flood, you kind of picture it as a big swash everywhere. But in fact, there's all sorts of detail to how that plays out on the land, and we can actually use an understanding of that to find places that are much more resilient and places that are much more vulnerable. So the effects of that are spread in understandable and predictable ways, and that's what we are focused on: finding those places where we think nature will retain resilience.

Climate change is very different than any other threat we've ever faced because it's a change in the ambient conditions of the planet. It's a change in the temperature and moisture regimes. And in response to that change, nature literally has to rearrange. So a big question is, how do we help nature thrive and conserve the ability of nature to rearrange? Connectivity between places where species can thrive and move is key to that.

We divided the US into about 10 regions, and in each of those regions, we had a large steering committee of scientists from every state. They



The Nature Conservancy spent more than a decade building its Resilient Land Mapping Tool, relying on input from 287 scientists across the United States. Credit: The Nature Conservancy.

reviewed it, they argued about the concepts, we tested stuff out, they tested it on the ground, and that's what improved the quality of the work, it's all thanks to them. By the time we finished, it took 287 scientists and 12 years, so it was a lot of work. We involved a lot of people in the work, and so there's a lot of trust now of the dataset.

What are you working on now, and what are you interested in working on next?

The US has not signed on to the global 30x30 agreement [to protect 30 percent of the world's lands and oceans by 2030], but we have America the Beautiful, which the Biden administration has launched as a 30x30 plan. People get hung up on that 30 percent, which is important, but if we want to sustain biodiversity, what's really important is, which 30 percent is it? Are we representing all the ecosystems, are we reaching all the species? Are we finding places that are resilient, and are we connecting them in a way that nature can actually move and be sustained?

Our work is all about resilience and connectivity and biodiversity, and it turns out that the network we came up with, that has full representation of all the habitats and ecoregions and connectivity, turned out to be 34 percent [of the US]. So we have internally adopted it within TNC as our framework: We are trying to conserve that network, and that's been super exciting. Because over the last five years, we conserved 1.1 million acres, of which about three quarters was directly in the network.

It's very unlikely that the federal government is going to actually do the conservation; it's really going to be done by the private NGOs, state agencies, and land trusts. In fact, in the Northeast, private land conservation over the last 10 years surpassed all the federal and state agency conservation combined. So our strategy has been to create a tool and get the science out and just encourage people to be using the science and thinking about climate resilience—with our fingers crossed that, if this makes sense to people, wherever they are . . . it will conserve the network in a diffuse way.

"Climate change is very different than any other threat we've ever faced because it's a change in the ambient conditions of the planet. It's a change in the temperature and moisture regimes. And in response to that change, nature literally has to rearrange."

What do you wish more people knew about conservation, biodiversity, and ecology?

Well, two things—one good, one bad. I wish more people understood the urgency of the biodiversity crisis. The fact that we've lost 3 billion birds—there are 3 billion fewer birds than there were 40 years ago. Our mammals are constrained now to small fragments of their original habitats. There's a crisis in our insects, that is really scary. Most of my career, we were focused on rare things; now these are common things that are dropping in abundance. So I wish people really understood that.

"I wish people understood that we can turn [the biodiversity crisis] around, by really focusing our energy and conserving the right places, and there's still hope and time to do that. It's a big task, and it can only be done by thousands of organizations working on it, but it can be turned around."

River otters in Indiana's Patoka River National Wildlife Refuge. The Nature Conservancy recently purchased 1,700 acres adjacent to the refuge, expanding the valley's connected wildlife habitat to more than 20,000 acres. Credit: Steve Gifford via Flickr CC BY-NC-ND 2.0.

And I also wish people understood that we can turn that around, by really focusing our energy and conserving the right places, and there's still hope and time to do that. It's a big task, and it can only be done by thousands of organizations working on it, but it can be turned around.

When it comes to your work, what keeps you up at night? And what gives you hope?

Well, I'm a scientist, and there are so many potential errors and problems and data issues, they never end. So our results are not perfect. They're pretty good, they've been ground tested a lot, but they're not perfect.

The other thing is the future. I really want my kids and grandkids to have a wonderful world full of nature, and to get there, we're going to have to really change our course.

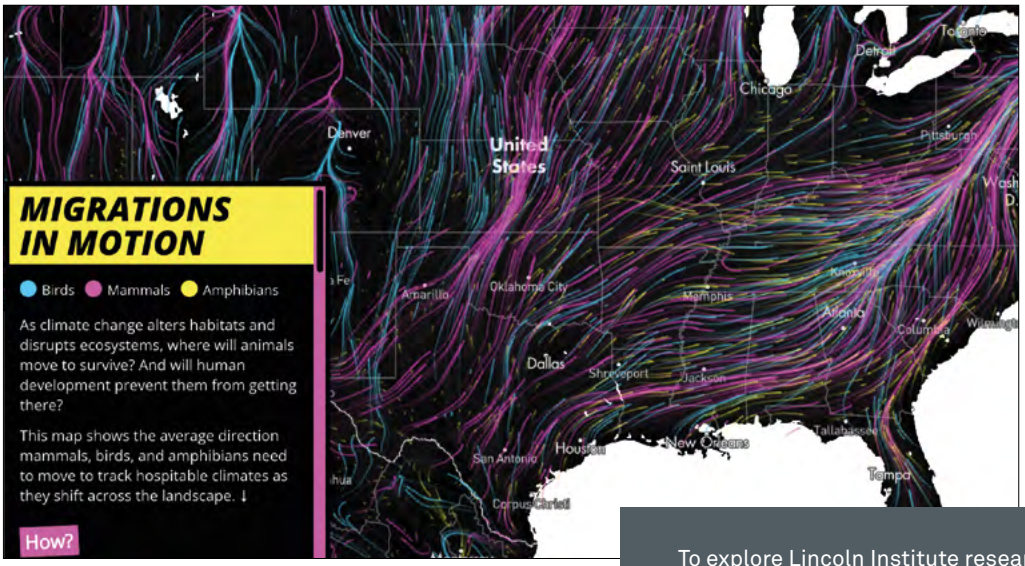
What's the most surprising thing you've learned in your research?

When we started this work, we didn't have a concept of what the end was going to look like. And I probably thought of the end as a bunch of big places, you know? But it's not a bunch of big places, it's a net, it's a web—a web of connected places, some big, some small. So that was a surprise to me.

You work a lot with maps—what's the coolest map you've ever seen?

We have a concept called climate flow, which is predicting how nature will move through the landscape following unfragmented areas and climatic gradients. And one of our scientists successfully animated that map, so that you can see the movement of the flows—and that is one of the coolest maps. It's not perfectly accurate, but it gets the concept across really nicely. And it was this map that helped us figure out that there's a pattern to all this. It's not random, there's a pattern—there are places where flows concentrate, there are places where flow diffuses, and that's really important to know.

Jon Gorey is a staff writer at the Lincoln Institute of Land Policy.

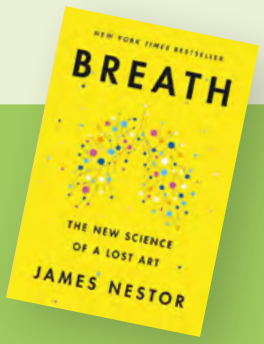


A still image from The Nature Conservancy's fully animated climate flow map. See it in its full glory at www.maps.tnc.org/migrations-in-motion. Credit: The Nature Conservancy.

To explore Lincoln Institute research opportunities, visit **www.lincolninst.edu/research-fellowship-opportunities**.

RECOMMENDED READING (AND VIEWING)

We asked each interviewee to recommend a favorite book or show. Here's what they said:



Breath: The New Science of a Lost Art
James Nestor
As nonprofit leaders, we often take self-care for granted, we kill ourselves in these jobs. And the power of what breath can do, the physiological impact that breathing and the way you breathe has on you, is really amazing. —OA

Wilding: The Return of Nature to a British Farm
Isabella Tree
It's a nonfiction book where a couple in Knepp decided to let their land go wild, and they document the change from farming to wildness. Over time, all these rare species start to show up . . . and pretty soon it is a total biodiversity hotspot. So it's a very interesting read, it's very hopeful. —MA

Killing Eve
Netflix
I've been reading a lot of books about climate and housing, and they're really depressing. I've been streaming *Killing Eve* . . . that's just fun and escapist. I love spy stories and mystery stories, and that's a good one. It actually makes me feel like real life is okay, because there aren't spies lurking in every corner! —JS

The Covenant of Water
Abraham Verghese
I can't give away too much, but it's part medical mystery, part family fiction, and part cultural awareness of water and how, outside of all of the scientific, technical pieces of it, water just holds this visceral importance to a lot of communities and how they're connected to it. —SA

Credits (l-r): Riverhead/Penguin Random House; Pan Macmillan; Netflix; Grove Atlantic.

NEW PUBLICATION

Preserving Affordable Homeownership: Municipal Partnerships with Community Land Trusts

By John Emmeus Davis and Kristin King-Ries

November 2024
Paperback ($20), PDF (free), 92 pages
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ISBN 978-1-55844-461-4 (PDF)

From climate-resilient houses on stilts in Florida to forested pocket neighborhoods in Oregon, community land trust homes come in all shapes and sizes. Although their styles vary, these dwellings—individually owned properties on community-owned land—share a common feature: affordability. The Lincoln Institute's newest Policy Focus Report, *Preserving Affordable Homeownership: Municipal Partnerships with Community Land Trusts*, explores how community land trusts (CLTs) can help solve the affordability crisis, and why municipalities and CLTs are increasingly working together to create homes that last.

Building on the 2008 Lincoln Institute Policy Focus Report *The City-CLT Partnership*—which elevated the role of CLTs in public housing policy—this new report takes a fresh look at how governments below the federal level are supporting the formation, expansion, and operation of CLTs.

The report draws on input and insights from 115 CLTs across the United States, describing the dramatic shifts in local housing policy; profiling emerging partnerships in cities large and small; and outlining the critical considerations facing CLTs, from funding to climate change. It identifies significant trends in the kinds of governmental support CLTs are receiving—including development regulations designed to encourage lasting affordability, changes to property tax assessment practices, and support for new homeowners—and details how state governments are offering legislative and financial support for CLT projects and programs. The authors apply their collective expertise to the critical issue of affordability, and provide recommendations for municipal leaders about how to partner with CLTs to ensure affordable homeownership opportunities for all.

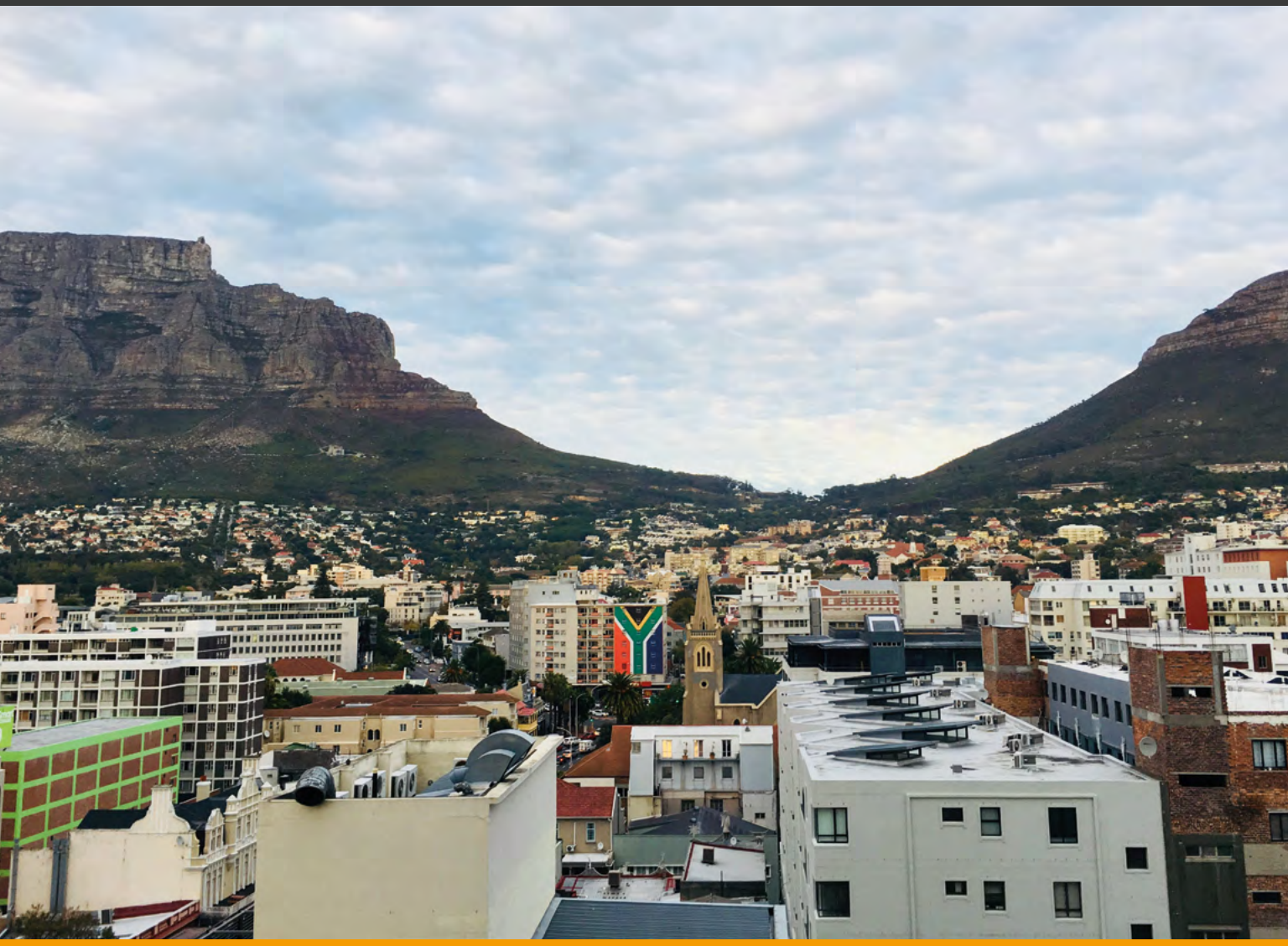
Community land trust homes in Seattle. Credit: Homestead CLT.

ABOUT THE AUTHORS

John Emmeus Davis is a city planner who has spent much of his 40-year career providing technical assistance to CLTs and documenting their history and performance. He coauthored *The City-CLT Partnership*. He previously served as housing director in Burlington, Vermont and is a partner at Burlington Associates in Community Development LLC. Davis is a founding board member of the International Center for CLTs and editor in chief of the center's imprint, Terra Nostra Press.

Kristin King-Ries is an attorney whose practice focuses on creating and stewarding permanently affordable homes and farms. She represents CLTs and other nonprofits and serves as a consultant to the Agrarian Trust and the Center for Agricultural and Food Systems at the Vermont Law and Graduate School. She is currently organizing a CLT legal collaborative on behalf of the International Center for CLTs. She served as general counsel for Trust Montana from 2017 to 2021.

www.lincolninst.edu/preserving-affordable-homeownership



Since 2020, the Lincoln Institute has partnered with South Africa's National Treasury, its Cities Support Program, and the Development Action Group to run a National Land Value Capture Program. This program aims to strengthen the capability of metropolitan governments to implement innovative land-based financing tools and strategies, with a focus on how these strategies can support South Africa's post-Apartheid spatial transformation agenda. The National Land Value Capture Program shows how coordinated efforts among national, provincial, and local authorities—together with civil society organizations, developers, and research centers—can support the implementation of policies such as inclusionary housing in major South African cities. A second phase of the program will begin in 2025.

A view of Cape Town, South Africa, with Table Mountain in the background. Credit: Enrique Silva.

LEARN MORE

lincolninst.edu/our-work/africa, landvaluecapture.org.za

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