

Land Lines

QUARTERLY MAGAZINE OF THE LINCOLN INSTITUTE OF LAND POLICY

JULY 2023

The Once and Future Grid

Converting Offices into Apartments

Conservation and Housing Groups Join Forces



Land Lines

JULY 2023 | VOL 35 | NO 3

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

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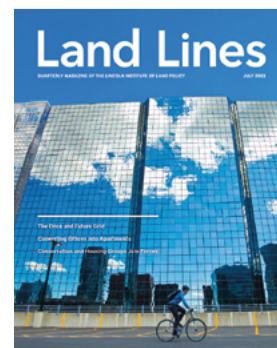
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Calgary, Alberta. Credit: GibsonPictures via E+/Getty Images.



Equity, Affordability, and the New Lending Landscape

IT MIGHT NOT be instantly obvious how housing finance could be considered a land policy, and even less obvious why pundits like me describe national financial regulation like the Community Reinvestment Act as one of the most important land policies of the 20th century. How in the world could *national* financial regulation influence local land use, and what does the lending and investment activity of banks have to do with land?

As I've noted here before, discriminatory federal lending maps devised by the Home Owners' Loan Corporation and adopted by the Federal Housing Administration (FHA) in the 1930s had enduring impact. Some 90 years later, a 2022 review by the Federal Reserve reported on research that definitively linked these maps to contemporary inequities in economic opportunity, health outcomes, access to green space, heat island effects, COVID mortality, and life expectancy.

We've seen a huge shift in mortgage lending away from regulated banks to nonbank lenders—and these lenders have no affirmative obligation to address historic discrimination.

The Community Reinvestment Act (CRA) was one of three congressional actions following the 1964 Civil Rights Act that were designed to undo the damage inflicted on communities by federal housing finance policies. Decades of capital starvation and discrimination-by-design had hollowed out American cities and immiserated millions of Americans and their communities.

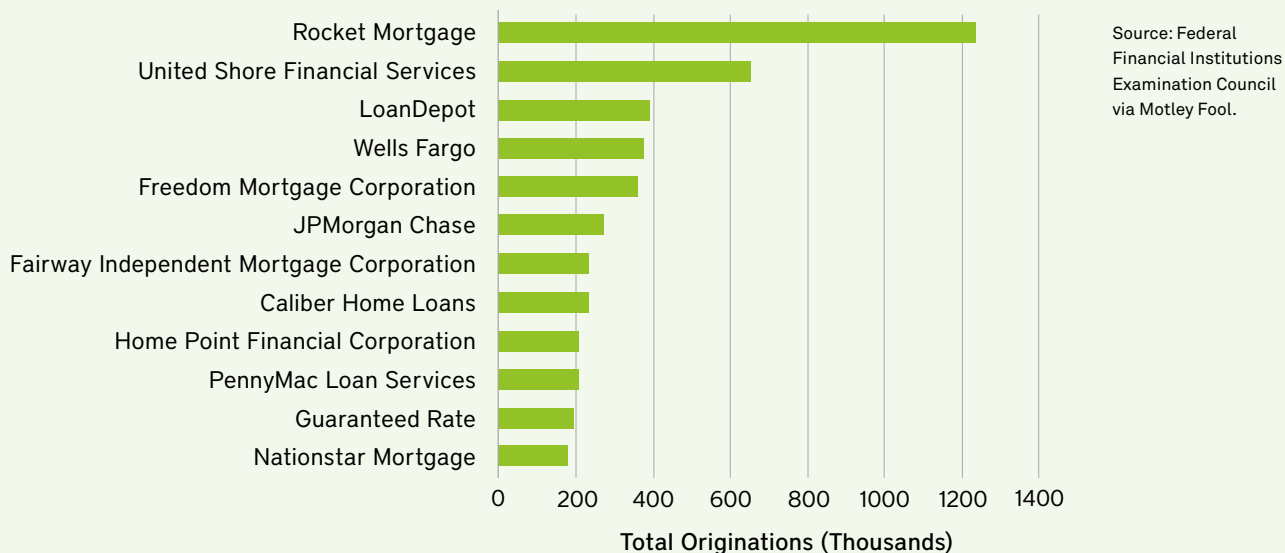
Passed in 1977 on the heels of the Fair Housing Act of 1968, which prohibited discrimination in real estate transactions, and the Home Mortgage Disclosure Act of 1975, which required lenders to report on their activities with geographic precision, the CRA imposed an affirmative obligation on federally regulated banks to serve the credit needs of all communities in their service areas. It did not tell banks what they could *not* do, but rather what they *needed* to do to reverse decades of bad behavior.

Three federal agencies—the Federal Reserve, Federal Deposit Insurance Corporation (FDIC), and Office of the Comptroller of the Currency (OCC)—were tasked with ensuring that banks complied with this new regulation. Interestingly, the law was only fully enforced a dozen years later, when regulators were asked to approve banks' geographic expansion, primarily through mergers or acquisitions.

The CRA has been revised many times to respond to the evolving banking industry. Most recently, in 2020, the OCC proposed a modernization rule to address the shift from “bricks and mortar” to digital banking, but the rule was opposed by the Federal Reserve, the FDIC, and thousands of community groups. The proposal was rescinded in 2021, but few observers would argue that the CRA does not need modernizing. Even more pressing than digital banking are concerns about the huge shift in mortgage lending away from regulated banks to nonbank lenders.

According to the Federal Financial Institutions Examination Council, 10 of the top 12 mortgage lenders in 2021 (and four of the top five) were independent mortgage companies. These nonbank lenders have no affirmative obligation to address historic discrimination.

TOP 12 U.S. MORTGAGE LENDERS BY ORIGINATIONS, 2021



Beyond Home Mortgage Disclosure Act compliance, their lending activity is very weakly regulated. They are not, however, beyond the reach of land policy qua financial regulation.

Nonbank lenders rely on industry giants for capital. According to the Urban Institute, the government-sponsored enterprises (GSEs), Fannie Mae and Freddie Mac, purchased around 60 percent of mortgages originated in the United States in 2021. The FHA and the US Department of Veterans Affairs (VA) accounted for an additional 16 percent. Importantly, nonbanks originated around 70 percent of the loans purchased by the GSEs and more than 90 percent of the government-backed loans in 2021. So, if one wanted to continue affirmative efforts to serve the housing finance needs of historically underserved markets, the pathway is fairly obvious: look for existing or new policy frameworks that provide opportunities, by way of regulating the GSEs, to affect the lending behavior of nonbanks.

As luck would have it, the housing finance giants are publicly controlled. Both Fannie Mae and Freddie Mac were placed in federal conservatorship by the Federal Housing Finance Agency (FHFA) in 2008 when they became insolvent during the foreclosure crisis. In 2017, the FHFA

implemented the Duty to Serve program, which imposed statutory requirements on the GSEs to serve three specific underserved markets: manufactured housing, affordable housing preservation, and rural housing. Under Duty to Serve, Fannie Mae and Freddie Mac are required to submit three-year plans that describe how they will better serve those markets. The plans are finalized based on public input and reported on annually to Congress.

In 2021, the FHFA imposed additional obligations on the GSEs to expand access to safe, decent, and affordable housing opportunities; they are now required to prepare, implement, and report annually on Equitable Housing Finance plans that describe how they will “meaningfully address the racial and ethnic disparities in homeownership and wealth that have persisted for decades.”

The decade following the first enforcement of the CRA in 1989 was a golden era for community development as advocates mobilized to pressure banks to meet CRA obligations. Almost immediately, hundreds of billions of dollars of new lending flowed to CRA service areas. The national homeownership rate rose from 64 percent to 68 percent, with growth in low- and moderate-income neighborhoods double the national rates.

Community development corporations prospered, and the community development finance industry was incubated.

We are at a similar moment for the Duty to Serve and Equitable Housing Finance plans—something I’ve taken to calling “the New CRA.” The FHFA is building more muscular regulatory oversight, and with the Lincoln Institute’s help, the civic sector is again mobilizing to ask for better plans, better enforcement, and better results.

With the Lincoln Institute’s help, the civic sector is again mobilizing to ask for better plans, better enforcement, and better results.

Last year, we convened 20 of the largest nonprofit affordable housing developers to launch the Underserved Mortgage Markets Coalition (UMMC). Its objective is to speak with one voice to push, and collaborate with, the GSEs to meet their mission under the Duty to Serve and Equitable Housing Finance plans. Together we are working with the GSEs to design better lending products to finance the purchase of manufactured homes, build the capacity of Community Development Financial Institutions to originate new mortgages in hard-to-reach markets, and persuade the FHFA to support new pilot lending programs to test new products and processes to better serve these markets.

President Jimmy Carter signs the Community Reinvestment Act into law in 1977. Credit: Federal Reserve.



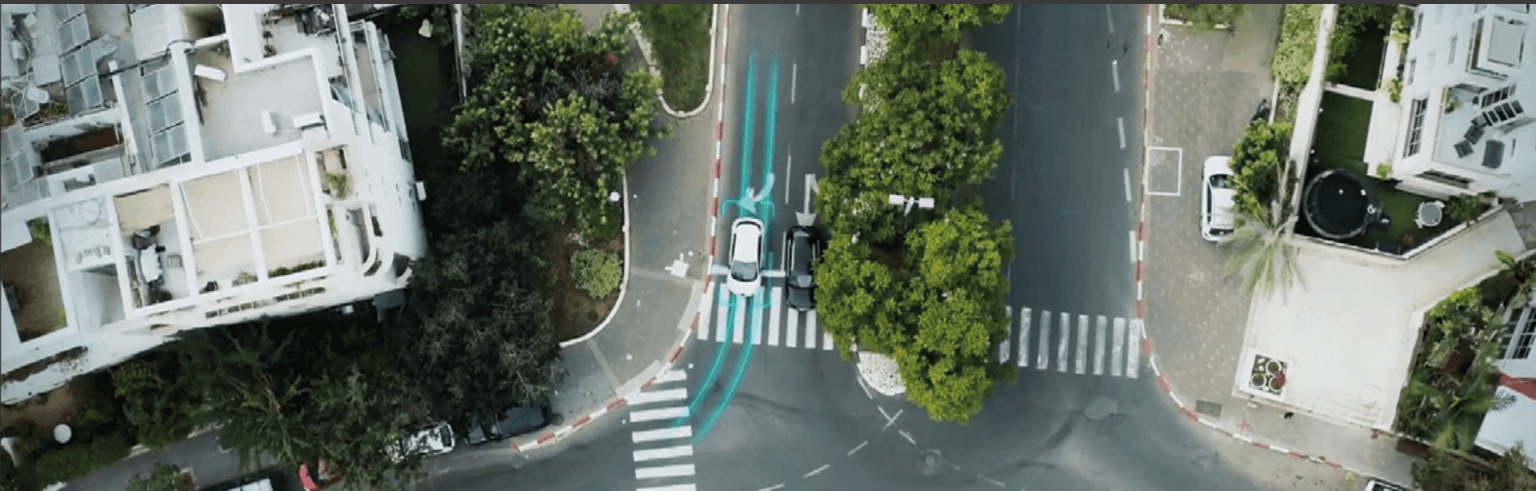
The UMMC is demystifying the secondary mortgage market—where lenders and investors buy and sell loans and servicing rights—and proposing realistic solutions to make real systems change. In its first full year as a coalition, the UMMC notched an important victory when the FHFA rejected new Duty to Serve plans submitted by the GSEs, asking for more ambitious plans with more specific goals like those reflected in a comprehensive blueprint the coalition had prepared. Recent UMMC efforts include a scorecard showing how well the GSEs followed the blueprint and a dashboard that will provide accessible, detailed quantitative data on their performance.

The Duty to Serve and Equitable Housing Finance plans are not a substitute for the Community Reinvestment Act. The CRA remains the most important land policy in our national arsenal of financial regulation, and is responsible for huge amounts of new credit that flowed back to communities that were denied access for decades.

But times have changed. When the CRA was passed, there were an estimated 18,000 banks insured by the FDIC. Today, there are 4,844. On top of that, many banks are closing or shrinking their retail mortgage business, ceding the space to nonbank lenders. We can try to reform the CRA to reflect this new market reality, or we can meet the market where it is.

Racial and ethnic homeownership gaps remain distressingly high, as does an unacceptable and stubborn racial wealth gap. If we hope to make a dent in either, we’ll need to find a way to expand homeownership in unprecedented ways.

Nobody expected the CRA to redress all the shameful impacts of misguided lending policies. The Duty to Serve and Equitable Housing Finance plans are wonderful supplements to the CRA. Perhaps a portfolio of lending regulations is a better approach than one size fits all. It is our hope that the UMMC will empower practitioners and advocates to ask the GSEs and the FHFA for what they need to take on these immense challenges. □



Pilot projects in cities from Tel Aviv to Detroit are testing electrified roads that charge the vehicles driving on them. Credit: Electreon.

These Routes Are Made for Charging

OVER THE PAST two years, the federal government has raced to turbocharge the transition from gas-powered vehicles to electric alternatives. The Biden administration wants EVs to make up half of new auto sales by 2030; last year's Inflation Reduction Act juices that goal through a \$7,500 individual tax credit for eligible EV buyers. But the electric vehicle transition isn't just a consumer issue—it's an infrastructure challenge.

After all, a nation of EV drivers will depend on lots of places to charge up—and that system simply doesn't exist. While today's EV owners do an estimated 70 to 80 percent of their vehicle charging at home, that won't work for long-distance driving. So the Biden administration has declared a goal of 500,000 public EV chargers built out by 2030, along highways, around cities, and in rural areas, with the 2021 Bipartisan Infrastructure Law committing \$5 billion to this nascent network.

But some experts say that if we come anywhere close to meeting the ambitious 2030 EV sales target, even that level of charging infrastructure won't be enough: the number of

chargers needed would be closer to 2 million. Moreover, long-haul freight trucking, a crucial transportation category, poses special challenges—with some fascinating potential solutions.

"Most people, when they think about vehicle electrification, think, 'How do we replace the gas stations with charging stations?,'" says Tallis Blalack, managing director of the ASPIRE (Advancing Sustainability through Powered Infrastructure for Roadway Electrification) Engineering Research Center at Utah State University. But alternative, or supplemental, possibilities are emerging, including roads embedded with charging coils at periodic intervals that recharge the vehicles driving over them, in the manner of a phone sitting on a wireless charging pad—basically, electric avenues.

A nation of EV drivers will depend on lots of places to charge up, and that system simply doesn't exist. But new possibilities are emerging, including roads that recharge the vehicles driving over them—basically, electric avenues.

Sometimes referred to as “inductive charging,” this technology has received less attention than the more traditional charging stations. But it’s being actively piloted in multiple places across the United States, including Salt Lake City, Orlando, and Detroit, in various locations in Europe, and elsewhere in the world.

“We believe that passenger vehicles are well over the tipping point—those are being electrified, and despite the challenges, it’s going to happen,” Blalack says. But the story isn’t so clear-cut when it comes to the trucks and heavy-duty vehicles that long-haul shipping relies on, and that may require a different way of thinking about EV infrastructure.

As Blalack points out, nearly half of US freight travels over 250 miles, most of it via truck, and medium- and heavy-duty trucks account for nearly a quarter of US transportation greenhouse-gas emissions. ASPIRE estimates that the cost of operating a freight truck could nearly double using long-range batteries and the fast-charging station options currently available. That’s because long-range batteries for heavy-duty trucks are big, expensive, and heavy (cutting into payload space), and even fast charging—assuming it’s available—can entail costly delays. With an electric road that provides charging on the go, trucks simply need a receiver for the charge. They could use smaller batteries that don’t have to hold as much of a charge, and the cost would actually shrink, perhaps to as low as half the current cost of operating a diesel truck, according to ASPIRE.

The technology could be built out gradually, but advocates ultimately envision it being available across long sections of US highways. And it could charge properly equipped lighter trucks and passenger vehicles as well; drivers would decide whether to charge while in motion,



The ASPIRE Engineering Research Center test track in North Logan, Utah, site of a roadway electrification demonstration project that uses wireless charging technology provided by Electreon. Credit: Courtesy of ASPIRE.

paying via in-vehicle software or an app. In some cases, the process of fitting highways with charging coils could be paired with other needed upgrades and maintenance. The coils would be placed every few miles, with specifics depending on traffic patterns. The coil technology—the development of which dates to the 1990s, including work on wireless energy transfer at the University of Auckland, an ASPIRE partner—can also be used in static form; vehicles with receivers essentially just park over it, with no need for a charging post.

Clearly, any widespread build-out of electric roads would take years. But existing and pending pilot programs suggest incremental benefits and possibilities across different scenarios. ASPIRE, through its own Salt Lake City facilities and partnerships, is testing freight logistics and electric transit programs. It’s also directly involved in several other pilot projects, including one from the Indiana Department of Transportation and Purdue University. A separate effort involves a new stretch of roadway west of Orlando that will include an electrified section to demonstrate how the technology can be part of new construction rather than a retrofit.

Sometimes referred to as “inductive charging,” this technology has received less attention than the more traditional electric-vehicle charging stations. But it’s being actively piloted in multiple places across the United States, including Salt Lake City, Orlando, and Detroit.

Another example that has captured attention—in part because of its location in the heart of the American auto industry—involves a pair of electric roads in Detroit. The first, scheduled for completion this year, is a quarter-mile stretch near Michigan Central Station, a mobility innovation hub; the second, projected for next year, is a three-quarter-mile strip near downtown. Both will facilitate experiments with a variety of electric vehicles. “This pilot project will enable us to identify [potential] use cases,” noted a Michigan Department of Transportation (MDot) spokesperson. “Some examples of use cases for wireless charging technology could be integrated into taxi and ride-sharing services, enabling vehicles to be charged while waiting for passengers, commercial vehicle queues at border crossings, static pad charging for transit and last-mile delivery stops, and in-motion charging for shuttle and transit routes.”

So far, the technology has largely been left out of the big federal funding initiatives that have boosted EV infrastructure spending. ASPIRE works with state and local governments as well as private industry; the Detroit project is funded by MDot and Israeli tech company Electreon, which has been involved in a number of EV infrastructure projects in the United States and Europe. “Interest in wireless charging is greater now than at any point since Electreon was established in 2013,” says Stefan Tongur, a vice president for the company. “Several countries in Europe have targets to electrify thousands of kilometers. . . . We are seeing interest and plans in other parts of the world too.” Sweden, as an example, has conducted a variety of pilot programs, recently announced it would deploy the technology on a 21-kilometer highway linking Stockholm and Gothenburg over the next two to three years, and may commit to up to 3,000 kilometers of electric roads by 2035.

In the next five or so years, such pilots may be extended into more ambitious experiments, Blalack says, gradually adding roadway segments based on freight traffic patterns. By 2040, one ASPIRE roadmap suggests, that could include interstate highways.

ASPIRE has partnerships with multiple educational institutions, labs, government entities, and nonprofits that are engaged in a range of energy technology projects. The idea isn’t so much to replace the charging station strategy; we’ll definitely need to build that infrastructure too. But other options can help meet the EV challenge. As Blalack says, “Our charging solution has to be: all of the above.” □

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

Embedding wireless charging coils in a road in Gotland, Sweden, for a demonstration project led by Electreon. Credit: Electreon.





Aftab Pureval, elected in 2021, is making history as Cincinnati's first Asian American mayor. He was raised in Southwest Ohio, the son of first-generation Americans, and worked at a toy store when he was in middle school. After graduating from the Ohio State University and the University of Cincinnati Law School, Pureval held several positions in the legal community, including counsel at Procter & Gamble, before entering public service. He served as Hamilton County Clerk of Courts from 2016 to 2021, and was the first Democrat to hold that office in over 100 years. Pureval resides in the north Cincinnati neighborhood of Clifton with his wife and their two sons.

He spoke with Senior Fellow Anthony Flint earlier this year for the *Land Matters* podcast; their full conversation is available at www.lincolnst.edu/publications/podcasts-videos. This transcript has been edited for length and clarity.

Top: Cincinnati, Ohio. Credit: pawel.gaul via iStock/Getty Images Plus.
Inset: Aftab Pureval. Credit: Amanda Rossmann/USA Today Network.

Housing and Hope in Cincinnati

ANTHONY FLINT: *You've attracted a lot of attention for what some have called a "heroic undertaking" to preserve the city's single-family housing stock and keep it out of the hands of outside investors. Briefly, walk us through what was accomplished in coordination with the Port of Cincinnati.*

AFTAB PUREVAL: Just to provide a little more context, Cincinnati is a legacy city. We have a proud, long tradition of being the final destination from the Underground Railroad. We were the doorstep to freedom for so many slaves who were escaping that horrific experience. We have a lot of historic neighborhoods, a lot of historic buildings, and we have a lot of aging infrastructure and aging single-family homes, which—paired with the fact that we are an incredibly affordable city in the national context—makes us a prime target for institutional investors.

Unfortunately, Cincinnati is on national list after national list about the rate of increase for our rents. It's primarily being driven by these out-of-town investors—who have no interest in the well-being of Cincinnati or their tenants—buying up cheap single-family homes, not doing anything to invest in

them, but overnight doubling or tripling the rents. The city is doing a lot of things through litigation, through code enforcement . . . to let them know that we're not playing around. If you're going to exercise predatory behavior in our community, we're not going to stand for it.

We've also done things on the front end to prevent this from happening by partnering with the Port. . . . When several properties went up for sale because an institutional investor put them on the selling block, the Port spent \$14.5 million to buy over 190 single-family homes, outbidding 13 other institutional investors. . . . Over the past year, the Port has been working to bring those properties into compliance [and match them] with qualified buyers, oftentimes folks who are working in poverty or lower middle-class who've never owned a home before. Just this year we're making three of those 194 available for sale. It's a huge success across the board . . . but it's just one tool that the Port and the city are working on to increase affordability of housing in all of our neighborhoods.

AF: *What did you learn from this that might be transferable to other cities? It takes a lot of capital to outbid an institutional investor.*

AP: It does require a lot of funds. That's why we need more flexibility from the federal government and the state government to provide municipalities with the tools to prevent this from happening in the first place. Now, once an institutional investor gets their claws into a community, there's very little that the city can do to hold them accountable.

The better strategy, as we've seen, is to buy up properties on the front end. A lot of cities have a lot of dollars from the federal government through the American Rescue Plan (ARP). We have used a lot of ARP dollars not just to get money into the hands of people who need it most, which is critically important in this time, but also to partner with other private-public partnerships or the Port to give them the resources necessary to buy up land and hold it.

This is a unique time in cities where they have more flexibility [with] the resources coming from the federal government. I would encourage any mayor, any council, to really think critically about using the funds not just in the short term but also in the long term to address some of these macroeconomic forces.

AF: *Cincinnati has become a more popular place to live, and the population has increased slightly after years of decline. Do you consider Cincinnati a pandemic or climate haven? What are the implications of that growth?*

AP: What I love about my job as mayor is my focus isn't necessarily on the next two or four years, but the next 100 years. Right now, we are living through a paradigm shift because of the pandemic. The way we live, work, and play is just completely changing. Remote work is completely altering our economic lifestyle throughout the entire country, but particularly here in the Midwest.

One of more than 190 homes purchased by the Port of Cincinnati as part of an effort to preserve affordability and local homeownership. Credit: The Port of Greater Cincinnati Development Authority.



What I am convinced of is because of climate change, because of the rising cost of living on the coast, there will be an inward migration. I don't know if it's in the next 50 or 75 years, but it will happen. We're already seeing large businesses making decisions based on climate change. Just two hours north of Cincinnati, Intel is making a \$200 billion investment to create the largest semiconductor plant in the country, drawn by our access to fresh water and our region's climate resiliency.

Now, don't get me wrong: we're all affected by climate change . . . but in Ohio and Cincinnati, we're not seeing the wildfires, the droughts, the hurricanes, the earthquakes, the coastal erosion that we're seeing in other parts of the country, which makes us a climate-change safe haven not just for business investment but also for people.

Cincinnati is partly growing because our economy's on fire right now, but we're going to really see, I believe, exponential growth over the next few decades because of these massive factors pushing people into the middle of the country. To make sure that the investments in the future and the population growth in the future do not displace our current residents, we've got to stabilize our market now and be prepared for that growth.

AF: *What are the land use changes and transportation improvements that you're concentrating on accordingly?*

AP: If we're going to get this right, we have to have a comprehensive review and reform of our land use policies. We have been having meetings with stakeholders to [explore what] a modern Cincinnati looks like. I believe it looks like a dense, diverse neighborhood that's walkable, with good public transportation and investments in public art. Right now, the City of Cincinnati's zoning is not encouraging those kinds of neighborhoods. Close to 70 percent of our city is zoned for single-family use



Cincinnati's electric streetcar travels a 3.6-mile loop connecting several areas of the city. Credit: 5chw4r7z via Flickr CC BY-SA 2.0.

exclusively, which is putting an artificial cap on the amount of supply that we can create, which is artificially increasing rents and artificially increasing property taxes, which is causing a lot of our legacy residents, even those who own their homes, to be displaced.

If we're serious about deconcentrating poverty and desegregating our city, then we've got to take a look at multifamily unit prohibitions. We've got to take a look at parking requirements for both businesses and homes. We've got to look at transit-oriented development along our bus rapid transit lines. We've got to look at creative opportunities to create more housing like auxiliary dwelling units, but none of this is easy. . . . I am confident we can make some substantive changes to our zoning code to encourage more affordability, encourage more public transportation, and just be a greener city. On that note, we have made a commitment that we will only buy city vehicles that are electric vehicles when they become available. We have the largest city-led solar farm in the entire country, which is significantly contributing to our energy consumption.

AF: *A little bit of this is back to the future, because the city had streetcars. Do you have the sense that there's an appreciation for that, that those times actually made the city function better?*

AP: The city used to be dense, used to have incredible streetcars, public transportation, and then, unfortunately, cities—not just Cincinnati but across the country—saw a steady decline of population, losing folks to the suburbs. Now people want to come back into the city, but now we have the hard work of undoing what a lot of cities tried to do, which was create suburban neighborhoods within a city to attract those suburban people back. It's a little bit undoing the past while also focusing on what used to exist.

AF: *What worries you most about this kind of transition, and what do you identify as the major issues facing lower-income and communities of color in Cincinnati?*

AP: Displacement. If we cannot be a city that our current residents can afford, they will leave, which hurts everything. If the city is not growing, then a city our size, where we're located in the country, we are dying, and we are dying quickly. Cities our size have to grow, and in order to grow, not only do we need to recruit talent, but we have to preserve the families and the legacy communities that have been here in the first place.

No city in the country has figured out a way to grow without displacement. The market factors, the economic factors are so profound and so hard to influence, and the city's resources are so limited, it's really difficult. . . . Oftentimes, I guess I get frustrated that I don't have enough resources, enough authority to make a meaningful

impact on the macroeconomic forces that are coming into the city. Because if we get our dream, which is more investment, more growth, that comes with negative consequences, and it's really difficult to manage both.

AF: *The mayor's website says Cincinnati is well positioned to be a leader in climate change at home and abroad. What do you think the city has to offer that's distinctive in terms of climate action?*

AP: All of our policy initiatives are looked at through two lenses. The first is racial equity and the second is climate—everything that we do, whether it's our urban forestry assessment, looking at a heat map of our city and investing in trees to not just clean the air but also cool our neighborhoods, [or] our investments in biochar. We are one of only three cities in the entire world that received a huge grant from the Bloomberg Philanthropies to continue to innovate in the world of biochar, which is a byproduct of burning wood, which is an incredible carbon magnet that helps with stormwater runoff but also pulls carbon out of the air.

Ultimately, businesses and people who are looking to the future consider climate change in that future. If you're looking for a city that is climate resilient but also making massive investments in climate technology, then Cincinnati is that destination for you. □

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

“If we cannot be a city that our current residents can afford, they will leave, which hurts everything. . . . Cities our size have to grow, and in order to grow, not only do we need to recruit talent, but we have to preserve the families and the legacy communities that have been here in the first place.”

HOME/ WORK

**Office-to-Residential Conversions
Are on the Rise—What Does That
Mean for Cities?**

By Jon Gorey

IT MAKES SO MUCH SENSE, at least on paper: A lasting shift in workplace norms has left many downtown office buildings half empty for much of the week, along with the surrounding delis, drugstores, and coffee shops that long relied on daily commuter dollars. As vacancies mount, commercial property values will drop, which could affect property tax revenues. Meanwhile, in the more residential neighborhoods outside of those drowsy downtown districts, a severe shortage of housing has pushed prices past tenable levels for homebuyers and renters alike.

So why not convert some of those empty offices into homes, creating much-needed new housing and bringing more people (and spending) downtown, while at the same time capturing the climate and sustainability benefits of building reuse and dense urban living?

That's a question being raised in cities all over the world, as remote and hybrid work schedules evolve from exception to rule for a sizable portion of the workforce. But while office-to-residential adaptive reuse appears to be a promising solution, the reality is more complicated.

MORE THAN half of American workers—some 70 million people—can perform their jobs remotely, according to a June 2022 Gallup analysis, and a mere 6 percent ever want to return to working full-time in an office; most say they would look for a different job if their employer forced the issue. Gallup forecasts that more than half of those remote-capable employees will work a hybrid schedule going forward, and 22 percent will work entirely offsite in the years to come (Wigert and Agrawal 2022).

As remote and hybrid work arrangements become not just accepted but expected, companies are consolidating the amount of office space they lease while trying to make commuting worth the effort for employees. Often that translates to

renting less square footage in a pricier building with new, high-end finishes and state-of-the-art amenities—what's known in commercial real estate as Class A space.

That leaves older, less attractive Class B or Class C offices—which comprise the majority of built workspace—struggling to find or keep tenants. Nationwide, the office vacancy rate surpassed 17 percent in the fourth quarter of 2022, up from 12.1 percent in late 2019, according to the commercial real estate company CBRE.

It's a trend that shows no signs of easing, and some cities are faring worse than others. CBRE estimated San Francisco's commercial vacancy rate to be 27.3 percent at the end of 2022; it was just 4.8 percent before the pandemic. Phoenix finished the year with nearly 24 percent of its offices unleased, up from 14.4 percent in late 2019 (CBRE 2023).

And central business districts, in particular, are reeling. For the third straight quarter, downtown offices had higher vacancy levels (17.6 percent) than suburban ones (17.2 percent), flipping the historical trend. The vacancy rate for downtown office buildings was 10.2 percent in late 2019.

In Denver's Upper Downtown, the office vacancy rate was already increasing before the pandemic, and had reached 21 percent by mid-2022, says Laura E. Aldrete, executive director of Community Planning and Development. But city leaders are choosing to see it as an opportunity. "We have an affordable housing crisis integrated into that," Aldrete says. "So how can we take two negatives and make it a positive?"

Downtown offices are sitting empty, while the cities they anchor desperately need housing. Could those unused cubicles and conference rooms be converted into homes?



Denver's Upper Downtown, left, lacks the vitality of Lower Downtown, right. Planners hope encouraging office conversions will change that. Credits (l-r): Sportstock via E+/Getty Images, Wim Wiskerke/Alamy Stock Photo.

Mixing It Up

Late in the pandemic, Aldrete noticed something as she walked around Querétaro City, Mexico: At a time when many American downtowns still felt eerily empty due to lingering office closures, Querétaro City was *alive*. Plenty of workplaces had shut down in Mexico, too, but the city center was still abuzz with people, including families with young children. “It’s a city from the 1500s that has a series of public realm plazas, with pedestrian-oriented streets and residential, office, and retail [spaces], and it was thriving,” Aldrete says.

She saw a similar pattern emerging in sections of downtown Denver. The city’s central business district, Upper Downtown, is a throw-back to the urban renewal era—concrete office buildings, one-way streets, parking lots—and has yet to wake up from its COVID-induced slumber. But Lower Downtown (“LoDo”), a historical, mixed-use neighborhood whose once-empty warehouses were converted to lofts and restaurants in the 1980s and ’90s, stayed relatively active through the pandemic. So did the Union Station neighborhood, which experienced its own mixed-use renaissance in the past decade, with the high-profile renovation of the

city’s train station sparking a greater focus on parks and mixed-income housing. “Today, in comparison to Upper Downtown, those two downtown neighborhoods continue to thrive,” Aldrete says.

Even before the pandemic, Aldrete could see that Upper Downtown’s nine-to-five vibe lacked the vitality 21st-century employers wanted. “Historically, all the banks, oil, and gas companies have scrambled to have their address on 17th Street,” Aldrete says—a stretch of Upper Downtown nicknamed “The Wall Street of the Rockies.” But when BP was looking for a regional headquarters seven years ago, the company bypassed 17th Street in favor of a Union Station location. Then COVID hit, “and it became very apparent that we did not have a neighborhood [in Upper Downtown] . . . no one was there,” she says. That raised the question: “How could we think about transforming our central business district into a central *neighborhood* district?”

Denver is now piloting a program that will invite up to five property owners to work with the city to convert their underused office buildings into residences. Aldrete has encouraged the owners of the historical but half-vacant Petroleum Building, among others, to participate, since they already had plans to convert the

That raised the question: “How could we think about transforming our central business district into a central *neighborhood* district?”

office tower into more than 100 apartments; she hopes a few successful pilot projects can pave a path for others to follow.

“In real estate, it’s the first ones who take the highest risk,” Aldrete says. “One of the roles city government can play is working with the private sector . . . how do we show up as good partners to move them through the process?”

The neighborhood already has entertainment venues and perhaps the best transit access in the city, including buses and light rail, Aldrete says, but it lacks other amenities that would draw full-time residents—“the heart of any community.” So at the same time, Denver is working with community partners to find other ways of creating “a complete neighborhood” downtown, from attracting more childcare facilities, to increasing the tree canopy outside of residential conversions, to activating ground-floor retail spaces through programs like PopUp Denver, which provides local entrepreneurs a rent-free storefront for three months.

Sustaining Downtown

Adaptive reuse presents logistical challenges, but also possibilities—including the potential to revive struggling downtowns and sustain them in a new way, says Amy Cotter, director of climate strategies at the Lincoln Institute of Land Policy. “There’s a lot of hand-wringing about the evolution of office space being a death knell for our city centers,” says Cotter, a former planner who focuses on urban policy and climate resilience. But converting excess workspace to housing offers the prospect of a 24/7 population keeping a city vibrant and economically healthy—“just differently than when we had central business districts with a nine-to-five daytime population and suburbanites commuting in,” she explains.

The urban routines of the last few decades had become predictable and unsustainable, Cotter says: “During the day, you’ve got office

workers parking and eating at restaurants, and then at night, you’ve got condo owners or apartment dwellers parking and eating out in restaurants,” she says. “Well—what if there wasn’t that switchover? What if it was the same population there, not only working, living, eating, and recreating in the same space, but not putting those miles on a car, and maybe even avoiding ownership of a car entirely?”

That sounds a bit utopian, Cotter admits, and yet it’s not unrealistic. After all, adaptive reuse is nothing new. As domestic manufacturing waned in the late 20th century, vacant textile mills and factories in the Northeast and Midwest were repurposed into sought-after artist studios and residential lofts. Dwindling church attendance has given rise to converted condos with literal cathedral ceilings. And in Lower Manhattan, revitalization efforts that started in the mid-1990s and accelerated after 9/11 have led to roughly 20 million square feet of office space being converted into about 17,000 homes, according to a study published by New York City’s Office Adaptive Reuse Task Force in January (City of New York 2023).



Adaptive reuse at Boott Mills, a former cotton mill in Lowell, Massachusetts.
Credit: John Penney via iStock Editorial/Getty Images Plus.

Workers update the roofing on a high-rise in Manhattan's financial district for the building's conversion to residential apartments. Credit: AP Photo/Bebeto Matthews.



Repurposing a structure, instead of demolishing it and rebuilding, keeps carbon out of the atmosphere and construction waste out of landfills. The United States generated 600 million tons of construction and demolition debris in 2018, according to the Environmental Protection Agency—more than double the amount of all our municipal solid waste—and 90 percent of it came from the demolition of existing buildings (US EPA 2022). Meanwhile, conventional building materials are extremely carbon-intensive; concrete and steel production each account for at least 8 percent of global greenhouse-gas emissions.

That's why adaptive reuse “almost always offers environmental savings over demolition and new construction,” according to the National Trust for Historic Preservation Research and Policy Lab, which notes that it takes 20 to 30 years of high-efficiency operation for most new buildings to finally offset the initial climate impact of their construction (Frey, Dunn, and

Cochran 2011). Keeping a building's foundation and framing intact while giving its facade a face lift and updating its heating, cooling, insulation, and other systems has the added benefit of drastically improving the energy efficiency of the building's operations, reducing energy consumption by up to 40 percent.

It can also be economical. While office conversions can get complicated, says Robert Fuller, New York-based principal and studio director at the global architecture firm Gensler, “compared to demolishing and building brand new, they generally come in at a lower cost per unit than new construction would.” CBRE estimates the cost of retrofitting one office building to apartments in Alexandria, Virginia, would be \$213 per square foot, compared to \$275 per square foot if it were built new. The process can be quicker, too: Developers told the Urban Land Institute that reuse can shave six to 12 months off the construction timeline (Kramer, Eyre, and Maloney 2023).

Keeping a building's foundation and framing intact while giving its facade a face lift and updating its heating, cooling, insulation, and other systems has the added benefit of drastically improving the energy efficiency of the building's operations, reducing energy consumption by up to 40 percent.

Mid-Century Meh

What makes the present reuse movement more challenging than converting mills and churches is the *type* of office buildings that need to be converted. A lot of the commercial space sitting vacant now is in the unglamorous, blocky towers of the 1960s, '70s, and '80s.

“They’re not really thought of as historic buildings just yet,” Fuller says. Along with aging systems, those mid-century monoliths often have sprawling, block-deep footprints—placing the core of the building upwards of 40 or 50 feet from the nearest (inoperable) window—and drab, unwelcoming facades.

Many of the Lower Manhattan buildings that got converted after 9/11 were prewar buildings with smaller floor plates and traditional framed window openings, Fuller says. “I don’t want to say they were easy conversions, but they made a lot of sense. Some of these 1960s and '70s buildings . . . definitely have their challenges.”

Architects can still overcome those issues—it’s usually just a matter of financial feasibility.

For example, Fuller says, “If the building has a large enough floorplate, you can actually create a lightwell down the center,” drawing daylight deep into the building core.

Such space can be repurposed in other ways, too. When Gensler was converting Philadelphia’s Franklin Tower from offices to apartments a few years ago, the company decided to stack the building’s new amenities—including a Peloton cycle studio, fitness center, and theater—through the center of the building on different floors, making use of otherwise dead space deep within the building’s core. “Rather than doing one amenity floor, which is quite common in a residential building,” Fuller says, “you can imagine this vertical spine of amenities that runs up through the building.”

Another challenge in adapting older office buildings is updating the curtain wall, or nonstructural exterior facade. This isn’t just to modernize the aesthetic and improve energy efficiency, but also to install operable windows, which most office buildings lack—and most cities require of residential units.



During the conversion of Philadelphia’s Franklin Tower, the 1980s concrete structure (left) was clad in glass and aluminum (right), and its narrow strips of windows replaced with large windows and private balconies. Credits (l–r): Courtesy of Gensler; Robert Deitchler, courtesy of Gensler.



A common area at Philadelphia's converted Franklin Tower, left, and a living room in one of its 550 residential units, right. Credits (l-r): Robert Deitchler, courtesy of Gensler; courtesy of PMC Property Group.

Despite these barriers, unremarkable office buildings can still be a good foundation for attractive housing, offering enviable locations and luxurious structural features like high ceilings. A 12-foot floor-to-floor height isn't considered Class A standard for modern office space, Fuller says, "but it's very generous for a residential building."

To help cities identify potential reuse candidates, Gensler developed a proprietary scorecard that awards points for a building's location, configuration, elevator service, and other factors. "It's a way to kind of quickly look at a broad swath of buildings and identify the best contenders," Fuller says—because not every vacant office tower will make a sensible conversion project.

Only 10 of 84 buildings Gensler evaluated in Boston's financial district, for example, ranked high enough to merit consideration as reuse targets (Carlock 2022). That may not sound like a lot. But even if most mid-century office towers don't ultimately pencil out for residential reuse, converting just a few can create hundreds or even thousands of new homes in housing-starved cities. "Given the millions of square feet of underutilized office space, even a small

percentage of that could really move the needle from a housing standpoint," Fuller says.

That's one reason New York's Office Adaptive Reuse Task Force is recommending 11 policy changes that would allow for and encourage the conversion of more office buildings in more neighborhoods (City of New York 2023). "We want to ensure that outdated office buildings can be converted to more in-demand uses, such as desperately needed homes for New Yorkers," planning director Dan Garodnick writes. Among the task force's recommendations, which followed a five-month study: loosening rules to allow the conversion of most office buildings built prior to 1991 and offering property tax incentives to support the creation of affordable housing and childcare facilities in repurposed buildings.

And in Washington, DC, where some 20 million square feet of office space sits vacant and Mayor Muriel Bowser has pledged to bring 15,000 new residents to downtown in the next five years, the city will offer 20 years of tax relief to developers who convert office buildings to residences, as long as 15 percent of the homes are designated affordable to those earning 60 percent or less of area median income.

Even if most mid-century office towers don't ultimately pencil out for residential reuse, converting just a few can create hundreds or even thousands of new homes in housing-starved cities.

CURRENCY CONVERSION: ADAPTIVE REUSE AND PROPERTY TAX REVENUE

The commercial property tax base is an important part of the revenue mix in most center cities. So does converting office space lead to a major loss of revenue? Not necessarily.

Though commercial buildings are often taxed at a higher rate than primary residences—75 percent higher, on average, according to a Lincoln Institute property tax analysis of the largest cities in each state—they don't necessarily provide the bulk of a city's property tax revenue (Lincoln Institute of Land Policy/Minnesota Center for Fiscal Excellence 2022). In a 2021 study of eight central US cities by the Institute on Taxation and Economic Policy, commercial real estate accounted for 37 percent of city property tax collections on average (ITEP 2021). And dependence on the property tax itself also varies, with some cities relying more heavily than others on state aid or local sales and income taxes.

The authors of the ITEP study found that a predicted 12 to 25 percent plunge in office property values would translate to a less dramatic 2 to 4 percent dip in overall revenue in most cities. That's still not a situation policymakers want to be in, says Adam Langley, associate director of tax policy at the Lincoln Institute, since it generally means either cutting services or raising taxes on remaining businesses, homeowners, or both. But it does suggest that, while converting an office building to residences may reduce the parcel's property tax obligation, the reclassification is unlikely to throw the city's finances into turmoil.

"The more fundamental issue is: What happens without these conversions?" Langley asks, adding that there's not yet much empirical evidence on this subject. "Having a high office vacancy rate, if it's permanent, is a bad thing. So if the alternative is having occupied condos and apartment buildings, even if they're paying lower property taxes, that seems like a better outcome."

Whatever approach cities take to revive their office districts, he suggests building some flexibility into their programs given the inherent uncertainty ahead, and cautions against locking in long-term tax abatements that may prove unnecessary a decade from now. After all, he points out, "it's not like you can just flip a switch and immediately convert millions of square feet of your city's office buildings into condos and apartments. It's going to take a long time to play out."



A sign of the times in New York's Times Square. Credit: Richard Levine/Alamy Stock Photo.

Converting Calgary

For better or worse, Calgary, Alberta, has a head start on many cities that are just starting to explore office conversions. A city of 1.3 million, Calgary has seen its share of booms and busts as the corporate capital of Canada's oil and gas industry. But when crude oil prices started sinking in 2014, they took the city's commercial property market down with them. Office buildings in downtown Calgary have lost about \$16 billion in property value since 2015, resulting in a loss of tax revenue that impacts the entire city.

"The conversations around our office vacancy issue started around 2015," says Natalie Marchut, program manager for Calgary's downtown strategy team. "Office vacancy had started climbing, we weren't seeing any reabsorption, and it started to become quite alarming." By the time COVID closures hit in 2020, there weren't a whole lot of downtown office workers left to send home.

So city officials worked with developers, businesses, and other partners to come up with a plan. With about a third of the office space downtown sitting vacant—some 14 million square feet—the city set a goal of removing six million square feet of office inventory over the next 10 years, ideally through residential conversions.

But as Isaac Newton would say, an object at rest tends to stay at rest, unless acted upon by an outside force. Even though converting a half-vacant office building to homes typically costs less than demolishing it and rebuilding from scratch, many property owners don't have the capacity or desire to take on such a big project, and instead succumb to inertia, letting buildings sit idle. "A big thing we realized was that most building owners weren't taking the initiative on their own to repurpose those vacant office towers," Marchut says.



The commercial property market in Calgary, Alberta, plummeted along with crude oil prices several years ago. Credit: dan_prat via E+/Getty Images.

So Calgary decided to offer financial incentives to kickstart the process. The city council approved an initial \$100 million in municipal funding in 2021—and another \$53 million in late 2022—to support adaptive reuse projects downtown, allowing the city to reimburse developers at \$75 per square foot of office space converted.

Even at that generous rate, which was calculated to cover about a third of the estimated \$225-per-square-foot cost of such conversions at the program's outset, some developers find it hard to make the numbers square, Marchut says, given rising interest rates and inflation. But the first two rounds of the program garnered far more project proposals than there was funding. The first 10 approved projects will subtract over 1 million square feet of office space from the downtown commercial market by converting it into some 1,200 new homes.

One concern that came up often in early discussions is that commercial properties are typically taxed at a higher rate than residential ones. "That was a big one that we had to get our heads around, but also help our council get their heads around: When you convert these to

With about a third of the office space downtown vacant, city officials worked with developers, businesses, and other partners to come up with a plan.

residential, they're going to be taxed at a lower rate, so we're not going to be getting what we could if they were fully occupied commercial spaces," Marchut says. "Yes. But we will not see the absorption of 14 million square feet of office space. We just will never get there."

The situation is so dire right now that some downtown buildings are assessed for their land value only, she adds. "Of course you need commercial property downtown, and of course they will always pay more to the city in tax revenue—but not if they're all empty," Marchut says. Meanwhile, removing excess inventory should reduce the vacancy rate, helping to stabilize and even restore the value of the remaining office space.

To accelerate conversions and attract as many applicants as possible, the city intentionally kept the program simple, without specific affordable housing requirements, for example. Marchut says that has allowed the city to prioritize projects that best align with its equity, climate, and planning goals.

"Every project that is coming online through this program is doing more than just converting office to residential," Marchut says. "We've got a few that are going to be doing affordable housing . . . we have others that are doing additional public realm improvements—and this is all optional. We don't require it, but applicants are coming to the table with really solid proposals, because they know the program is so competitive, and so they're kind of bringing their A game."

The program's first conversion project—the Cornerstone by Peoplefirst Developments, slated for completion later this year—is creating 112 family-oriented units, 40 percent of which will be priced at affordable rates, Marchut says. "They're also building three-bedroom units, which we don't have much of at all in the downtown," she notes. Another project, the 176-unit Palliser One by Aspen, plans to put in a public park and skating rink at ground level.

"Of course you need commercial property downtown, and of course they will always pay more to the city in tax revenue—but not if they're all empty."



The Cornerstone by Peoplefirst Developments, an adaptive reuse project in Calgary, will create a family-oriented residence (left) out of a commercial office building (right). Credit: Courtesy of Peoplefirst Developments.

The city is also investing \$163 million in placemaking and public realm projects, like revamping key pedestrian streets and extending its RiverWalk into the West End. “The other thing we’re really looking at is how to get more park space,” Marchut says. “Downtown, and particularly the West End, is starved for open public space, and if we’re looking to bring in new residents and families and children and all the rest, they’re going to need a place to go outside and play.”



Officials in Calgary are investing in the city’s RiverWalk and other amenities for new residents. Credit: Richard Cummins/Alamy Stock Photo.

One option that remains on the table for creating more parks downtown while reducing the glut of commercial space is the demolition of vacant office buildings that can’t be converted into something more useful. (An upcoming phase of the program will subsidize other types of office conversions as well, such as retail or arts venues.) “We are exploring incentivizing demolition for very specific properties,” Marchut says. “There are Class C buildings built in the ’70s that are full of asbestos, and also probably cannot actually be upgraded to meet new building code—they’re just simply at end of life.”

Calgary doesn’t have the kind of housing crisis facing larger cities like Toronto or Vancouver, but Alberta is still projected to gain 2 million new and mostly urban-dwelling residents by 2046. “With those numbers,” Marchut says, “we need to build more affordable housing, and we need to build more central housing . . . and these conversion projects will provide rental rates that are lower than new builds.” That’s something that will help both current and future Calgarians. “We’re going to see a finished product really soon,” Marchut says. “I’m super excited to finally see one open their doors and invite new residents in.”

It’s Not (Just) About the Money

Beyond the financial incentives, Calgary is taking other steps to encourage conversions. Most properties downtown, for example, are exempt from change-of-use permitting requirements. “That saves, on average, six months,” Marchut notes, and removes the risk that projects could be bogged down or blocked altogether.

Since developers need to invest an enormous amount of time and money in a project even before proposing it to the city, simply indicating general support for conversions provides an important boost in confidence, Marchut said. “Obviously, you can’t guarantee an approval until you have a plan set in front of you that you can review against the rules. But a notional, ‘Yes, the city is supportive of what you’re trying to achieve on this site,’ goes a long way in giving comfort to developers.”

Back in Denver, Aldrete doesn’t have incentive dollars to encourage investment, so she’s hoping that a “higher-touch” review and approval process, led by an in-house coordinator dedicated to office conversions, will drastically reduce the time it takes for developers to get projects moving. “You essentially cut off two to three months for every review cycle you can reduce, to get them out the door and under construction. So that is real money to the developer,” she says. “That’s how we’re trying to win them over.”

Fuller says that, even as some cities embrace reuse, others are lagging behind. “The time is ripe to change some of our zoning and our legislative policies that could help catalyze this type of conversion,” he says, while emphasizing that quality and safety should not be sacrificed. “We’ve come around to realize that having a mix of uses in the same location is actually healthy for cities, in terms of generating 24/7 activity and eyes on the streets and all those things that we know are good. So I’m optimistic that good things will come of this.”

Cotter is also optimistic that this surge in post-pandemic interest in office conversions will create a lasting trend. “There’s all sorts of creative adaptive reuse that’s happening that is going to give architects, construction firms, and city code officers experience with how this can be done, and lay the groundwork for it to be done more readily,” Cotter says. “And wouldn’t we all be well served if our buildings, once constructed, could evolve with us?” □

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

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FINDING

Conservation Groups and
Affordable Housing Advocates
Explore New Collaborations

COMMON

GROUND

By Audrea Lim

IN HIS THREE DECADES leading the Scenic Hudson Land Trust, Steve Rosenberg saw waves of people moving from cities to the Hudson Valley following major events: 9/11, Hurricanes Sandy and Irene, even Chelsea Clinton's wedding in Rhinebeck. So when another wave arrived during COVID-19, part of the great migration of urban office workers to rural America, it wasn't exactly novel.

But this time, things were different in the Hudson Valley, which runs along the Hudson River from New York City to Albany. Land and real estate prices were skyrocketing, due to the influx of new residents and the broader pressures of the market. In the region's cities and villages, gentrification had begun sweeping areas long marred by disinvestment, displacing low-income residents, posing a threat to Black and Brown communities, and making it hard to preserve and create affordable housing.

This "intense pressure on the land," Rosenberg says, was also making the job of conservation harder. Just a decade earlier, land trusts could more easily assemble three or four parcels of land to create a contiguous protected area that would help preserve wildlife habitat and build climate resilience. Now it would take 10 or 12 purchases to assemble a comparable amount of acreage, and conservation groups were more frequently being outbid.

As they vied with outside buyers for land, the region's conservation and housing organizations faced similar challenges, and some began to wonder if they could accomplish more by working together. At the same time, some conservation organizations, prompted largely by the Black Lives Matter movement, were exploring how they might better address racial justice, public health, and climate equity as part of a more community-centered type of land conservation. But housing and conservation groups also seemed to exist in parallel worlds, with different missions, goals, funding models, and governance structures.

Still, Rosenberg saw potential. When he retired from Scenic Hudson in 2021, he teamed up with Rebecca Gilman Crimmins, a Hudson Valley native and affordable housing professional in New York City, to convene a working group of five conservation land trusts and five affordable housing organizations in the region. The groups began learning about each other's work, identifying where that work intersects, and mapping potential places where they might partner. They combined census, biodiversity, and climate data with their knowledge about local officials, planning policies, and land use regulations (RPA 2023). "Healthy communities need to have both" open space and affordable housing, Rosenberg said. "They shouldn't be seen as mutually exclusive or in opposition to one another."

As real estate prices spike, the climate unravels, and America undergoes a racial reckoning, conservation and affordable housing groups are beginning to explore how they can work together.

As real estate prices spike, the climate unravels, and America undergoes a racial reckoning, conservation and affordable housing groups are beginning to explore how they can work together. In 2022, the Lincoln Institute convened practitioners and advocates, including Rosenberg and Crimmins, to discuss the potential for collaboration by conservation land trusts and community land trusts. Through a series of virtual and in-person discussions supported by the 1772 Foundation, participants from national, regional, and local groups explored the barriers that have gotten in the way of partnership—and the opportunities ahead.

The Hudson Valley community of Kingston, New York. The Kingston Land Trust is part of a new coalition working to protect open space and preserve affordable housing in the region. Credit: Chris Boswell/Alamy Stock Photo.

Shared Concerns, Separate Roots

America's first conservation land trust, The Trustees of Reservations, was dreamed up by landscape architect Charles Eliot, whose father was president of Harvard. Eliot saw the nation's cities yellowing with industrial pollution, and envisioned wild green pockets of open space in every city and town. The state enabled The Trustees to begin acquiring and protecting land in 1891. Today, America has 1,281 land trusts that have protected more than 61 million acres. Mostly operating in rural and suburban settings and often run by volunteers, land trusts protect wildlife habitats, critical ecosystems, and natural, historical, and cultural sites by buying and managing parcels outright or by holding conservation easements—voluntary legal agreements with landowners that limit development and other defined uses on a property.

Community land trusts (CLTs), by contrast, have more recent beginnings. In 1969, a group of civil rights activists led by Charles Sherrod set out to build collective wealth and power among Black farmers in southwest Georgia. They created New Communities, an undertaking that combined community ownership of land with individual homeownership, serving as a model for

today's CLTs. The organization was forced to foreclose on its land in 1985, after the USDA's discriminatory practices deprived it of crucial grants and aid in the wake of a devastating drought. But it's still operating as an educational organization, and it ignited a movement: today there are more than 300 CLTs in the country. CLTs are still oriented toward serving marginalized communities, and typically own land while giving individuals the opportunity to own the homes and businesses on top. Despite their rural origins, most CLTs now focus on providing permanently affordable housing in urban settings.

These distinct origins have led to an array of differences, as Katie Michels and David Hindin describe in a working paper prepared for the Lincoln Institute convening (Michels and Hindin 2023). Land trusts have tended to focus on and be led by wealthier, whiter, and more rural constituencies, while CLTs are more often geared to and governed by people of color. The resources available to the groups are also different.

“Compared to CLTs, land trusts may be wealthier organizations with greater access to political power and financial resources,” Hindin and Michels write, noting that public and private funding is usually dedicated to conservation or housing, but not both. Because both groups need land to fulfill their mission, they add, “some local conservation and community land trusts have

Charles Sherrod (on porch steps) canvassing for the Student Non-violent Coordinating Committee in 1963. Sherrod would later cofound New Communities, which inspired the nation's community land trust (CLT) movement. Credit: Nasher Museum of Art at Duke University.





In coastal Maine, a land trust and community land trust (CLT) are partnering on a joint effort to protect wetlands and build affordable workforce housing. Credit: Mike Perlman, courtesy of Island Housing Trust.

had negative experiences with each other and may view the other as competitors.”

But that’s beginning to change. “We’re starting to see some conservation land trusts and CLTs really trying to figure out how to work together,” said Beth Sorce, vice president of sector growth at Grounded Solutions Network, a national nonprofit that promotes affordable housing solutions and grew out of a network of CLTs. As cities metastasize and affordable parcels grow scarce, conservation and affordable housing organizations are beginning to see past their differences, says Sorce, who participated in the Lincoln Institute convening: “We have a common goal of a really healthy, livable place. Maybe instead of everyone trying to acquire land individually, we could work together to figure out how to do this in a way that makes our community green.”

Land trusts across the country “are providing so many benefits to our environment and to people’s lives and well-being,” said Forrest King-Cortes, director of community-centered conservation at the Land Trust Alliance (LTA), a national coalition of conservation land trusts. LTA hired King-Cortes—who also participated in the Lincoln Institute convening—to lead its efforts to put people at the center of conservation work, and he sees “more opportunity to have dialogue with other movements like the affordable housing movement.”

“We have a common goal of a really healthy, livable place.”

LINCOLN INSTITUTE COLLOQUIUM ON CONSERVATION AND COMMUNITY LAND TRUSTS

During 2022, the Lincoln Institute of Land Policy led a yearlong research effort on the potential for collaboration between conservation land trusts and community land trusts (CLTs). With the support of Peter Stein of Lyme Timber Company and a grant from the 1772 Foundation, the institute convened a core group of experts in conservation and affordable housing for a series of meetings, culminating with a colloquium and working paper (Michels and Hindin 2023).

The colloquium has informed ongoing efforts to advance land conservation and affordable housing priorities. In February, working paper coauthors Katie Michels and David Hindin advised the Connecticut Land Conservation Council’s summit for advocates and leaders in the conservation and housing sectors to consider shared agendas and future policy goals. In March, Jim Levitt, director of Sustainably Managed Land and Water Resources at the Lincoln Institute, moderated a keynote panel titled “Affordable Housing and Land Conservation: Not an Either/Or” at the annual meeting of the Massachusetts Land Trust Coalition; the panel included a colloquium participant.

“To thrive, communities need permanently affordable housing and permanently conserved land that provides green space, natural infrastructure, and biodiversity-friendly habitat,” says Chandni Navalkha, associate director of Sustainably Managed Land and Water Resources at the Lincoln Institute. “By working in greater collaboration, these communities of practice have unique potential in leveraging their decades of success and experience to implement multigoal, multibenefit projects that address communities’ most pressing challenges.”

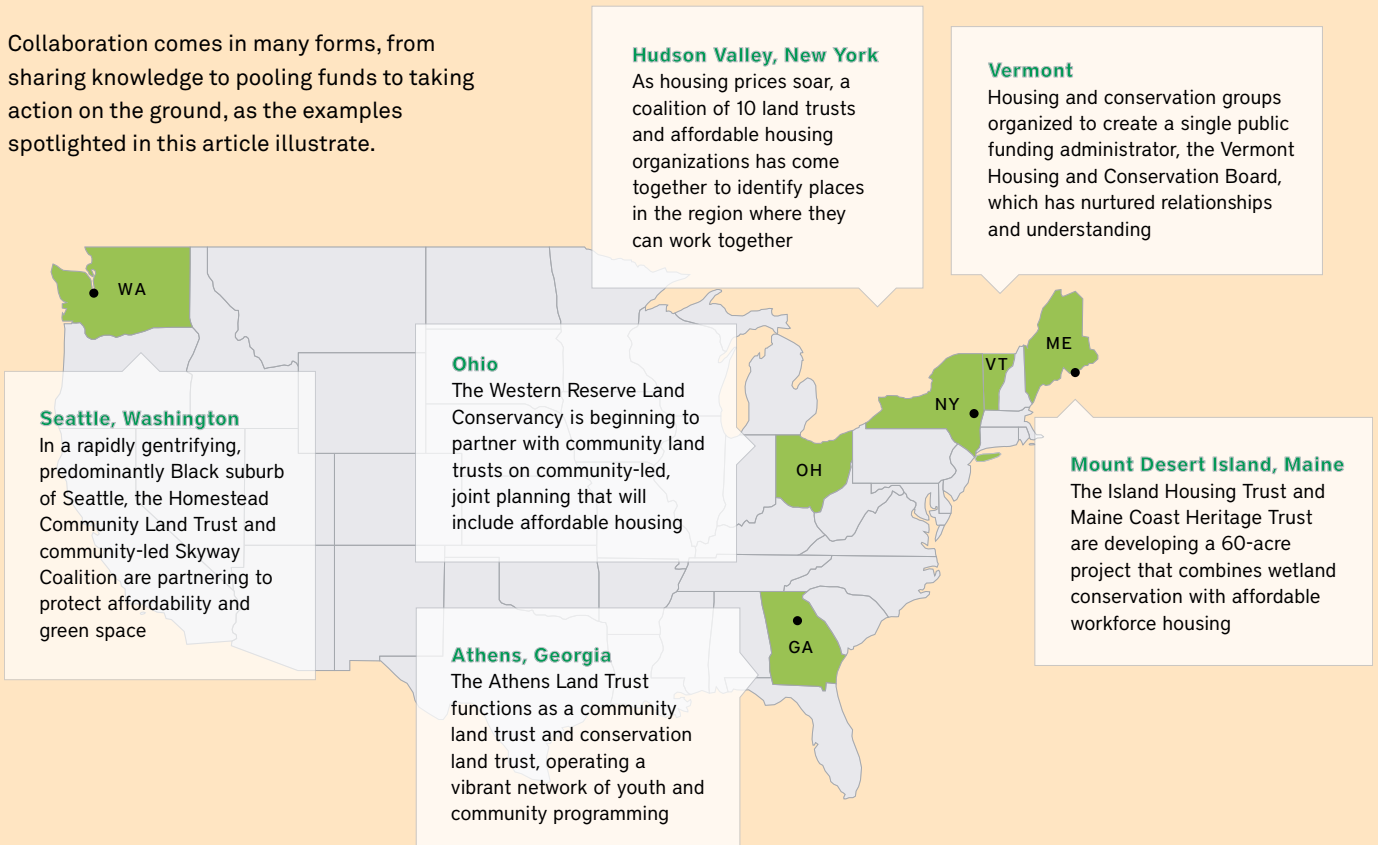
As these conversations continue, participants are identifying many possible forms of collaboration, from exchanging ideas and information to jointly pushing for policy reform. In some cases, groups are taking action on the ground. In Ohio, the Western Reserve Land Conservancy, which has long worked with local land banks to acquire properties for public green space, is beginning to partner with CLTs on community-led, joint planning that will include affordable housing. On Mount Desert Island in Maine, where housing constraints and costs lead 54 percent of workers to live off-island, the Island Housing Trust, a CLT, is partnering with the Maine Coast Heritage Trust on a 60-acre project that combines wetland conservation with the

development of affordable workforce housing. And in a rapidly developing, predominantly Black suburb of Seattle, the Homestead Community Land Trust and community-led Skyway Coalition are partnering to protect affordability and green space as they stave off gentrification.

As these conversations continue, participants are identifying many possible forms of collaboration, from exchanging ideas and information to jointly pushing for policy reform. In some cases, groups are taking action on the ground.

COLLABORATION IN ACTION: CONSERVATION AND AFFORDABLE HOUSING GROUPS WORKING TOGETHER

Collaboration comes in many forms, from sharing knowledge to pooling funds to taking action on the ground, as the examples spotlighted in this article illustrate.



A Collaborative Model in Athens, Georgia

While conservation and affordable housing advocates explore opportunities for collaboration, they can learn from organizations that have built both goals into their mission. The Athens Land Trust is considered by many to be the shining light at the intersection of these worlds.

In the early 1990s, Nancy Stangle and Skipper StipeMaas were developing a rural intentional community, Kenney Ridge, on 132 acres in Athens-Clarke County, Georgia—about 200 miles north of Albany, where the CLT movement was born. The plan was for Kenney Ridge to consist of private lots for homeowners, a community farmhouse and gardens, and common, conserved open space. But as they laid out the development, they realized that setting aside more land for conservation also made the private lots more expensive, because the costs of building roads, water lines, and sewer lines were divided between the lots, and more conservation amounted to fewer lots—and fewer lot owners to bear the costs. “They were seeing this tension between environmental-type development and affordability,” said Heather Benham, the Athens Land Trust’s executive director. And it was pricing out some of their friends.

Around this time, Stangle was taking her kids to the zoo in Atlanta when her car broke down. A woman pulled over and offered to take Stangle to her office, where she could use the phone. The woman worked at a community land trust, the Cabbagetown Revitalization and Future Trust.

After reading up on the CLT model, Stangle and StipeMaas decided to create an organization that would function as both a land trust and a CLT, and the Athens Land Trust was born.



Homeowners at an Athens Land Trust house in Athens, Georgia. Credit: Athens Land Trust.

For the first few years, the Athens Land Trust functioned mostly as a conservation land trust. Then in 1999, one of its board members bought a vacant lot in a historically Black neighborhood of Athens and donated it to the group. The local government provided an affordable housing grant, and the organization built its first house.

The two wings of the organization continued to grow—the trust came to hold over 20,695 acres of conservation easements, from farms outside Athens to pine plantations and mountains in north Georgia, and it built and rehabbed homes inside the city—but they remained practically separate. “Basically, when we answered the phone, it was pretty clear if somebody was calling for one thing or the other,” said Benham. The callers were typically either low-income Black families interested in housing, or white farmers wanting to protect land they had owned for generations.

In the early 2000s, these parallel strands of work began to intersect. A board member mentioned that drug activity was taking place on a vacant lot in their neighborhood. Could the

For the first few years, the Athens Land Trust functioned mostly as a conservation land trust. Then in 1999, one of its board members bought a vacant lot in a historically Black neighborhood of Athens and donated it to the group. The local government provided an affordable housing grant, and the organization built its first house.

land trust turn it into a community garden? “It didn’t seem like such a far leap to do gardens when you’re protecting farms,” said Benham. “That became a project, and then it just kept growing.”

Other neighborhoods began reaching out about starting similar projects. The group partnered with the local university to create a network of community gardens, and an urban farm where neighbors could grow food to sell, supplementing their income. A USDA grant provided funds, and the city also offered some land. To maximize the community’s benefit from the land, the Athens Land Trust began running gardening classes and farm workdays, youth programming around agricultural skills, and a farmers market in a low-income Black neighborhood. These activities support the Athens Land Trust’s goals of fostering economic development and community empowerment, Benham says. “The economic opportunity around the farmers market and the small business development,” she says, weaves the parcels into the “neighborhood ecosystem and economy.”

Where Conservation and Justice Meet

As the urban work of the Athens Land Trust grew, its leaders began applying an equity lens to their rural conservation work too, identifying populations underserved by previous efforts to protect farmland. In April 2023, the land trust was close to reaching a deal for the first conservation easement on a Black-owned farm in Georgia. Throughout the United States, 97 percent of farms and 94 percent of farm acreage belongs to white farmers. Many Black landowners lack clear title—a legacy of unjust property inheritance rules—and are unable to donate or sell easements on their land, while

To maximize the community’s benefit from the land, the Athens Land Trust began running gardening classes and farm workdays, youth programming around agricultural skills, and a farmers market in a low-income Black neighborhood.

Athens Land Trust programming includes the Young Conservation Stewards (left), Young Urban Builders, and Young Urban Farmers, who maintain a network of community gardens including Williams Farm (right). Credit: Athens Land Trust.



those who have fought to gain clear title may be understandably hesitant to sign over any rights. Benham adds that the scoring mechanisms used by the USDA Natural Resources Conservation Service to determine whether to conserve a parcel tend to favor farms located on prime agricultural soils. “Well, surprise, surprise—most Black farmers didn’t get the most prime lands,” she notes.

Benham believes the Athens Land Trust has managed to straddle both worlds because its fundamental goal is to give the community control over lands and development. Eschewing tunnel vision toward either housing or conservation, the trust and other similarly minded organizations “might have more shared framework, vocabulary, practices, and ways of engaging” with the environmental justice movement than conservation land trusts do, she said. That’s reflected in philanthropy too: the funders who seem to understand how the trust’s conservation and housing work align are the ones who recognize their environmental justice—like “sustainability work in low-income neighborhoods.”

In the South Bronx, New York, a community land trust launched in 2020 operates with a similar hybrid model, working to preserve housing affordability and protect open space, including the neighborhood’s network of community gardens. The South Bronx Community Land and Resource Trust grew from the work of local community development corporation Nos Quedamos (We Stay), which started in the 1990s as grassroots resistance to an urban renewal plan that would have displaced a low-income, mostly Latino community. Committed to “development without displacement”—development driven and controlled by the community—Nos Quedamos now has a portfolio of affordable housing. It launched the CLT to “create and support a healthier community by bringing into balance land use, affordability, accessibility to services and open space, environmental sustainability and resilience, community scale and character.” It is designed to be a centralized, community-owned entity.



Volunteers with Nos Quedamos, a community development corporation in the South Bronx that recently launched a community land trust to promote affordable housing and sustainability. Credit: Imani Cenac/Nos Quedamos.

Julia Duranti-Martínez, who works with CLTs at the national community development organization LISC and is a board member on the East Harlem/El Barrio CLT in New York City, recommends that conversations about collaboration “defer to the groups who come out of environmental justice organizing.” In a real estate market where land is expensive and scarce, housing and conservation groups vie for parcels, and new parks are often seen as harbingers of gentrification, the community development projects that have navigated these tensions most successfully have been driven by the same fundamental goal as the environmental justice movement, she says: ensuring that “Black, Indigenous, and communities of color are really the ones in a decision-making role.”

Duranti-Martínez adds that the framework of CLTs has historically shared more in common with environmental justice groups than with the conservation movement. “They are promoting these community stewardship models not in opposition to affordable housing,” she said, but simply because “a healthy community” has “all kinds of different spaces: dignified and affordable housing, affordable commercial space, green space, and community and cultural spaces.”

Moving Forward

Despite promising ideas for collaboration and enthusiasm for these initiatives, ideological and cultural hurdles remain. Success, for land trusts, has historically been measured in the number of acres protected and dollars leveraged, but these conventional measures “don’t really capture the full impact” of smaller or more complex projects, said Michels. Protecting green space and building housing on five acres could take the same time, effort, and resources as conserving 10,000 rural acres, she notes, which means there are some ideological frameworks on the conservation side that have to shift.

Potential collaborators also need to proceed purposefully and thoughtfully; meaningful and inclusive community engagement will be key to the success of combining affordable housing and open space goals, say many involved in this work, whether that effort is happening inside a single

organization or as part of a collaboration between groups. “Conservation has a lot to learn about building community stakeholders in as decision-makers within our organizations,” says King-Cortes of LTA. Despite growing interest in broadening the movement’s work, “many of us are not ready, I would say, to jump into partnership with affordable housing groups until we’ve done our homework: until we’ve learned about the roots of the affordable housing movement, the ties to the civil rights movement.”

Meaningful and inclusive community engagement will be key to the success of combining affordable housing and open space goals, say many involved in this work, whether that effort is happening inside a single organization or as part of a collaboration between groups.

This map illustrates the network of affordable housing and community gardens developed in the South Bronx by Nos Quedamos. Increasingly, proponents of healthy communities view affordable housing and open space as complementary, not opposing, causes. Credit: Nos Quedamos.





With funds including a bond administered by the Vermont Housing and Conservation Board, Twin Pines Housing Trust built an energy-efficient, mixed-income housing complex in White River Junction, Vermont, that includes community gardens and transit access. Credit: Twin Pines Housing Trust.

Yet conservation groups also have a wealth of resources and expertise to offer. For CLTs, “by far the biggest inhibitor to being able to scale is access to land and money,” said Sorce of Grounded Solutions Network. Partnerships often help fill that gap, and conservation groups could help with this too. “They could team up to acquire a larger parcel, some of which is going to be conservation, some of which is going to be housing.”

In fact, this kind of partnership could benefit both sectors. “Everyone’s struggling to fundraise,” said King-Cortes. “Everyone’s trying to make the most of what we’ve got. But by working together on planning, I think both movements can get more done and maximize resources.”

Succeeding at that will take some effort, because most funding for conservation and housing has historically been separate, as Michels and Hindin noted. “All of the public policy-supported programs and funding are totally siloed,” Rosenberg confirmed. A housing group that wants to build a development with trails, parks, or community gardens can typically only get funding to build the housing, while on the flip side, conservation groups can’t get funding to do anything besides conserve land.

However, there are exceptions to that rule. In Vermont, housing and conservation groups organized in 1987 to create a single public funding source, the Vermont Housing and Conservation Trust Fund, administered by the Vermont Housing and Conservation Board (VHCB). Michels, who worked at VHCB for several years, says it demonstrates a potential model for collaboration. It has nurtured relationships and understanding between the two communities, and both practitioners and policymakers have come to see the dual goals as complementary, not competitive—reinforcing an almost 100-year-old land use tradition of compact settlement surrounded by a working landscape.

Every year, a coalition of affordable housing and conservation groups lobbies the state legislature for VHCB funding. The result is “a lot of relationship building across those communities of practice, and they each know what the other is working on,” Michels said. VHCB has invested in projects with both elements in many towns, ensuring that affordable housing and open space are both available. “There’s a version of collaboration that doesn’t involve working together

on a single parcel,” but pulling for the same outcomes, Michels said; when an opportunity does present itself on one parcel, it is widely embraced.

Back in the Hudson Valley, Rosenberg’s working group is also eyeing Massachusetts’ Community Preservation Act as a model. Voters in Massachusetts can opt for their municipality to apply a surcharge on property taxes, which can then be used to fund conservation, affordable housing, outdoor recreation, and historic preservation. New York’s legislature has authorized some municipalities to vote for a local real estate transfer fee to create a community preservation fund, but the proceeds can only support conservation, not housing.

Identifying policy reforms that could help accomplish its work and agreeing on a statement of shared purpose have been priorities for the Hudson Valley group, which has continued its explorations with support

from Regional Plan Association, the project’s fiscal sponsor, and the Consensus Building Institute. “There are actually some collaborations that are already beginning,” said Rosenberg. The Kingston Land Trust, which has been studying and promoting the community land trust model since 2017, has partnered with the regional affordable housing group RUPCO to launch a CLT as part of its Land for Homes initiative. The organization also worked with graduate students at Columbia University and Bard College to develop a regional housing vision and a guide for collaboration between conservation and housing groups (Kingston Land Trust 2021). The Chatham, New York–based Columbia Land Conservancy, meanwhile, is serving as the fiscal sponsor for another new CLT.

And within the working group, one of the conservation land trusts identified a 113-acre farm parcel for sale in the town of Red Hook that “defines the gateway to the community,” Rosenberg said. Red Hook has a community

The Kingston Land Trust has partnered with a regional affordable housing group to launch a community land trust as part of its Land for Homes initiative. The organization also worked with graduate students at Columbia University and Bard College to develop a regional housing vision and a guide for collaboration between conservation and housing groups.

With housing prices and non-local property ownership on the rise in Kingston, New York, graduate students from Columbia University worked with the Kingston Land Trust on a project that envisions new affordable housing models on communally owned property, including medium-density apartments with shared amenities (right) and tiny homes (facing). Credit: See facing page.





Credit (facing and above): “(E)CO-Living: Towards a More Affordable and Green Kingston” by Yiyang Cai, Kai Guo, Lingbei Chen, Wenyi Peng. Urban Design Studio II, Spring 2021, Graduate School of Architecture Planning and Preservation, Columbia University. Faculty: Kaja Kühl coordinator, with Lee Altman, Anna Dietzsch, Shachi Pandey, Thaddeus Pawlowski and Associates, Zarith Pineda, Victoria Vuono. Local Partner: Kingston Land Trust. <https://storymaps.arcgis.com/stories/db865dfff929442c8414b596aa753f18>.

preservation fund to support conservation, and Scenic Hudson and other groups have long been active there. But having recently expanded its public sewer system, Red Hook was also looking to develop more affordable housing—and, in the case of this property, to fend off private buyers who were interested in developing the whole parcel.

Conditions seemed favorable. So two of the working group’s housing organizations and two of the land trusts met with local officials to discuss collaborating with the town on a project that would achieve both goals: conserving farmland and building some affordable housing. The town now plans to purchase the land, working with one of the land trusts to place a conservation easement on most of it and setting aside the rest for homes to be built by one of the affordable housing groups. “That project is not done, but it is moving forward,” said Rosenberg. “That’s really exciting.” 📌

Audrea Lim is a writer in New York City whose work has appeared in the *New York Times*, *Harper’s*, and the *Guardian*. Her book *Free the Land*, on the commodification of land and alternatives in the United States, will be published by St. Martin’s Press in 2024.

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An aerial photograph of a power transmission tower in a rural landscape. The tower is a complex lattice structure of metal, positioned in the center of the frame. It is surrounded by a mix of green fields and brown, plowed earth. The perspective is from directly above, looking down at the tower and the surrounding terrain. The lighting is bright, casting long shadows from the tower and the power lines that stretch across the fields.

GRID

LOCKED

**How Land Use Battles Are Hindering
the Clean Energy Transition**

By Anthony Flint

ONE EMERGING CONSENSUS to combat climate change is increasingly clear: electrify everything, and make that power come from renewable sources, like wind, solar, and hydro power. Removing fossil fuels from electricity generation can be surprisingly smooth, as clean power facilities have rapidly become more cost-efficient. Renewables are currently 20 percent of US power generation and steadily growing.

But there's a sprawling and daunting land use task that is necessary to make that clean energy transition happen: not only the siting of solar arrays and wind farms, but the construction and improvement of transmission lines and substations and pipelines, across thousands of acres of land.

Researchers at Princeton University have estimated that if manufacturing capacity for turbines and photovoltaics continues to ratchet up as it has been for the last several years, up to 400,000 square miles will be needed in the US to harvest wind energy alone (Larson et al. 2020). That means much more visible renewable energy infrastructure on hilltops, in suburban neighborhoods, and in what may feel like people's backyards.

Battles over the siting of wind and solar installations, and opposition to the key upgrades and expansion of the grid that will allow clean power to plug in, are occurring on a state-by-state basis, in the absence of federal authority or oversight. In many cases, renewable energy facilities have been cleared through the permitting process to start operating, but

remain in limbo because they can't plug in to the existing, antiquated grid.

A crazy quilt of local land use regulations—including bylaws restricting solar fields and wind farms—has amplified the voices of opposition from neighbors and organized groups, including, in what many climate advocates consider a profound irony of the times, some environmental organizations.

In addition, land use conflicts are hindering another critical component of the clean energy transition—the mining of metals such as lithium to make high-capacity rechargeable batteries, for electric vehicles and storing power from renewable sources when the sun doesn't shine or the wind doesn't blow (see sidebar page 39).

Those targeting net-zero emissions by mid-century hoped for a high-level wave of renewable energy that would transform the way everyone gets their power. Instead, there are standoffs and bottlenecks, at the state and local level, as the execution of this extraordinary transition gets bogged down, literally, on the ground.

"I would agree things aren't going well right now—though I would suggest that we also have way more shots on goal than in previous years, so there are more stories of projects getting blocked because there are just more project proposals," said Sarah Banas Mills, senior project manager at the Graham Sustainability Institute and lecturer at the School for Environment and Sustainability, University of Michigan.

Those targeting net-zero emissions by mid-century hoped for a high-level wave of renewable energy that would transform the way everyone gets their power. Instead, the execution of this extraordinary transition is getting bogged down on the ground.

As frustration mounts at what many see as a fumbling of the ball at a key moment in the fight against climate change, Mills, who has been tracking battles over renewable energy all over the US and coauthored a paper on the topic (Bessette and Mills 2021), says a more nuanced analysis is required about each and every site, now that installations are ramping up. Wind projects in places with more people or higher scenic amenities are more likely to be opposed; neighbors may also be more likely to balk at large solar arrays on farmland, which many clean energy advocates thought would be an easier sell.

“Renewables present one of the biggest economic opportunities rural communities have seen in decades,” she said. “But with all opportunities, there are trade-offs. That we have so many communities saying no suggests to me that in many places communities are finding that the positives—economic benefits—don’t outweigh the negatives. Changes may need to be made to project characteristics, like size, location within the community, and distribution of economic benefits . . . to get more communities to ‘yes.’”

IT WASN’T always this way. In the past, there was little to no veto power exercised at the local level, as industrialization advanced and critical infrastructure was deemed necessary, whether canals, railroads, and telegraph lines in the 19th century, or the interstate highway system in the 1950s.

A common thread for infrastructure is the intensive use of land, which is necessary to complete networks and distribute benefits across large expanses. This was especially true in the development of the grid. Power plants were built at whatever location was required, whether near a coal mine or on a river. Then, a decentralized but highly connected system of substations, transformers, and transmission and distribution lines got the power to the end user—homes and businesses. The flow of power is from point to point and as it happens, since large amounts of electricity are not stored; the power is used as it is produced, and vice versa.

Although the construction, organization, and regulation of the grid started out in a patchwork state-by-state and regional framework, the federal government established oversight with the Federal Power Act of 1920, which Congress passed to coordinate the development of hydroelectric projects such as the Hoover Dam. Major new agencies like the Tennessee Valley Authority, established in 1933, helped create a sense of intention and purpose; bringing electricity to rural areas was part of a national mobilization in economic development during the Great Depression (and, also intentionally, a fountainhead of jobs). Among other federal agencies, what is now known as the Federal Energy Regulatory Commission (FERC) took the lead in managing power generation and the grid, although generally oversight of utilities, and the prices they charge in particular, remains a state responsibility.

In terms of the extraordinary accomplishment of the grid, the ultimate result of planning and coordination is the familiar landscape of today: 160,000 miles of high-voltage power lines draped on shiny metal stanchions up to 200 feet tall,

Construction of power lines in the Maricopa County town of Cashion, Arizona, in 1934. Credit: Arizona State Library, Archives and Public Records, History and Archives Division, Phoenix, #98-3250.





MUCH ADO ABOUT MINING

Another critical land use dimension of the clean energy transition is the mining of metals used for batteries for electric vehicles and general power storage, including lithium, cobalt, copper, nickel, niobium, and graphite. The World Bank estimates that over 3 billion tons of minerals and metals will be needed by 2050 to meet the clean energy storage and deployment goals in the 2015 Paris Agreement—a production increase of 500 percent.

With these minerals in such high demand, regions like Latin America, which controls two-thirds of the global supply of lithium, are under tremendous pressure to allow mining as a new source of economic development. But the mining process is dangerous, hugely disruptive to the environment, and often occurs within Indigenous territories.

The resource-rich countries where the minerals are, primarily in the Global South, are home to extensive biodiversity and uniquely vulnerable to the impacts of climate change, said Claudia Dobles Camargo, former First Lady of Costa Rica, where open-air mining is banned. Honduras and El Salvador have also banned the practice. “We cannot just transition from one type of energy to clean energy without taking into consideration that this could become a new extractivism,” she said.

Beyond the developing world, any move to extract these clean-power minerals seems to become instantaneously contentious. When a Maine couple discovered large lithium deposits on their property, they were surprised that neighbors didn’t celebrate

the potential contribution to the clean energy transition—but rather demanded state regulators prevent any kind of mining operation at all.

Technology may come to the rescue, in the form of more sustainable lithium mining techniques involving microbes, seawater, and brine. Lithium can also be recycled from old batteries, a process dubbed “urban mining.” And researchers at MIT and elsewhere are working on new kinds of batteries, such as metal-air devices using aluminum, zinc, or iron, all of which are abundantly available, that would obviate the need for lithium altogether.

Another approach to minimize damage and land use conflicts: reduce demand for batteries for electric vehicles by driving less—a higher bar, to be sure, for societies just getting used to the concept of alternatives to fossil fuel.

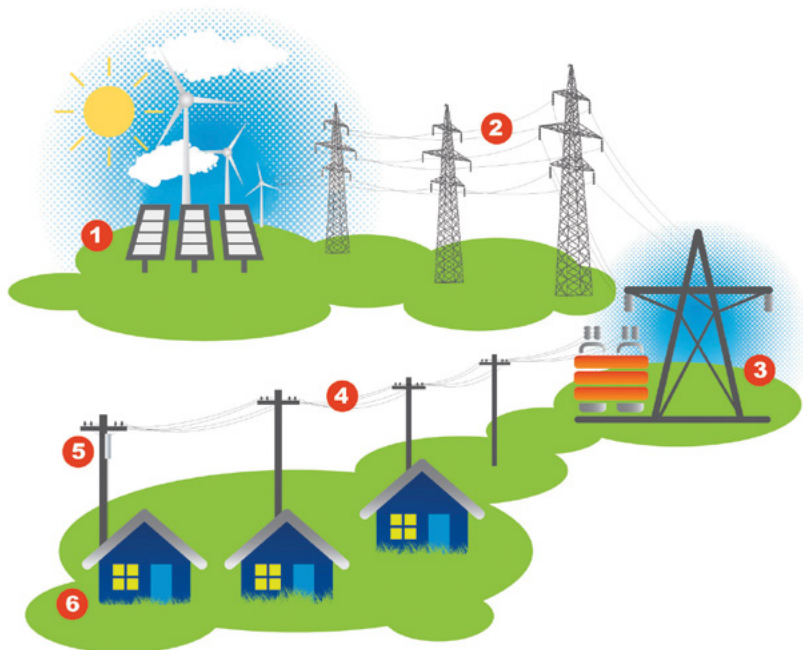
A report by a team led by Providence College professor Thea Riofrancos found that the United States “can achieve zero emissions transportation while limiting the amount of lithium mining necessary by reducing the car dependence of the transportation system, decreasing the size of electric vehicle batteries, and maximizing lithium recycling” (Riofrancos et al. 2023).

“Reordering the US transportation system through policy and spending shifts to prioritize public and active transit while reducing car dependency,” the report says, “can also ensure transit equity, protect ecosystems, respect Indigenous rights, and meet the demands of global justice.”

HOW ELECTRICITY IS DELIVERED TO HOMES

- 1 Electricity generated
- 2 Electricity transmitted over high-voltage lines
- 3 Voltage reduced at substation
- 4 Power distributed through lower-voltage lines
- 5 Voltage further reduced by overhead transformer
- 6 Electricity delivered

Credit: PPL Electric Utilities.



with forest and brush cleared away underneath, crisscrossing the countryside, whisking electricity generated by 7,300 power plants to nearly 150 million customers across the US, according to the US Energy Information Administration. The North American grid—three grids, technically, called the Eastern, Western, and Texas Interconnect—is completed by millions of miles of low-voltage power lines and distribution transformers (EIA 2016).

To date, most electricity is produced using conventional sources such as natural gas, oil, coal, and nuclear. But at least 20 percent of the nation's power is now generated by renewable energy facilities—wind, solar, hydroelectric, biomass, geothermal—and that proportion is growing, as coal-fired power plants, for example, are steadily phased out. Over the past decade, 290 coal-fired plants were decommissioned in the US, leaving 224 in operation.

The Biden administration has pledged to eliminate fossil fuels as a form of energy

generation in the US by 2035, setting the goal of 80 percent carbon-free electricity by 2030. Wind, solar, and hydroelectric power have been the fastest-growing segment of the energy sector, and will be further fueled by some \$370 billion in funding under the Inflation Reduction Act. Wind and solar projects, steadily improving in their technology and efficiency, are ready to roll.

But therein lies the current land use challenge—not only in the siting of renewable energy installations, but also in the all-important upgrade to the grid to carry and distribute all that clean power. On both fronts, the development of renewable energy has been stymied in recent years.

At least 20 percent of our power is generated by renewable energy facilities—wind, solar, hydroelectric, biomass, geothermal—and that proportion is growing.

Opposition to offshore wind farms, notably the Cape Wind project off Cape Cod, was perhaps the first and most infamous example of affluent homeowners objecting to clean energy infrastructure because they claimed it spoiled the view. But wind farms on land, whether atop ridges or on farmland, have also ignited fierce opposition, even in remote areas.

In Northern California, Shasta County supervisors rejected a proposal by Connect Wind/Fountain Wind for 48 turbines on rural land after hearing concerns about impacts on wildlife habitat, Indigenous lands, and even whether the turbines would interfere with fighting wildfires from the air. A local ordinance passed shortly afterward banning large wind projects outright. The California Energy Commission is allowing the developers a second chance under a provision of Assembly Bill 205, which can override local veto power over clean energy projects.

In Iowa, a judge ordered developers to dismantle three 450-foot turbines on farmland after neighboring landowners complained about the noise the turbines made. The victorious

opponents, who successfully argued that the zoning board shouldn't have issued the permits, hope their battle "will empower other rural landowners and small towns to take on wind," according to the *Des Moines Register* (Eller 2018).

A typical concern as well is the danger posed by wind turbines to birds—although pesticides, buildings, and housecats kill many times more birds than the slowly rotating blades, and clean-tech researchers, using artificial intelligence, have come up with ways to keep birds away anyway.

Solar installations have not fared much better. While more than 2,500 solar farms are up and running in the United States, solar projects are increasingly encountering blockades, in Indiana, Ohio, Virginia, and elsewhere. Neighbors often get in an uproar when they see how large, visible, and land-intensive some of the solar arrays are, describing them in alarming fashion, as in one battle over a Midwest proposal, as filling up thousands of football fields with shiny, deep blue panels.



Solar installation in western Massachusetts.
Credit: Jerry Monkman/
EcoPhotography.

Researchers in a 2021 Michigan study found that despite readily acknowledged benefits such as economic development, tax payments, and compensation for the landowner and community, “projects have increasingly faced local resistance . . . [due to] aesthetics, noise, and negative impacts to rural and Tribal culture, values, and community energy sovereignty, along with . . . risk to wildlife, productive farmland, biodiversity, and human health” (Crawford, Bessette, and Mills 2022). Additional perceived risks included lowered home and property values, increased electricity rates, impacts to tourism, and the toxicity of materials used in construction and operation, the study says.

A team at MIT studied 53 American renewable energy projects that were paused, delayed, or canceled between 2008 and 2021 in 28 states because of local opposition. The researchers identified seven common drivers of conflict: environmental impact; financial viability; quality of public engagement; Tribal rights; health and safety concerns; and concerns related to land and property values (Susskind et al. 2022).

“We found overwhelming evidence to suggest that federal, state, and local regulators need to rethink the design and operation of their facility siting processes,” the researchers conclude. “A fast and fair transition to renewable energy will not be achieved in the US if policymakers and energy developers do not anticipate and respond proactively to the full array of sources of local opposition.”

High-profile standoffs have the effect of scaring off partners worried about bad publicity. In Queensland, Australia, the tech company Apple withdrew from an agreement to buy power from a proposed 80-turbine wind farm on nearly 2,000 acres, a project the World Wildlife Fund (WWF) had criticized for threatening koalas, wallabies, and red goshawks. A WWF spokesperson applauded the move, saying it demonstrated

“leadership and a commitment to renewables that are good for climate and nature.”

Opposition to transmission lines and the upgrades and expansion of the grid that are necessary to handle new clean power has been perhaps the most strenuous of all—leaving renewable energy installations that have already been built or permitted to remain in limbo, an untenable scenario for green-tech companies and investors.

A four-year legal battle over a 145-mile transmission line that would carry hydroelectric power from Quebec to Massachusetts has been representative of the bare-knuckle brawling over land use. Conservation groups said the pipeline threatened wilderness areas in Maine, where most of the line would be constructed, prompting a statewide vote against the project, though it had already been permitted. A judge recently ruled that construction could resume.



Protesters rally against a transmission line that will cut through Maine to bring hydropower from Quebec to Massachusetts. Credit: AP Photo/Robert F. Bukaty.

“A fast and fair transition to renewable energy will not be achieved in the US if policymakers and energy developers do not anticipate and respond proactively to the full array of sources of local opposition.”

“This is essential work in our effort to electrify everything in order to avoid the worst effects of climate change. . . . These are the kinds of big leaps we need to take after decades of minimal progress on climate action.”

Proponents complained that the opposition had been financed and motivated by a rival natural gas utility seeking to block competition. Joseph Curtatone, president of the Northeast Clean Energy Council, said he hoped the court decision “marks an end to the self-interested, corporate-funded attempts to sabotage this project.” Building the project as planned, he said, would remove more than 3 million metric tons of carbon annually and provide \$200 million in desperately needed upgrades to the electric grid.

“This is essential work in our effort to electrify everything in order to avoid the worst effects of climate change. Without grid upgrades we can’t deliver power to heat pumps and electric vehicles. These are the kinds of big leaps we need to take after decades of minimal progress on climate action,” he said. “If we’re fighting tooth-and-nail over removing 3 million tons of CO₂ with lower-cost energy, we’re never going to reach net zero.”

In the book *Superpower*, the author Russell Gold chronicled the ultimately futile attempt by

Houston businessman Michael Skelly to get approval for a transmission line to connect wind farms in Oklahoma to the grid in Tennessee, which became emblematic of community opposition paired with politics (Gold 2020). But the same problem keeps recurring. It took 18 years before a 732-mile transmission line was approved by federal authorities to carry clean power from the proposed 700-turbine TransWest wind farm on rangeland in Wyoming to homes and businesses in California. The interstate project required multiple approvals under the National Environmental Protection Act (NEPA), with detailed examination of impacts on flora and fauna, including the sagebrush grouse.

The objections to green infrastructure have evoked past battles over endangered species, sacred sites, and otherwise culturally valuable land. The Greenlink West project, a 470-mile transmission line through Nevada, is under fire because it might disturb woolly mammoth tusk fossils.



Pads have been cleared for wind turbines at Wyoming’s Overland Trail Ranch, which straddles the Continental Divide. Credit: Robert Gauthier/ Los Angeles Times.

The irony is not lost on many that environmental laws passed in the 1970s to combat rampant pollution are now being used to fight renewable energy projects that will curb climate change. Environmental litigation is threatening a wide range of environmentally advantageous initiatives across the country, from dense housing to bike lanes to congestion pricing.

“I’m an environmentalist, which means I’ve got some practice in saying no. It’s what we do,” wrote Bill McKibben in an essay for *Mother Jones* titled, “Yes in Our Backyards” (McKibben 2023). McKibben’s decades of activism include successfully fighting the Keystone XL fossil-fuel pipeline. “But we’re at a hinge moment now, when solving our biggest problems—environmental but also social—means we need to say yes to some things. . . . One way may be to back up a little and think of the slightly longer term.”

Without any sense of a grand plan or rationale, and environmentalists divided—one camp saying impacts on the environment must always be considered, the other that there will be no functioning wildlife habitats or thriving species if climate change isn’t curtailed—renewable energy projects are increasingly being viewed as what Harvard professor Alan Altshuler called LULUs: “locally unwanted land uses,” like prisons or landfills.

AN ARRAY of solutions for overcoming this impasse has emerged recently, including legislation introduced just this year.

At least three steps are needed to adequately and effectively deploy clean energy infrastructure, says Patrick Welch, an analyst in the climate strategies group at the Lincoln Institute of Land Policy: federal-level permitting reform, local regulatory changes, and more strategic and creative planning.

At least three steps are needed to adequately and effectively deploy clean energy infrastructure: federal-level permitting reform, local regulatory changes, and more strategic and creative planning.

“In many instances, there are genuine issues regarding the proposed siting of new solar, wind, and hydro projects—whether that is related to stormwater runoff issues, other impacts on important ecosystems, or new land grabs on Indigenous lands,” Welch said. “We need to be more strategic and creative. Things like co-locating solar on parking lots and rooftops or interstate rights of way, rather than clearcutting forests, are good solutions.”

The Nature Conservancy’s Site Renewables Right initiative, which identifies suitable sites for wind and solar energy in the central United States by mapping factors including environmental impact and agricultural production, is a good example of trying to find workable solutions, he said; another is Baltimore County’s study on solar siting, which identified nearly 34,000 acres of potential optimal solar sites on rooftops, parking lots, and degraded lands (Minnemeyer and Wiggans 2020).

But even with more appropriate siting, Welch said, permitting and local land use regulations can get in the way. “Both sides of the aisle have known for decades that NEPA and the associated permitting spiderwebs are responsible for long, unnecessary delays. Now, the climate crisis has

A solar installer in Lowell, Massachusetts. Credit: Jerry Monkman/
EcoPhotography.





A worker inspects Bonneville Power Administration lines in Oregon in the 1970s. Credit: James L. Amos via Image Bank Unreleased/Getty Images.

brought new urgency to that conversation. Local regulations must allow for the appropriate siting of renewable energy infrastructure, too.”

Federal coordination—harkening back to the more intentional establishment of infrastructure in the first half of the 20th century—has seemed to many the obvious first step. This spring, US Senator Sheldon Whitehouse (D-RI) and US Representative Mike Quigley (D-IL) introduced the Streamlining Interstate Transmission of Electricity (SITE) Act, which would establish a new federal siting authority at the Federal Energy Regulatory Commission to ease the process of constructing long-range, high-voltage transmission lines.

“If we don’t build more long-range transmission lines, much of the low-cost clean energy that is coming online will simply not be able to get to the homes and businesses that need it,” Whitehouse said when unveiling the bill. The goal is better reliability, an upgrade of the nation’s creaky grid infrastructure, and lower emissions while “responsibly balancing local needs and preferences,” he said.

There is action at the state and regional scale as well. After criticism that state regulatory authorities have been dragging their feet on the clean energy transition, Massachusetts Governor Maura Healey appointed climate-savvy commissioners to the state Department of Public Utilities, and established two new commissions, one to review clean energy siting and permitting, and another to coordinate offshore wind development.

In Washington State, Governor Jay Inslee recently signed a bill requiring longer-term planning by utilities and allowing bigger transmission projects to go through the state’s streamlined siting process. The Bonneville Power Administration (BPA), which manages hydropower from 31 federal dams in the Northwest, has proposed some upgrades to its system, which, if completed, will help increase transmission capacity.

The electricity market is structured differently in the Pacific Northwest than in California and other states, making coordination and planning that much more difficult, said Emily

Moore, director of the Climate and Energy program at the Sightline Institute. Washington and Oregon have assertive climate action plans to shift to clean energy, but even if all utilities agreed to switch tomorrow, the grid couldn't support the load, she said, so hundreds of wind and solar projects are languishing.

"In an ideal world, we would have clarity on how much more transmission is needed . . . and where it would go, so we could then start building it before it is too late," she said. "But planning, at least in our region, is largely reactive, not proactive. Changing that here will require new levels of coordination between BPA, individual utilities, regulators, and policymakers."

When renewable energy projects or transmission lines are first rolled out to the public, developers would do well to practice better stakeholder engagement, said Josh Hohn, a principle at the urban design firm Stantec. He urges project leaders to help people visualize what's actually being proposed "before imaginations run wild."

BUILDING CONSENSUS about clean energy infrastructure is especially challenging in part because the land use issues are so local, but tie back to the global problem of climate change, requiring conceptualizing priorities in sometimes counterintuitive ways. For example, it seems outrageous to clear trees to make way for solar panels. But according to one forest ecologist, doing so actually reduces carbon emissions more after a period of time than leaving the trees in place (Canham 2021).

Technology is also advancing so rapidly, the land use dimension of clean energy could become less onerous. Geothermal drills require less land, though are akin to the oil rigs that have dotted the landscape since the turn of the last century. Batteries are getting better, allowing clean power to be stored. And there is the notion of the mega-solar project, consolidating arrays all in one or two large, out-of-the-way

locations, like a corner of the Sahara desert. By one calculation, solar panels on a single parcel of 43,000 square miles—1.2 percent of the Sahara—could power the entire world (Moalem 2016).

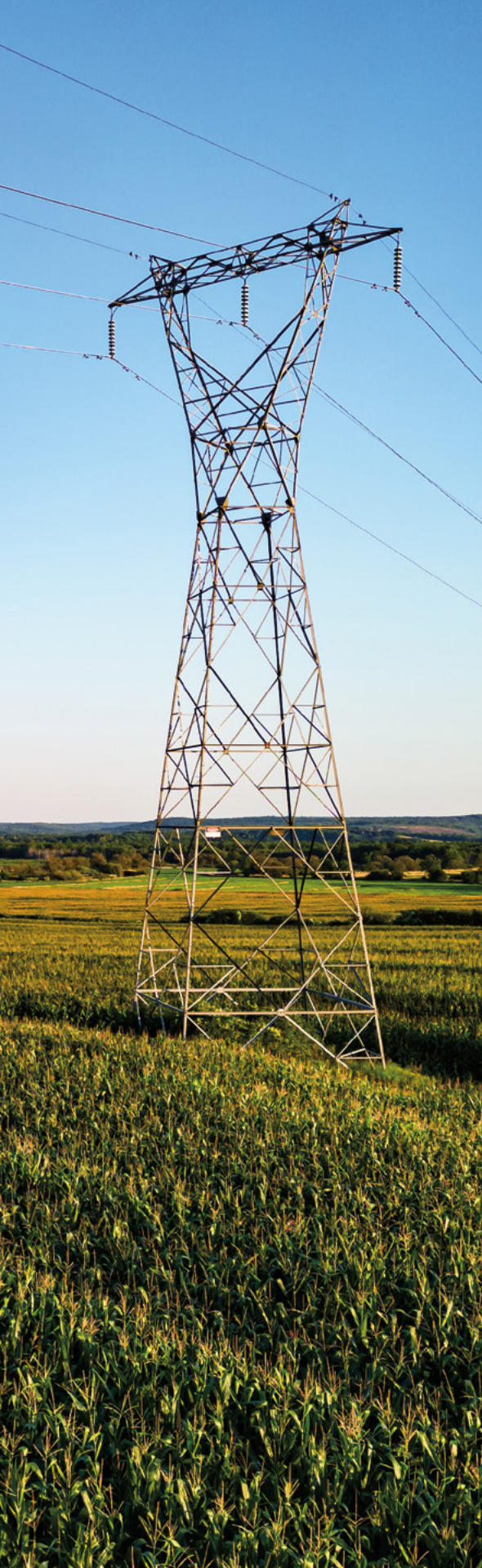
At a more conceptual level, McKibben—who founded the organization Third Act to recruit aging Boomers concerned about climate change—called for a change in mindset when looking at clean energy infrastructure. Instead of viewing it as unsightly, he suggests, we could appreciate how it's helping the planet wean off fossil fuels, and has great economic returns as well. "It's a different kind of beauty," he said in an interview, though he acknowledged people are used to judging landscapes by more conventional measures.

Whether such reconceptualization can happen remains to be seen. But the public's relationship with land has clearly become a key element of the clean energy transition. Above all, this is a moment for thoughtful land policy, with the future of the planet hanging in the balance, said the Lincoln Institute's Patrick Welch.

The public's relationship with land has clearly become a key element of the clean energy transition. Above all, this is a moment for thoughtful land policy, with the future of the planet hanging in the balance.

"Given the scale and urgency needed for this massive rollout of new infrastructure, there is a significant risk that we do it in a way that leads to serious unintended consequences," Welch said. "So we need to be mindful and strategic—but not to the point of inaction." □

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



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Greening America's Smaller Legacy Cities

By Joseph Schilling, Catherine Tumber, and Gabi Velasco

REALIZING A LOW-CARBON FUTURE that is economically and racially just is an enormous undertaking at any level, but especially for small and midsize older industrial cities. These smaller “legacy cities” tend to have assets that make them ripe for sustainable redevelopment, yet they often lack the investment and capacity to create and implement comprehensive sustainability initiatives. But by building a strong policy foundation and leveraging newly available funding streams, these cities can chart bold paths toward green regeneration, according to *Greening America's Smaller Legacy Cities*, a new Policy Focus Report by Joseph Schilling, Catherine Tumber, and Gabi Velasco.

The report offers strategic policy guidance for achieving meaningful climate resilience and climate justice, and for scaling early efforts effectively. It explores the fast-changing world of local climate policy and planning, as well as the existing policy levers that municipalities can use to reform land use practices, plan for blue-green infrastructure, redevelop brownfields, construct green buildings, and prepare for low-carbon energy build-out. The report also breaks down the practical strategies, specific steps, and key resources

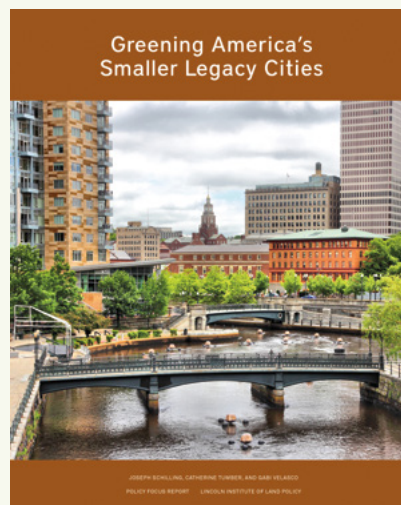
that smaller legacy cities need to link their sustainability efforts to broader partnerships and networks and to secure transformative investments.

Greening America's Smaller Legacy Cities offers a novel framework for city leaders and for regional, state, and federal allies and partners to create near- and long-term sustainability programming at every level. With consistent awareness of the budget pressures and myriad other constraints these cities face, the authors explore newer funding and capacity-building opportunities, and they offer an insightful guide to the regional intergovernmental policy ecosystems and players that can help or hinder growth.

Today, smaller legacy cities are regional economic centers and county seats, with a modest sense of scale, history of productive know-how, and access to fertile farmland, forests, and water assets. They are crucial to constructing a more sustainable, equitable, low-carbon world—and by integrating climate resilience, environmental justice, and green economic development initiatives, each smaller legacy city can forge its own path toward equitable green regeneration.

“This is crucial work. These small cities are often the hubs of large regions, and they can't be allowed to just molder away. Instead, they have a bright—and bright green—future, if we can come together to help them make the transition!

— **Bill McKibben**, climate activist and author, *The End of Nature*



July 2023
 PDF (free), 84 pages
 ISBN 978-1-55844-451-5
 Paperback (\$20), 84 pages
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Joseph Schilling is a senior policy and research associate in the Research to Action Lab and Metropolitan Housing and Communities Policy Center at the Urban Institute. In 2010, Schilling founded the Vacant Property Research Network, a hub for policy and research translation related to regenerating legacy cities.

Catherine Tumber is the author of *Small, Gritty, and Green: The Promise of America's Smaller Industrial Cities in a Low-Carbon World* (MIT Press, 2012). She is a Penn Institute for Urban Research scholar and a Gateway Cities Innovation Institute fellow with the Massachusetts Institute for a New Commonwealth.

Gabi Velasco is a policy analyst in the Research to Action Lab at the Urban Institute, where their work focuses on environmental justice and housing justice.

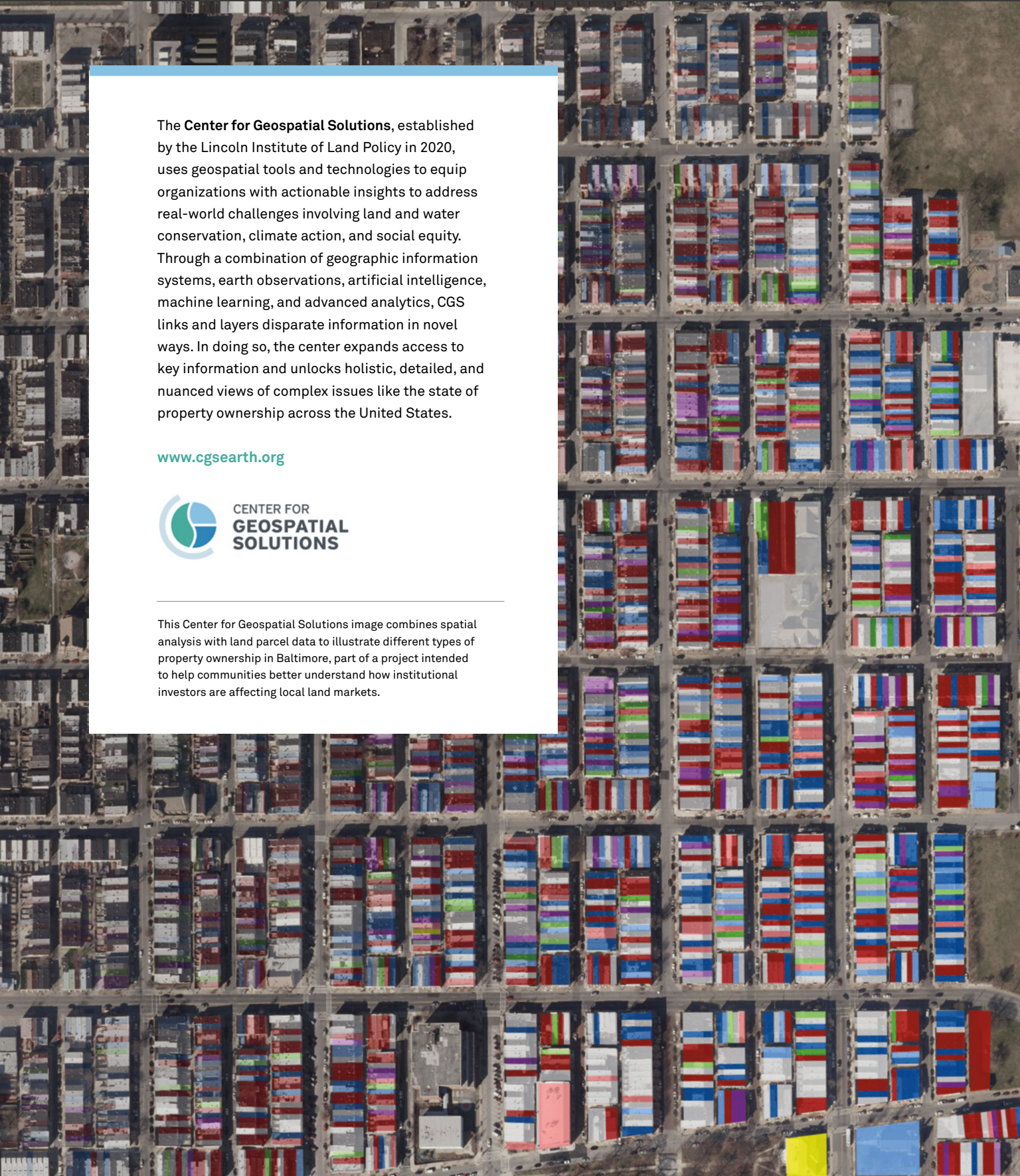


The **Center for Geospatial Solutions**, established by the Lincoln Institute of Land Policy in 2020, uses geospatial tools and technologies to equip organizations with actionable insights to address real-world challenges involving land and water conservation, climate action, and social equity. Through a combination of geographic information systems, earth observations, artificial intelligence, machine learning, and advanced analytics, CGS links and layers disparate information in novel ways. In doing so, the center expands access to key information and unlocks holistic, detailed, and nuanced views of complex issues like the state of property ownership across the United States.

www.cgsearth.org



This Center for Geospatial Solutions image combines spatial analysis with land parcel data to illustrate different types of property ownership in Baltimore, part of a project intended to help communities better understand how institutional investors are affecting local land markets.





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