Land Lines

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JULY 2016

Sustainable Housing Solutions

Skinny Homes and Other Affordable Infill Housing

Community-Driven Buyouts in Flood Zones

Nonprofit PILOTS (Payments in Lieu of Taxes)

Land Lines

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Cover photo: A skinny house in Portland, Oregon. Credit: Meghan Paddock Farrell

Toward a Theory of Urban Evolution

IN HIS 1937 ESSAY "WHAT IS A CITY?," Lewis Mumford described an evolutionary process through which the "badly organized mass city" would evolve into a new type of "poly-nucleated" city, "adequately spaced and bounded":

> "Twenty such cities, in a region whose environment and whose resources were adequately planned, would have all the benefits of a metropolis that held a million people, without its ponderous disabilities: its capital frozen into unprofitable utilities, and its land values congealed at levels that stand in the way of effective adaptation to new needs."

For Mumford, such cities, designed with strong public participation, would become the nuclei of new poly-nucleated metropolitan regions that result in:

> "A more comprehensive life for the region, for this geographic area can, only now, for the first time be treated as an instantaneous whole for all the functions of social existence. Instead of trusting to the mere massing of populations to produce the necessary social concentration and social drama, we must now seek these results through deliberate local nucleation and a finer regional articulation."

Unfortunately, since Mumford wrote these words, we have not achieved poly-nucleated cities or regions. Nor have we advanced a theory of urban evolution. Urban theorists have described cities, used basic pattern recognition to detect relationships among the potential components of urban evolution, or offered narrow prescriptions to fix one urban challenge while generating inevitable unintended consequences that pose new challenges. This is because we have never developed a real science of cities.

For more than a century, planners, sociologists, historians, and economists have theorized about cities and their evolution by categorizing them, as noted by Laura Bliss in a well-documented 2014 CityLab article about the likelihood of an emerging evolutionary theory of cities. They generated multiple typologies of cities, from functional classifications to rudimentary taxonomies (see Harris, 1943, *Functional Classification of Cities in the United States*; Angel et al, 2012, *Atlas of Urban Expansion*; Knox, 2013, *Atlas of Cities*). But they based these classifications on arbitrarily chosen categories and did little to inform our understanding of how cities became what they are or to presage what they might become.

Even Jane Jacobs, in a foreword to her 1961 book, *The Death and Life of Great American Cities*, called for the development of an ecology of cities—a scientific exploration of the forces that shape cities—but provided only narrative accounts of what defined great cities, mostly with regard to design, as part of her ongoing assault on the orthodox planning profession. In some of her later work, Jacobs set out principles to define great cities, based mostly on form, but she never provided a framework to improve the science of urban theory.

Modern urban theory is plagued by several shortcomings. It is not analytic. It fails to provide a framework for generating hypotheses and the empirical analysis to test those theories. And the research, in general, focuses on big iconic cities, rather than a representative global selection of urban settlements that captures the differences between big and small cities, primary and secondary cities, industrial and commercial cities. Importantly, the research provides little guidance regarding how we might intervene to improve our future cities to support sustainable human habitation on the planet.

The New Urban Agenda—to be announced in October at the third UN-Habitat conference, in Quito, Ecuador—will present consensual global objectives for sustainable urbanization. These objectives provide guidance for United Nations member states as they prepare for the gargantuan task of welcoming 2.5 billion new urbanites to the world's cities over the next thirty years—culminating the 250-year process through which human settlement moved from almost entirely rural and agrarian to predominantly urban contexts. But before we attempt to implement the New Urban Agenda, we must confront the serious limitations in our understanding of cities and urban evolution. A new "science of cities" would buttress our efforts to get this last stage of urbanization right.

Before we attempt to implement the New Urban Agenda, we must confront the serious limitations in our understanding of cities and urban evolution. A new "science of cities" would buttress our efforts to get this last stage of urbanization right.

I do not intend to present a new science of cities in this message. Instead, I will suggest a way to frame one that borrows from evolutionary theory. The evolution of species is driven by four main forces, and it seems reasonable that corollary forces help to shape the evolution of cities. These forces are: natural selection, gene flow, mutation, and random drift. And they play out in predictable ways that shape cities—where city growth replaces reproductive success as an indicator of evolutionary success.

From the medieval town hall of Mons, Belgium, the Guardhouse Monkey overlooks the city. Credit: © Jochen Tack / Alamy Stock Photo.

Natural selection is a process of impulse and response. It relates to how a city responds to changing external factors (impulses) that support or inhibit success. Impulses can be economic, environmental, or political, but they are, importantly, outside the control of the city. Economic restructuring, for example, might select against cities that depend on manufacturing, have inflexibly trained workforces, or extract or produce single commodities that face changes in demand in global markets. Climate change and sea-level rise will inhibit the success of coastal cities or those exposed to severe weather events. Political impulses might include regime changes, social uprisings, or war. Or they might be something as seemingly minor as a change in allocation formulae for national revenues. Every impulse will benefit some cities and harm others. A city's ability to respond to different impulses might be a measure of its resilience, which is directly influenced by the three other evolutionary forces.

Planners need better tools to drive their practices and to test their approaches. If we are to successfully implement the New Urban Agenda, a new toolkit based on evolutionary science would be hugely helpful.

Migration (gene flow) helps to diversify the economic, social, and age structures of cities through the exchange of people, resources, and technologies. Presumably, the in-migration of people, capital, and new technology improves a city's ability to respond to external impulses. Out-migration, in general, would reduce this ability.

Mutation, for cities, is an unpredictable change in technology or practice occurring within a city. It might be shorthanded as innovation or disruption.

Random drift involves longer-term changes in cities that result from cultural or behavioral shifts. These might include decisions to maintain or preserve long-term assets, real or cultural. Drift describes the unpredictable ways that cities might change their character.

As noted, I do not want to lay out a new theory of urban evolution here. I merely want to recommend this direction in order to invigorate our thinking around urban change more rigorously and systematically. A significant amount of work has already gone into quantifying elements of this framework. Risk theorists and insurers have quantified many of the external impulses that challenge cities. Demographers and population theorists have studied human migration, and macroeconomists have studied capital flows. A lot of attention has been paid to innovation and disruption in the last couple of decades. Random drift is a little less studied. But, as Bliss points out, big data and new technologies might help us to detect longer-term drift. In any case, a larger framework that weaves these disparate areas of work together would advance our understanding of urban evolution.

On a cautionary note, while an evolutionary theory of cities would be a signal advancement of urban theory, it is useful to remember that, unlike evolution, which is a mostly passive process—species enduring the external forces that act on them—cities, in theory at least, are driven by more purposive behavior: planning. But planners need better tools to drive their practices and to test their approaches. If we are to successfully implement the New Urban Agenda, a toolkit based on evolutionary science would be hugely helpful. As Mumford concluded in his 1937 essay:

> "To embody these new possibilities in city life, which come to us not merely through better technical organization but through acuter sociological understanding, and to dramatize the activities themselves in appropriate individual and urban structures, forms the task of the coming generation."

We at the Lincoln Institute of Land Policy stand ready to support coming generations in comprehensive and scientific analysis of urban evolution and the important role that effective land policies can play in driving it. Our urban future depends on it.

NONPROFIT PILOTS (PAYMENTS IN LIEU OF TAXES)

By Daphne A. Kenyon and Adam H. Langley

Local governments forgo roughly 4 to 8 percent of total property tax revenues each year due to the exemption for hospitals, universities, and other charitable nonprofits.[1]

In all 50 states, property owned by charitable nonprofits and used for a tax-exempt purpose is exempt from the property tax. Despite the benefits these institutions provide, including valuable services and jobs for residents, they also impose costs for police and fire protection, street maintenance, and other public services. The property tax exemption can fiscally strain local governments and shift a larger share of the property tax burden to home owners and businesses.

As of 2012, at least 218 localities in 28 states had received PILOTs, amounting to more than $92 million per year.

To help offset revenue losses from the property tax exemption, some local governments ask nonprofits to make voluntary payments in lieu of taxes (PILOTs).[2] PILOTs are typically far less than what nonprofits would pay if they were taxable, but they can contribute significantly toward the cost of the public services they consume.

Most PILOT revenue comes from "eds and meds" in the Northeast. Colleges contribute about two-thirds of PILOT revenue, and hospitals pay another quarter (figure 2). The Northeast accounts for roughly 75 to 80 percent of PILOT activity. Boston, Providence, New Haven, Baltimore, and Pittsburgh are some of the major cities that have received PILOTs (table 1).[3] Nonprofit property is highly concentrated in a small number of jurisdictions—namely college towns, state capitals, and central cities.

PILOTs go by many different names, including "service fees," "voluntary contributions," or simply "gifts." To add to the confusion, the term "payment in lieu of taxes" is also used to describe payments from businesses, state or federal government, public universities, and public authorities. This policy brief covers all voluntary payments made by private nonprofits as a substitute for property taxes, regardless of what they are called.

Figure 1
States with Localities That Receive PILOTs (2000–2012)

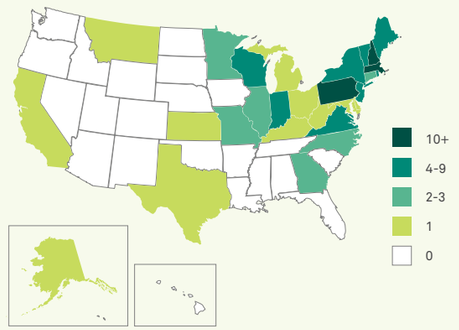
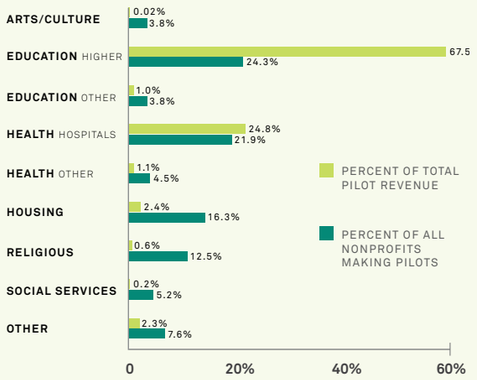


Figure 2
Types of Nonprofits That Make PILOTs



Source (figures 1 and 2): Langley, Kenyon, and Bailin (2012).

WHY IS THERE GROWING INTEREST IN PILOTS?

Anti-tax sentiment. The current political environment has led local governments to seek alternative revenue sources rather than raise taxes.

The Great Recession. Many local governments have faced severe fiscal pressures and have sought new revenue sources to compensate for declines in state aid, property taxes, and other revenue sources since the late 2000s.

The health and education sectors' increasing share of the U.S. economy. A rise in the share of property owned by tax-exempt nonprofits has diminished the local property tax base. One analysis found that between 2006–2007 and 2011–2012, the share of total assessed value that was tax-exempt had grown in 16 of 20 large U.S. cities.[4]

Declining support for the nonprofit tax exemption. As some hospitals aggressively pursue unpaid bills for uninsured patients, colleges raise tuition, and nonprofit executives receive very high compensation, some voters are questioning the charitable nature of these institutions.[5]

WHY DO NONPROFITS CHOOSE TO OFFER PILOTS?

A sense of community responsibility or enlightened self-interest. The success of many nonprofits depends on the success of their host community. PILOTs help to pay for policing and other services that improve the city's quality of life and benefit the nonprofit.

Coercive tactics. One strategy used by local governments to gain leverage in PILOT negotiations is to request a PILOT when a nonprofit needs a building permit, zoning change, or some other approval from the city. Nonprofits may view these requests as extortion while others see the payments as bribery for special treatment. In some cases, nonprofits agree to PILOTs after the city or state has threatened to impose a new tax or fee. Finally, some nonprofits have made PILOTs to avoid challenges to the organizations' tax exempt status. These coercive tactics sometimes "work" in the sense that they lead to large PILOTs, but they backfire at least as often—driving nonprofits away from the negotiating table and leaving the city with no PILOT, a damaged reputation, and possible legal fees.

Table 1

U.S. Cities That Receive the Most PILOT Revenue

City	State	Year	PILOT REVENUE		Number of Nonprofits Making PILOTS
			Total $	% General Revenue	
Boston	MA	2015	27,925,183	0.84%	36
New Haven	CT	2015	10,936,010	1.49%	2+
Providence	RI	2016	8,233,374	0.94%	7
Cambridge	MA	2015	6,919,135	0.64%	15
Princeton	NJ	2015	3,610,000	5.93%	6
Erie*	PA	2015	2,862,897	0.44%	13
Baltimore	MD	2015	2,411,533	0.07%	15
Lancaster	PA	2015	1,614,344	2.08%	38
Lebanon	NH	2016	1,553,546	4.78%	1
Ithaca*	NY	2014	1,550,619	0.86%	2
Pittsburgh	PA	2015	419,000	0.07%	41 (in 2012)

Note: This table shows updated data for localities identified as receiving the most PILOT revenue in a 2012 survey that still receive a PILOT. (Langley, Kenyon, and Bailin 2012).

* Table shows combined PILOT revenue for the city, county, and school district.

** General revenue is from the Census Bureau's 2013 Survey of State and Local Government Finances, but adjusted for inflation to match year with PILOT revenue for each city.

PROS OF PILOTS

Nonprofits should pay for public services they consume. Nonprofits depend on a range of public services for their operations—police and fire protection, street maintenance, snow removal, and more. It is reasonable to expect nonprofits to offer PILOTs to help cover their share of these service costs. Otherwise, home owners and businesses will need to pay more taxes to cover these costs.

The benefits and costs of the property tax exemptions are distributed unevenly. One common rationale for the nonprofit exemptions—the quid pro quo theory—is that because nonprofits provide public benefits, they deserve a tax subsidy. However, there is a geographic mismatch between the benefits and costs of nonprofit activities, with broadly dispersed benefits and highly concentrated costs. For example, a university's education and research activities often benefit an entire state and in some cases the whole world, but the cost of providing police and fire protection for the university is borne entirely by city taxpayers. PILOTs help address this spatial mismatch by diminishing the share of the cost borne by city taxpayers.

Greatest tax savings go to nonprofits with the most valuable properties, not those that provide the most valuable services. Only about one-third of nonprofits own property, so the majority of nonprofits receive no tax savings from the property tax exemption. Among nonprofits that do own property, average tax savings for hospitals ($3.7 million) and higher education institutions ($2.9 million) are much greater than average savings for nonprofits that provide human services ($107,156), community improvement ($88,327), housing and shelter ($76,111), and all other types of organizations.[6] Thus, the nonprofit tax exemption is a very imprecise subsidy for encouraging charitable activities. Because most PILOT revenue comes from hospitals and colleges, PILOTs can help address this imprecision.

CONS OF PILOTS

PILOT negotiations are often contentious, ad hoc, and secretive. Local governments sometimes use very agressive tactics to try to compel nonprofits to make PILOTs. These measures can erode important relationships between governments and nonprofits and damage each side's reputation even if they ultimately generate zero revenue. In addition, the voluntary nature of PILOTs means the amount is usually determined in an ad hoc manner; similar nonprofits may pay very different amounts, and small nonprofits may pay more than much larger organizations. Finally, PILOTs are often determined in secretive private meetings, in contrast to decisions about taxes that result from public debate.

PILOTs provide limited revenue. PILOTs account for less than 0.25 percent of general revenues for 70 percent of localities with data, and more than 1 percent of revenues for just 11 percent of localities, according to the most comprehensive analysis of PILOTs to date.[7] Table 1 shows PILOTs as a percent of general revenue for localities receiving the most PILOT revenue in a 2012 survey. The revenue potential of PILOTs is usually far lower than the proceeds of higher tax rates, higher fees, or an expanded tax base.

PILOTs could lead nonprofits to raise fees or cut services. The funds for PILOTs do not come out of a black box; nonprofits will need to increase revenues and/or cut spending to cover this cost. This response will vary across organizations. An increase in fees is one of the most likely responses to a PILOT, because many nonprofits receive a large share of their revenue from fees and have some flexibility to raise prices without facing a significant drop in demand for their services. For example, a college could increase tuition or a hospital could increase some fees. It is also possible that a nonprofit would cut some charitable services that are not central to their core mission. However, as long as PILOTs are truly voluntary, it is unlikely that a nonprofit would make a major operational change or cut key services when it can simply say "no" to the PILOT request.

Recommendations

Keep PILOTs voluntary and avoid undermining the charitable tax exemption itself. Nonprofits sometimes worry that the term "payment in lieu of taxes" creates the impression that they should be paying taxes and could undermine their tax-exempt status in future court decisions. These organizations may prefer to call their payments "voluntary contributions" or "service fees." Many long-term contracts for PILOTs stipulate that they are voluntary and in no way alter the nonprofit's tax-exempt status.

Communicate respectfully. Collaboration between nonprofits and local government is the foundation for effective PILOTs. These payments are voluntary, so local officials must explain the need for a PILOT, demonstrate that they are trustworthy partners who will use the funds efficiently, acknowledge nonprofits' contributions to their community, and listen to their concerns. For example, in 2011, Providence faced a $110 million budget deficit and possible bankruptcy. Mayor Angel Taveras raised taxes, closed some public schools, reworked labor contracts, and suspended cost of living adjustments for its public pensions. He also said "shared sacrifice" meant that nonprofits should increase their PILOTs. It took longer than a year, but ultimately the city negotiated PILOTs worth an additional $48 million over 11 years from the city's seven largest nonprofits, which helped the city avoid bankruptcy.[8]

Justify the amount of the PILOT. The amount of a PILOT should reflect the cost of providing services to a nonprofit and use some basis to calculate a payment. In Boston, for example, about 25 percent of the City's budget goes to core public services that directly benefit nonprofits—police and fire protection, street cleaning, and snow removal—so a PILOTs Task Force determined that the contribution should equal 25 percent of what a nonprofit would owe if fully taxable.[9]

Earmark PILOTs for public services consistent with a nonprofit's mission. Some nonprofits worry that making an unrestricted contribution to local government violates their mission or will upset donors. An alternative is to target a PILOT to fund activity that directly benefits the nonprofit or otherwise supports its mission. In Worcester, Massachusetts, earmarking funds broke an impasse in PILOT negotiations. University funds were used for the city's public library and improvements to public parks near their campuses.[10]

Pursue long-term PILOT agreements. Renegotiating PILOTs every few years imposes costs on all parties and can become contentious. Long-term agreements, ranging from 5 to 30 years, provide a predictable revenue stream for local governments and a known budget number for nonprofits. Typically, these contracts specify a payment in the base year, an inflator so that PILOTs keep up with inflation, and a number of years for payment.

Reduce cash PILOTs if a nonprofit agrees to provide new services to local residents. Most nonprofits strongly prefer to provide services rather than make cash PILOTs, but local governments typically prefer cash, which can be used to fund their highest priorities. City officials and nonprofit leaders can identify which services would be most valuable for local residents and most appropriate for each nonprofit to provide. Boston's PILOT program allows nonprofits to reduce their cash contributions by up to half for providing certain community benefits.

Acknowledgment We are grateful to Bethany Paquin for her research assistance.

NOTES

1 "The Property Tax Exemption for Nonprofits and Revenue Implications for Cities." November 2011. Daphne A. Kenyon and Adam H. Langley. Urban Institute.

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4 Maciag, Mike. 2012. "Tax-Exempt Properties Rise as Cities Cope with Shrinking Tax Bases." *Governing.* November.

5 Kenyon and Langley (2010), see footnote 2.

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8 Badger, Emily. 2013. "An Uneasy Peace for a Cash-Strapped City and Its Prestigious Nonprofits." *The Atlantic Cities.* December 19.

9 Rakow, Ron. 2013. "Payment in Lieu of Taxes: The Boston Experience." *Land Lines*. Cambridge, MA: Lincoln Institute of Land Policy. January.

10 Kenyon, Daphne A. and Adam H. Langley. 2011. "Payments in Lieu of Taxes by Nonprofits: Case Studies." *State Tax Notes.* July 18.

Verifying Green Bonds

ACROSS THE GLOBE, IMPLEMENTING THE PARIS CLIMATE AGREEMENT is expected to cost more than US$12 trillion over 25 years.

So it's not surprising that much of the conversation since the agreement was finalized in December has been about climate finance. And one of the big topics in climate finance—particularly among city leaders—is "green bonds."

But what exactly are green bonds, and why should local authorities care about them? Here's a brief explanation of the major issues.

WHAT IS A GREEN BOND?

A green bond is a type of debt instrument much like any other bond—except that the proceeds must be earmarked for projects that produce a positive environmental impact.

The first bonds marketed this way were issued by the European Investment Bank in 2007 and World Bank in 2008. Since then, other development banks, corporations, and governments have joined the trend. According to the Climate Bonds Initiative, a research group that tracks the market, total green-bond issuances shot up from US$3 billion in 2012 to about US$42 billion in 2015.

Local authorities represent a growing slice of this market. They see green bonds as one tool that could help pay for renewable energy, transit systems, and water infrastructure, among other things.

The U. S. state of Massachusetts sold the first municipal green bond in June of 2013, followed a few months later by the city of Gothenburg, Sweden. Other recent issuers include the city of Johannesburg; the transit authorities of New York City, Seattle, and London; and the water authority of Washington, DC.

This article originally appeared at Citiscope.org. Citiscope is a nonprofit news outlet that covers innovations in cities around the world. More at Citiscope.org.

ARE GREEN BONDS ANY DIFFERENT THAN OTHER MUNICIPAL BONDS?

Not really. The mechanics work the same as any other municipal bond issuance. The main difference is the environmental aims of whatever the city is using the bond proceeds to pay for.

In addition, green-bond issuers face some additional paperwork—essentially to prove to investors that their money is actually being used to benefit the environment.

To some degree, green bonds are a marketing tool. Labeling a bond that will pay for subway repairs as "green" makes it more appealing to investors. "The reality is a lot of cities are issuing green bonds, they're just not calling them that," says Jeremy Gorelick, who teaches municipal finance at Johns Hopkins University in the U.S. city of Baltimore.

"If I called my fire truck 'green,' investors might raise an eyebrow," Germán says. "But it's a two-sided market, so there's some check and balance. An issuer will raise that money only if an investor believes it's really for a green purpose."

That may be true in advanced economies such as the United States, where a mature municipal-bond market has been functioning for more than a century. In the developing world, most cities are unable to issue bonds at all, and for a variety of reasons. In many countries, cities need to obtain legal authority from their national governments to issue a bond in the first place. They also have a lot of work to do in terms of establishing creditworthiness.

Gorelick, who is advising the city of Dakar, Senegal, on its efforts to issue its first municipal bond, recommends that cities in this situation not aim for the bond market right away. He says they can first try borrowing from central governments or their related municipal development

Green bonds funded the DC Water Sewer Authority Clean Rivers Project. Credit: © Dennis Tarnay, Jr. / Alamy Stock Photo

funds before approaching development finance institutions for concessionary loans or commercial banks for market-rate debt. The idea is to build creditworthiness and the sort of transparent accounting that bond investors active in debt capital markets will demand.

WHY ARE CITIES SO INTERESTED IN GREEN BONDS?

There are many reasons. The key one is that investors really want green bonds in their portfolios right now. As a result, municipal issuers have seen sales of green bonds "oversubscribed"—a good problem for a city to have.

When Gothenburg issued its first green bonds in 2013, "we didn't know if there would be any interest from investors," says Magnus Borelius, Gothenburg's head of treasury. Within 25 minutes, investors had placed €1.25 billion worth of orders—many times more than expected—and Gothenburg had to begin turning them away. "We were overwhelmed," Borelius says.

Cities benefit from strong investor demand in a number of ways. Most important, it means they can attract new kinds of investors, diversifying the pool of people and institutions with an interest in their city. "It's good to have a lot of investors know you have access to capital," Borelius says. Since issuing green bonds, he adds, "we've had increased contact with investors—they're more interested in the city, and they're coming to visit us."

Strong investor demand "puts the issuer in an advantageous position," says Lourdes Germán, a municipal finance expert with the Lincoln Institute of Land Policy. Local authorities can use their leverage to increase the size of their offering, demand a longer payback period, or seek better pricing. While some cities have reported getting more favorable pricing on green bonds, Germán says issuers shouldn't count on it. "It remains murky whether calling it 'green' gets better pricing," she says.

WHAT'S IN IT FOR INVESTORS?

A growing number of investors want to see their money going toward environmentally sustainable projects. Some are motivated by the fight against climate change; others are simply hedging climate risks in their portfolios.

The result is that more pension funds and private-asset managers these days have some kind of mandate to think green. For example, last month, the Swedish public pension fund AP2 said it was allocating 1 percent of its €32 billion portfolio to green bonds. When you're talking about huge institutional investors, commitments like this add up quickly.

On top of that, municipal bonds, at least in established markets like the U.S., are generally viewed as safe investments. So green bonds issued by cities are particularly desirable. "Institutional investors have a fiduciary duty and won't invest in a product that won't deliver a return," says Justine Leigh-Bell, a senior manager at the Climate Bonds Initiative. "We have here an investment-grade product by blue-chip issuers where the risk is low."

HOW DO YOU KNOW IF A BOND IS "GREEN"?

There are no hard rules around that—which is a concern for both investors and environmentalists. However, the market for green bonds is evolving quickly, and some voluntary standards are emerging for issuers.

One, developed largely by large banks through the International Capital Market Association, is called the Green Bond Principles. Another was developed through the Climate Bonds Initiative and is known as the Climate Bonds Standard. The People's Bank of China also recently released its own guidelines on green bonds.

Nobody has to use these standards, but there's a strong push in the direction of doing so. "If I called my fire truck 'green,' investors might raise an eyebrow," Germán says. "But it's a two-sided market, so there's some check and balance. An issuer will raise that money only if an investor believes it's really for a green purpose."

A growing number of municipal issuers are seeking out third-party opinions to validate their bonds' "greenness." That's what Gothenburg does. The Swedish city also has created a "green bond framework" to be transparent with investors about what the city considers "green" and how it selects projects.

"It's still early days in this market," says Skye d'Almeida, who manages the sustainable infrastructure finance network for the C40 Cities Climate Leadership Group. "So it's very important to avoid any 'greenwashing' scandals where cities say they issued a green bond and investors find out down the track that it wasn't green. That would erode confidence in the market. So having some independent party verify and being very transparent about the use of the proceeds is something cities should be prepared to do."

DOES IT CREATE A LOT OF EXTRA WORK OR COST FOR THE CITY TO ISSUE A GREEN BOND?

Some. Leigh-Bell puts the cost of an independent review at between US$10,000 andUS$50,000, depending on who is doing the review and other factors. That's a rounding error on deals that are often valued in the hundreds of millions of dollars.

Issuing green bonds can create extra work for city staff. Ahead of an issuance, there's the need to scour the city's capital investment plans for projects that qualify as green. Afterward, there's work involved in tracking the use of proceeds and reporting that information to investors. According to d'Almeida, these jobs have the positive side effect of forcing people to work across their silos—finance staff must collaborate with transportation or environmental staff, for instance.

Borelius says that has been the case in Gothenburg. "The first question people ask me about green bonds is, 'How much extra work is it?'" he says. "If you don't put treasury people and sustainability people at the same table, it will be a lot of extra work. But if you're issuing a green bond, you should have that in place."

Johannesburg Mayor Mpho Parks Tau agrees that mobilizing around green bonds has paid organizational dividends. Asked recently if labeling bonds "green" is mostly about marketing, the mayor responded that the exercise has been useful for aligning local government as an institution around his environmental agenda. "We are able to say to the institution, actually, the bulk of our capital program is going to be about sustainability."

Christopher Swope is managing editor of Citiscope.

Subsidized Uber in the Suburbs

FOR YEARS, IT LOOKED LIKE THE NEXT BIG THING IN PUBLIC TRANSPORTATION FOR THE SUBURBAN CITY OF ALTAMONTE SPRINGS, FLORIDA, WOULD BE AN INNOVATIVE PROGRAM CALLED FLEXBUS. Instead of running on fixed routes, buses would respond to demand from kiosks located at specific activity centers. It was, city manager Frank Martz says, "the first demand-response transportation project ever developed in the United States." Some even referred to it as an "Uber for transit."

Unfortunately, it didn't work out. The regional bus operator administering the plan lost key federal funding, and Altamonte Springs had to look for a new solution. "Rather than be mad," Martz continues, "We decided to solve the problem. We still needed to serve our residents."

This time, officials went with Uber itself. This past spring, the Orlando suburb announced a straightforward partnership with the ride-sharing firm, subsidizing citizens who opted to use that service instead of their own cars—particularly for trips to regional rail stations that connect population centers around Seminole County. The pilot has proven popular enough that several municipalities in the area have already launched similar programs.

Rodriguez expects more experiments as cities work to figure out how "to get Uber users to complement the existing infrastructure."

Most of what we hear about the relationship between municipalities and ride-sharing startups involves contention. Right around the time Altamonte Springs started this pilot program, a standoff over regulatory details in Austin, Texas, led both Uber and its chief rival Lyft to stop doing business in the city. But Altamonte Springs is an example of how some cities, planners, and scholars are trying to find opportunities within the rise of ride-sharing's prominence and popularity. MIT's Senseable City Lab has worked with Uber; UC Berkeley's Transportation Sustainability Research Center and others have been diving into ride-sharing data with an eye toward public-transportation impacts. And this past March, the American Public Transportation Association released a study assessing how new services can complement more familiar forms of "shared mobility," and suggested ways that agencies can "promote useful cooperation between public and private mobility providers."

"What it's going to boil down to is how this new system interacts with the existing, traditional system," says Daniel Rodriguez, a Lincoln Institute fellow who teaches planning at University of North Carolina and has studied transportation innovation in Latin America and the United States. He expects more experiments as cities work to figure out how "to get Uber users to complement the existing infrastructure."

That almost exactly describes one of the prime motivations for Altamonte Springs' Uber pilot: the service was, Martz points out, an existing option that required none of the time-and-money commitments associated with a typical transportation initiative. "The focus could not and should not be on infrastructure," he said. "It needed to be on human behavior." In other words, ride-sharing services already respond to demand that has been demonstrated by the market, so how could the city hitch a ride on that trend?

The answer was to offer local users a subsidy: the city would pay 20 percent of the cost of any local ride, and 25 percent for rides to or from Sun Rail stations, the region's commuter-rail system. Riders simply enter a code that works in concert with Uber's "geofencing" technology to confirm location eligibility; their fee is lowered accordingly, and the city seamlessly makes up the difference. "It's all about user convenience," Martz says. But he's getting at a bigger point than ease of payment. Instead of building systems that citizens respond to, maybe it's worth trying a system that responds to where citizens actually are—and adjusts in real time as that changes.

After a demand-response bus system failed in the suburb of Altamonte Springs, Florida, the city began paying 20 percent of residents' local Uber fares. Credit: iStock.com/GoodLifeStudio

Whether this works out in the long run remains to be seen, but as an experiment the risks are pretty low. Martz has estimated the annual cost to the city at about $100,000—compared to $1.5 million for the earlier FlexBus plan. While the pilot is just a few months old, he says local Uber use has risen tenfold—which is why neighboring municipalities Longwood, Lake Mary, Sanford, and Maitland have all joined in or announced plans to do so. ("We're creating a working group among our cities," Martz adds, with a focus on managing traffic congestion and "how to connect our cities.")

As Rodriguez points out, the land-use implications alone, both short- and long-term, are compelling. On the day-to-day level, affordable ride-sharing as an option for, say, doctor visits or school appointments or similar errands lowers demand for parking spaces. On a higher level, it leverages options that already exist instead of devising more land-intensive projects that can take years to plan and complete.

In a sense, the experiment fits into a broader trend of seeking ad-hoc transportation innovations. Rodriguez has studied experiments from home-grown bus systems to aerial trams in Latin America that supplemented existing systems rather than building new ones. And while at first blush the concept of partnering with a ride-sharing service sounds like something that would work only in a smaller municipality that lacks a realistic mass-transit-system option, he points out that it could actually play a role in bigger cities. One example: Sao Paulo, Brazil, which offers what *The Atlantic's* CityLab has called "the best plan yet for dealing with Uber"—essentially auctioning off credits, available to both existing taxi services and ride-sharing upstarts, to drive a certain number of miles in a set time period. The regulatory details (devised in part by former Lincoln fellow Ciro Biderman) aim to give the city options, while capturing and exploiting market demand rather than trying to shape it.

That captures Martz's broader attitude. "Why," he asks, "should the public sector focus on infrastructure embraced by people who used it 40 years ago?" While he readily notes that this line of policy thinking is very much in step with the pro-free-enterprise attitudes in "a very Republican county," he also insists that local political support for the plan crossed party lines. And more significantly, he stresses that this solution leaves the city much more easily positioned to adjust as technology changes. Carpooling scenarios seem like one logical possibility. And Uber and other technology companies are known to be working on driverless-car scenarios that could prove even more efficient. Martz doesn't quite come out and say this, but if Uber gets "disrupted" by some more efficient solution, striking up a new partnership would be a lot easier than a do-over on a multiyear region-wide project. "Let market forces carry the day," Martz says.

Of course, as Rodriguez notes, all of this remains very experimental at this stage—and a full-on embrace of ride-sharing carries potential downsides. It obviously remains car-centric and not necessarily affordable to broad swaths of many city populations, even with the 20 percent discount. The ability to travel longer distances for lower costs has been a major factor in city sprawl. "This could be another step in that direction," he observes.

But the combination of uncertainty and potential is exactly why it's worth attending to efforts that embrace ride-sharing upstarts instead of fighting them. "There's no correct answer right now; it's still an exploration," Rodriguez cautions. But the likes of Uber do offer one attribute that's hard to deny for those willing to experiment, he adds: "It's tangible, and you know it works."

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GENTLE INFILL

Boomtowns Are Making Room for Skinny Homes, Granny Flats, and Other Affordable Housing

Portland, Oregon, is considering whether to allow more tall "skinny" homes, constructed on half the amount of land required under single-family zoning. Credit: Fred King

By Kathleen McCormick

RECENT NEWS STORIES ROUTINELY FEATURE "HOT MARKET" U.S. CITIES WITH ASTRONOMICAL HOUSING PRICES that end up displacing residents with moderate or low incomes. In Portland, Oregon, Mayor Charlie Hales declares a state of emergency, directing a budget cut from the city's general fund to create more affordable homes. San Francisco's epic housing battles pit longtime residents against tech workers. In Seattle, 40 people, 35 jobs, but only 12 housing units arrive daily. In Denver, Mayor Michael Hancock pledges $150 million for affordable housing in the next decade. Boston Mayor Martin J. Walsh plans to build 53,000 units by 2030, while neighboring Cambridge adds density in infill areas and near transit. And in Boulder, Colorado, public officials consider a host of housing options in an approach they call "gentle infill."

"Hot markets exist for many reasons, but in Portland, Seattle, San Francisco, Boulder, and other cities, housing issues are clearly a result |of strong economic development," says Peter Pollock, FAICP, manager of Western programs for the Lincoln Institute of Land Policy. In these cities, a jobs-housing imbalance leads to inadequate housing options. The "gentle" or "sensitive" infill approach is about "trying to find ways to make infill compatible with surroundings to achieve urban design goals and enable production of more housing," he says. The term also "puts a positive spin on something that may not be universally accepted"—namely, density—"and suggests that we can do a better job."

While half of all households nationwide are spending more than 30 percent of their income on housing, many residents in hot market cities are spending more than 50 percent and being forced to leave. Housing activists, such as those at the recent first national YIMBY ("Yes in my backyard") gathering (see sidebar), are challenging city planners and elected officials to create more diverse infill options to house people, stem displacement, make better transit connections, and create more environmentally sustainable communities.

How Did We Get Here?

Desirable cities are growing rapidly because they're attracting millennials and cultural creatives for job opportunities and lifestyle amenities, and the newcomers have gravitated in numbers that far exceed places to live. The tech industry, with its influxes of well-paid workers, is often blamed for driving up housing costs and causing displacement. But other factors are also in play. Many cities built little if any housing during the Great Recession. Mortgage credit is tighter. Construction costs are escalating. New housing is priced at market rates that drive up the cost for existing homes. Zoning that favors single-family detached houses or luxury apartments has led to expensive housing monocultures. What's being viewed as a crisis in many cities is the loss of housing not just for lower-income residents but also for workforce and middle-income residents—teachers, nurses, firefighters, small business owners, young professionals, young families, and others who typically provide a foundation for communities.

Restoring the "Missing Middle"

The good news is that cities across the United States are already working on solutions. Communities are overturning policies that prohibit housing or place tight restrictions on where and how it can be built, to allow for more diverse and affordable places to live. Many urban planners and public officials are focused on developing housing types that restore the "missing middle," to shelter moderate and middle-income households.

The missing middle, a concept that grew out of new urbanism, includes row houses, duplexes, apartment courts, and other small to midsize housing designed at a scale and density compatible with single-family residential neighborhoods. Since the 1940s, this type of development has been limited by regulatory constraints, the shift to car-dependent development, and incentives for single-family home ownership. Three- or four-story buildings at densities of 16 to 35 dwelling units per acre used to be a standard part of the mix in urban neighborhoods. Many urban planners say this scale and density of housing is needed again to offer diversity, affordability, and walkable access to services and transit. Cities are using a variety of additional approaches to inject more moderately priced housing into residential neighborhoods, from shrinking or subdividing lots to adding accessory dwelling units (ADUs) to expanding legal occupancy in homes. Some of these gentle infill approaches are showing great potential or in fact adding needed units on a faster track.

How does gentle infill work? It depends on the city, as demonstrated by the following examples from Portland, Oregon; Boulder, Colorado; and Cambridge, Massachusetts.

"Missing middle" housing types typically have small to medium-size footprints, with a body width, depth, and height no larger than a single-family home. They can blend into a neighborhood as compatible infill, encouraging a mix of socioeconomic households and making more effective use of transit and services. Credit: Opticos Design.

Urban planners and public officials are focused on developing housing types that restore the "missing middle"—row houses, duplexes, apartment courts, and other small to midsize housing designed at a scale and density compatible with single-family residential neighborhoods.

PORTLAND, OREGON: MORE HOUSING IS BETTER

Portland typically ranks atop lists of "best places" to live but has recently slipped a few notches because of its housing prices, which ballooned 13 percent in 2015. According to a recent study released by Metro, the regional government organization, Portland area rents increased 63 percent since 2006, while the average income of renters rose only 39 percent. The population grew by 12,000 in 2015, to more than 632,000 residents in 250,000-plus households.

Since 1973, Portland has been living with statewide urban planning that mandates an urban growth boundary to protect farmland and forests from urban sprawl and to ensure efficient use of land, public facilities, and services within the urban boundary. This city has an ambitious agenda to meet its growth projections with several big planning efforts: a new zoning map and the 2035 Comprehensive Plan, its first update in 30 years, adopted by city council in June 2016; a new land use code with regulations that affect a range of growth from multifamily and mixed-use development to transportation corridors and parking; and Central City 2035, a long-range development plan for the city center and its districts.

The city is relying on policy changes in view of the 142,000 additional jobs, 135,000 extra households, and 260,000 more people that it will need to accommodate by 2035, according to Metro. About 30 percent of new housing will be built in the city center, 50 percent in mixed-use centers and corridors, and 20 percent in Portland's single-family residential zones, which comprise about 45 percent of the city's 133 square miles of land. The city has about 12,000 buildable lots, assuming that some current lots can be subdivided to provide more sites.

Since 2010, an estimated 20,000 new residential units have been built or are in the pipeline, and tax increment financing in designated urban renewal areas has invested $107 million in new and preserved affordable housing. In March, the state legislature lifted a 17-year ban on inclusionary zoning, which will allow the city to require builders to set aside units for new workforce housing. The city is focused on funding strategies to provide more affordable homes for households below 80 percent of the area median income (AMI). To increase the number of middle-income units for people earning more than 80 percent of AMI, the city is relying on policy changes, rather than funding strategies.

By the end of 2016, a stakeholder advisory committee for the Residential Infill Project (RIPSAC) will provide advice regarding the size and scale of houses, small-lot development, and alternative housing types. One proposal under consideration is to allow more internal conversions of large historic houses into multiple units, an approach that would provide more housing while avoiding teardowns and preserving the historic fabric of neighborhoods. Building on the legacy of small homes that exist from a century ago, Portland is looking to add little houses on undersized, pre-platted lots. And the city is considering whether to allow the development of more tall "skinny" homes of up to 1,750 square feet on 2,500 square-foot lots, half the square footage of land required under R-5 single-family zoning.

This "stacked-unit duplex" in Sunnyside, featured in Portland's Infill Design Toolkit, "continues the pattern of nearby detached houses" and echoes the form of the many nearby duplexes from the early 20th century. Credit: Bill Cunningham, Portland Bureau of Planning and Sustainability.

"Five or ten years ago, people would ask, 'Why is this house being built on a narrow lot?'" says RIP project manager Morgan Tracy. "Now it's not so surprising. They're really becoming popular because they're at a lower price point for buyers."

Policy changes regarding accessory dwelling units have helped generate new moderately priced housing and have drawn the attention of public officials from other cities in search of solutions to their own housing crises. ADU construction has exploded since 2010, when the city waived development fees covering sewer, water, and other infrastructure connections, reducing construction costs by $8,000 to $11,000 per unit. The waiver inspired a surge in construction: almost 200 ADUs were permitted in 2013—six times the yearly average from 2000 to 2009. In 2015, the city granted 350 new ADU permits, for a current total of more than 1,500 units. Tracy says ADUs "are a well-accepted means of producing more housing because they're better integrated into a site and don't necessitate a home being demolished."

Any single-family house in the main zoning districts can have an ADU, and a proposal would allow up to two units—an interior apartment plus a separate carriage house or granny flat. The city does not limit the number of ADUs within a neighborhood or require off-street parking. It has also streamlined some ADU standards to allow for improved designs with slightly greater height and setbacks. RIPSAC is considering proposals to allow any house to have two ADUs, both interior and detached, triplexes on corner lots where duplexes are now allowed, and duplexes on interior lots, with a detached ADU. Allowing duplexes on interior lots and triplexes on corners "doesn't mean everyone will take advantage" of the policy changes, says Tracy, noting that only 3 percent of corners now have duplexes. But "if every property owner took advantage of additional unit potential, we would double the number of housing units in each neighborhood."

The next phase of infill housing policy considerations will address how medium-density housing types might fit into small infill and multi-dwelling sites. The city has already been moving in that direction: Portland's *Infill Design Toolkit* guide focuses on integrating rowhouses, triplexes and fourplexes, courtyard housing, and low-rise multifamily buildings into neighborhoods.

"What may be shocking and alarming for some people becomes more acceptable as you see it more," says Tracy. "We're seeing that with duplexes and triplexes in single-family neighborhoods. The last time we built them was in the 1930s and '40s. We're trying to promote a wider diversity of housing forms, and some folks are supportive because they understand the need to be able to house more people on available land."

BOULDER: MORE HOUSING IS BETTER, BUT THERE ARE DOWN SIDES

Boulder is studying what other cities are doing to encourage gentle infill, and a recent trip to Portland by city officials, staff, and business leaders offered perspective on what could work at home. Like Portland, Boulder has determined to halve carbon emissions by 2030, provide more infill housing in the developed city core, protect open space, and encourage public transportation use. But with one-sixth of Portland's population and different challenges and opportunities, Boulder seeks its own consensus on what gentle infill means.

Located 25 miles northwest of Denver in the foothills of the Rockies, Boulder also ranks high on the lists of healthy, livable, and entrepreneurial places. The natural beauty and high quality of life in this 25.8-square-mile city of 105,000 have attracted start-ups and established tech firms such as Google and Twitter. The influx has fed a digitally paced lifestyle and "1 percent" housing market in which the median single-family detached house costs over $1 million.

In the past two years, housing prices overall have risen 31 percent.Factors beyond the tech industry have limited affordability for many years (disclosure: for 23 years, I've lived, worked, and raised two kids in a formerly modest Boulder neighborhood that has been largely rebuilt with higher-end homes). The University of Colorado-Boulder, a key economic driver with 38,000 faculty, staff, and students, generates significant housing demand. A jobs-housing imbalance translates to an estimated 60,000 cars arriving and departing daily, despite regional and local bus service.

State law prohibits rent control, and the state's "condominium construction defects legislation" has squelched that type of construction for middle-income housing. Boulder is also home to many independently wealthy "trustafarians" and speculative buyers who purchase homes with cash from selling property in other high-end markets. Some are second or third residences; others are reserved for short-term rentals like airbnb. In June 2015, city council voted to restrict short-term vacation rentals, saying they impacted affordability and reduced the number of long-term housing opportunities.

Development limitations include few residential lots, a 45,000-acre ring of protected open space around the city, and a height limit, to preserve mountain views, capped at between 35 and 55 vertical feet, depending on planned development intensity and location near transit. The city is within sight of a theoretical build-out; a forecast of 6,760 additional units by 2040 is being considered for the current update of the Boulder Valley Comprehensive Plan. A 2015 housing survey conducted for the plan indicated that most residents were willing to increase density and building height to allow for more housing, at least in some parts of the city.

Since 1989, while the percentage of lower-income households has held steady, middle-income households have declined from 43 percent to 37 percent of the populace. The segment disappearing at the fastest rate is households earning between $65,000 and $150,000 as well as families with children. City council, the planning board, and local newspaper op-ed pages field lively debates over the "Aspenization" of Boulder and infill housing options that could slow or reverse the city's momentum toward greater exclusivity and less diversity.

To increase the number of middle-income units for people earning more than 80 percent of AMI, Portland is relying on policy changes rather than funding strategies.

Boulder has been working on affordability and inclusivity for some time. Its inclusionary zoning ordinance has produced 3,300 affordable housing units since 2000. Developers of projects with five or more units are required to construct 20 percent as permanently affordable, build off-site, donate land, or make a cash-in-lieu payment to the city's affordable housing fund. The city's goal is 10 percent permanently affordable housing; some 7.3 percent of the city's housing stock now qualifies.

Part of the affordable program is aimed at middle-income housing: the city has a goal of creating 450 permanently affordable units for households earning 80 to 120 percent of AMI. Since 2000, 107 units for middle-income households have been built in new mixed-income neighborhoods on land annexed in north Boulder. Many are in the Holiday neighborhood, a mixed-use model of 42 percent affordable units integrated within a total of 333 townhomes, row houses, flats, live-work studios, and cohousing. Recently built middle-income units are located in the Northfield Commons neighborhood, where half of the 43 percent of affordable units in duplexes, fourplexes, sixplexes, and townhomes are reserved for middle-income households.

YIMBYS UNITE IN BOULDER

On a hot sunny weekend in June, the first-ever YIMBY ("Yes in my back yard") "unconference," as the democratically run gathering was called, drew 150-plus young and old urbanists to Boulder from 25 cities, including New York; San Francisco; Sitka, Alaska; and Brisbane, Australia.

"YIMBYTown" drew urban planners, architects, elected officials, and advocates for affordable housing, transportation, public health, the environment, and social justice. It was sponsored by the San Francisco based Open Philanthropy Project and the Boulder Area Realtor® Association and hosted by Better Boulder, a local advocacy group that last November spearheaded a successful campaign to defeat two ballot initiatives intended to limit growth in the city. (Disclosure: The author is a Better Boulder member-volunteer.) Presentations and discussions focused on housing, zoning, gentrification, coalition building, and NIMBY challenges, including titles such as "How F-cked is San Francisco—Lessons From the Worst Housing Market in the Country" and "Reframing the Sacredness of Single-family Zoning."

The gathering was bookended by references to the social and economic implications of rising housing costs and displacement. In the opening plenary, Sonja Trauss, founder of the San Francisco Bay Area Renters' Federation (SF-BARF), says a key goal of the movement is to "repopulate cities" as "an integrative process to counter the segregation of the suburbs." In closing remarks, Sara Maxana of Seattle for Everyone noted a growing body of evidence that "exclusionary zoning causes housing shortages in high-demand cities and leads to exclusion by class. It induces segregation by wealth and reduces access to opportunity, good jobs, schools, healthcare, and open space."

"It's very expensive to subsidize people making $70,000 to $130,000 per year," says Aaron Brockett, a city council member and former planning board member, referencing a middle-income housing study prepared for the city that defined Boulder's middle market as 80 to 150 percent of AMI. He advocates for "market solutions like smaller units as a trade-off in those areas that have amenities and services such as mixed-use areas where people can walk to transit and redeveloping areas."

In preparing a comprehensive housing strategy, Boulder is exploring ideas for middle-income infill housing in transit corridors, commercial strips, business parks, and industrial areas that could be rezoned and redeveloped, and in walkable mixed-use neighborhood centers in residential areas. "The 15-minute neighborhood is the Holy Grail for a lot of communities, but it takes a lot of work," says Jay Sugnet, project manager for Housing Boulder. "Are they in single-family neighborhoods or at the edge of service-industrial areas? Where are you willing to locate those, and what's appropriate? You also need a concentration of people to support retail. Boulder has lots of commercial corridors, but they need a sufficient number of people to support all of them."

The city also plans to adjust the ADU ordinance to achieve more middle-income affordability in neighborhoods of mostly single-family detached houses, which comprise about 41 percent of the city's 46,000-unit housing stock. An ADU ordinance in effect since 1981 has permitted only 186 ADUs and 42 OAUs (owner's accessory units) because of requirements regarding off-street parking, minimum lot size, and limits on ADU density. "We'd like ADUs for diversity of housing in neighborhoods," says David Driskell, executive director of planning, housing, and sustainability. "Physically we could put in quite a few here, but, politically, there will be quite a lot of discussion about parking and traffic impacts."

City council is considering "creative adjustments" to existing housing that could have less impact on the footprint and "character" of residential areas, such as loosening code restrictions on the number of unrelated people who can share a home. In most residential zones, no more than three unrelated people can share a house, even if it has six bedrooms and multiple bathrooms. A ballot measure petition launched recently by University of Colorado graduate students asks Boulder voters to overturn the occupancy limit and adopt a "one person = one bedroom" policy. Allowing higher occupancy is controversial, because, although it would provide more places for students and others to live legally, it could further drive up housing costs for families, as monthly rent in group houses, particularly close to the university, often costs as much as $1,000 per bedroom.

The city is also discussing a revision of its 20-year-old cooperative housing ordinance. No co-op projects have been permitted because the ordinance was "essentially a path to No," says Driskell. Three affordable rental co-ops were established under other measures. City council is considering a more welcoming ordinance that supporters say would benefit the city by offering a sustainable and community-oriented lifestyle for single residents, young families, seniors, and people who work lower-wage jobs.

"We tend to be a regulatory city, and we have really embraced deliberative planning," says Susan Richstone, deputy director of planning, housing, and sustainability. "It hasn't always been easy, but we're having the discussions and making changes in planning and zoning levels within a regulatory framework. It's in our DNA."

"Density is a bogeyman here, and people are up in arms," says Bryan Bowen, an architect and planner who is a member of the Boulder Planning Board and the city's Middle Income Working Group. Residents are anxious about both modest homes being scrapped and replaced with 5,000 square-foot $1.5 million new homes and the possibility of greater density with more large edgy-looking multifamily apartment buildings. "That's probably why gentle infill feels good, though it has an interpretive quality. It's a question of what people find to be compatible and palatable." There's no consensus yet about which infill approach will work best, Bowen says. "But frankly, in moderation, some application of all of them might be needed."

These live/work units are one of many affordable housing types in Boulder's Holiday neighborhood, a mixed-use community on the redeveloped site of a former drive-in movie theater. Credit: Boulder Housing Partners.

This carriage house ADU, in the mixed-use Holiday neighborhood, is part of Boulder Housing Partners' affordable rental program. Credit: Boulder Housing Partners.

ACCESSORY DWELLING UNITS (ADUS): A PREFERRED INFILL HOUSING APPROACH

Demographic changes such as aging populations, shrinking household size, college-loan-strapped millennials, and cultural preferences are leading many cities to allow home owners to build ADUs, also known as in-law apartments, granny flats, and carriage houses. Advocates say ADUs—built in the interior of a home, rebuilt from a garage, or newly built as a separate cottage—offer affordable options for elderly parents, adult kids, and caregivers. They're also a source of rental income that can help residents stay in their homes. As older home owners wish to downsize and age in place, some are choosing to live in the ADU and rent out their main house.

Typically ranging from 200 square feet to more than 1,000 square feet, ADUs are part of a long tradition of modest apartments and multigenerational houses that were common before the era of single-family suburban homes. Many housing advocates are keen on ADUs as a way to add units quickly, with home owners financing the infill of existing neighborhoods, compared to the lengthy and costly process of land acquisition and development of larger-scale multifamily projects by municipalities, nonprofit affordable housing organizations, and private developers. At Denver's Bridging the Gap housing summit in May, a session on small-scale affordability posed a potential scenario for the city: 70 neighborhoods multiplied by 300 ADUs per neighborhood would equal 21,000 moderately priced housing units.

At the recent YIMBY conference in Boulder, Susan Somers of AURA (formerly Austinites for Urban Rail Action) in Austin, Texas, described a coalition effort to become "an ADU city" and achieve much greater housing density in the mostly single-family detached city. They accomplished their mission; in November 2015, the Austin City Council passed a resolution relaxing ADU regulations and allowing them on smaller lots. AURA hopes to help home owners entitle 500 new ADUs annually. The units provide "affordable housing and a source of income to allow folks to stay in their homes," says Somers. In gentrifying East Austin, "this is how families stay together."

CAMBRIDGE: BRIDGING THE INCOME GAP

Cambridge, located across the Charles River and three miles west of Boston, has the most expensive housing in Massachusetts and bears keen pressure to produce more missing-middle options. The population has increased more than 10 percent since 2000, to 110,000 residents within a compact 6.5 square miles, and is projected to grow by 6,200 homes before 2030, according to the Metropolitan Area Planning Council (MAPC), the regional planning agency for Metro Boston. The city has 117,000 jobs and more than 52,000 housing units, about half of them located in mixed-use commercial areas. The average listed single-family home price in 2015 exceeded $1.2 million. Median monthly rent for a one-bedroom apartment is $2,300.

"Cambridge has become a bifurcated place of very high income and very low income," says Andre Leroux, executive director of the Massachusetts Smart Growth Alliance. "It's hard for middle-class people to live there." Cambridge has the infrastructure to support much greater density and to add significantly more residential development and huge residential towers, "but it doesn't want to be downtown Boston."

The city is in the first year of a three-year comprehensive plan process, its first since 2000 (the state does not require municipalities to develop comprehensive plans). Affordable housing for low, moderate, and middle incomes —a resounding theme through the public process—is the number-one priority, says Iram Farooq, assistant city manager for community development.

Mass + Main, a mixed-use development in Central Square, Cambridge, required a zoning variance to allow for greater height and density in exchange for 20 percent affordable units. Credit: Twining Properties.

"For a lot of working people, there are fewer affordable options in the city," says Farooq. The greatest population decline has occurred among residents earning between 50 and 80 percent of AMI, she says. Middle-income households earning between 80 and 120 percent of the area's AMI are also leaving the city for housing options elsewhere in the urban region. She notes that a city program that offered low-interest financing to home buyers earning up to 120 percent of AMI experienced little demand.

"Just creating the program doesn't mean people are going to use it. With the same financial commitment, they are able to go three miles down the road and find a nicer or bigger house for the same money. Being able to hold onto the middle is more challenging than at other income levels."

Allowing duplexes on internal lots and triplexes on corners "doesn't mean everyone will take advantage of the policy changes," Tracy says. "But if every property owner did we would double the number of housing units in each neighborhood."

The city is using regulatory strategies to fund more affordable housing. An incentive zoning ordinance enacted in 1988 required linkage payments to offset the effects of commercial development on the housing market. In 2015, the city updated the ordinance, increasing the rate for developers from $4.58 to $12 per square foot and broadening the requirement to include any nonresidential development, including healthcare and university facilities, labs, and office space. The city is also considering new zoning for infill sites and an expansion of its inclusionary housing ordinance, which now requires 11.5 percent affordability in new projects, to 20 percent affordable units for moderate, middle-income, and low-income households.

Cambridge has been building infill housing, mostly in projects ranging from 50 to 300 units, on larger sites. East Cambridge, for example, has seen the development of thousands of housing units in the past decade, along with millions of square feet of office space and restaurants, on land that was formerly industrial. The city is requiring residential units with all new development; 40 percent of a new commercial project in East Cambridge's Kendall Square will be dedicated to housing. Some of this new development is subsidized for the middle class. But few parcels exist in residential areas, land costs are high, and residents are pushing back.

For years, housing advocates have been urging the city to add more infill housing and increase density in Central Square, the historic municipal center of the city. Located on Massachusetts Avenue, Central Square has a subway station and a bus-transfer station where eight bus routes converge. The area has some three- and four-story buildings as well as one- and two-story buildings that could be redeveloped for dense mixed-use housing next to transit. The square historically had taller, denser buildings before some third and fourth stories were removed to reduce taxes during the Depression. In 2012, however, some neighbors tried to persuade the city to downzone Central Square.

"Downzoning is not appropriate in a crisis in which we're so restricted in our ability to build housing," says Jesse Kanshoun-Benanav, an urban planner and affordable housing developer who started the civic group A Better Cambridge in response to the downzoning effort, to promote increased density for infill housing opportunities. The city council tabled the downzoning effort and since then has been allowing zoning changes in Central Square and providing incentives such as additional height and density in exchange for the development of more affordable housing.

At the eastern end of Central Square, Twining Properties is developing Mass + Main, a multi-parcel mixed-use project with a 195-foot tower and 270 apartments, 20 percent of which will be affordable for low, moderate, and middle-income residents. The project required a zoning variance, notes Farooq. "We're now hearing political desire to rezone the rest of Central Square. People don't seem to be as opposed to density as height, so we'll have to explore what that means in terms of urban form."

Townhouses, duplexes, and triple deckers are the norm in Cambridge, and only 7.5 percent are single-family detached homes. New rules passed in May that allow the conversion of basements into accessory dwelling units in single- and two-family homes throughout the city could enable 1,000 legal ADUs. The ADUs don't need a zoning variance, and off-street parking is not required. The square footage of the new units won't count as gross floor area (ADUs previously were prohibited in most cases due to the existing floor-area ratio and requirements for lot area per dwelling unit). Supporters say the rules won favor because they allow for more efficient use of large homes and won't alter the look of the neighborhood.

"It's important that there are people in the city who are willing to accept trade-offs," says Farooq, noting that the YIMBY movement has "great political capital" to counter NIMBY pushback against infill housing. "There is a community desire to see more housing, and many young people, including a lot of renters, recognize that it's important to increase the supply and not have steep increases in rent, to make housing more manageable and accessible."

Regional Approaches

Leroux from the Massachusetts Smart Growth Alliance and others across the nation say that housing needs should be addressed as a regional issue, and cities and towns should work together to allow urban infill housing and approaches like ADUs under state zoning laws. In June, the Massachusetts Senate passed a bill that would reform 1970s-era zoning laws to permit ADUs and multifamily housing districts in every community. A coalition including the Alliance; the Senate President; mayors; and advocates for the environment, public health, affordable housing, and transportation supported the bill, which is poised to become state law next legislative session. A legal and policy strategy, it includes a fair-housing clause that prohibits communities from making discriminatory land-use decisions, which Leroux and others say increase segregation in many metropolitan areas, as low-income residents, including people of color, get pushed out of redeveloping urban neighborhoods.

"We think there's a grand bargain to be made between cities and towns and the real estate development community to unshackle development near walkable places, infrastructure, and transportation while curbing sprawl and protecting natural areas."

Suburban communities also need to do their fair share, he says. Many suburbs are still zoning and building for the auto-oriented market, with "a lot of modest homes being torn down and replaced with McMansions," he says. "We think there's a grand bargain to be made between cities and towns and the real estate development community to unshackle development near walkable places, infrastructure, and transportation while curbing sprawl and protecting natural areas." To allow for more diverse housing growth, he says, the Alliance and others are promoting "as-of-right," or permitted zoning uses, in walkable areas, commercial centers, villages, town centers, and urban squares, because "that's where the market is and where we need to let the market do its job." □

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BUY-IN FOR BUYOUTS

Three Flood-Prone Communities Opt for Managed Retreat

By Robert Freudenberg, Ellis Calvin, Laura Tolkoff, and Dare Brawley

This article is adapted from Buy-in for Buyouts: The Case for Managed Retreat from Flood Zones, *a Policy Focus Report to be published in August 2016 by the Lincoln Institute of Land Policy in conjunction with Regional Plan Association.*

HURRICANE IRENE AND SUPERSTORM SANDY COST THE NEW YORK METROPOLITAN AREA an unprecedented number of lives and properties. In the span of 14 months, between August 2011 and October 2012, the storms killed 83 residents and caused $80 billion of damage in New York, New Jersey, and Connecticut. More than $60 billion in recovery funding was allocated to local governments, home owners, and facilitators to repair roads and seawalls; elevate, secure, or acquire buildings; restore dunes and wetlands; and reconstruct communities.

The hurricanes generated a regional dialogue about how to prepare for and respond to extreme weather events. These conversations led to state-of-the-art, government-sponsored design competitions such as Rebuild by Design. And at the federal level, the U.S. Army Corps of Engineers (USACE) conducted the two-year, $19.5 million North Atlantic Coast Comprehensive Study, which focused on how to protect Northeast residents from hurricanes.

Yet nearly five years later—after recovery efforts have been completed and appropriate programs implemented—many communities in the region still could not withstand the surge levels of another Sandy or the riverine flooding of another Irene. And by 2050, the number of residents vulnerable to flooding in the region will likely double to 2 million people, due to rising sea levels, the increasing frequency and magnitude of storms, and steady population growth. One third of the victims will be socially vulnerable.

Left: After Hurricane Irene hit New Jersey in September 2011, these residents of Wayne accessed their home via boat in order to begin cleaning up the property. Credit: Tom Pioppo/FEMA (2011).

The Case for Buyouts

Rebuilding and restoring are the most common and popular adaptation tools for strengthening community resilience in the face of climate change, but the strategy that most effectively eliminates risk is managed retreat through the use of buyout programs. Yet, because of the social and political complexity of managed retreat, governments and communities across the United States have largely dismissed it as an adaptation strategy.

Typically funded by federal or state dollars and managed at the state or county levels, buyout programs are designed to provide a mechanism for residents to sell their homes and move to safer locations if they no longer want to live in high-risk flood zones. New York, New Jersey, and Connecticut all employed buyout programs on a limited scale following Hurricane Irene and Superstorm Sandy, but too often this approach was considered controversial even for the hardest hit areas.

Indeed, managed retreat poses considerable challenges. For home owners, the decision to leave a community can be traumatic, especially if adequate and affordable housing is hard to find nearby. For municipalities, the loss of tax revenue from bought-out properties can have a serious impact on the local budget. On a higher level, urban planning's dubious history of relocating low-income communities, ostensibly for the greater good, stands as a reminder of how well-intentioned, even necessary measures such as managed retreat can have disproportionate negative impacts if they are not carefully considered in close consultation with residents.

But if these problems are carefully considered during the design and implementation process, the benefits of buyouts can outweigh the risks. Unlike other adaptation measures, retreat is a one-time investment that requires no further action beyond providing relocation assistance to participants and protecting the natural landscape left behind. Managed retreat also has the potential to create synergies with other resilience and adaptation strategies.

After suffering severe damage by Hurricane Sandy, nearly 99 percent of the residents of Oakwood Beach, Staten Island, requested a buyout program, which led to the acquisition of 326 properties. Credit: Regional Plan Association (October 2014).

Since development is not permitted on acquired land, buyouts can be used to implement projects such as sea wall construction, wetlands restoration, and many other engineered and nature-based resilience measures. Residents can forge new beginnings on safer ground and help create public amenities by allowing for the acquisition of homes in flood-prone areas and restoration of the land to natural floodplain functions.

While the promise of buyouts is great—yielding 100 percent risk reduction, a greater return on public investment, and other benefits to communities and habitats—they have attracted only $750 million of the billions in federal aid allocated for resilience and recovery in the New York metropolitan region. The vast majority of recovery efforts have focused on more popular adaptation measures.

Buyouts in the New York Metropolitan Region

This article highlights the experience of three cities in Connecticut, New York, and New Jersey that adopted buyout programs after suffering major property loss from Hurricane Irene or Superstorm Sandy. The case studies demonstrate that buyout programs are a useful tool for moving residents in flood zones out of harm's way, but they also illustrate the limitations of current programs.

BUYOUT PROGRAMS IN THE NEW YORK REGION

NY RISING

New York State established the New York Rising Buyout and Acquisition Programs (NY Rising) in order to address the damage caused by hurricanes Irene and Sandy as well as Tropical Storm Lee between 2011 and 2013. In a handful of designated "enhanced buyout areas," including Oakwood Beach on Staten Island, home owners were offered the pre-storm value of their homes, plus incentives for group participation to prevent the so-called "checkerboarding" of bought-out properties.

BLUE ACRES

The Blue Acres program, run by the New Jersey Department of Environmental Protection, predates hurricanes Irene and Sandy, but it has benefited from the funding made available after those storms. In recent years, the program has mainly targeted neighborhoods in Sayreville and Woodbridge, and identified individual properties or clusters of properties that experienced repetitive or severe repetitive losses.

OTHER FEDERALLY FUNDED PROGRAMS

In many cases, buyout programs are administered on the local level and funded largely through federal grant programs such as FEMA's Hazard Mitigation Grant Program (HMGP) and the USDA's Emergency Watershed Protection Floodplain Easement Program (EWP-FPE). Typically, federal grants for buyouts require a local funding match of 25 percent.

OAKWOOD BEACH, NEW YORK

Oakwood Beach is located on the central part of Staten Island's South Shore. The lowest-lying portion of the neighborhood is situated next to the marshes of Great Kills Park. The most serious flood risks come from storm surge off the Raritan Bay and Lower New York Harbor. Additionally, sections of the neighborhood experience nuisance flooding following even modest rainfall. Along with the neighboring upland community of Oakwood, Oakwood Beach has a population of 22,000, and nearly 3,000 residents live in current FEMA Special Flood Hazard Zones. The number of people within high-risk flood zones is expected to increase nearly 150 percent, to 7,300 by 2050.

Oakwood Beach is a middle-class community with a median annual household income of $89,000. The neighborhood is 31 percent low-to-moderate income, 16 percent nonwhite, and 69 percent owner-occupied. The neighborhood was largely developed in the 1960s and 1970s; nearly half its residents have lived in the community for more than 25 years. In general, the homes built closer to the water are smaller and cheaper than those located farther upland. Single-family homes dominate the neighborhood, but there are a handful of apartment buildings inland.

Hurricane Sandy severely impacted Oakwood Beach. The storm surge overtopped the boulevard that runs along the coast and damaged the berm between the neighborhood and the Atlantic Ocean. The surge inundation was exacerbated by the floodwaters trapped within the "bowl" topography of the South Shore (SIRR 2013). In Oakwood Beach, some homes were swept off their foundations; others were flattened. Staten Island as a whole was among the hardest hit areas, with 23 storm-related deaths in the borough (SIRR 2013; Koslov 2014). Prior to Sandy, Oakwood Beach withstood several other historic floods, including intense inundation from a nor'easter in 1992 and flooding from Hurricane Irene in 2011 (Oakwood Beach Buyout Committee 2015; Koslov 2014). After the 1992 storm, residents organized a Flood Victims' Committee to petition for better flood protection from the state and federal government. Although the USACE somewhat addressed their concerns by constructing a berm, it was not completed until ten years after the nor'easter (Koslov 2014).

Building on their experience organizing for flood protection in the 1990s, Oakwood Beach residents moved quickly to plan their recovery after Hurricane Sandy. At an early community

In Oakwood Beach, a single 100-year flood event could cause $216 million of damage across 1,837 properties, and 830 would have to be demolished. A buyout of only those 830 properties would save community residents $817,000 per year in flood insurance premiums and an annualized average of $5.7 million in damages and dislocation costs. Credit: Regional Plan Association (October 2014).

meeting devoted to immediate disaster response and aid, one organizer asked if residents would support a buyout program. Nearly all community members in attendance said yes. Residents then formed the Oakwood Beach Buyout Committee, which began to draft an application for a state buyout. The committee conducted outreach to gauge interest and provided information to residents about what a buyout program might entail. The committee collected signatures from nearly all the neighborhood's residents to indicate their interest (Lavey 2014). Additionally, committee members surveyed residents about where they felt safe living within the neighborhood, in order to generate maps of priority acquisition areas.

This mapping effort is a powerful tool for communities organizing to receive buyouts. However, some populations that are considering buyouts are settling in marginal flood-prone areas because they have suffered government-imposed relocations and disinvestments in the past. If buyout program plans are not community-driven, they risk continuing this pattern of marginalization. As we observed in post-Katrina New Orleans, residents understandably opposed buyout programs proposed by outside planners who hadn't consulted with the local population. By contrast, Oakwood Beach residents collaboratively created their own "green dot" maps to convey their goals for a buyout program and to confirm that they did not want redevelopment in their flood-prone area.

The NY Rising Program heeded residents' requests and launched a buyout program for Oakwood Beach. As of June 2015, nearly 99 percent of the neighborhood's residents have participated. The state plans to purchase 326 properties, an acquisition process that will be completed in 2016. As of February 2015, the state owned 296 properties and had demolished 60 (Rush 2015; Governor's Office of Storm Recovery 2015).

The relative success of Oakwood Beach's buyout program is not surprising considering the fiscal context. Factoring in the projected sea level rise by 2050, a single 100-year flood event could cause $216 million of damage across 1,837 properties, and 830 would have to be demolished. As summarized in table 1 (p. 32), a buyout of only those 830 properties would save community residents $817,000 per year in flood insurance premiums and an annualized average of $5.7 million in damages and dislocation costs. In terms of the potential costs to communities, Oakwood Beach benefits from being only one neighborhood in a very large city. The loss in tax revenue is quite negligible in the context of New York City's $75 billion budget.

WAYNE, NEW JERSEY

Wayne is a township of 55,000 people in the outer ring of northern New Jersey suburbs. Twenty percent of households are low-to-moderate income, 20 percent of residents are nonwhite, and 80 percent are home owners. The town is landlocked but lies within the Passaic River Basin. Approximately 12 miles of Wayne's western border is formed by the Pompton River, which has a history of flooding. Additionally, the township has several lakes and streams with development encroaching on flood zones. Approximately 5,400 people (nearly 10 percent of the total population) currently live in Special Flood Hazard Areas. Wayne is the wealthiest of the case studies, but the town has experienced the slowest property value growth since 2000. FEMA has provided $6.9 million in individual assistance to Wayne home owners since 2007, and 15 percent of registrants occupy repetitive-loss properties.

Wayne has experienced severe flooding since colonial times. The most severe flood to impact the entire Passaic River Basin occurred in 1903. Since then, several major floods have occurred each decade. Although the USACE began plans to reduce flooding in the Passaic River Basin in 1936, a comprehensive plan for the area has yet to be implemented.

The first buyouts in the Passaic River Basin began in 1995, after the New Jersey Department of Environmental Protection (NJDEP) formed its Blue Acres Program. They have continued through various funding sources, including NJDEP, FEMA, and open space taxes, in the case of municipalities in Morris County. However, Wayne was not included in the first round of buyouts through the Blue Acres Program in the late 1990s. As a result, municipal officials approached the state about funding the town, which led to several other programs. In 2005, the NJDEP and USACE identified the Hoffman Grove neighborhood in Wayne as a priority area for buyout funding (USACE 2005). A series of allocations since 2005, including additional funding after hurricanes Irene and Sandy, allowed for the purchase and removal of 96 homes in the Hoffman Grove neighborhood. FEMA was the primary source of funding for these purchases; the Blue Acres Program provided the nonfederal match. Despite these significant subsidies, news sources reported that "there is no immediate funding to buy and raze the houses that are left standing" (McGrath 2011). Nevertheless, all but 29 homes in this neighborhood have now been purchased and removed.

A buyout program in the Hoffman Grove neighborhood of Wayne, New Jersey, which has experienced severe riverine flooding since colonial times, will restore the area to a floodplain. Credit: Tim Pioppo/FEMA.

In May 2015, the USACE, together with NJDEP, released a follow-up to that 2005 study and identified 27 additional properties within Hoffman Grove as priorities for acquisition. Municipal officials in Wayne are now working to identify willing residents in order to move the program forward. Once these buyouts are complete, the entirety of the Hoffman Grove neighborhood will return to a floodplain.

The buyout programs in Wayne more closely resemble the FEMA buyout programs that began in the 1990s in response to the Great Flood of 1993, given Wayne's vulnerability to seasonal and storm-related riverine flooding. Buyouts have undergone greater testing in riverine settings, leading to simpler program designs. Additionally, lower property values in inland riverine areas make it possible for buyout programs to purchase a greater number of homes. (Following disasters, property values of riverine flood properties are less resilient than coastal property values.)

The fiscal impact analysis for Wayne reveals that, after the acquisition of 96 Hoffman Grove properties, the township has a relatively small number of properties vulnerable to severe flooding compared to the other case studies. Even so, a 100-year flood event could still severely damage 127 homes, costing $25 million, as shown in table 1 (p. 32). It is worth noting that applying Wayne's buyout program to the remaining most vulnerable properties may lead to an average of $840,000 in lost tax revenues per year.

Table 1 Fiscal Impact Analysis of Buyouts in the New York Metropolitan Area

CITY/STATE	OAKWOOD BEACH, NY	WAYNE, NJ	MILFORD, CT
PROPERTIES AT RISK	830	127	428
MOST RECENT APPROPRIATIONS*	$75,027B	$78.1M	$202.2M
Avoided Damages and Dislocation Costs			
100-Year Flood Event *per property:*	$139,535,223 $168,115	$25,158,629 $198,099	$192,118,514 $450,982
Annual *per property:*	$5,683,325 $6,847	$1,972,474 $15,531	$14,358,247 $33,700
Net Present Value *per property:*	$81,096,791 $97,707	$28,145,719 $221,620	$204,852,881 $480,875
Avoided Flood Insurance Premiums			
Annual *per property:*	$816,699** $984	$242,611 $1,910	$435,582 $1,022
Net Present Value	$11,653,681	$3,461,884	$6,215,424
Cost of Removing Properties			
Cost of Removing Properties **Total Property Values at Risk**	$154,288,240 $185,889	$31,209,638 $245,745	$136,811,570 $321,154
Losses in Property Taxes			
Annual *per property:*	$2,960,947 $3,567	$840,485 $6,618	$2,756,857 $6,471
Net Present Value *per property:*	$42,250,495 $50,904	$11,993,089 $94,434	$39,338,287 $92,343
Lost Taxes as Percent of Most Recent Budget	0.00%	1.08%	1.36%

* *Appropriations for Oakwood Beach and Milford are based on 2015 figures; appropriations for Wayne are based on 2014 figures. The Oakwood Beach number includes all appropriations for New York City.*

** *Flood insurance premium figures based on aggregate figure for New York City.*

Source: Regional Plan Association.

MILFORD, CONNECTICUT

Milford is a coastal city of 52,000 people, midway between Bridgeport and New Haven on Long Island Sound. Milford has the longest coastline of any town in Connecticut (14 miles) plus two significant rivers, the Wepawaug and Housatonic, leaving residents vulnerable to both coastal and riparian flooding. Oceanfront property is one of Milford's most prized amenities, and the town has more waterfront homes than any other case study in this article. Currently, there are 8,100 Milford residents in the 100-year flood zone, with a 26 percent increase projected by 2050. Milford also has the most repetitive-loss properties of any municipality in Connecticut. Since 2007, Milford residents have made up 20 percent of registrants in FEMA's individual assistance program; FEMA awarded them $3.5 million. The town is 25 percent low-to-moderate income, 15 percent nonwhite, and overwhelmingly owner-occupied.

Milford's own analysis confirmed the city's extreme vulnerability. A Category 2 hurricane has the potential to inundate more than 2,000 properties, including 35 city facilities. More than 1,500 homes were damaged by Irene and Sandy, over 200 severely (Daley 2014). An excess of $60 million in flood insurance claims were paid to Milford residents in 2011 and 2012 (City of Milford 2015). A year after Sandy, entire streets and dozens of homes remained empty, while many others were elevated on piles and rebuilt. As in many areas damaged by Sandy, government funding came slowly, which retarded recovery (Zaretsky 2013). An estimated 4,000 to 5,000 homes in the city may still need to be elevated to satisfy building code requirements (Buffa 2013).

The primary strategies for combating flood risk in Milford have included beach nourishment projects, building retrofits and elevations, revetments, jetties, and groins. The city's 2013 Hazard Mitigation Plan outlined over $14.4 million in flood mitigation projects, including elevating structures, protecting or upgrading critical infrastructure such as the wastewater treatment plant, and replenishing dunes (City of Milford 2013). The highest-priority projects were neighborhood drainage systems and catch basins. Due to lack of funding, however, many proposed projects either stalled or have not begun.

Hurricane Sandy damaged 1,500 properties in Mllford—which has the longest coastline in Connecticut, two rivers, and the state's highest number of repetitive loss properties—but the city and most home owners have resisted buyout programs. Credit: Denis Tangney, Jr.

The USACE evaluated the coastline of Milford for the North Atlantic Coast Comprehensive Study and found that the implementation of structural measures, like beach fill or dune projects, may be limited due to space constraints even in areas where these approaches might normally be most cost effective. If these measures are not applicable, flood proofing, and even acquisition and relocation, might be the most economical long-term strategies (USACE 2015). These challenges are shared by many highly developed areas along the eastern Atlantic coast. Buyouts can be difficult to secure in the short term, and structural solutions do not effectively reduce risk.

Yet buyouts have received some attention from the city's residents. FEMA Hazard Mitigation Grant funds were used to buy several properties. Additionally, Milford has received $1.4 million from the USDA Floodplain Easement Program to buy at-risk properties (USDA n.d.). Despite available funding, however, the programs received only seven applicants in 2013. Furthermore, the city's official position was "unenthusiastic" (Spiegel 2013). Milford stakeholders interviewed for this report cited concerns over the loss of the municipal tax base as the primary cause of resistance to buyouts, as coastal property owners pay the highest property taxes.

From the state's perspective, Milford presented a promising case for a buyout program since many of the repetitive-loss properties were adjacent to the Silver Sands State Park, and acquired parcels could be incorporated into the park. Stakeholders indicated that positive alternative models for development are needed to encourage participation in buyout programs. The fiscal analysis performed for this study reveals that, while buyouts would impact property taxes, the effects would not be as severe as perceived by municipal officials. As a percentage of the most recent budget, buyouts of the most vulnerable properties would result in only a 1.36 percent loss in revenue, as indicated in table 1 (p. 32).

Milford's vulnerable properties have the highest average value among the case studies. Factoring in 2050 sea level rise projections, Milford's most vulnerable homes—those that could suffer over 50 percent damage—could face $204 million in damage and dislocation costs over the next 100 years. Relocating home owners from just these properties that are most at risk could save $435,000 in annual flood insurance premiums.

Conclusion

Buyout programs have long been avoided in public dialogue. Yet when weighed against the magnitude of risk faced by some U.S. coastal and riverine communities, they can be a viable and effective way to enable retreat from flood zones. As tools to preserve communities and strengthen resilience, they deserve serious consideration.

The three case studies highlight both the potential value of buyout programs and the political, social, and economic challenges of implementing them. Many factors contributed to the relative success of buyout participation in Oakwood Beach and Wayne and to the failure in Milford. The timing of the program, the level of program engagement with residents, the attachment to place, and the availability or lack of alternatives all played a role. In order to meet the needs of residents and municipalities, we must rethink the goals, strategies, and time frame of buyout programs, improve the administration of funding, reform the planning process, and design minimally disruptive programs.

For an in-depth exploration of managed retreat in the New York metropolitan region, see the forthcoming Policy Focus Report, *Buy-in for Buyouts: The Case for Managed Retreat from Flood Zones*, to be published in August 2016 by the Lincoln Institute of Land Policy in conjunction with Regional Plan Association.

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New York City residents posted a warning to Hurricane Sandy. Credit: jaydensonbx/ Flickr/CC (2012).

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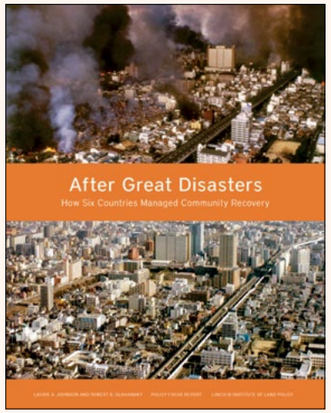
NEW LINCOLN INSTITUTE POLICY FOCUS REPORT

After Great Disasters
How Six Countries Managed Community Recovery

By Laurie Johnson and Robert Olshansky



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After Great Disasters: How Six Countries Managed Community Recovery, by Laurie Johnson and Robert Olshansky, shows how metropolitan regions can rebuild for greater resilience during the reconstruction process after major disasters—from earthquakes, tsunamis, and hurricanes to terrorists attacks. This new Policy Focus Report draws on the authors' unrivaled experience chasing disasters around the world, playing an advisory role in recovery efforts, and learning how to plan for natural disasters so the recovery process leaves communities in better condition than they were in before the catastrophic event.

The report identifies lessons from six countries that employed different management approaches while recovering from major disasters: the 2008 Wenchuan earthquake in China; the 2010 and 2011 Canterbury earthquakes in New Zealand; the 1995 Kobe earthquake and 2011 Tohoku earthquake and tsunami in Japan; the 2001 Gujarat earthquake in India; the 2004 Sumatra earthquake and tsunami in Indonesia; and the September 11, 2001 terrorist attack in lower Manhattan, 2005 Hurricanes Katrina and Rita, and 2012 Hurricane Sandy in the United States.

Each of these governments faced considerable uncertainty and had to balance the tensions between speed and deliberation, and between restoration and betterment.

Extreme weather events and other disasters are becoming a fact of life for many metropolitan areas, exacerbated by the impacts of climate change, said Armando Carbonell, senior fellow and chair of the Department of Planning and Urban Form at the Lincoln Institute, who noted that the report was a natural outgrowth of the institute's work in climate adaptation.

"While not all disasters are climate related, the broader lessons on post-disaster recovery are relevant for a world in which the combined effects of climate change and urbanization will result in an increasing incidence of disasters," Carbonell said. "Pre- and post-event planning will be essential to reduce human suffering and economic loss."

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The aftermath of major natural disasters can change the fortunes of a city or region forever. Post-disaster reconstruction can offer opportunities to fix long-standing problems: to improve construction and design standards, renew infrastructure, create new land-use arrangements, reinvent economies, and improve governance. If executed well, reconstruction can help break the cycle of disaster-related impacts and losses, and improve the resilience of a city or region.

To date, there has been little systematic knowledge of how to make recovery work well. When a catastrophic disaster strikes, leaders of affected communities know that they lack relevant experience, and they seek lessons from others. Typically, they muddle through, innovate, and learn as they go. But later, many note that their recovery could have been faster, better, and easier if they had known then what they have since learned. Given the growing number of disaster recovery experiences, the authors say, the time has come for organizing and synthesizing common lessons.

In examining the case studies, the authors offer the following recovery recommendations, which reflect a set of core principles: primacy of information, stakeholder involvement, and transparency.

- Enhance existing government structures and systems to promote information flow and collaboration.
- Emphasize data management, communication, transparency, and accountability.
- Plan and act simultaneously involving continuous monitoring, evaluating, and correcting.
- Budget for the costs of communication and planning.
- Increase capacity and empower the governmental levels closest to the disaster to implement actions.
- Avoid permanent relocation of residents and communities except in rare instances when public safety and welfare are at risk, and only with full participation of residents.
- Although speed is important, avoid rushing through reconstruction.

Recovery after great disasters is always complex, takes a long time, and never occurs fast enough for affected residents. However, the process can be improved by setting more realistic expectations at the outset, working to restore communities and economies quickly and equitably, empowering stakeholders to participate in the process, improving preexisting problems, ensuring governance for recovery over the long term, and reducing the risk of future disasters.

Premeditated strategies for managing future disasters strengthen community resilience—the ability to survive, adapt, and recover from extreme events.

Over the years, Johnson and Olshansky have coauthored several publications, including *Opportunity in Chaos: Rebuilding After the 1994 Northridge and 1995 Kobe Earthquakes* and *Clear as Mud: Planning for the Rebuilding of New Orleans*. They were interviewed for this faculty profile in the April 2016 issue of *Land Lines*. *After Great Disasters: How Six Countries Managed Community Recovery* will be useful to urban planners, local government officials and staff, state and national governments concerned with urban policy, and disaster relief organizations. The report is part of a series of Lincoln Institute publications focused on planning for and recovering from extreme weather events induced by climate change: *Lessons from Sandy; Resilient Coastal City Regions*; a report set to be released next month, *Buy-in for Buyouts*; and the related forthcoming book *Nature and Cities: The Ecological Imperative in Urban Planning and Design*.

Hurricane Sandy damaged many homes along the New Jersey shore after making landfall there on October 29, 2012. *Source: L. Johnson (2013).*

ABOUT THE AUTHORS

Laurie Johnson is an internationally recognized urban planner who specializes in disaster recovery and catastrophe risk management. She has studied or helped to manage recovery following many large-scale disasters across the United States and around the globe. She is a visiting project scientist at the Pacific Earthquake Engineering Research Center at the University of California-Berkeley and chairs the U.S. National Advisory Committee for Earthquake Hazards Reduction.

Robert Olshansky is professor and head of the Department of Urban and Regional Planning at the University of Illinois at Urbana-Champaign. His teaching and research cover land use and environmental planning, with an emphasis on planning for natural hazards. He has published extensively on post-disaster recovery planning, planning and policy for earthquake risks, hillside planning and landslide policy, and environmental impact assessment.

NEW LINCOLN INSTITUTE REPORT

50-State Property Tax Comparison Study

In partnership with the Minnesota Center for Fiscal Excellence

For the first time, the report analyzes why tax rates vary from city to city.

THE LINCOLN INSTITUTE OF LAND POLICY has released the latest edition of its annual report on property tax rates in all 50 U.S. states, with a new analysis of how communities raise revenue to pay for basic public services.

The *50-State Property Tax Comparison Study,* produced in partnership with the Minnesota Center for Fiscal Excellence, tracks the effective tax rate—the tax payment as a percentage of market value—for residential, commercial, industrial, and apartment properties in more than 100 U.S. cities.

For the first time, the report analyzes why tax rates vary from city to city, exploring factors such as the reliance on property taxes relative to other revenues such as the sales tax, the variation in property values, the differential treatment of residential and commercial property, and the level of local government spending. The report also explores the impact of property tax assessment limits, which constrain local governments and distort tax rates for owners of similarly valued properties.

"The property tax is a critical source of revenue for local government services, from education to public safety," said Joan Youngman, chair of the Lincoln Institute's Department of Valuation and Taxation. "This report provides a snapshot of property taxation across cities, one step toward a fuller picture of how communities meet their responsibility to serve their citizens."

Bridgeport, Connecticut, continues to rank at the top for the property tax rate on the median-valued home—a reflection of its heavy reliance on the property tax (residents pay no local sales or income taxes). By contrast, Birmingham, Alabama, has the fourth-lowest property tax rate, but total local taxes are 27 percent higher than in Bridgeport once sales, income, and other local taxes are taken into account. Other cities with high property tax rates, such as Detroit (2nd highest) and Milwaukee (5th highest), have low property values, requiring relatively high tax rates to meet even the most basic public service needs.

New York City ranks at the top for property tax rates for apartments. Its ranking reflects the city's high "classification ratio"—the extent to which it favors owner-occupied housing over other properties. In New York City, the tax rate on apartments is more than five times higher than on the median-valued home.

When it comes to commercial property, Detroit, New York, and Providence, Rhode Island, have the highest tax rates, with different contributing factors in each city. In Detroit, low property values require higher rates to fund services in the struggling city. In New York's red-hot real estate market, policy makers have chosen to shield home owners by shifting the burden to commercial property. And in Providence, the city has historically relied heavily on the property tax, compared with other local revenues.

The report also analyzes the effect of assessment limits, which restrict the ability of cities to reassess properties to fully reflect increases in the market value. In Long Beach, California, for example, the owner of a newly purchased home pays 40 percent more than someone who has owned the same home for 14 years—the greatest disparity in the country. New York City ranks second with a 37 percent disparity, and Los Angeles ranks third at 35 percent.

The Lincoln Institute and the Minnesota Center for Fiscal Excellence have coproduced the *50 State Comparison Study* for the last five years. The report released in June, based on 2015 data, is available at the Lincoln Institute subcenter Significant Features of the Property Tax, which offers detailed data on the property tax in 50 states and the District of Columbia.

The study can be used for further research on the dynamic impacts of property taxation, such as the extent to which commercial or industrial tax rates have an influence on locational decisions of businesses, or the relationship between tax rates and the proportion of untaxed or untaxable land in cities.

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Highest Property Tax Rates on a Median-Value Home (2015)			
1	Bridgeport (CT)	3.88%	Why: High property tax reliance
2	Detroit (MI)	3.81%	Why: Low property values
3	Aurora (IL)	3.72%	Why: High property tax reliance
4	Newark (NJ)	3.05%	Why: High property tax reliance
5	Milwaukee (WI)	2.68%	Why: Low property values, high property tax reliance
Lowest Property Tax Rates on a Median-Value Home (2015)			
49	Boston (MA)	0.67%	Why: Classification shifts tax to business, high home values
50	Birmingham (AL)	0.66%	Why: Low property tax reliance, classification shifts tax to business
51	Denver (CO)	0.66%	Why: Low property tax reliance, classification, high home values
52	Cheyenne (WY)	0.65%	Why: Low property tax reliance
53	Honolulu (HI)	0.30%	Why: High home values, low local gov't spending, classification

Highest Effective Property Tax Rates on $1-Million Commercial Property			
1	Detroit (MI)	4.13%	Why: Low property values
2	New York (NY)	3.96%	Why: High local gov't spending, classification shifts tax to business
3	Providence (RI)	3.71%	Why: High property tax reliance
4	Chicago (IL)	3.60%	Why: Classification shifts tax to business, high local gov't spending
5	Bridgeport (CT)	3.59%	Why: High property tax reliance
Lowest Effective Property Tax Rates on $1-Million Commercial Property			
49	Virginia Beach (VA)	1.03%	Why: High property values, low local gov't spending
50	Billings (MT)	1.01%	Why: Low local gov't spending
51	Honolulu (HI)	0.91%	Why: High property values, low local gov't spending
52	Seattle (WA)	0.88%	Why: High property values, low property tax reliance
53	Cheyenne (WY)	0.64%	Why: Low property tax reliance

DAVID C. LINCOLN FELLOWS 2015–2016

The David C. Lincoln Fellowships in Land Value Taxation (LVT) were established in 1999 to develop academic and professional interest in this topic through support for major research projects. The fellowship program honors David C. Lincoln, former chairman of the Lincoln Foundation and founding chairman of the Lincoln Institute, and his long-standing interest in LVT. The program encourages scholars and practitioners to undertake new work in the basic theory of land value taxation and its applications. These research projects add to the knowledge and understanding of LVT as a component of contemporary fiscal systems in countries throughout the world. The 2015–2016 DCL fellowships announced here constitute the 16th group to be awarded. This program is administered through the Lincoln Institute's Department of Valuation and Taxation.

The 2015–2016 recipients and their topics are:

Joshua M. Duke *Professor of Economics, University of Delaware*
Public Acceptability and Land Value Taxation: An Experimental Economics Investigation
This research seeks to overcome objections to LVT—specifically that LVT creates too many "policy losers" and that it taxes unrealized capital gains. An economic experiment is built so that participants can make investment decisions in a virtual land market under either LVT or uniform property tax regimes. Participants vote for their preferred tax mechanism. Heterogeneous induced values identify what groups "lose" from LVT or "win" but still reject LVT on equity grounds. The broader research project seeks to measure incentives driving LVT opposition and then to design and test-bed targeted incentives and nudges to increase acceptability.

Christopher England *Ph.D., Georgetown University*
Land Value Taxation in Vancouver: A Study in Rent-Seeking and Path Dependency
This is a study of the rise and decline of LVT in Vancouver. The objective is to evaluate the causes for its disappearance in Vancouver, with a view to understanding why LVT regimes have lacked permanence. My hypothesis is that although it functions in the interest of the community, it impedes on the ability of small, organized interests to obtain inordinate returns. That would make opposition to it an example of Mancur Olson's model of rent-seeking. Therefore, LVT is an optimal case for demonstrating how rent-seeking undermines political institutions.

Ryan M. Gallagher *Associate Professor of Economics, Northeastern Illinois University*
Fiscal Zoning, Small Homes, and the Property Tax: Evidence from Massachusetts and Chicago
This project introduces several empirical tests of fiscal zoning's impact on local governments' property tax rates. Preliminary evidence reported in this proposal motivates two testable hypotheses: (1) zoning regulations hostile toward small home developments, such as minimum lot size requirements, have the unintended effect of actually reducing a community's property tax base, and, consequently, (2) implementation of these regulations actually forces communities to raise their effective property tax rates, all else being equal. These two hypotheses will be tested using a detailed cross-section and a panel of local governments within Massachusetts and the Chicago area, respectively.

Ronan Lyons *Assistant Professor of Economics, Trinity College Dublin*
Implementing Land Value Taxation in Dublin, Ireland: Detailed Estimates and the Impact of Land Use Restrictions
Standard descriptions of LVT highlight the strong relationship between land values and proximity to central business districts. However, this ignores regulation's pivotal role. Land use restrictions (LURs) fundamentally alter site values by affecting the options open to owners. This project examines this issue, using the case of Dublin, Ireland, a city subject to varying height restrictions and where thousands of sites are subject to preservation orders.

C. LOWELL HARRISS FELLOWSHIPS 2015–2016

The Lincoln Institute of Land Policy has selected the recipients of the 2015–2016 C. Lowell Harriss fellowships. Named in honor of the Columbia University economist (1912–2009) who served for decades on the Lincoln Institute's board of directors, the C. Lowell Harriss Fellowships support work on dissertations as part of a continuing effort to foster research on the cutting edge of tax and land policy. Administered through the departments of Valuation and Taxation and Planning and Urban Form, the program provides a link between the Lincoln Institute's educational mission and its research objectives by supporting scholars early in their careers.

The 2015–2016 recipients and their topics are:

Jamaal William Green *Portland State University*
Manufacturing in Place: The Role of Industrial Preservation in Manufacturing Employment

Thomas Warren Hilde *The University of Texas at Austin School of Architecture*
Disaster Resiliency through Green Infrastructure: Using Scenario Planning to Improve Understanding of Green Infrastructure's Promise for Community Resilience

Ben Hyman *University of Pennsylvania*
Firm Mobility and Local Tax Instruments: Causal Evidence from a Large-scale Tax Credit Lottery and Factor Cost Differentials at Labor Union Boundaries

Walter Melnik *Michigan State University*
Tax Base, Revenue Shocks, and the Choice of Tax Instrument by Local Governments: Evidence from Ohio Property and Local Income Taxes

Corbin Miller *Cornell University*
The Effects of Property Tax Limits and Levy Elections on School Spending and Student Achievement

David Schoenholzer *University of California, Berkeley*
Estimating the Value of Local Public Goods Using Real Estate Valuation of Municipal Annexations

Alpen Duresh Sheth *MIT*
Insurance as Public Revenue Protection?: Rethinking the Role of Property Insurance in Public Policy

Ruchi Singh *University of Illinois at Urbana-Champaign*
The Effect of Riots on the Property Tax Base in Los Angeles

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