

**WHAT'S
POSSIBLE:
INVESTING
NOW
FOR
PROSPEROUS,
SUSTAINABLE
NEIGHBORHOODS**

FEDERAL RESERVE BANK OF NEW YORK
LOCAL INITIATIVES SUPPORT CORPORATION
ENTERPRISE COMMUNITY PARTNERS

FEDERAL RESERVE BANK OF NEW YORK

33 Liberty Street
New York, NY 10045

ENTERPRISE COMMUNITY PARTNERS

11000 Broken Land Parkway
Columbia, MD 21044

LOCAL INITIATIVES SUPPORT CORPORATION

28 Liberty St, 34th Floor
New York, NY 10005

Editors

Krista Egger
David Erickson
Madeline Fraser Cook
Claire Kramer Mills

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ISBN: 979-8-218-38672-6

Printed in the United States of America



*This work is dedicated to all the earth's children,
those here with us now
and those yet to be born.*

ACKNOWLEDGMENTS

Tackling a complex topic with implications for current and future generations requires a strong commitment from many collaborators. First, we thank all the contributors who synthesized a lifetime of work into a series of accessible and substantive essays. We also thank the advisory committee, who helped crystalize the major themes in this volume.

Both Local Initiatives Support Corporation (LISC) and Enterprise Community Partners would like to thank the Wells Fargo Foundation for its support that made participation in a lengthy project like this possible. The Foundation's commitment to support all communities in the transition to a resilient, equitable, and sustainable future requires new ideas, new resources, and new partnerships, and we hope this book contributes to all three. We are especially grateful to John Moon for his collaboration and support throughout the project.

We could not have completed this project without the editorial assistance and project management support of our incredible staff and personnel. From Enterprise Community Partners, that includes Andrew Jakabovics, Rachel Drew, Fehintola Abioye, Stephen Fee, and Diane Cho. From LISC, that includes Laurel Engbretson, Michael Tang, Mary Talbot, Michael Salgueiro, and Astrid Lewis Reedy. From the Federal Reserve Bank of New York, that includes Jack Gutt, Javier Silva, and our Digital Strategy and Corporate Communications teams.

There were also many external collaborators essential to the conception, development, and completion of this book. These include Annie Donovan, Marion McFadden, Zack Subin, Heather Clark, Julia Meisel, Colleen Mulcahy, Katharine Greider, Steve Wolf, Nicole Spewak, Mike Orcutt, Lauren Baumann, Srinidhi Sampath-Kumar, Moana McClellan, Yu Ann Tan, Jacob Corvidae, Michael Gartman, Anna Zetkalic, Meredith Cowart, Ellie White, David Gumbs, Laila Atalla, Olivia Prieto, Tamara George, Anish Tilak, Martha Campbell, Amar Shah, Ella Mure, Jacob Korn, and Bryn Grunwald.

Our designers, C&G Partners, have crafted the look for this volume and all the *What Works* books. As usual, their artistry and design evoke the themes within this volume. The communications team from Avoq ensured our message was crafted to meet the urgency of the moment and to reach audiences in ways that can further amplify the solutions contained within.

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FOREWORD

WE'RE IN THIS TOGETHER

Catherine Coleman Flowers,
Center for Rural Enterprise and Environmental Justice

The climate crisis runs straight through low-wealth neighborhoods. After years of increasingly threatening weather—heat, fire, wind, floods—there is a growing recognition that underserved and rural communities are hit hardest when natural disasters strike.¹ Far less understood, however, is how critical these communities are to solving the crisis. I should know—I've spent my career on the front lines.

Lowndes County, Alabama, my childhood home, typifies the problems we face and the solutions we can forge. It's the home of what I call America's dirty secret. Chronic underinvestment in rural infrastructure has resulted in broken sewage and water systems, causing persistent strain for residents, strain that climate volatility exacerbates. Lowndes County flashes a warning sign of the extreme harms caused by failing systems, which are often rooted in systemic neglect and the legacy of Jim Crow;² in this case,

1 Amrith Ramkumar, "Climate Change's \$150 Billion Hit to the U.S. Economy," *WSJ*, November 14, 2023. Available at www.wsj.com/science/environment/climate-change-us-economy-c9fbda96.

2 Hasan Kwame Jeffries, *Bloody Lowndes: Civil Rights and Black Power in Alabama's Black Belt* (New York: NYU Press, 2009).

those failing systems led to a resurgence of parasites like hookworm that were previously thought to be eradicated.³

The nonprofit I founded, the Center for Rural Enterprise and Environmental Justice, works to eliminate overlapping health, economic, and environmental disparities that threaten rural and marginalized communities. We've collaborated with academic researchers to collect and analyze data from community members, building an economic and public health case for investments in basic services and durable infrastructure.⁴ We've partnered with NASA on wastewater treatment innovations to make clean water accessible and affordable and advocated on behalf of marginalized communities before every level of government. I've personally collaborated with leaders on both sides of the aisle to raise awareness and find workable solutions.⁵ The model we've developed, rooted in community voices and insights, is core to delivering sustainable results.

Extreme weather intensifies risks in communities across the United States. Rising sea levels, heavy rains, and chronic heat are spreading public health and economic inequality issues far beyond the rural South, as documented in the federal government's Fifth National Climate Assessment.⁶ They are also awakening a broader range of stakeholders to the threats of climate change and the economic opportunities for new investments in infrastructure and energy transition.

The math of climate change is straightforward: Large-scale goals, like climate resilience and net zero, require an extensive ground game. Fortifying and transitioning only select neighborhoods will neither materially reduce disaster costs nor make a transformative dent in toxic emissions. It is only through inclusive investments that our whole nation will become economically stronger and more climate resilient. Federal

3 ML McKenna et al., "Human Intestinal Parasite Burden and Poor Sanitation in Rural Alabama." *Am J Trop Med Hyg.* 97 (5) (2017 Nov):1623-1628. Available at doi: 10.4269/ajtmh.17-0396.

4 Catherine Coleman Flowers, JoAnn Kamuf Ward, and Inga Winkler, "Flushed and Forgotten: Sanitation and Wastewater in Rural Communities in the United States." (The Alabama Center for Rural Enterprise (ACRE), The Columbia Law School Human Rights Clinic, and The Institute for the Study of Human Rights at Columbia University, May 2019). Available at www.humanrightscolumbia.org/sites/default/files/Flushed%20and%20Forgotten%20-%20FINAL%20%281%29.pdf.

5 Catherine Coleman Flowers, *Waste: One Woman's Fight Against America's Dirty Secret* (New York: The New Press, 2020).

6 NCA2023, *The Fifth National Climate Assessment*, available at <https://nca2023.globalchange.gov/>.

policy, in the Bipartisan Infrastructure Law and Inflation Reduction Act, recognizes the urgency of community investments, particularly in historically underserved communities, to achieve these shared goals.⁷

What's Possible is an essential playbook for building a stronger, more inclusive future. Putting low-wealth communities at the center, the book begins with the insight that solutions to deeply rooted problems lie in communities themselves. These places, home to so many Americans, have considerable assets, including human capital and dense social networks. Elevating workable solutions from a cross-disciplinary set of practitioners, community leaders, and investors, this compilation of essays presents ideas for harnessing historic public and private climate investments to foster shared economic opportunity. For too long, we have been working in silos—climate, finance, health, nonprofit, community development—all toiling on specific issues in specific regions. Through practical cases, these chapters illustrate what I've practiced on the ground: Lessons learned in one context are often transportable and cross-sector collaborations are not only possible but essential. Our collective future depends on it.

7 The White House, *Justice40 Initiative*, www.whitehouse.gov/environmentaljustice/justice40.

CATHERINE COLEMAN FLOWERS *is the founder of the Center for Rural Enterprise and Environmental Justice, Vice Chair of the inaugural White House Environmental Justice Advisory Council, and a board member for the Climate Reality Project, the Natural Resources Defense Council, and others. Catherine was featured in TIME's 100 Most Influential People in 2023 and on the Forbes 50 Over 50 list.*

INTRODUCTION

COMMUNITY DEVELOPMENT IN THE CRITICAL CLIMATE DECADE

Xavier de Souza Briggs, *Brookings Institution*
Annie Donovan, *Raza Development Fund*

As the Fifth National Climate Assessment (2023) underscores, this is an all-hands-on-deck moment in our history and a particularly crucial decade ahead for climate action.¹ A landmark report—the work of hundreds of climate scientists, policy officials, and others that is updated just twice per decade—the assessment comes with a pointed warning. We are, on many fronts, making incremental climate changes where transformative ones are required. More of the same will not suffice.

That point was also underscored with the Biden administration’s release, in September 2023, of our government’s first-ever National Climate Resilience Framework, a wide-ranging roadmap for making our communities and our economy more resilient to the climate impacts we are

¹ Allison R. Crimmins et al., “The Fifth National Climate Assessment.” (Washington, DC: U.S. Global Change Research Program, 2023). Available at <https://nca2023.globalchange.gov/>.

already experiencing—and ever more severely and unpredictably.² Despite those impacts, the need to adapt creatively and fairly is not yet widely acknowledged or acted on. For one, it is still often described in technical and abstract terms that do not encourage communities to engage.

Zooming out, the aggregate picture is clear, and we all contribute to it, especially in the ways we consume resources: The U.S., China, and other nations continue to emit greenhouse gasses at a rate that contributes significantly to the rise in global temperatures worldwide, increases the frequency and severity of extreme weather, disrupts our way of life, and threatens our future. We see this in everything from lower crop yields and higher food prices to more intense and widespread droughts, the displacement of renters and homeowners after disasters, heat-related injury and death, more unpredictable and life-threatening power outages, and more.³

Yet in the face of these and other impacts of our changing climate, some communities are much more vulnerable than others. They are less able to make the investments required to become more resilient to those impacts or meet the rising costs of property insurance, and, as a consequence, less able to bounce back and adapt in the face of growing shocks and losses. This volume is focused on those communities—the historically disinvested and marginalized places.⁴ Our goal is not to review well-trodden ground, explaining why the climate is changing or debating the best ways to reduce greenhouse gas emissions. Rather, this volume aims to inspire and equip a broad set of stakeholders, from investors, policymakers, and philanthropic donors to community developers and climate activists, to join forces with a greater sense of urgency and practical possibility.

2 The White House, “Fact Sheet: Biden-Harris Administration Hosts First-Ever White House Climate Resilience Summit and Releases National Climate Resilience Framework.” (Washington, DC: The White House, September 28, 2023). Available at www.whitehouse.gov/briefing-room/statements-releases/2023/09/28/fact-sheet-biden-harris-administration-hosts-first-ever-white-house-climate-resilience-summit-and-releases-national-climate-resilience-framework/.

3 Allison R. Crimmins et al., “The Fifth National Climate Assessment.”

4 “Gentrification and Neighborhood Revitalization: WHAT’S THE DIFFERENCE?,” *National Low Income Housing Coalition*, April 5, 2019. Available at <https://nlihc.org/resource/gentrification-and-neighborhood-revitalization-whats-difference>.

NEW RESOURCES AND TOOLS FOR A CRITICAL CLIMATE DECADE

While the threats we face seem dire and our systems far too resistant to change, this moment offers an unprecedented range and scale of opportunities. In an era of extreme partisanship, Congress has passed not one but two laws that together provide historic levels of public investment to fuel a clean energy transition and modernize water systems and other critical infrastructure.

The estimated \$864 billion 2021 Bipartisan Infrastructure Law⁵ (BIL) dedicates billions of dollars⁶ to directly tackle the climate crisis and advance environmental justice, investing in communities through a wide range of programs, from the Federal Emergency Management Agency’s Building Resilient Infrastructure and Communities grant program to the first-ever U.S. Department of Transportation grants to states to build the charging infrastructure for electric vehicles and, in the process, promote more equitable community access to that now-essential infrastructure.⁷ The Inflation Reduction Act (2022) adds hundreds of billions more, much of it for innovation-centered programs.⁸ For example, the Treasury Department’s Low Income Communities Bonus Credit,⁹ a new tax credit provided by the Internal Revenue Service in collaboration with the Department of Energy, targets tribal communities and low-and moderate-income neighborhoods to more deeply subsidize clean energy projects while encouraging a wider range of actors to participate in the clean energy marketplace. For example, the new IRS Elective Pay program¹⁰ will, for the first time ever, allow public and nonprofit agencies without

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- 5 The White House, *A Guidebook to the Bipartisan Infrastructure Law*, available at www.whitehouse.gov/build/guidebook/.
 - 6 Brookings, *Brookings Federal Infrastructure Hub*, available at www.brookings.edu/articles/brookings-federal-infrastructure-hub.
 - 7 FEMA, *Building Resilient Infrastructure and Communities*, available at www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities.
 - 8 Brookings Office of Communications, “One year later: The Inflation Reduction Act and climate progress,” *Brookings*, October 11, 2023. Available at www.brookings.edu/events/one-year-later-the-inflation-reduction-act-and-climate-progress/.
 - 9 Wally Adeyemo, “The Low-Income Communities Bonus Credit Program: Our Approach to an Inclusive Clean Energy Economy,” *U.S. Department of the Treasury*, August 10, 2023. Available at <https://home.treasury.gov/news/featured-stories/the-low-income-communities-bonus-credit-program-our-approach-to-an-inclusive-clean-energy-economy>.
 - 10 Internal Revenue Service, *Elective Pay Overview*, available at www.irs.gov/pub/irs-pdf/p5817.pdf.

conventional income tax liability to file for clean energy credits that are, in effect, grants by another name. Additionally, the U.S. Environmental Protection Agency’s (EPA) \$27 billion Greenhouse Gas Reduction Fund¹¹ (GGRF), allocated through intermediaries, will stimulate public and private investments in projects ranging from utility-scale clean energy facilities, such as solar farms, to community solar.

As community investors and project developers have shown for decades now, some of the most transformative work is likely to happen where public investment, often from multiple program sources, is used effectively to leverage private investment. In the process, the dollars will go farther, and more disadvantaged communities will be able to participate—but only if we learn to deploy these tools as quickly as possible. We do not have decades to run small-scale demonstrations and gradually build up the kind of delivery know-how and operational infrastructure that came to define affordable housing development.

Alongside the historic levels of public investment and broader set of program tools, the Biden administration has advanced Justice40, a whole-of-government policy aiming to allocate at least 40 percent of the overall benefits of certain Federal investments for climate action to communities that are marginalized, underserved, and overburdened by pollution. Inspired by community climate activists who won a similar commitment at the state level, initially in New York, the federal Justice40 targeting goal and guidelines for federal agencies sit on top of a broader, first-ever presidential executive order on “advancing equity and support for underserved communities through the federal government.”¹² Arguably, no comparable set of public investment and targeting policies has been aimed at community developers and investors since the War on Poverty programs of the late 1960s and the Community Reinvestment Act of 1977.¹³

11 EPA, *Greenhouse Gas Reduction Fund*, available at www.epa.gov/greenhouse-gas-reduction-fund.

12 The White House, *Justice40: A Whole-Of-Government Initiative*, available at www.whitehouse.gov/environmentaljustice/justice40/; Xavier de Souza Briggs and Jessica Sherman, “What we can learn from the effort to implement Biden’s executive orders on advancing equity,” *Brookings*, June 16, 2023. Available at www.brookings.edu/articles/what-we-can-learn-from-the-effort-to-implement-bidens-executive-orders-on-advancing-equity/.

13 Board of Governors of the Federal Reserve System, *Community Reinvestment Act (CRA)*, available at www.federalreserve.gov/consumerscommunities/cra_about.htm.

Justice40 is particularly important, not just because of the scale of investment it is beginning to drive, but because it explicitly acknowledges that a rising tide does not lift all boats. Historic and systemic disinvestment will not be dismantled by default. Reform, if it is going to change outcomes in ways that are meaningful for disadvantaged people and places, must be intentionally designed and implemented through specific policies and practices. And crucially, such intent—which does not, for now, have the force of federal law or regulation—must be informed by hard-won lessons of the past. It must also be “future-proofed,” in the form of more durable and binding policy measures and funding streams, since the policy and underlying principles remain contested, and could be readily dismantled.

Nonetheless, focusing on tangible progress, as an example of how Justice40 is expressed programmatically, the EPA’s GGRF includes a \$6 billion Clean Community Investment Accelerator to provide project funding and technical assistance to build the clean financing capacity of local community lenders working in low-income and disadvantaged communities. Without that, this network of lenders, especially Community Development Financial Institutions (CDFIs), would not have the resources needed to play their part in financing a just transition to a clean economy at the community level.

On a broader note, as recent Brookings Institution research shows, local governments and their implementation partners are compelled to reimagine, blend, and braid resources to fund even the most inspired climate action plans in the most motivated regions of the country; for now, many local climate plans lack solid targets and operational strategies, let alone identified funding (though new federal and state funding is starting to change that).¹⁴

FROM POSSIBILITY TO OUTCOMES: PREVIEW AND PLAN OF THIS VOLUME

What is possible—and also imperative—now is far from assured. That’s why this volume is significant and timely. The essays that follow are largely written by and for practitioners of community development,

14 Caroline George, Joseph W. Kane, and Adie Tomer, “How US cities are finding creative ways to fund climate progress,” *Brookings*, February 22, 2023. Available at www.brookings.edu/articles/how-us-cities-are-finding-creative-ways-to-fund-climate-progress/.

sustainable and impact investing, green workforce development, climate action, and environmental justice, as well as those who support them—investors, funders, policymakers, planners, and public managers. This moment demands cross-disciplinary work. It demands that we come out of our silos, question dated assumptions, learn from each other, and mobilize our collective power to move from incremental to transformative and deeply inclusive change. It is clear that we cannot otherwise create more climate resilient communities for all.

If we get this right, we will:

Create Effective, Durable Change at the Community Level

A consistent theme of this volume is that community transformation requires authentic engagement that centers community voice, dignity, and well-being. In the Foreword, Catherine Flowers compels us to begin by acknowledging the historic and systemic factors that have led—and still contribute—to climate vulnerability in marginalized communities so that past harms are not perpetuated as we invest in a clean economy. In *Spanning the Nexus*, Joseph Kunkel reminds us that Indigenous wisdom is rooted in environmental stewardship and therefore Indigenous leadership is essential to surfacing effective solutions. Debra Gore-Mann explains in *Empowering Communities* how California’s Transforming Climate Communities Program effectively puts local organizations in the driver’s seat on key decisions impacting resilient infrastructure investments. The work of centering and engaging communities is not easy, but it is essential and we know a great deal about what works.

Promote Climate Mitigation (Reducing Emissions) and Adaptation (to Climate Impacts) Simultaneously

We cannot afford either/or thinking and action. Fortunately, the co-benefits of reducing emissions while promoting climate resilient communities abound. In her relevant but broader essay illustrating that point, *Finding What’s Possible*, Denise Fairchild tells the story of the journey that led her to integrate community development and climate action, but only after many years of seeing the two as binary and at odds. “Decarbonizing the economy,” she learned by experience, “produces jobs, business opportunities, and healthy people, homes, and communities.” Furthermore, the partnership she forged with Microsoft demonstrates how a major

corporation came to understand that a “resilient corporation can only ride out economic cycles when the customers, suppliers, shareholders, and communities it operates in are resilient, too.” In *Climate Resilient Housing*, Danielle Arigoni warns that the affordable housing stock in America is at disproportionately high risk of adverse impacts from natural hazards, and she offers climate-responsive solutions that National Housing Trust is implementing to improve health and resilience. Examples include removing gas stoves or remediating moisture from flooding for families with asthmatic children or electrifying utilities for older adults living on fixed incomes to reduce monthly bills, especially in communities experiencing more extreme temperatures. It is within our reach to help all residents avoid devil’s choices between staying cool or warm or affording essential food and medicine.

Increase Capital Flows and Technical Assistance to Disadvantaged Communities

The transition to a clean energy economy will not be cheap, but deferring these investments will cost much more. According to the International Energy Agency, to reach net zero emissions by 2050, annual clean energy investment worldwide will need to more than triple by 2030 to around \$4 trillion, and COP28, the 2023 UN climate gathering, underscored that too much private finance is going to the wrong priorities, including fossil-fuel production, rather than to fair and effective solutions.¹⁵ CDFIs and other community lenders know from decades of practice that when money needs to flow quickly, low-income communities and communities of color get short shrift. For now, too many disadvantaged communities—not just nonprofit organizations but many local governments in low-income cities and towns—lack the staff capacity and technical expertise to develop projects, navigate complex applications, and meet collateral or matching-fund requirements. How can we avoid repeating this pattern? Anna Smukowski and Laura Mixter argue, in *Climate and Community Development: Emerging Investment Frameworks Fuel Transformative Impact*, that to equitably drive capital to communities for climate resilience, it is imperative that investors align around frameworks that are more standardized, accessible, outcome-driven, and scalable. For climate investors, this means taking time up front to understand the

¹⁵ IEA, “Net Zero by 2050.” (Paris: IEA, 2021). Available at www.iea.org/reports/net-zero-by-2050.

economic forces that affect marginalized communities, and for CDFIs and other experienced community investors, this means embracing more data-intensive innovations that are easier to scale. In *Investing for More Prosperous and Climate-Resilient Communities*, Javier Hernandez and Lisa Richter put out an “all-dollars-on-deck” call to action and offer frameworks for a broad span of investors—institutions, public charities, social enterprises, families, donor advised funds, and individuals—to adjust their savings and investment strategies in ways that catalyze climate solutions and ensure all of the nation’s people can benefit.

But frameworks won’t be enough. To achieve community impact at scale, it will take flexible and well-targeted resources that can de-risk investments. This is a major goal of the Greenhouse Gas Reduction Fund we called out above, and for other new federal programs. Government has a long history of using tools such as loan guarantees and insurance to catalyze private investment when the capital market alone will not take the risk, or, in some cases, accepting relatively longer payback periods and lower financial returns. The examples of such domestic development finance are wide ranging, from direct or guaranteed small business, farm, infrastructure, and manufacturing loans to mortgage insurance for veterans and low-and moderate-income homebuyers. As we highlighted earlier, it is not yet clear whether the resources made available through the IRA, BIL, and other measures will be sufficient, or whether Justice40 will be implemented in ways that truly promote equitable outcomes on a meaningful scale. The principles, strategies, and recommendations explained in this volume will improve the odds of success.

Expand Economic Inclusion

As a 2019 report by McKinsey & Company underscored, the persistent racial wealth gap in America limits the U.S. economy as a whole and is projected to depress GDP by 4 to 6 percent by 2028.¹⁶ Research by Harvard economist Raj Chetty shows that we would have “four times as many inventors in America if women, underrepresented minorities and kids from low-income families were to become inventors at the same rate

¹⁶ Nick Noel et al., “The economic impact of closing the racial wealth gap,” *McKinsey and Company*, August 13, 2019. Available at www.mckinsey.com/industries/public-sector/our-insights/the-economic-impact-of-closing-the-racial-wealth-gap.

as high-income white men.”¹⁷ Given the scale of innovation, workforce development, and investment needed to decarbonize the American economy, we cannot leave assets, especially our human capital, sitting on the sidelines. Donnell Baird offers an important part of the solution: electrifying every building in America, i.e. removing gas-fueled heating and cooking systems and other carbon sources, as a way of reducing emissions while improving family and community health and advancing racial justice. As part of this, Baird and his partners are inventing new approaches to green workforce development, as he describes in *Untapped Potential: Scaling Workforce Development for a Green Economy*. Harnessing the federal government’s Civilian Climate Corps program, Baird’s organization, BlocPower, is working to close the gap between the workforce needs of the clean energy construction and installation markets and the material needs of under-resourced and under-utilized talent. As an entrepreneur of color himself, he has broken through barriers in access to capital by attracting investment from Wall Street to Silicon Valley. Increasingly, the BlocPowers of the world are not just investable but, more specifically, ready to scale, and we must remove the mindsets and other obstacles that stand in the way.

Rethink and Dramatically Improve Community Health

According to the National Institutes of Health, “mitigating climate change presents unrivaled opportunities for improving public health.”¹⁸ The cost savings to the health system of cleaner air alone would be massive, as Maggie Super Church explains in her essay, *Climate and Health*. She shows that disinvested communities already suffering from myriad health challenges are facing increased threats from flooding, wildfire, extreme heat, drought, infectious disease, and food insecurity. The disruption and damages caused by climate change have cascading impacts on physical and mental health, including greater exposure to conflict and violence. However, health systems are starting to recognize the public health benefits of decarbonization by investing in climate mitigation and adaptation strategies. These strategies offer a way to improve outcomes and

17 Raj Chetty, “Raj Chetty on social mobility in America,” *The Washington Post*, August 16, 2023. Available at www.washingtonpost.com/washington-post-live/2023/08/16/raj-chetty-social-mobility-america/.

18 Ian Roberts, “The health co-benefits of climate change policies: doctors have a responsibility to future generations,” *Clin Med* 9 (3) (2009):212-3. Available at www.ncbi.nlm.nih.gov/pmc/articles/PMC4953604.

reduce costs. Crucially, Medicaid, the largest provider of health coverage for low-income people in the U.S., is allowing states to use program funding to pay for services such as electrifying homes to reduce indoor air pollution. After more than a decade building the evidence, often through small-scale demonstrations, that these “social determinants of health” ought to be investment priorities and should consistently emphasize cost-effective preventive health, we are at last seeing rules and incentives begin to shift systemically. Meanwhile, on the ground, Super Church also encourages the use of nature-based solutions and green infrastructure as strategies to improve health from outside the home, such as by replacing dark, heat-trapping pavements and rooftops with greenery that increases shading, absorbs water, and cools the air (we are also seeing rapid uptake of reflective, heat-reducing paint and related solutions).

Reduce Energy Costs and Disaster-Related Losses for Workers and Families

Both climate mitigation and climate adaptation will positively impact low-to-moderate income households in the form of lower energy bills and the ability to lead healthy, more productive lives. However, as described in Leigh Phillips’ essay, *Climate Constraints on the Finances of Low- and Middle-Income Households and the Tools to Ease Them*, and by a growing body of research and policy recommendations,¹⁹ low-income households are not well-positioned to withstand increasingly severe weather and disasters from our changing climate, let alone multiple shocks arriving on shorter intervals. The fate of many disadvantaged people and their communities will depend on making better-informed choices about climate risk²⁰ and also on insurance reform and innovation as well as a modernized, more robust and fair safety net, including pre- and post-disaster assistance. As shown in Phillips’ essay, organizations such as SaverLife are using technology and advocacy to improve the chances that low-income households will rebound after disasters. But more must be done, such as expanding and making permanent evidenced-based programs, like the federal Child Tax Credit, that have powerful and lasting benefits beyond greater climate resilience.

19 Brookings, *Reforming national disaster policy*, available at www.brookings.edu/collection/reforming-national-disaster-policy/.

20 Julia Gill and Jenny Schuetz, “How to nudge Americans to reduce their housing exposure to climate risks,” *Brookings*, July 27, 2023. Available at www.brookings.edu/articles/how-to-nudge-americans-to-reduce-their-housing-exposure-to-climate-risks/.

IN SUM: WHICH CLIMATE FUTURE?

Warnings about making the planet unlivable, who would suffer the greatest harm, and the imperative of choosing a different path are nothing new, and they do not come only from scientists, activists, or elected leaders. As in earlier chapters of our nation's history, artists and other culture bearers—from novelist Octavia Butler to Joy Harjo, our first Native American poet laureate—showed us the signs early, and they offer some of the most historically grounded, vivid, and compelling stories about our relationship with nature, each other, and a changing climate. Our great artists have put a more human face on complex problems, to be sure, but along with Indigenous and other traditional sources of knowledge, artists often help us see other living things and our debt to nature in profoundly new and transformative ways as well.

While this volume sits firmly in the nonfiction realm, and offers considerable data to go with its stories, we see both its hopefulness and recognition of risk in that larger light: We must choose a different future, based on new ways of seeing, and embrace the practical means to achieve it.

As the diverse contributions in this volume underscore, doing that will require that we overcome a number of tensions and contradictions—unacceptable either/ors—so evident in past practice, in lessons uncovered but not widely learned. First, and perhaps most importantly, we must move quickly, but not if it means business as usual and top-down, exclusionary approaches. We need speed of action along with inclusion and transformation that puts marginalized communities at the center, as leaders and agents of change.

Fast-moving market actors, along with public officials under pressure to deploy funds visibly and quickly, need to embrace, not avoid, more community-driven and community-informed strategies. In some of community development's most unfortunate moments, even community-based organizations have viewed inclusion as a euphemism for rehashing resident grievances or raising unrealistic expectations on strapped budgets. Inclusion, properly understood, is a craft, not just an ethos of more democratic decision making, and neither is yet at the core of climate action or the major industries eager to “deploy” and profit from it.

Second, none of this works without addressing capacity gaps. We cannot accept either innovation or scale, recognizing the assets in marginalized communities or being clear-eyed about how uneven their capacity to act remains. Yet on the whole, our commitment to “capacity building” remains modest at best, and too reliant on private philanthropy to fill big gaps in public investment. Capital does not effectively deploy itself, transformational projects are more demanding to create than conventional ones, and all the playbooks and technical assistance in the world are no substitute for skilled people based locally and dedicated to local work, especially in communities facing the greatest risks. We have avoided confronting these realities, and the capacity gaps have been so stark in the public sector (all levels and types of government, including tribal), not just the nonprofit sector, for far too long. We need a shared embrace of excellence and accountability for tangible results, driven by an honest accounting of the implementation capacity they actually require. Community development at its best has long shown why and how.

Third and finally, there is a very real risk of climate action that reinforces rather than disrupts inequality. Because our country is unequal by design, our finance, infrastructure, building, and other systems wired in so many ways to favor the haves, the risk of generating new harms and wider gaps is all too real, but often overlooked, in the rush to emphasize can-do optimism and opportunity. The risks range from generating new enclaves available only to an insured and protected climate elite to climate gentrification—a new variation on the old theme of physically displacing the most marginalized people—and supporting interventions, however well-intended, that end up unfairly extracting resources or expanding rather than narrowing gaps in income and wealth. We cannot afford not to accelerate and scale up climate action, but as recent research on the risks in climate action emphasizes, access to goods jobs,²¹ along with contracts²² and other business opportunities, is getting decided now, and not by some invisible hand. What’s more, as voters and the news media

21 Xavier de Souza Briggs et al., “We haven’t yet decided that climate and infrastructure jobs are for everyone, or even that we’ll have enough workers,” *Brookings*, September 1, 2023. Available at www.brookings.edu/articles/we-havent-yet-decided-that-climate-and-infrastructure-jobs-are-for-everyone-or-even-that-well-have-enough-workers/.

22 Xavier De Souza Briggs, Charisse Conanan Johnson, and Bruce Katz, “America’s new industrial revolution is creating a procurement economy. Unless we act now, it will make the racial wealth gap even worse,” *Fortune*, October 11, 2023. Available at <https://fortune.com/2023/10/11/america-new-industrial-revolution-procurement-economy-racial-wealth-gap/>.

have barely noticed so far, this is happening on a scale not seen since the late 1800s, when the nation rapidly industrialized and urbanized.

In sum, it is a time for choosing which climate future we will enact and who will be included, and that choice cannot wait.

***XAVIER (XAV) DE SOUZA BRIGGS** is a senior fellow at the Brookings Institution and senior advisor and co-founder of What Works Plus, a funder collaborative promoting equity and resilience through America's historic investments in infrastructure and climate action. An award-winning educator and book author, formerly on faculty at Harvard and MIT, he is also an experienced leader in philanthropy and government.*

***ANNIE DONOVAN** is President & CEO of Raza Development Fund. Annie has decades of experience in community development finance. She has held executive roles in two other leading community development financial institutions, has served as a senior advisor in the White House Domestic Policy Council and Council on Environmental Quality, and was Director of the U.S. Department of the Treasury's CDFI Fund.*

**URGENT
& INSEPARABLE:**
COMMUNITY DEVELOPMENT
& CLIMATE
RESILIENCE

1



WHAT COMMUNITY DEVELOPMENT CAN TEACH US ABOUT CREATING CLIMATE-RESILIENT NEIGHBORHOODS

Annie Donovan, *Raza Development Fund*

Adam Kent, *Natural Resources Defense Council*

Brenda Loya, *BlueHub Capital*

Tony Hernandez, lifelong resident of Roxbury, Massachusetts, says his neighborhood had become a “virtual landfill for surrounding communities.”¹ In the late 1980s, according to *The Boston Globe*, Roxbury “was one of the most blighted places in the country, a monument to racism and neglect.”² The diverse community of predominantly Black, Latino, and immigrant residents bore all the markers of systemic disinvestment. A long history of “redlining” had made it virtually impossible for residents to build family wealth through home ownership. Further, the Commonwealth of Massachusetts bulldozed 30 blocks of the Dudley Triangle in the 1960s for a highway that never materialized, leaving a gaping hole through the heart of Roxbury that

1 Tony Hernandez. Interviewed by Bryan Dyer, telephone interview on April 9, 2013. Lifelong resident of the Roxbury neighborhood and staff member of Dudley Neighbors, Inc.—Loyola University Chicago Essay: Community Uprooted: Eminent Domain in the US: Boston, MA Dudley Square. Available at www.luc.edu/eminent-domain/siteessays/bostonma/#d.en.403611.

2 Yvonne Abraham, “Trust and Transformation in a Roxbury Neighborhood,” *The Boston Globe*, July 24, 2015. Retrieved August 4, 2015. Available at www.bostonglobe.com/metro/2014/07/23/roxbury-neighborhood-once-monument-racism-and-neglect-undergoes-transformation/QcWotBYJZYGoZD3OU4u0lO/story.html.

soon attracted widespread illegal dumping.³ Decades of such decisions fueled disinvestment and ultimately led the U.S. Environmental Protection Agency to designate Roxbury a “disadvantaged” community.⁴

Like many disinvested places, however, Roxbury is rich in social capital. Many of its residents banded together in 1984 to create the Dudley Street Neighborhood Initiative (DSNI). Over nearly 40 years DSNI has led transformation of the Dudley Triangle into a vibrant community with 227 units of permanently affordable housing, commercial space, playgrounds, two urban farms, and a community greenhouse—all on land owned by the community through a community land trust called Dudley Neighbors, Incorporated (DNI).⁵

Today, Roxbury, like many under-resourced communities, finds itself facing a new threat: the impacts of climate disruption. “Climate change is foremost on our minds,” says DSNI executive director John Smith. “We must ensure that our community is prepared for what lies ahead, both the opportunities and the threats.”

In response, DSNI’s governing board—35 members elected by the community—has mobilized to create a comprehensive community resilience plan with input from the City of Boston and Boston Medical Center. DSNI aims to improve the energy efficiency of housing, introduce “resilience hubs,” and create economic opportunities for residents in the clean-energy transition now underway in the U.S.

Smith knows that executing a resilience plan won’t prove easy. Bringing the Dudley Triangle back from the brink in the 1980s—against long odds—required extraordinary effort. Demolition had left half of the area’s 62 acres empty and abandoned, destroyed most of its housing, and displaced hundreds of families.⁶ Yet collective action enabled the community to lay out its own vision in the *Dudley Street Neighborhood Initiative*

3 Harold Raymond (1987), *Dudley Square: A public building as a catalyst for urban revitalization*. [Master’s Thesis, Massachusetts Institute of Technology]. Available at [23360636-MIT.pdf](#).

4 United States Environmental Protection Agency, *EJScreen: Environmental Justice Screening and Mapping Tool*, available at www.epa.gov/ejscreen.

5 The Dudley Street Neighborhood Initiative Application for Planning Grant from the Promise Neighborhoods Program Catalog of Federal Domestic Assistance (CFDA) Number: 84.215P. Available at <https://www2.ed.gov/programs/promiseneighborhoods/2010/narratives/u215p100187.pdf>.

6 Raymond, ‘Dudley Square: A public building.’

Revitalization Plan: A Comprehensive Community-Controlled Strategy. In a sign of DSNI’s burgeoning political influence, the City’s development agency adopted the strategy as the area’s master plan. Even more consequentially, DSNI persuaded the Boston Redevelopment Authority to grant the DNI the power of eminent domain over a portion of the Dudley Triangle—the first time the powerful agency had given a community-based nonprofit the right to control its own development. Thanks to sustained effort over decades, DSNI has succeeded in amplifying the voices of residents to influence decisions affecting their community’s quality of life—an example of community development at its best.

WHAT IS COMMUNITY DEVELOPMENT?

“Community development” means a *resident-centered process through which community members work together to improve the quality of life in their neighborhood or town.* Though resident-driven, community development often draws support from public and private partners and from policies and programs designed to create healthy, sustainable, economically vibrant communities.⁷ The community development sector has developed significant capacity to produce and finance affordable housing, grocery stores in food deserts, and community facilities that house services ranging from childcare to health care, workforce development, and small-business incubation.

As DSNI and other examples in this volume show, the community development infrastructure built over the past six decades has laid the foundation to now advance the goals of climate justice and bring about a transition to an equitable and inclusive clean-energy economy. More critically, community development has shown *how* to do that. The same approach, using the tools of finance and real estate development to meet community priorities, can also deliver on new climate-related priorities: rooftop and community solar, energy retrofits for residential and commercial buildings, tree planting to reduce urban heat islands, new walkable and bikeable infrastructure, new parks, and “resilience hubs” that

⁷ Alexander von Hoffman, “The Past, Present and Future of Community Development in the United States.” (Joint Center for Housing Studies Harvard University, 2021). This essay first appeared in *Investing in What Works for America’s Communities*, available at www.whatworksforamerica.org/pdf/von%20hoffman.pdf.

combine electric-vehicle charging stations, air-quality monitoring, and cooling centers for periods of excessive heat.

Community development has its roots in the civil rights movement and the War on Poverty and takes aim at persistent poverty and chronic disinvestment in places and people—disproportionately of color—both of which have dramatically reduced access to affordable housing, quality schools, health care and healthy food, and economic opportunity. These same communities face disproportionate exposure to significant environmental risks: polluted air, unsafe drinking water, and excessive heat due to the lack of tree canopy and green spaces. Greater vulnerability to severe weather events also plagues many of these communities.⁸

The geography of concentrated and persistent poverty in America didn't happen by accident. Law, public policy, and financial markets all played a role in segregating communities by socioeconomic status and race. The South enforced racial segregation by law—collectively called Jim Crow—but the North followed the same practices, even if it rarely codified them into law. Racial covenants prohibited the sale of homes to people of color in certain communities. The federal Home Owners Loan Corporation drew red lines on maps to designate neighborhoods deemed too “risky” for investment, in part based on their racial makeup. These maps had a significant impact on the ability of people of color to access long-term, low-cost mortgages, effectively excluding them from the wealth-building power of homeownership.⁹

Although the Fair Housing Act of 1968 outlawed housing discrimination,¹⁰ redlining has cast a long shadow over the communities inside those red lines. Recent research has cataloged contemporary economic and environmental disadvantages in formerly redlined neighborhoods, including higher rates of poverty, vacancy, loan denial, subprime lending, and

8 Environmental Protection Agency, “Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts.” (U.S. Environmental Protection Agency, 2021). Available at www.epa.gov/cira/social-vulnerability-report.

9 Gerken et al., “Addressing the Legacies of Historical Redlining.” (Urban Institute, 2023). Available at www.urban.org/research/publication/addressing-legacies-historical-redlining.

10 U.S. Department of Housing and Urban Development, *Housing Discrimination under the Fair Housing Act*, available at https://www.hud.gov/program_offices/fair_housing_equal_opp/fair_housing_act_overview.

mortgage default and lower rates of economic mobility and homeownership, alongside lower home values.^{11 12 13}

Historically redlined neighborhoods also face a higher risk of poor health and environmental outcomes. A National Institutes of Health-funded study published in 2022¹⁴ found links between redlined neighborhoods and shorter life spans; worse mental health and maternal health; a higher prevalence of chronic diseases; and higher rates of childhood lead poisoning, asthma, and heat-related illness.¹⁵ Other research found formerly redlined communities tend to be at least several degrees (F) hotter than nearby communities, due in part to fewer trees and more heat-retaining asphalt.^{16 17}

Community development emerged in the 1960s in response to the damage of federal urban renewal, a top-down program to eradicate substandard housing through eminent domain and the wrecking ball. Such programs didn't consult the affected communities; in their disregard, they mirrored the Interstate Highway System, which disproportionately targeted and adversely impacted many communities of color, fragmenting neighborhoods.¹⁸ These policies displaced communities of color and low-income families and tore apart the social fabric and cultural heritage of many vibrant communities.

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- 11 Daniel Aaronson, Bhash Mazumder, and Daniel Hartley, "New Data on Thousands of U.S. Neighborhoods Shows Direct Impact of Redlining from 1930 to Today," *Federal Reserve Bank of Chicago*, Policy Brief, February 2022. Available at <https://www.chicago.fed.org/research/mobility/policy-brief-redlining>.
 - 12 David J. X. Gonzalez et al., "Historic redlining and the siting of oil and gas wells in the United States," *Journal of Exposure Science & Environmental Epidemiology* 33 (2023): 76-83. Available at <https://www.nature.com/articles/s41370-022-00434-9>.
 - 13 Environmental Protection Agency, "Climate Change."
 - 14 Carolyn B. Swope et al., "The Relationship of Historic Redlining with Present Day Environmental and Health Outcomes," *Journal of Urban Health* 99(6) (2022): 959-983. Available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9342590/>.
 - 15 Jill Rosenthal, "The Health Care Consequences of Extreme Heat Are Just the Tip of the Iceberg - Center for American Progress," *Cap20*, September 8, 2022. Available at <https://www.americanprogress.org/article/the-health-care-consequences-of-extreme-heat-are-just-the-tip-of-the-iceberg/>.
 - 16 Swope et al., "The Relationship of Historic Redlining."
 - 17 Brad Plumer and Nadja Popovich, "How Decades of Racist Housing Policy Left Neighborhoods Sweltering," *The New York Times*, August 24, 2020. Available at <https://www.nytimes.com/interactive/2020/08/24/climate/racism-redlining-cities-global-warming.html>.
 - 18 David Karas, "Highway to Inequity," *New Visions for Public Affairs* 7 (2015). Available at <https://www.ce.washington.edu/files/pdfs/about/Highway-to-inequity.pdf>.

Federal investment under the Economic Opportunity Act of 1964 helped create a decentralized network of thousands of community development corporations (CDCs) like DSNI. In addition to resident engagement and training, CDCs developed the capacity to build and manage affordable housing and commercial real estate, improving the built environment and creating jobs. The Community Reinvestment Act of 1977 (CRA) drew banks into the field, requiring them to invest in communities from which they take deposits. CRA remains a critical legal underpinning of today's community development sector.¹⁹

Though the Reagan presidency brought drastic cutbacks in direct federal grants to support community development, other strategies, tools, and funding sources emerged. The Low-Income Housing Tax Credit (LIHTC) program, created in 1986, offers tax incentives for private investment in affordable rental housing. Administered by state housing finance agencies, LIHTCs have generated billions of dollars of investment in the construction and preservation of more than three million units of affordable housing nationwide.²⁰

Philanthropic, corporate, and government actors created intermediaries such as the Local Initiatives Support Corporation (LISC), Enterprise Community Partners (ECP), and NeighborWorks America to gather and channel resources from these same sectors to investment in locally driven projects and capacity building. The intermediaries harmonized multiple funding streams and disseminated best practices in real estate development to smaller CDCs around the country.

Capacity building—investing in the skills and organizational strategies that community-based players need to succeed—plays a foundational role in successful community development. Examples include helping CDCs establish governance and operational policies that expand access to new funding sources; equipping staff and leadership with the technical skills to scale their work; and providing flexible capital that enables leaders to plan for growth and develop strategies with the communities they serve. Making community-led development sustainable and effective requires

19 Federal Reserve History, *Community Reinvestment Act of 1977*, available at <https://www.federalreserve-history.org/essays/community-reinvestment-act>.

20 National Low Income Housing Coalition, <https://www.nlihc.org/>.

giving community members the skills and resources to plan for and make decisions that affect their quality of life.

During the 1980s and 1990s, community development financial institutions (CDFIs) emerged to invest in community development activities and CDCs. Despite the many forms that CDFIs take—from nonprofit loan and venture funds to regulated banks and credit unions—they share a mission of using the tools of finance to counteract disinvestment. They invest affordable capital in community development activities that range from housing to health and education facilities, small businesses, and commercial development.

The U.S. Treasury’s Community Development Financial Institutions Fund (CDFI Fund) has significantly enhanced the growth and success of the CDFI model. The network of certified CDFIs has grown from fewer than 200 in 1996 to more than 1,400 today and collectively manages \$450 billion in assets.²¹ Due to the success of CDFIs, the CDFI Fund itself has grown to administer eight different programs, including the New Markets Tax Credit Program, which has catalyzed more than \$66 billion in private investment in economically distressed communities since its creation in 2000.²²

COMMUNITY-DEVELOPMENT STRATEGIES CAN DELIVER RELIABLE RESULTS FOR CLIMATE ADAPTATION

Community development relies on collaboration among a complex web of stakeholders: residents, community-based organizations, CDCs, CDFIs, government agencies, philanthropy, banks, and corporations. These actors work to make communities more equitable and to equip them to thrive in the face of change and adversity. They face no bigger challenge than the climate crisis.

Climate instability has already devastated people and communities across the U.S. and around the world. And what we’ve seen to date only represents the tip of a (melting) iceberg. The Intergovernmental Panel on

21 Federal Reserve Bank of New York, *Sizing the CDFI Market: Understanding Industry Growth*, available at <https://www.newyorkfed.org/outreach-and-education/household-financial-stability/sizing-the-cdfi-market-understanding-industry-growth>.

22 Community Development Financial Institutions Fund, *Agency Financial Report Fiscal Year 2022*, available at https://www.cdfifund.gov/sites/cdfi/files/2023-01/CDFI_Fund_FY22_AFR_FINAL508.pdf.

Climate Change projected in its 2023 *Synthesis Report* that the climate crisis “will continue to disproportionately affect the poorest and most vulnerable populations.”²³

The community development sector will play a critical role in the work of responding to, perhaps even averting, the impacts of climate disruption on our most vulnerable communities. More than half a century of experience shows that success in addressing the climate crisis will mean relying on fundamental principles of the community development approach:

- The people most affected must play a central role in designing and implementing solutions.
- Collaborating across diverse partners can deliver long-lasting results.
- Durable solutions require capacity building and comprehensive investment.
- Quality-of-life improvements can build sustained momentum for change.

The practice of centering local communities—fundamental to community development—opens the door to durable solutions that can build a more climate-resilient economy. The localized approach is key; residents’ understanding of their community’s unique assets, needs, priorities, and culture plays a critical role in devising and delivering solutions the community will embrace.

As an example, financing and building a solar project in the Southeast can look very different from one in the West, thanks to state-level policies, regulations, and market dynamics. The actual *approach* to implementing such a project, however, doesn’t need to differ dramatically if it builds on the idea of working with those closest to the problem to be solved. Tapping local knowledge and building trust and community support through co-design and true partnership stand as two critical community-development approaches that can lead to enduring climate and resilience results.

23 AR6 Synthesis Report, *Climate Change 2023*, available at <https://www.ipcc.ch/report/ar6/syr/>.

Communities may have unique characteristics, but responses tailored to one location can deliver—and have delivered—reproducible and scalable new solutions. For example, in the 1970s and 1980s, declining federal investment in affordable housing led municipalities and states to create housing trust funds in response to rising need.²⁴ These took many forms but generally involved designating specific revenues to the production and preservation of affordable housing. Where once there were only a handful of local trust funds, today they have multiplied to the point that more than 800 generate approximately \$3 billion annually for affordable housing development or preservation.²⁵ The success of the model prompted Congress to create a national Housing Trust Fund in 2008—after years of advocacy by low-income-housing organizations led by the National Low Income Housing Coalition.²⁶

The focus on the power of partnerships offers another lesson for addressing the climate crisis. Returning to the Dudley Square example, sustained collaboration among residents, the Riley Foundation, Boston’s mayor, and city agencies promoted lasting outcomes, such as the community land trust—still in place and still evolving.

Collaboration and partnerships can help broaden support and build social cohesion for more ambitious and sustained action. Both add resources and networks that can prove pivotal to achieving lasting change, and they can leverage collective knowledge and expertise to deliver mutually reinforcing solutions. To build a climate-resilient economy, we’ll need a wide range of actors all pulling in the same direction.

One critical consideration: community development moves at the speed of trust, not the speed of markets. Building and maintaining trust takes time, especially in places that have experienced neglect, disinvestment, or discrimination. Capacity building at the community level also takes time and effort.

24 Alan Mallach, *A Decent Home: Planning, Building, and Preserving Affordable Housing*. (Chicago: American Planning Association, 2009).

25 Community Change, *State and Local Trust Funds 2022*, available at <https://housingtrustfundproject.org/housing-trust-funds/>.

26 “The Housing Trust Fund: An Overview.” (Congressional Research Service, Updated December 20, 2021). Available at <https://crsreports.congress.gov/product/pdf/R/R40781>.

THE KEYS TO LONG-TERM SUCCESS: BUILD CAPACITY, INVEST COMPREHENSIVELY, AND FOCUS ON QUALITY-OF-LIFE IMPROVEMENTS

Communities must have the tools and autonomy to chart their own futures—as DSNI did in Roxbury—yet capacity only goes so far without investment. Correspondingly, investment without capacity can do little to address deeply rooted inequities, many exacerbated by climate change. Capacity building and capital access represent mutually reinforcing elements of a strategy for addressing the climate crisis.

We can see this in action with The Inflation Reduction Act, which has pumped billions of dollars into projects, companies, and communities to expand the clean-energy economy in the U.S. while delivering benefits to lower-income and marginalized communities. Much of this funding requires companies to engage thoroughly with communities and labor to create quality jobs, apprenticeship programs, and more. Fortunately, companies don't need to reinvent the wheel: over decades, the community development sector has pioneered—and thoroughly tested—best practices for engagement. The movement has shown how to build local expertise and capacity to manage responsible investment to mobilize communities and scale climate solutions.

From affordable housing, economic opportunity, and health to arts and culture, education, and environmental justice, community development boils down to improving quality of life for people who have long endured marginalization and disinvestment. Some quality-of-life improvements represent quick fixes; others may require decades of work to deliver meaningful results. People don't live in project or sector silos: To build broad support for meaningful change, they must see tangible improvements in their lives.

Some of DSNI's visible “early wins”—curbing illegal dumping and trash-transfer stations in the neighborhood—helped build momentum for larger, bolder, and more systemic change.²⁷ This comprehensive and

27 “Boston, MA—Eminent Domain in the Hands of the Community,” in *Community Uprooted: Eminent Domain in the US*, online exhibit published by Loyola University's Center for Urban Research and Learning and Loyola University Museum of Art. No date. <https://www.luc.edu/eminent-domain/sitesays/bostonma/#d.en.403611>. Retrieved October 16, 2023.

intersectional focus on quality of life represents another essential lesson for building a climate-resilient economy. Focusing on relevant outcomes that people can see and feel—be those affordable and energy-efficient homes, access to affordable renewables, or paid apprenticeships in a growing clean-energy economy—won't just address the climate crisis. It will also broaden the base of support for more ambitious and sustained action in the future.

ANNIE DONOVAN is President & CEO of Raza Development Fund. Annie has decades of experience in community development finance. She has held executive roles in two other leading community development financial institutions, has served as a senior advisor in the White House Domestic Policy Council and Council on Environmental Quality, and was Director of the U.S. Department of the Treasury's CDFI Fund.

ADAM KENT is a Senior Advisor at the Natural Resources Defense Council (NRDC) and previously served as Deputy Director of the Washington, DC, office of the Local Initiatives Support Corporation (LISC). Adam holds a bachelor of arts in economics from Macalester College, a master's in teaching from American University, and a master's in public affairs from Princeton University.

BRENDA LOYA is the COO for BlueHub Capital, a community development financing organization focused on building healthy communities where low-income people live and work. She has more than 15 years' experience overseeing affordable housing and community facilities investments, economic development initiatives, and environmental justice projects.

CLIMATE RESILIENCE: THE NEXT FRONTIER FOR COMMUNITY DEVELOPMENT

Joyce Coffee, *Climate Resilience Consulting*
Rachel Jacobson, *Independent Climate Resilience Expert*
Ella Mure, *RMI*

Regardless of where you fall in the debates over climate change, there is one point we can all agree on: severe weather events are occurring with frighteningly greater intensity and frequency.

Over the past several decades, we've built up community development infrastructure that has the potential to be an important mitigating factor against the hazards of a warming climate. However, the reality is that climate change is putting at risk the work that community development has done to strengthen social fabric, lift community voices in local decision-making, and improve the built environment with affordable housing, schools, health centers, and thriving small businesses. To ensure a vibrant future for neighborhoods and communities impacted by climate change and historic disinvestment, we all must become versed in the emerging field of climate resilience and adaptation—and how community development underpins it.

The American Society of Adaptation Professionals (ASAP) defines climate resilience as “the capacity of an individual, group, or system to prevent, withstand, respond to, and recover from climate-related

disruption.”¹ Disruptions can be discrete events, like wildfires or hurricanes, and they can also extend to chronic effects, such as extreme temperatures and sea level rise. The impacts of these events and hazards have been and will continue to be some of the most dangerous and demanding challenges we face as a society. The concept of climate resilience encompasses many interpretations, definitions, and practices, but it is grounded in the desire and need to increase safety and security for all.

One of the deadliest and costliest weather events in U.S. history, Hurricane Katrina, gave startling insight into how climate change will impact communities in the future. Hurricane Katrina sparked the largest domestic migration since the 1930s Dust Bowl—with an estimated 1.5 million Gulf Coast residents, including as many as 350,000 in New Orleans alone, fleeing or evacuating the area.²

In addition to the loss of many lives, homes, and essential infrastructure, thousands of relocated residents never moved back, deepening the lasting impact of community fragmentation and erasing the social cohesion and social capital that is so important for equitable rebuilding. When rebuilding climate-resilient communities in high-risk regions like New Orleans, it is crucial to acknowledge the threat posed by measures that do not take into account community voices and community impacts. Without thoughtful deliberation and community input, climate resilience plans can trigger uneven investments and gentrification, spurring further displacement and social upheaval and exacerbating community fragmentation. Pairing climate resilience with community development is the way forward to a just and equitable society.

WHAT IS CLIMATE RESILIENCE?

Like community development, climate resilience demands multifaceted approaches that will vary based on local geographies, demographics, and resources, but the approaches can be categorized in two ways.

In broad terms:

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- 1 “ASAP Professional Guidance Resources Glossary.” (American Society of Adaptation Professionals). Available at <https://adaptationprofessionals.org/wp-content/uploads/2021/03/ASAP-Glossary.pdf>.
 - 2 Jeffrey A. Groen and Anne E. Polivka, “Hurricane Katrina evacuees: who they are, where they are, and how they are faring,” *Monthly Labor Review* (2008): 32-51. Available at www.bls.gov/opub/mlr/2008/03/art3full.pdf.

- The Intergovernmental Panel on Climate Change (IPCC) defines climate adaptation as “the process of adjustment to actual or expected climate and its effects.”³ Climate-resilience *adaptation* measures include green infrastructure, like wetlands or coastal ecosystems to reduce flooding, or changes to land use policy to avoid building (or rebuilding) on hazard-prone land.
- Climate *mitigation* measures are “human intervention[s] to reduce the sources or enhance the sinks of greenhouse gases,” according to the IPCC.⁴ Climate-resilient mitigation could include building or retrofitting buildings to meet higher energy-efficiency standards (to reduce emissions from buildings while also reducing the need for air conditioning) or embracing renewable energy with battery storage (to reduce emissions while providing back-up power).

Efforts to build resilience, either through adaptation or mitigation, may be proactive (preemptive strategy) or reactive (coping mechanism).⁵ For many communities, climate resilience has consisted primarily of reactive strategies following extreme climate events. In many cases, grassroots community organizations have been the first source of relief and resources following extreme weather events. The Federal Emergency Management Agency (FEMA) leads federal disaster relief and recovery, and states and local governments often have their own strategies and emergency plans for recovery and rebuilding.

While reactive responses are often necessary after hazardous events, proactive strategies are often more cost effective in the long run, as they support efforts to minimize disruption and damage, and ultimately allow communities to withstand and recover from climate events and hazards faster.⁶ Proactive resilience planning requires a thoughtful, long-term

3 Core Writing Team, “Annexes.” In *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Geneva, Switzerland: Intergovernmental Panel on Climate Change, 2014). Available at www.ipcc.ch/site/assets/uploads/2019/01/SYRAR5-Glossary_en.pdf.

4 Ibid.

5 Susanne C. Moser and Maxwell T. Boykoff, “Climate change and adaptation success: The scope of the challenge.” In *Successful Adaptation to Climate Change*, edited by Susanne C. Moser and Maxwell T. Boykoff (New York: Routledge, 2013). Available at https://sciencepolicy.colorado.edu/students/envs-geog_3022/moser_boykoff_ch1_2013.pdf.

6 IEA, “Power Systems in Transition.” (Paris: IEA, 2020). Available at www.iea.org/reports/power-systems-in-transition/climate-resilience#.

approach to capacity-building through financial investment, good governance, and engagement practices. An example includes embedding climate-resilience standards in infrastructure investments, development requirements, and market regulations.⁷ The federal government also has programs that recognize the importance of proactive planning: for example, FEMA's Building Resilient Infrastructure and Communities program and the National Oceanic and Atmospheric Administration's (NOAA's) National Coastal Resilience Fund.

Building climate resilience is a multi-stakeholder process. In addition to the local, state, and tribal governments that hold many infrastructure and planning responsibilities, it should also include community leaders and community-based organizations, residents, technical experts and technical assistance providers, and funders. The potential synergy among these groups is significant; community development organizations can bring key insights to the table, strengthening the ability of local groups and residents to engage.⁸

Funding for climate resilience can come from several sources. The Bipartisan Infrastructure Law and the Inflation Reduction Act have provided an enormous infusion of federal resources for climate resilience (described further below). State, local, and tribal governments can access federal funding, and they can also raise revenue from taxes or bond issuance, for example. Additional philanthropic funding is often necessary. Local financial institutions could play a critical role in financing projects that historically have not been of interest to lenders. As money and technical assistance from EPA's Greenhouse Gas Reduction Fund reaches them, local financial institutions will build their capacity to develop products for climate-related projects.⁹ Finally, there is also a role for innovative insurance products, like parametric insurance, which simplifies and speeds

7 Peter Plastrik et al., "How State Governments Can Help Communities Invest in Climate Resilience." (Innovation Network for Communities, 2020). Available at <https://static1.squarespace.com/static/5736713fb654f9749a4f13d8/t/5f80e0ee6c7e12422ef0793e/1620184032452/Plastrik+Coffee+State+Resilience+Investment+Framework+2020.pdf>.

8 Ned Gardiner et al., "Implementing the Steps to Resilience: a Practitioner's Guide," *Climate-Smart Communities Series* 6 (2022). Available at <https://repository.library.noaa.gov/view/noaa/46456>.

9 Although the Greenhouse Gas Reduction Fund is only for projects that reduce greenhouse gas emissions, developing new financial products will build capacity to finance a range of complementary projects.

payouts, and community-based insurance, which leverages government support for insurance for multiple properties.¹⁰

SOCIAL COHESION: A FUNDAMENTAL LINK BETWEEN CLIMATE RESILIENCE AND COMMUNITY DEVELOPMENT

Community development efforts support social cohesion, or “the strength of relationships and sense of solidarity among members of a community,” according to the U.S. Department of Health and Human Services.¹¹ Marginalized communities often possess social capital that increases their capacity to adapt to climate impacts, thus improving their climate resilience. Climate change and the policies and economic systems created in response to climate change, on the other hand, bring physical, economic, and emotional impacts that damage or completely erase social cohesion. For example, physical destruction from climate change can force migration, breaking down the sense of community, as in Hurricane Katrina. Extreme heat may prohibit outdoor play, preventing connections between children and families. More insidiously, impacts and responses can entrench inequity, including through gentrification and displacement.

Consider the national history of inequitable development and land use as a starting point. In the early- to mid-1800s, Indigenous people were expelled from their native lands through colonial violence—torn from their communal culture and way of life and forced onto small areas of undesirable land. In the 1930s, Black populations were confined to redlined neighborhoods that concentrated poverty and disinvestment, depriving communities of opportunity. In the 1950s, federal transportation funds favored highways that connected predominantly white suburbs to cities’ downtowns, oftentimes running through and fracturing Black neighborhoods.¹²

Today, the acute impacts of climate change trend similarly to these legacies of disinvestment, exacerbating the harm past policies have caused. Residents of historically redlined districts experience disproportionate

10 Ella Mure et al., “Rethinking the Status Quo of Property Insurance,” *RMI*, April 21, 2023. Available at <https://rmi.org/rethinking-the-status-quo-of-property-insurance/>.

11 Healthy People 2030, *Social Cohesion*, available at <https://health.gov/healthypeople/priority-areas/social-determinants-health/literature-summaries/social-cohesion>.

12 Climate Justice Alliance, *Just Transition: A Framework for Change*, available at <https://climatejusticealliance.org/just-transition/>.

heat-related mortality and other health impacts from heat and air pollution. In some places, the summers bring a 20-degree (F) difference in outdoor surface temperatures between redlined and non-redlined districts.¹³ These inequities play out in Los Angeles County, California, where a 2023 study shows that Black and Latino residents, particularly renters, are more likely than white residents to live in areas that experience higher heat-related impacts, lower levels of tree coverage, and insufficient access to air conditioning.¹⁴ Heightened poverty rates further compound inequities; in the case of extreme heat in Los Angeles County, some individuals cannot afford to run air conditioning or ventilation systems due to high utility costs.

Community development organizations have worked hard to overcome the legacies of redlining and urban renewal, enabling both resident-driven solutions and social cohesion. Those lessons are highly valuable to climate resilience. They demonstrate the myriad ways that community involvement in climate solutions could help keep communities strong.

DEVELOPING EQUITABLE AND LASTING SOLUTIONS

The term climate justice embodies the fact that the impacts of climate change are interconnected with social, racial, economic, and public health issues.¹⁵ It is critical that climate solutions address the root causes of inequitable exposure and risk, and recognize that there is no blanket approach to alleviating the compound burdens felt by vulnerable communities.¹⁶ Climate justice can guide our decision-making, not only to ensure safety and security, but to seize the opportunity to use climate resilience to invest in marginalized communities and tackle deep-seated inequities faced by populations today.

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- 13 Daniel Cusick and E&E News, “Past Racist, Redlining, Practices Increased Climate Burden on Minority Neighborhoods,” *Scientific American*, January 21, 2020. Available at www.scientificamerican.com/article/past-racist-redlining-practices-increased-climate-burden-on-minority-neighborhoods/.
- 14 Hana Abdelatty et al., “Turning Down the Heat: Addressing Heat Inequities of Frontline Communities in Los Angeles.” (UCLA: The Ralph and Goldy Lewis Center for Regional Policy Studies, 2023). Available at <https://escholarship.org/content/qt8kr3h6jm/qt8kr3h6jm.pdf?t=rpwpa1j&v=lg>.
- 15 Center for Climate Justice, *What is Climate Justice?*, available at <https://centerclimatejustice.universityof-california.edu/what-is-climate-justice>.
- 16 EPA, *Research on Community Resilience to Climate Change*, available at www.epa.gov/climate-research/research-community-resilience-climate-change.

Understanding and implementing climate resilience in this way rests on a simple concept: People most impacted by climate change possess deep wisdom for building resilience to it. Solutions that fail to incorporate people-centric decision-making and that fail to get ahead of changes in the climate and in markets can result in community fragmentation.

In Miami, FL for example, rising sea levels are displacing families and businesses from low-lying areas.¹⁷ Whereas beachfront properties were once considered luxury living, property values are now rising in higher-elevation areas that have typically been home to low-income residents. The consequence is gentrification, the process by which a neighborhood or community changes as more desirable developments attract an influx of more affluent residents and businesses. Through this process, property values, taxes, and living expenses increase, displacing residents who can no longer afford to live in the area.

In one of Miami's historically redlined neighborhoods, Little Haiti, where nearly half of the residents live below the poverty line, average home values increased by nearly 80 percent in the past four years, according to Zillow.¹⁸ It is now one of the fastest gentrifying neighborhoods in South Florida, sitting just 10 feet above sea level. The implication of climate gentrification (gentrification triggered by climate change) is the potential displacement of residents who can no longer afford the safety of higher ground; often, the only option is to relocate to more affordable but higher-risk areas.

Within the broader Miami-Dade County, sea level rise could displace nearly 56 percent of households, according to recent modeling research.¹⁹ Across the country, sea level rise, wildfires, flooding, and other extreme climate events and hazards are causing a similar chain reaction of gentrification and displacement. We must not overlook the fact that climate change and solutions to mitigate it have the potential to cause the same

17 Minho Kim and E&E News, "'Climate Gentrification' Will Displace One Million People in Miami Alone," *Scientific American*, October 17, 2023. Available at www.scientificamerican.com/article/climate-gentrification-will-displace-one-million-people-in-miami-alone.

18 Zillow, *Little Haiti Home Values*, available at www.zillow.com/home-values/269071/little-haiti-miami-fl/.

19 Nadia A Seeteram et al., "Modes of climate mobility under sea-level rise," *Environmental Research Letters* 18 (11) (2023). Available at <https://iopscience.iop.org/article/10.1088/1748-9326/acfe22>.

negative impacts of redlining and failed urban renewal strategies when not grounded in holistic and equitable design and implementation.

Shifting power to communities means reconstructing systems of authority to enable community members to have meaningful impact on local decision-making, resource distribution, and capacity-building. By doing so, communities can build social cohesion and then leverage it to establish platforms for fostering engagement and effective action. Solutions and initiatives that community members develop and enact yield entirely different results than the inequitable policies and developments that have created differential climate impacts.

Planning and collaboration that benefits communities and incorporates their input requires significant time and effort, as one New York neighborhood found during an 18-month, community-driven resilience planning process following the destruction caused by Hurricane Sandy in 2012. Centering its approach around public engagement, the NYC Department of Housing Preservation and Development led a collaborative effort to bring together community members, city agencies, elected officials, and local organizations to develop the Resilient Edgemere Community Plan.²⁰ Through multiple workshops, open houses, group meetings, and surveys, the plan leveraged community engagement as a foundation for climate resilience. The resilience benefits included protection from future storms and sea level rise through elevated homes, thoughtful relocation of residents in high-risk areas, and a raised shoreline surrounding the perimeter of the community.

Additionally, the Resilient Edgemere Community Plan is a long-term investment opportunity that has yielded benefits beyond enhanced climate resilience. It incorporates transportation plans to increase accessibility and transit services as well as economic development plans for mixed-use affordable housing, retail, and community facilities. The impacts of climate change inspired these investments, but the results are wider-reaching, demonstrating the ability and opportunity for community-driven resilience solutions to drive sustainable social and economic gains as well.

20 NYC Housing Preservation and Development, *Resilient Edgemere*, available at www.nyc.gov/site/hpd/services-and-information/edgemere.page.

Community resilience centers or resilience hubs are another example of how climate strategies can help meet community needs.²¹ Resilience hubs provide space and resources to help residents better prepare for and recover from disruptions and emergencies. In Baltimore, the city’s Community Resiliency Hub Program demonstrates a collaborative approach that strengthens relationships between community members and government officials.²² The program is a partnership between service-based community organizations located in Baltimore’s most climate-vulnerable neighborhoods and various local government departments. Across the city, these hubs act as cooling centers during heat waves, charging stations during power outages, and a central location for providing resources, such as bottled water, fans, and sandbags, to residents during other climate events.²³ The space and services the hubs offer also provide a platform for community engagement, where residents actively participate in identifying and driving local solutions, building relationships, and fostering social cohesion.²⁴

Federal and state programs can also support community-driven climate resilience by advancing the work of local governments and their community partners. At the federal level, programs like HUD’s Community Development Block Grant (CDBG) program and the EPA’s Environmental and Climate Justice block grants support communities through capacity-building, technical assistance, and funding.²⁵ Although it’s been historically difficult for communities to access federal funding, many current funding opportunities allow local governments and community-based organizations to partner with states and tribes to access resources.

21 Bryn Grunwald, Mia Reback, and Ryan Warsing, “Weathering Climate Disasters with Resilience Hubs,” *RMI*, October 26, 2022. Available at <https://rmi.org/weathering-climate-disasters-with-resilience-hubs/>.

22 Baltimore Office of Sustainability, *The Baltimore City Community Resiliency Hub Program*, available at www.baltimoresustainability.org/baltimore-resiliency-hub-program/.

23 Jared Brey, “Resiliency Hubs Help Baltimore Plan for Climate Emergency in Vulnerable Neighborhoods,” *Next City*, August 6, 2021. Available at <https://nextcity.org/urbanist-news/resiliency-hubs-help-baltimore-plan-for-climate-emergency-among-vulnerable-neighborhoods/>.

24 Bethany Rogerson and Mimi Majumdar Narayan, “Resilience Hubs Can Help Communities Thrive—and Better Weather Disasters,” *Pew*, June 22, 2020. Available at www.pewtrusts.org/en/research-and-analysis/articles/2020/06/22/resilience-hubs-can-help-communities-thrive-and-better-weather-disasters.

25 Ella Mure, “Supporting Local Governments as Climate Change Threatens Their Communities,” *RMI*, April 21, 2023. Available at <https://rmi.org/supporting-local-governments-as-climate-change-threatens-their-communities/>.

Municipalities at the state and local level can also harness their own financing mechanisms for building climate resilience.²⁶ In addition to leveraging grants and federal funding, municipalities can incentivize change within the private sector through public-private partnerships, municipal bonds, and tax revenues or fees. Climate resilience planning is also becoming more frequently integrated into standard government budgets, oftentimes an added component of existing or planned infrastructure developments. City and state agencies can also work with nonprofit organizations or private foundations to make climate-specific funds available. Smaller-scale projects are usually driven at the community level, through community bonds or crowdfunding campaigns. Across all sectors and levels of investment, future-proofing communities to the impacts of climate change demands a collaborative approach that is most effective when it fosters and builds off a community's social capital.

CLIMATE-READY COMMUNITIES: SAFEGUARDING THE WORK AND FUTURE OF COMMUNITY DEVELOPMENT

Climate resilience considerations aim to not only strengthen overall community resilience but are a means of protecting the social fabric, physical resources, and various initiatives that community development has already established within communities.

Across the country, climate resilience is being integrated into community development in various ways. For example, in New Orleans, hospitals have assembled fleets of boats and high-water trucks to move people and supplies during the inevitable storms to come.²⁷ In California, following the Camp Fire, the air quality in local schools was so poor that many schools had to close for health and safety concerns. Community members and health experts are working with state legislators to enable government funding and policies for school resilience upgrades, such as high-efficiency air filtration and cooling systems; solar panels and batteries that operate during power outages; and drought-resistant landscaping to provide safe

26 Ibid.

27 Patrick Boyle, "Hurricanes, heat waves, fires, floods: Hospitals build defenses as climate change stirs the weather," *AAMC News*, May 26, 2022. Available at www.aamc.org/news/hurricanes-heat-waves-fires-floods-hospitals-build-defenses-climate-change-stirs-weather.

outdoor spaces.²⁸ Climate resilience initiatives not only aim to enhance our ability to adapt to or mitigate the impacts of climate change, but generate myriad co-benefits integral to community wellbeing.

Climate-resilient community development is a cross-sector, multidisciplinary effort—actors across the climate resilience space offer a wealth of frameworks, guides, and tools to support community development professionals as they strive to leverage climate resilient investment opportunities to protect their communities.²⁹ Even more importantly, climate resilience and community development professionals should seek knowledge, wisdom, and solutions directly from affected communities and collaborate with them to invest in—and implement—solutions derived from community input. As the impacts of climate change continue to intensify, accelerating community collaboration and harnessing social cohesion is critical to accelerating the transformation to a more just and equitable society.

28 Erin Digitale, “How to climate-proof schools,” *Environment & Sustainability* 2 (2023). Available at <https://stanmed.stanford.edu/climate-resiliency-schools/>.

29 Lian A. Plass and David J. Wasserman, “5 Climate Tech Tools to Build Community Resilience,” *Planning Magazine*, January 23, 2023. Available at <https://planning.org/planning/2023/winter/5-climate-tech-tools-to-build-community-resilience/>.

APPENDIX

Frameworks

- [National Climate Resilience Framework](#): The framework, released by the White House in September 2023, outlines the principles and key objectives of climate resilience, providing clear and direct opportunities for action in correspondence with each objective.
- [Steps to Resilience Framework](#): The framework, a part of the U.S. Climate Resilience Toolkit, describes an iterative process to identify and address the most pressing climate-related vulnerabilities and risks. Following its steps, groups assess their most vulnerable and at-risk assets, investigate possible solutions, and make plans to address their greatest concerns.
- [Community-Driven Climate Resilience Planning Framework](#): The framework, created by the National Association of Climate Resilience Planners, advocates deepening democratic practices at the local and regional levels, presents principles and practices that define

this emergent field, and outlines resources for community-based institutions employing community-driven planning processes.

Toolkits and Guides

- [Ready-to-Fund Resilience Toolkit](#): While aimed at local governments, this toolkit provides a useful synthesis of concepts and mechanisms relevant to climate resilience investments.
- [HUD's Community Resilience Toolkit](#): The toolkit, created for states, local governments, and low- and moderate-income communities, provides ideas and guidance on ways to build community resilience to climate change impacts.
- [ULI Resilient Retrofits: Climate Upgrades for Existing Buildings](#): Created for real estate actors, designers, policymakers, and finance professionals, this report indicates the opportunities and challenges of preparing for a changed climate.
- [Steps to Resilience Practitioners Guide](#): A companion to the Steps to Resilience framework, this guide provides detailed instructions for documenting climate hazards, determining situations to avoid, and developing workable solutions to reduce climate-related risks.

JOYCE COFFEE is President of Climate Resilience Consulting, a social enterprise that works to create practical strategies that enhance markets and communities through adaptation to climate change. She has 25 years of leadership experience in government, private, nonprofit, philanthropic, and academic sectors and is an appointed director or chair of 20 nonprofit boards.

RACHEL JACOBSON builds transformational climate and social justice policy through cross-sector collaboration. She has worked with the American Society of Adaptation Professionals, the National Oceanic and Atmospheric Administration, the White House Council on Environmental Quality, and private-sector companies. Rachel holds a bachelor of arts, master of public policy, and master of science degrees from the University of Michigan.

ELLA MURE, an associate in RMI's Carbon-Free Buildings Program, focuses on advancing decarbonization within the built environment and developing climate resilience resources for communities. She holds a bachelor of arts in Environmental Studies, specializing in environmental justice and urban planning.

FINDING WHAT'S POSSIBLE: HOW CORPORATE COMMITMENTS CAN STRENGTHEN THE COMMUNITY DEVELOPMENT AND CLIMATE NEXUS

Denise Fairchild, *Emerald Cities Collaborative*
Danielle Decatur, *Microsoft*

The existential threat of the climate crisis has accomplished the seemingly impossible, bringing together community developers with environmental activists, climate professionals, and other stakeholders, including corporations. For years, environmental and economic policies and practitioners butted heads; I myself subscribed to the jobs-versus-environment paradigm. As a community developer, nothing was more important to me than the fight for economic and social justice. Addressing the urgent threat to the well-being and quality of life of low-income communities of color meant, and still means, reversing a pervasive legacy of divestment, displacement, racism, and discrimination. For me, the answer was community development, and I was part of a national movement that fueled the growth of the sector, now armed with a full suite of resources and tools for supporting community organizing; inner-city and rural real estate development, construction, and financing; jobs, income, and wealth creation; and a panoply of supportive facilities and services.

A spotlight on climate change over the last decade has intensified the urgency of finding common ground among stakeholders in the community development, environmental/climate, health, and corporate sectors to build climate partnerships that will enact meaningful change. Finding the nexus of community development and climate, however, was not immediate.

In the 1970s, environmental legislation and government regulations combined with philanthropic interests in the new environmental movement redirected political, financial, and social capital away from a focus on civil rights and the basic needs of vulnerable communities to a focus on the conditions of animals, forests, oceans, and air. The focus on environmental issues seemed to me to be just another form of divestment and distraction. This blind spot persisted even when I served as a commissioner on L.A.'s Environmental Quality Board in the mid-1980s, a body that played an instrumental role in a Black- and woman-led, citywide multiracial campaign to defeat a proposed municipal incinerator in South Los Angeles.

It took more than three decades before I finally “got it.” Now, for the past 20 years I’ve operated at the intersection of environment, economy, and equity. What logic led to this change? I realized that decarbonizing the economy produces jobs, business opportunities, healthy people, homes, communities, and a healthy planet.

The 2023 IPCC report sounds an even louder alarm about the need for action.¹ It highlights the need for government, corporations, and individuals to mitigate and adapt to climate change. It makes clear the policies, large-scale investments, corporate and community commitments, and individual behavioral changes that are essential to cleaning up our built environment and protecting our natural environment.

The value proposition for better alignment is compelling. We must build a new field of practice that effectively combines the complementary knowledge, capacities, and assets of diverse stakeholders. We must rethink, re-engineer, and rebuild healthy communities—and reform the way we do business as a society. Yes, this is an earth- and life-saving mandate,

1 “Climate Change 2023: Synthesis Report.” (IPCC, March 2023). Available at www.ipcc.ch/assessment-report/ar6/.

but a “just transition” to a carbon-free, more sustainable economy holds dramatic potential for fixing long-standing economic and social issues plaguing disadvantaged communities.

The good news: The business case for corporate-community partnerships to build climate-resilient communities is as strong as the promising ideas, models, and partnerships that are emerging. Major corporations have begun connecting aggressive climate commitments and investments to a community-development mission. This essay examines the logic, learnings, and experience of the importance of strong corporate-community climate partnerships.

In 2012, Microsoft achieved carbon neutrality and instituted the first corporate carbon tax, the “carbon fee.” The company has continuously set more ambitious climate goals, such as making operations carbon-negative, water-positive, and zero-waste by 2030. At the same time, it has committed itself to creating more equitable economic opportunity through diversity, inclusion, and racial equity.

In 2019, Microsoft began to evaluate the intersection of its sustainability commitments and community development, specifically the environmental justice movement. Both initiatives share a vision of a more sustainable future for all. Corporations like Microsoft and frontline organizations both work toward resilience; a resilient corporation can only ride out economic cycles when the customers, suppliers, shareholders, and communities it operates in are resilient, too.

Corporate-community partnerships require crossing the aisle to learn each partner’s culture, interests, language, and practices. They also require breaking down a legacy of distrust, disconnection, and differences. After all, the community development field emerged because markets—credit, housing, retail, and labor—failed to serve the needs of low-income communities. Communities also see corporations as the engines of the carbon economy—even as corporations see community engagement as an

impediment to corporate goals. Addressing the threats of a dangerous new normal requires cultural shifts on both sides.

CLIMATE CHANGE: THE COMMON CAUSE

World leaders and 97 percent of the world's climate research agrees: The planet is getting warmer, driven largely by a global economy that burns fossil fuels, such as coal and gas, to meet energy needs.² That includes energy used to light, heat, and cool homes and businesses; to motorize cars, trucks, planes, and other transport vehicles; and to fuel industries of mass production, consumption, and waste. The concentration of carbon dioxide in the atmosphere is reaching alarmingly high levels (s420 parts per million).³

Climate change is real, is here, and is having dire effects on all of us. Carbon from fossil fuel combustion has 1) increased air pollution and health-related maladies, such as cancers, asthma, and other respiratory diseases; 2) increased the frequency and ferocity of extreme weather, including floods, hurricanes, tornadoes, extreme heat, fire, and drought; 3) increased the loss of lives and property and the public costs of disaster rescue, recovery, and rebuilding; 4) destabilized families and communities; and 5) accelerated harm to the biodiversity of life-sustaining ecosystems.

Climate change also affects the business community. Supply-chain interruptions, blackouts, and costs of damage from extreme weather represent obvious concerns. Companies have begun recognizing the need for reducing the intensity of their resource use and for developing infrastructure that moves society toward a circular economy, powered by clean energy.

A focus on climate as part of a broader environmental, social, and governance (ESG) strategy has taken center stage. McKinsey⁴ argues

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- 2 John Cook et al., "Quantifying the consensus on anthropogenic global warming in the scientific literature," *Environmental Research Letters* 8 (2) (2013). Available at <https://iopscience.iop.org/article/10.1088/1748-9326/8/2/024024>.
 - 3 Rebecca Lindsey, "Climate Change: Atmospheric Carbon Dioxide," *Climate.gov*, May 12, 2023. Available at www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide.
 - 4 Witold Henisz, Tim Koller, and Robin Nuttall, "Five ways that ESG creates value," *McKinsey and Company*, November 14, 2019. Available at www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/five-ways-that-esg-creates-value.

that a strong ESG focus reduces costs, attracts new customers, motivates employees, and leads to longer-term investments that stabilize a business. In other words, addressing climate change is good business for corporations.

Beyond bottom-line concerns, a growing number of corporations have intentionally adopted an outward-facing stance, using investments to address community-level economic, environmental, and social issues. While climate change affects everyone, its harshest impacts fall disproportionately on low-income, rural, and immigrant communities and communities of color. These groups lack the resources to withstand severe climate impacts. An increasingly unstable and extreme climate acts as a threat multiplier, exacerbating pre-existing problems in these communities, which are hit “first and worst” and already weakened by physical, economic, and social maladies not of their making. Called “fence line” communities—given their proximity to refineries, transfer stations, highways, factories, and other toxic land uses—they already face collateral damage from the carbon economy, with particularly high rates of morbidity and mortality. Their physical infrastructure—substandard homes, degraded sewer and water systems, reduced tree coverage, and flood and heat zones—make these places more susceptible to extreme weather. Hurricane Katrina’s devastating passage along the Gulf Coast in 2005 drew world attention as an early example of the destruction a rapidly changing climate will bring.

Extreme weather hits households struggling with housing, health, mobility, and economic obstacles particularly hard. Weather disasters make recovery and rebuilding an incomprehensible challenge for vulnerable communities. Consequently, businesses have begun including environmental and climate justice in their sustainability and climate strategies to reduce regulatory and reputational risk—and as a response to pressures from key stakeholders, like employees, customers, and investors.⁵ Socially responsible businesses also recognize the significance of ensuring that the emerging green economy operates more inclusively and with greater

5 Zahid Torres Rahman, Jane Nelson, and Tara Shine, “A Framework for Business Action on Climate Justice,” *Stanford Social Innovation Review*, October 17, 2022. Available at https://ssir.org/articles/entry/a_framework_for_business_action_on_climate_justice.

access to jobs and business opportunities than the digital economy does, as an example.

Industry has incrementally embraced equity and justice as part of core business strategy. Convenings like the Transform to Net Zero coalition, comprising companies from technology to food products, include a “just and sustainable transition” as a key principle and actively promote climate-justice initiatives. A workshop on “Integrating Climate Justice into Business Transformation” at GreenBiz 23—a conference of 1,800 sustainable business professionals—drew more than 200 aspiring change makers. The Clean Energy Buyers Alliance (CEBA), which gathers a community of energy customers and providers, has formed an Equity Working Group as part of its Beyond the Megawatt initiative. In an April 2023 blog post CEBA wrote that “embedding equity and justice in clean energy procurement” is “good for business.”⁶

WHAT COMMUNITY DEVELOPMENT BRINGS TO THE CORPORATE CLIMATE AGENDA

Corporate approaches to climate have traditionally focused on internal operations. Adopting a community development lens does far more. A community development lens brings new perspectives and tools for maximizing the co-benefits of climate investments, addressing past harms, and ensuring inclusion of marginalized communities in the future clean economy.

As a field of practice, community development preceded concerns about climate instability by decades. Established under Title VI of the Civil Rights Act of 1964 as a weapon in the War on Poverty, the community development sector has compiled 60 years of experience building the physical, economic, and social infrastructure of low-income communities, urban and rural. This robust infrastructure includes:

6 Phoebe Romero and Shane Lee, “Why Integrating Social Equity In Your Clean Energy Procurement Is A Feasible Imperative,” *CEBA*, April 10, 2023. Available at <https://cebayers.org/blog/why-integrating-social-equity-in-your-clean-energy-procurement-is-a-feasible-imperative>.

- 1 A national network of nonprofit developers;
- 2 Large national intermediaries with billions in capital invested;
- 3 Sophisticated leveraged-financing and investment mechanisms, including public and private grants, loans, and equity investments;
- 4 Training and technical infrastructure for communities;
- 5 Federal, state, and local policy experts and bipartisan support; and
- 6 Banking and corporate partnerships.

Beyond expertise in repairing, building, and managing the built environment, community development has produced the opportunity to tackle the proverbial low-hanging fruit: thousands of units of housing and thousands of square feet of commercial facilities whose retrofitting and decarbonization would advance national climate goals. With expanded technical support, community developers have the capacity to build localized, distributed delivery systems for clean energy, food, and other basic needs of a climate-resilient economy.

Perhaps the most important contribution community developers can make to solving the climate challenge is the social capital needed to build community climate resilience. Post-disaster research identifies social capital as the single most important resource for climate rescue, recovery, and rebuilding. Community developers, largely resident-driven, view their work comprehensively and stand at the forefront of community innovations needed to adapt to climate change. They have experience developing local, sustainable food systems, addressing urban heat islands, expanding tree canopies and creating local parks, organizing resilience hubs to adapt to extreme weather, and creating community jobs and business opportunities for the emerging green economy. Moreover, as community organizers and advocates, they can help ensure that equity, inclusion, and the benefits of a clean economy accrue to those who need them most.

WHAT CLIMATE BRINGS TO THE COMMUNITY DEVELOPMENT AGENDA

While scientists have raised concerns about climate change for more than a century,⁷ the 2015 Paris Climate Agreement brought a new focus and urgency to the goal of fostering a rapid transition to a low-carbon economy.⁸

Given its relative youth, the climate sector lacks the mature infrastructure of the community development sector. Policies remain unsettled and uneven across nations, states, and local governments. Market-based financing of energy efficiency, clean energy, and other green projects remains at a first-generation level, and financial institutions haven't fully adopted it. Many climate technologies are still conceptual, untested, and costly. Even with public policy mandates and incentives—grants, tax credits, and various incentives—the sector remains predominantly driven by large, mainstream research, technology, and environmental organizations in the private sector. Working at the intersection of environment, economy, and equity isn't yet fully or effectively integrated in the climate economy. A just transition to a more sustainable, economically fair and inclusive economy remains more vision than reality.

Despite these challenges, the climate sector has forged tighter bonds with the community development sector. Addressing the threat of climate change requires a recognition that lower-income communities contain some of the most energy-inefficient buildings and least efficient infrastructure. Because established energy and construction firms often lack the interest in and the cultural competence for working with these communities, tackling needed building and infrastructure improvements relies on enlisting community contractors, skilled local workers, and trusted ambassadors.

The climate crisis also requires “relocalizing” markets and businesses to build a more sustainable and climate-resilient economy. For example, climate-driven weather events immediately disrupt food distribution and

7 Spencer Weart, “The Discovery of Global Warming [Excerpt],” *Scientific American*, August 17, 2012. Available at www.scientificamerican.com/article/discovery-of-global-warming/.

8 United Nations Climate Change, *The Paris Agreement*, available at <https://unfccc.int/process-and-meetings/the-paris-agreement>.

power grids. Requiring system redundancy and decentralized infrastructure—that is, bringing food, energy, and water production closer to where people consume them—represent critical strategies for building resilience. Averting the worst climate outcomes by building a clean-energy future requires working with public, private, and community partnerships—another proven skill set of community developers.

GOING TO SCALE

Community developers are new to the climate space; environmental and sustainable development practitioners and corporations are new to community development. Initiatives already underway, however, hold promise for accelerating new alliances. Several recent examples include the climate investments in the \$1 trillion dollar Infrastructure Investment and Jobs Act;⁹ the \$370 billion of clean energy funding in the Inflation Reduction Act;¹⁰ an executive order requiring 40 percent of investments to target climate-justice and disadvantaged communities;¹¹ and a broad policy focus on creating high-paying jobs and supporting collective bargaining.¹² Related investments at state and local levels, such as New York State’s \$18 billion climate investment fund, put additional emphasis on collaboration.¹³

In addition to a supportive public policy environment, corporate climate commitments represent a solid opportunity for a just transition to healthy, climate-resilient, economically viable, and equitable communities. As of September 2022, 83 percent of Fortune 500 companies had made climate

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- 9 Christina DeConcini and Jillian Neuberger, “US Infrastructure Bill Makes Headway on Climate, But More Is Needed,” *World Resources Institute*, November 15, 2021. Available at www.wri.org/insights/us-infrastructure-bill-makes-headway-climate-more-needed.
 - 10 Nathaniel Meyersohn, “Biden’s climate law has led to 86,000 new jobs and \$132 billion in investment, new report says,” *CNN Business*, August 14, 2023. Available at www.cnn.com/2023/08/14/business/climate-clean-energy-jobs-biden/index.html.
 - 11 The White House, “FACT SHEET: President Biden Signs Executive Order to Revitalize Our Nation’s Commitment to Environmental Justice for All,” April 21, 2023, available at www.whitehouse.gov/briefing-room/statements-releases/2023/04/21/fact-sheet-president-biden-signs-executive-order-to-revitalize-our-nations-commitment-to-environmental-justice-for-all/.
 - 12 The White House, “Biden-Harris Administration Roadmap to Support Good Jobs,” May 16, 2023. Available at www.whitehouse.gov/briefing-room/statements-releases/2023/05/16/biden-harris-administration-roadmap-to-support-good-jobs/.
 - 13 Office of the New York State Comptroller, *Leading the Way on Climate Investment*, available at <https://www.osc.ny.gov/common-retirement-fund/leading-way-climate-investment>.

commitments.¹⁴ Most focus on greening their own operations—including reducing and eliminating fossil-fuel use, minimizing waste, and strengthening biodiversity and ecosystems—but some have made a leadership commitment by strategically using climate investments to address long-standing issues of economic and social justice in low-income communities of color. Microsoft ranks among the corporations most focused on justice-centered climate work.

Unprecedented levels of public and private investments in climate solutions that create jobs, business opportunities, and healthy communities raise the question of what’s possible. What do we need to build the partnerships that create a sustainable, economically just, and inclusive economy? Microsoft’s corporate-community climate partnership highlights five key ingredients.

1. Committed and Courageous Leadership

Successfully bridging the corporate-community divide requires C-suite buy-in and daring leadership from both corporate and community partners. Critically, it requires both sides of the partnership to spend time developing new competencies and skills.

The climate crisis provides a compelling rationale for working together, but that definitely doesn’t mean business as usual. Corporate-community partnerships require culturally competent teams that can navigate differences both obvious and unexpected. Corporations need community sensibilities and experience; community organizations must bolster their lived experience and organizing skills with finance, business, and development acumen.

Most corporate sustainability teams—typically STEM, environmental, and development specialists—must add capacities to work in fence line communities, such as understanding the importance of trust building to advance project objectives, even if it means longer project timelines. Conversely, community organizations must engage staff who can help develop climate initiatives, like community-owned solar, while helping corporate partners reach the large reductions they need to meet aggressive

¹⁴ Julien Claes et al., “Where the world’s largest companies stand on nature,” *McKinsey Sustainability*, September 13, 2022. Available at www.mckinsey.com/capabilities/sustainability/our-insights/where-the-worlds-largest-companies-stand-on-nature.

net-zero-carbon targets. An example of this is making environmental attributes—like Renewable Energy Credits (RECs)—available for corporate procurement. In other words, both sides need translators to bridge their different needs and approaches.

Danielle Decatur, Microsoft’s director for climate justice, initiated the company’s justice-centered sustainability work for its data centers. Her focus on a “community informed” effort grew from her post-Katrina work with FEMA. With Jenny Carney at WSP, Decatur reached out to Jacqui Patterson and Mandy Lee at The National Association for the Advancement of Colored People (NAACP) and Denise Fairchild at Emerald Cities Collaborative to explore a possible partnership, an initiative that ultimately led to the creation of the Just Transition PowerForce (a.k.a. The PowerForce), a national strategic advisory group of community-based environmental justice, energy, and workforce practitioners.

2. Collaborative Learning

Microsoft’s collaboration with the Just Transition PowerForce began in 2020 with focused intention, care, and agreements informed by the Jemez Principles for Democratic Organization, widely adopted principles that stress inclusiveness beyond tokenism and creation of just and respectful relationships. The collaboration launched a year of learning workshops designed to foster a clearer understanding of assets, goals, and strategies on the part of participating corporations and communities and to identify areas of mutual gain.

3. Foundational Agreements

Microsoft and the Just Transition PowerForce established agreements for working together, clarifying expectations, coalescing around outcomes, and heading off surprises and disappointments. An initial agreement codified principles, roles, and responsibilities.

A second agreement, the Environmental Justice Measurement and Evaluation Framework, guided investment decisions to ensure just and equitable processes and outcomes. Inspired by the Energy Democracy

Scorecard¹⁵ and the Portland Clean Energy Community Benefits Fund,¹⁶ the framework puts priority on solutions led by communities that generate social, economic, and environmental benefits for people most marginalized and excluded historically.

4. Corporate Climate Innovations

Building partnerships required a significant amount of prep work, but it generated innovative climate strategies that reformed traditional business practices. The framework has governed equity power purchase agreements (PPAs) for renewable energy that direct a portion of project revenues to under-resourced communities so they can share in the benefits of the clean energy transition.

One of Microsoft's equity PPAs covers 250MW of solar capacity provided by Volt Energy Utility. African-American-owned Volt launched a tax-exempt nonprofit to administer community funds generated over the multiyear agreement. The Sharing the Power Foundation "advances environmental justice and an inclusive clean energy future through grantmaking and seeding the next generation of environmental leaders." The PPA also gives priority to job creation for women, minority leadership, carbon neutrality, and habitat restoration. Intending to inspire other corporate renewable-energy buyers, Microsoft and Volt published a paper in 2022 with details on the agreement and the lessons learned in integrating environmental justice into renewable-energy procurement.¹⁷ Since then, other companies have announced renewable energy deals with environmental justice benefits.

5. Community Initiatives

A core principle for the Just Transition PowerForce is that its corporate partnerships must produce tangible benefits for its community constituents. Working with The PowerForce, Microsoft made investments in sustainability and community through circular economy initiatives, an economic concept meaning products, services, or resources are recycled,

15 "Energy Democracy Scorecard." (Washington, DC: Emerald Cities Collaborative). Available at https://emeraldcities.org/wp-content/uploads/2021/04/FINAL_Scorecard.pdf.

16 Portland.gov, *Portland Clean Energy Community Benefits Fund (PCEF)*, available at www.portland.gov/bps/cleanenergy.

17 Adrian Anderson et al., "Environmental justice in renewable energy procurement." (Microsoft, October 2022). Available at <http://aka.ms/EJinREProcurement>.

renewed, or regenerated rather than wasted, and renewable-energy initiatives.

One such investment went to a community enterprise in Atlanta working to increase waste diversion and circularity, which aligns with Microsoft's goal of producing zero waste by 2030. The PowerForce led Microsoft through a community engagement process that identified three Black-women-led enterprises: Goodr; Truly Living Well Center for Natural Urban Agriculture; and Green is Lyf. The three organizations had proposed "Zero Waste Westside," a pilot program to create a closed loop for food waste in neighborhoods on the city's west side. The investment funded equipment for increasing compost production at Truly Living Well's urban farm and helped Green is Lyf pay living wages for its community-outreach staff. The project built the organizations' capacity to deliver community benefits and become suppliers to companies in the Atlanta area. Truly Living Well has received further funding from Drawdown Georgia's Climate Solutions and Equity Grant program.

Taking a bottom-up rather than top-down approach, Microsoft showed up with funding and an intention to learn from existing relationships and solutions proposed by community members. Its experience with the engagement has informed its other environmental justice efforts. Investment partnerships with community development organizations have taught Microsoft that building environmental justice into business practices can stimulate broader economic opportunity by 1) investing in diversity in operations and supply chains and 2) funding community initiatives led by historically excluded groups. This work has helped Microsoft understand that it can only move as quickly as it is able to build trust between it and its community partners. Microsoft sees the process as equal in value to the outcomes themselves.

POSITIONING COMMUNITY DEVELOPMENT FOR CLIMATE WORK

So, what's possible? A world worth living in. The climate challenge offers a chance to break down long-established silos and to work together toward a greener, healthier, more inclusive, and just economy. This requires a **commitment to multi-stakeholder partnerships**. It means

changing business models, policies, and practices that don't serve people, planet, or communities. It requires placing an active climate agenda front and center. Corporate-community partnerships, done right, can tackle not only our environmental and climate challenges, but also our economic and equity issues.

“Done right” means enlisting the community development sector as a major partner to:

- Organize the multi-stakeholder table
- Engage local communities in the process
- Build local businesses and job opportunities in the new economy
- Deploy capital to create climate-resilient infrastructure

The extensive networks of community developers will play an essential role in ensuring that the transition to the clean economy doesn't exclude or sideline Black, Latino, Indigenous, low-income, or rural communities the way previous economic transitions have. The agriculture, industrial, service, and digital economies left a legacy of exclusion, economic inequality, poverty, and environmental degradation. Excluded communities labored as unpaid or underpaid workers in these economies. Excluded communities were pigeonholed as consumers rather than producers in these economic shifts. Excluded communities had almost no access to capital to create businesses, resulting in today's income and wealth gaps. Excluded communities had no seat at the planning and decision-making tables, necessitating the growth of the community development industry to “clean up” the economic, social, and environmental devastation of failed public- and private-sector policies and practices. Formerly excluded communities must participate fully in the planning, development, implementation, and outcomes of anticipated public and private investments in the clean economy. These are preconditions for a just transition.

In this exciting and critical time, we can forge transformative, rather than transactional, solutions to the climate challenge. While many challenges complicate the task of reimagining and re-aligning the economy, we can't escape the urgency of doing it. If hindsight is 20-20 vision, then we can fix past failures to build strong, equitable, healthy, climate-resilient, and just, community-serving economies. The climate clock is ticking; there is much

at stake—but also enormous opportunity for everyone. After 45 years in the sustainable and community development sector, I am encouraged to see what’s possible.

DENISE FAIRCHILD is president emerita of the Emerald Cities Collaborative and leader of the Ubuntu Climate Breakthrough Initiative, which focuses on designing a cultural response to the unsustainable economic growth, production, and consumption systems driving climate change. Prior to joining Emerald Cities, Denise’s professional work included over 30 years in community development as founder and director of the CDTech Center at L.A. Trade Technical College and as director of LA LISC, the Los Angeles office of the Local Initiatives Support Corporation.

DANIELLE DECATUR leads the Microsoft data center environmental justice strategy toward a measurable, positive impact on the climate resilience and capacities of under-resourced communities. She has also launched the zero waste, supplier sustainability, and embodied carbon reduction programs for Microsoft data centers as part of the company’s carbon negative, zero waste, water positive, and ecosystems protection goals. Danielle has a background in strategy, process improvement, and change management with Microsoft, AREVA North America, and IBM.

UNLOCKING THE DREAM: MAKING THE ENERGY TRANSITION AND A SUSTAINABLE FUTURE ATTAINABLE FOR ALL

Jamal Lewis, *Rewiring America*

The urgency of capping the rise in global temperature means we must slash carbon emissions everywhere we can. And because, according to the IEA, energy use creates more than 75 percent of emissions, energy efficiency represents an obvious place to focus.

We've never had better tools for cutting energy use; technologies such as heat pumps, induction stoves, and electric vehicles are transforming the way we heat and cool homes, cook food, clean clothes, and move people from place to place—and they've entered the consumer market rapidly. But what hasn't been rapid? The uptake of these technologies by income-constrained households, both slowing decarbonization and depriving these households of the financial benefits of greater efficiency and lower costs.

To solve this problem, we'll need to address three obstacles:

- The high cost of buying and installing highly efficient electric appliances puts off many households. Existing programs provide financial support for making the shift, but they often fail to anticipate barriers to adoption. A program might pay to increase insulation and install a heat pump, for example, but not cover the cost of essential preparatory steps, such as lead removal and mold remediation. That calls for program redesign.
- Some households simply don't know what's available, suggesting a need for education and outreach infrastructure designed to explain the accessibility of more effective, more efficient electric appliances and the benefits (lower costs, better indoor air quality) they bring.

- Income-constrained households may view high-efficiency, low-energy technology as out-of-reach luxuries.

Equitable decarbonization can expand our carbon-reduction efforts. Well-designed financial support programs and better education and outreach will play a central role in boosting adoption of energy-efficient technologies—but we’ll also need to invest in local leaders and organizations undertaking high-visibility projects that inspire their communities to dream bigger about what’s possible for themselves and the planet.



Photo by Luke Liu

2

PEOPLE & COMMUNITIES ON THE FRONT LINES



TRAUMA-INFORMED APPROACHES TO RESILIENT HOUSING

Lymaris Albors, *Acacia Network*

When Mayra Santiago returned to her home in the beautiful mountains of Caguas, Puerto Rico in the days after Hurricane Maria, she found it destroyed.

“When I arrived here with my girls, they didn’t want to come. I found a complete disaster and I said, *Wow*. What used to be our home, our castle, it now had so many walls torn down and it was so destroyed that we could no longer live there. There was really nothing I could do,” Mayra said.

Mayra’s family was one of tens of thousands displaced by Hurricane Maria in September 2017, one of the worst natural disasters in recorded history in the Caribbean. The National Oceanic and Atmospheric Administration estimates that the damage in Puerto Rico and the U.S. Virgin Islands from Maria reached \$90 billion, making it the third costliest hurricane in U.S. history.¹

1 Richard J. Pasch, Andrew B. Penny, and Robbie Berg, “Hurricane Maria (AL152017): 16-30 September 2017.” National Hurricane Center Tropical Cyclone Report. National Oceanic and Atmospheric Administration (NOAA). January 2023.

Mayra and her daughters had lost their home and belongings, but not their lives, unlike thousands of Puerto Ricans who perished during the storm and its aftermath.

The official death toll in Puerto Rico has stirred much debate, with the territory's government initially claiming only 64 deaths as a direct result of the disaster. However, a 2018 study from George Washington University's Milken Institute School of Public Health estimated that 2,975 fatalities occurred on the island due to Maria; a study in the *New England Journal of Medicine* set the toll above 4,600.²

Like Mayra, those who survived Maria coped with a grim aftermath: loss of loved ones, destruction of property, displacement, lack of access to basic resources and services, interruption of care, food insecurity, unemployment, and much more. Fear, anxiety, grief, depression, exacerbated medical conditions, and post-traumatic stress disorder (PTSD), among other conditions, have, for some, persisted to this day.

Rather than an isolated event, Hurricane Maria represents a signal of what is to come as climate-driven disasters become more widespread. With that in mind, Acacia Network, the organization I lead, partnered with organizations and agencies in Puerto Rico to develop a new housing prototype that can serve as a model for the future. It incorporates multiple features to ensure resilience in future climate-driven disasters, and its design adopts emerging ideas of comfort and healing for those who have experienced trauma.

THE EMERGENCE OF “ECO-ANXIETY”

In 2005, philosopher Glenn Albrecht coined the term “solastalgia,” which he defined as “the pain experienced when there is recognition that the place where one resides and that one loves is under immediate assault... a form of homesickness one gets when one is still at ‘home.’”³

2 Carlos Santos-Burgoa et al, “Ascertainment of the Estimated Excess Mortality from Hurricane María in Puerto Rico.” (Milken Institute School of Public Health. The George Washington University, August 2018); Nishant Kishore et al, “Mortality in Puerto Rico after Hurricane Maria,” *The New England Journal of Medicine* 379 (2) (2018).

3 Glenn Albrecht, “‘Solastalgia’: a new concept in health and identity.” *PAN: Philosophy, Activism, Nature* (3) (2005): 44-59. Available at https://bridges.monash.edu/articles/journal_contribution/Solastalgia_a_new_concept_in_health_and_identity/4311905.

The term “eco-anxiety” also began appearing in this context, with the American Psychological Association describing it as “a chronic fear of environmental doom.” In a 2010 interview with *The New York Times Magazine*, Albrecht called this anxiety “a global condition, felt to a greater or lesser degree by different people in different locations but felt increasingly, given the ongoing degradation of the environment.”

With the inescapable reality of worsening climate-driven disasters and heightened attention paid to it from news organizations and on social media, eco-anxiety and associated feelings of impending doom have become commonplace around the globe. A 2023 article in *The New York Times* titled “How Do We Feel About Global Warming? It’s Called Eco-Anxiety” highlighted the ripple effect of back-to-back climate disasters—floods, fires, and higher-than-normal temperatures, and other crises—across Europe.⁴

A study published in the *Yale Journal of Biology and Medicine*, “Eco-emotions and Psychoterratic Syndromes: Reshaping Mental Health Assessment Under Climate Change,” highlights the debilitating effects of recurrent natural disasters in disaster-prone areas. The authors wrote:

Each new disaster can reshape the psychological experience causing symptoms more quickly and more severely on the subsequent exposure; therefore, resulting in a repeated trauma, especially if there has not been enough time between events to recover or to prepare to face a new disaster, with effects also on a community and social level [...]. This kind of trauma is usually endured by the populations living in those areas most frequently exposed to extreme climate events, nevertheless, it can also affect those who did not have direct experiences of natural disasters but are particularly sensitive to climate change and hence tend to be influenced by the news and the worsening trends.

4 Jason Horowitz, “How Do We Feel About Global Warming? It’s Called Eco-Anxiety,” *The New York Times*, September 16, 2023. Available at www.nytimes.com/2023/09/16/world/europe/italy-greece-eco-anxiety.html.

The authors point out that “many practitioners are not adequately prepared to deal with eco-anxiety, even if they acknowledge that climate change is relevant for their field.” Thus, while access to mental health services, self-care, and other interventions may play a critical role in addressing eco-anxiety in individuals, we must increase our focus on adapting our built environment to minimize or reduce the catastrophic effects of natural disasters driven by a changing climate.

INCORPORATING GREEN DESIGN PRINCIPLES INTO DEVELOPMENTS

Climate change has exacerbated the severity and number of natural disasters globally. According to a 2021 report from National Public Radio, “Climate change has helped drive a fivefold increase in the number of weather-related disasters in the last 50 years... [and] these disasters are getting more severe... As a result, many people are dealing with what’s commonly referred to as ‘eco grief,’ a type of mental exhaustion that stems from accepting the harsh realities of climate change and feeling overwhelmed or hopeless.”⁵

Puerto Rico, a small island in the Greater Antilles covering 8,897 square kilometers or 3,435 square miles, offers a poignant case study of climate change and worsening disasters, particularly hurricanes. Historical accounts of hurricanes date as far back as the 1500s. The Taínos—the native people who inhabited Puerto Rico and neighboring islands at the time of the Spanish arrival in 1493—deified hurricanes, seeing “the great storms as a dangerous but creative cosmic force in the formation of their world.”⁶ In the early 1900s, Puerto Rican *jibaros* (or country folk) would build makeshift hurricane shelters—also known as *tormenteras*, *rancheras*, or *barracas*—so that families could take refuge during a storm.

Acacia Network has been addressing climate change by incorporating green design principles into our developments—from New York to Puerto Rico, from Buffalo to Manhattan, and from the mountains of Toa Alta to

5 Sharon Pruitt-Young. “Climate Change Is Making Natural Disasters Worse – Along With Our Mental Health,” *NPR*, September 11, 2021. Available at <https://www.npr.org/2021/09/11/1035241392/climate-change-disasters-mental-health-anxiety-eco-grief>.

6 Stuart B. Schwartz, “Sea of Storms: A History of Hurricanes in the Greater Caribbean from Columbus to Katrina.” (Princeton University Press, 2015).



Jibaro hurricane shelter (Edwin Roskam, 1938).

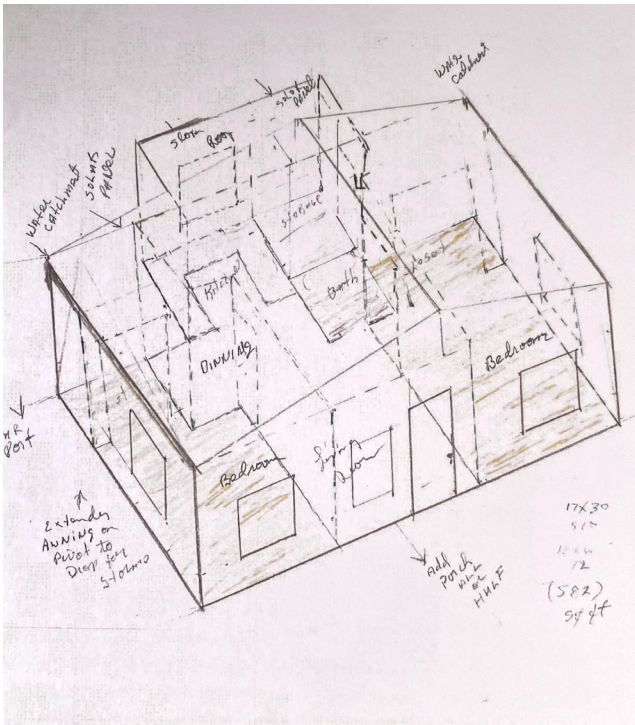
the urban center of Caguas. A large New York City-based human services organization, Acacia comprises 100-plus affiliates and related entities that, together, serve more than 150,000 individuals annually through integrated programs in housing, health, economic development, social services, and cultural revitalization.

Our roots trace back to the transformative work of Puerto Rican pioneers in the Bronx who made important contributions to the fields of behavioral health and addiction services, particularly in underserved Latino populations. In 2012, we solidified a permanent footprint in Puerto Rico through development of Palacio Dorado, an Energy Star-certified, affordable housing complex in Toa Alta that serves 100-plus low-income seniors. Following Maria, we expanded our presence through humanitarian and disaster-relief efforts, including delivery of needed supplies to devastated communities, hosting health fairs in hard-to-reach municipalities, and supporting community-based organizations to ensure they could continue providing critical services to those most in need.

Sleepless trips to Puerto Rico and travel around the island gave birth to a dream first sketched on a small piece of paper as Acacia Network’s president, Raul Russi, ruminated on the future of housing for the Island.

Born in 1945 in Barrio Apeadero—a neighborhood in the southeastern town of Patillas—Raul lived with his mother, father, and six siblings in a wooden home with a galvanized-steel roof, a common dwelling structure in the countryside even today. At the age of 11, he and his family migrated to Buffalo, NY. Raul had left Puerto Rico, but Puerto Rico never left him.

In 2018, while Acacia worked in Puerto Rico to deliver aid and to support local organizations, Raul reminisced about his birth-home and recalled the old *tormenteras* that served as improvised storm shelters. He began drawing on a napkin, at first trying to capture his memory of



Resilient Housing Prototype on a napkin, by Raul Russi (2018).

his grandfather's home. Later, Raul created an entirely new model of housing that, today, has become a reality. He envisioned a small single-family house, functional and well-organized, with each space designed to take best advantage of natural elements such as sunlight, prevailing winds, and rainwater. The house was meant to be light and airy—a home and a refuge built to hold up to the tests of time and weather.

In 2022, Mayra Santiago and her family moved into that house.

Mayra lives in one of two prototypes Acacia Network has developed in Caguas, a city of roughly 125,000 south of San Juan in Puerto Rico's Central Mountain Range. The prototype—modeled on Raul's vision and designed in partnership with Marvel Architects, based in New York City and Puerto Rico—includes an insulated concrete-panel system that is resistant to hurricanes and seismic events. The prototype uses passive design elements adapted to Puerto Rico's climate, with its intense heat waves and extreme weather events. Equipped with rooftop solar panels and a rainwater-collection system, the houses remain habitable even if the island loses power and access to potable water in a disaster.



Aerial view, Acacia Resilient Prototype Home.

The prototypes have already been put to the test. During Hurricane Fiona in 2022, neither lost power nor water, even when neighboring houses went dark.

But the Acacia Resilient Prototype Home represents far more than a model for housing in disaster-prone areas. It also serves as a model for trauma-informed architecture in the Caribbean.

WHY HOUSING DEVELOPERS SHOULD TAKE A TRAUMA-INFORMED APPROACH

The American Psychological Association defines trauma broadly as “any disturbing experience that results in significant fear, helplessness, dissociation, confusion, or other disruptive feelings intense enough to have a long-lasting negative effect on a person’s attitudes, behavior, and other aspects of functioning.” Trauma can affect someone of any race, ethnicity, country of origin, or socioeconomic status, but certain groups or communities can be more vulnerable as a result of previous exposure to risk factors such as poverty and housing insecurity; limited educational and workforce-development opportunities; easy access to drugs and alcohol; and a lack of activities and after-school support for young people, among other social and environmental challenges.

Many Puerto Ricans live below the federal poverty line, and some families live in a perpetual state of trauma. Figures from the Maternal and Child Health Bureau of the U.S. Health Resources & Services Administration (HRSA) put Puerto Rico’s 2018 poverty rate at 43 percent, compared to 13 percent for the mainland U.S. Close to 60 percent of children under 18 were living in poverty, according to the HRSA.⁷

Many families living in poverty, like Mayra’s, found the trauma of losing everything during Hurricane Maria almost unbearable—and further compounded by the socioeconomic and mental health crises that followed.

A 2020 study of community residents’ mental health following exposure to “community disaster trauma” found that natural disasters, such as Hurricane Maria, can cause “community-level traumatic reactions and

7 HRSA Maternal & Child Health, III.B. Overview of the State - Puerto Rico - 2021, available at <https://mchb.tvisdata.hrsa.gov/Narratives/Overview/2e093cb9-c703-4947-bcb9-14081b6a38a7>.

generate direct social and economic costs, [and the] mental health consequences of community trauma encompass a range of emotional, behavioral, and cognitive reactions that occur in various populations with the threat of disaster.”⁸ Further, the authors found that specific populations—women, children and teens, seniors, and individuals with preexisting trauma or behavioral health conditions—can prove especially susceptible to PTSD and other mental health challenges following a disaster.

The COVID-19 pandemic piled further stress on a population already at the brink of mental collapse. According to a study published in *Nature Medicine* in 2022, COVID-19 affected mental health on a global scale as shown by increased self-reporting of mental disorders and substance use, with some vulnerable groups—including women, seniors, adolescents and young adults, certain ethnic minority groups, and people living in poverty and/or suffering from pre-existing conditions—more susceptible than others. Not surprisingly, healthcare workers also experienced worsening mental health due to an increased workload and work-related stressors, including exposure to infections and death. Burnout, according to a 2022 study in *European Psychiatry*, “was already a relevant problem” in healthcare workers before the pandemic and since then has become “a growingly concerning phenomenon.”⁹

Understanding the broad implications of natural disasters and global epidemics for the mental health of vulnerable populations, such as Puerto Rico’s inhabitants, Acacia Network sought to focus resources on offering support in a few critical areas. These ranged from short-term solutions, such as humanitarian aid, to long-term strategies that would address more permanent needs, including resilient housing, mental health supports, and burnout prevention.

In 2022, for example, we launched a pilot program to address healthcare-worker burnout in Puerto Rico, made possible partly by the Promoting Resilience and Mental Health Among Health Professional Workforce program. The program awarded Acacia nearly \$3 million to support

8 Ju-Yeon Lee et al., “The Impact of Community Disaster Trauma: A Focus on Emerging Research of PTSD and Other Mental Health Outcomes,” *Chonnam Medical Journal* 56 (2) (2020): 99-107. Available at doi:10.4068/cmj.2020.56.2.99.

9 Claudia Aymerich et al., “COVID-19 Pandemic Effects on Health Worker’s Mental Health: Systematic Review and Meta-Analysis,” *European Psychiatry* 65 (1) (2022): e10. Available at doi:10.1192/j.eurpsy.2022.1.

healthcare workers in the Bronx through La Casa de Salud, our network of federally qualified health centers. Noting Puerto Rico's great need, we proposed using part of the grant, in collaboration with local agencies, to offer burnout prevention and mental wellness services to workers in island healthcare agencies. We have reached more than 5,000 workers to date with evidence-based preventive strategies, self-care routines, and brief psychological interventions while providing access to professional clinical support and technical assistance to partner organizations.

Our other critical focus, on the mainland and in Puerto Rico, has involved housing development for vulnerable groups, such as seniors and low-income families, using trauma-informed design principles that promote wellbeing and provide an environment conducive to healing and stability.

According to reporting in *Bloomberg* by Zach Mortice, "The rise of trauma-informed design in architectural discourse is likely linked to the other great public health threat of our age: Covid-19. Beyond underscoring the link between one's immediate environment and health, the pandemic was itself a mass trauma experience, bringing a tidal wave of death, illness, economic disruption and social isolation."¹⁰ Experts see recognizing potential traumatic history as essential to establishing physically and psychologically safe environments for the individuals served, an understanding broadly labeled a "trauma-informed" approach. Multiple fields, including behavioral-health sciences and social work, have adopted the term in recognition of trauma's capacity to alter a person's behaviors and responses and to acknowledge an individual's trauma without further exacerbating or stigmatizing it.

As a human-services provider working daily with underserved, at-risk communities, Acacia Network takes this approach to heart. We challenge our leaders and staff to take a trauma-informed approach to every aspect of our work—from the color we choose to paint our waiting-room walls and the artwork we display to the decision to interact with program participants in their own language.

10 Zach Mortice, "Buildings That Can Heal in the Wake of Trauma," *Bloomberg*, April 10, 2023. Available at www.bloomberg.com/news/features/2023-04-10/how-trauma-informed-design-can-create-healing-architecture.

In Puerto Rico, this meant developing our resilient-housing model not only to resist the impact of natural disasters and adapt to climate change, but also to provide an environment where families can heal and grow. In addition to sustainability features that protect the house from power or water loss in a natural disaster, our Caguas prototype features an airy design that maximizes natural light and cross ventilation to maintain a light and fresh interior, regardless of the surrounding cityscape. The prototype incorporates colors, interior and exterior, and tile work and patterns chosen to inspire tranquility and reflection. The home also features a patio and landscaping, reflecting relatively recent research that underscores the importance of greenery to mental wellbeing.

For Mayra and her family, the prototype proved life-changing. Receiving the keys to her new home—donated by the Municipality of Caguas, our partner for this project—felt like receiving a new lease on life, she said. “I feel blessed by this opportunity to now live here and have a home that has a solid foundation, a roof for myself, my daughters, and my grandchildren, and anyone else who would like to visit me is more than welcome.”

Our experiences as housing developers in Puerto Rico and other underserved regions, such as the Bronx, have taught us not only to remain abreast of new technologies and materials, but also to consider socio-cultural and behavioral challenges facing communities in disaster and trauma-prone areas. The future of housing development lives there.

LYMARIS ALBORS is the CEO of Acacia Network, a leading nonprofit provider of integrated health, housing, social services, economic development, and cultural revitalization programs. Leveraging her significant acumen in program management, capacity building, quality improvement, and strategy design, Lymaris is responsible for cultivating and expanding Acacia’s partnerships across the public, private, and nonprofit sectors to build on the organization’s legacy and carry forward its mission. In addition to her work at the helm of Acacia, Lymaris serves on the boards of the Legal Action Center, Casabe, and Blythedale Children’s Hospital.

MITIGATING THE FINANCIAL IMPACT OF ENERGY ON FAMILY BUDGETS ON THE PATH TO A CLEAN ENERGY FUTURE

Srinidhi Sampath-Kumar, *RMI*
Jamal Lewis, *Rewiring America*

The climate crisis is one of the most pressing issues facing the planet and our society. Households can help mitigate the impacts of the climate crisis and reduce emissions through the choices they make about what energy to use for appliances, heating, and transportation. Replacing systems and appliances with efficient electric ones, pursuing a decentralized grid of solar power and batteries, and shifting to electric vehicles can place the U.S. and the world on a path to zero emissions by 2050.

Fortunately, electric appliances have become vastly more efficient and healthier—and Americans are recognizing these advantages. We can see the evidence in the growing proportion of all-electric homes in every part of the U.S.,¹ record-high sales of electric vehicles,² and the sales

1 Maggie Woodward, “One in four U.S. homes is all electric,” *U.S. Energy Information Administration*, May 1, 2019. Available at www.eia.gov/todayinenergy/detail.php?id=39293.

2 Eric Wesoff and Dan McCarthy, “Chart: US EV sales are having a record-setting year,” *Canary Media*, November 17, 2023. Available at www.canarymedia.com/articles/electric-vehicles/chart-us-ev-sales-are-having-a-record-setting-year.

advantages offered for choosing heat pumps over gas furnaces.³ The path forward looks promising, but the adoption of electric technologies must still increase exponentially, most critically in marginalized communities, to ensure a just and equitable transition.⁴ The clean energy and electrification transition must ensure that everyone has access to its benefits, in contrast to a long history of leaving behind low-income and disadvantaged communities.

The upfront costs of electric appliances and equipment and its installation represent a key challenge. Electric appliances, vehicles, and decentralized energy sources can cost more than fossil-fuel-powered alternatives, presenting a barrier for low-income households that may lack the financial resources to make the switch to electric—particularly given that many of the same communities also face high housing and other economic and social burdens that impose competing needs and priorities.

Another challenge is that the benefits of electrification aren't always evenly distributed. Low-income households and communities of color may not see the same savings on their energy bills as households in newer, more energy-efficient houses and buildings. In fact, some low-income households may face higher electric bills after switching to electric appliances and equipment because they occupy older, less energy-efficient structures that require more energy to perform the same tasks.

As we move forward on the path to a clean energy future, we need to prioritize and promote an equitable transition that is affordable and attainable for all households.

THE DANGERS OF AN INEQUITABLE TRANSITION

The shift toward efficient electric appliances doesn't just benefit those who can make the transition. It also harms those who can't. Fossil fuels continue to pollute, affecting occupants' health. Pollutants from gas cause hazardous air pollution both indoors and out, degrading air quality, especially in communities that already face high pollution levels

3 Maria Virginia Olano, "Chart: Americans bought more heat pumps than gas furnaces last year," *Canary Media*, February 10, 2023. Available at www.canarymedia.com/articles/heat-pumps/chart-americans-bought-more-heat-pumps-than-gas-furnaces-last-year.

4 "Pace of Progress: Electrifying everything at the rate required to meet our climate goals." (Washington, DC: Rewiring America, November 2023). Available at <https://www.rewiringamerica.org/pace>.

and related poor health outcomes. In 2017 alone, combustion pollutants from buildings led to approximately 18,300 early deaths in the U.S. and \$205 billion in health impacts, according to an estimate by the Rocky Mountain Institute.⁵ Further, heat pumps both heat and cool homes, and cooling has increasingly become a necessity in the face of extreme heat, now the number-one weather-related cause of death in the U.S., claiming as many as 1,300 lives a year, according to the EPA.⁶

As more people switch to electric appliances, demand for fossil fuel-powered appliances decreases. That decline spreads the cost of fossil fuels across fewer customers, increasing the per-customer cost for those that are left to bear it. As per-customer cost for gas increases, electrification's value proposition becomes even more enticing. The result could create a significant and negative impact on those unable to electrify.

STRATEGIES FOR PROMOTING AN EQUITABLE TRANSITION

1. Lower the Upfront Costs of Electrification

An electrification transition is largely accessible only to wealthy households because of the higher upfront costs and replacement costs of efficient electric appliances and vehicles. Electric solutions also have a reputation as “luxuries” that are only affordable to the affluent. To make electrification more accessible, we need ways to lower the upfront costs of more effective energy and transportation choices, particularly in the cases of low-income renters and landlords. Low-income renters can't control when and how upgrades are made to their homes, and may face repercussions, such as rent increases and evictions, following such upgrades when landlords look to cover the costs. Additionally, a lack of financial reserves makes it more difficult for providers of rent-restricted multifamily housing, who often operate at a deficit, to invest in energy upgrades. Existing housing-financing structures also make it challenging to pursue such upgrades.

The Inflation Reduction Act (IRA) created a tremendous resource to address the upfront costs of electrification, providing at least \$57 billion

5 Brady Seals and Leah Louis-Prescott, “Uncovering the Deadly Toll of Air Pollution from Buildings,” *RMI*, May 2021. Available at <https://rmi.org/uncovering-the-deadly-toll-of-air-pollution-from-buildings/>.

6 “Climate Change Indicators: Heat-Related Deaths,” *United States Environmental Protection Agency*, August 2022. Available at www.epa.gov/climate-indicators/climate-change-indicators-heat-related-deaths.

to support electrification of low-income and disadvantaged communities.⁷ The IRA includes \$4.5 billion in point-of-sale appliance and electrification rebates; tax credits for heat pumps and heat-pump water heaters; \$7,500 tax credits for the purchase of an electric vehicle; \$1 billion for energy-efficiency, electrification, and resilience upgrades in affordable multifamily properties; and significant funding for household and community solar. While the IRA stands as a significant step forward in making electrification accessible, ensuring that low-income households have the opportunity to electrify their homes will require more funding. A plausible average appliance and electrification rebate of \$10,000 means this funding can reach roughly 450,000 low- and moderate-income (LMI) households across the country. That represents just a fraction of LMI households in the U.S.

Additional state and local funding can play a significant role in closing the gaps that prevent low-income households from electrifying their homes. States across the U.S. have recognized the need to invest in rebates for efficient building electrification. Minnesota has passed a bill that includes \$13 million in electric heat pump rebates and \$15.7 million in electric vehicle rebates for low-income households. The District of Columbia council has also established a low-income electrification program. In New Jersey, the Board of Public Utilities has approved a \$348 million building-decarbonization program that provides upfront discounts for electrification.⁸ California has invested about \$900 million in an equitable building-decarbonization program that will capitalize on IRA rebates for weatherization and electrification.⁹ Such investments represent essential steps in securing an equitable transition to clean energy.

Similarly, utility investments can make a major difference in access to both home weatherization and electrification. Utilities across the U.S. have slowly increased spending on building electrification programs,

7 Jamal Lewis et al., “The Inflation Reduction Act of 2022: Investments for Disadvantaged Communities,” *Rewiring America*, August 5, 2022. Available at <https://content.rewiringamerica.org/reports/IRA%20Benefits%20to%20Disadvantaged%20Communities.pdf>.

8 State of New Jersey Board of Public Utilities, “8C Order Second Triennium,” July 26, 2023. Available at www.nj.gov/bpu/pdf/boardorders/2023/20230726/8C%20ORDER%20Second%20Triennium.pdf.

9 California Energy Commission, *Equitable Building Decarbonization Program*, available at www.energy.ca.gov/programs-and-topics/programs/equitable-building-decarbonization-program.

with a majority of existing programs funding heat-pump space heating.¹⁰ However, utilities can both increase investments in building-electrification specifically for low-income households and make it part of their Integrated Resource Plans to increase the scope of building electrification and to help ensure long-term funding. Colorado, for instance, recently required utilities to file Clean Heat Plans that offer beneficial electrification programs to reduce greenhouse gas production.¹¹ Utilities in California have proposed innovative on-bill financing models to address gaps.

2. Address Housing Quality and Conditions

A long history of disinvestment has created high demand for limited housing supply in low-income communities and Black and Latino communities, increasing prices and decreasing quality. Poor housing quality makes it more difficult to electrify communities, as older, energy-inefficient homes with structural deficiencies, outdated appliances, and faulty energy systems may not be able to support modern appliances and equipment. Additionally, low-income households in these communities may not have the financial resources to make the necessary upgrades. Many utility programs also require abatement of lead, asbestos, and other health hazards before their programs can weatherize homes. Holistically upgrading lower-income homes by addressing health, efficiency, solar, and storage needs provides long-term benefits to disadvantaged and climate-vulnerable communities, including seniors and those with disabilities. It also saves money on avoided healthcare costs that households can use for other necessities.

Funding should specifically target health and safety issues and pre-electrification measures. Several agencies are recognizing this need and addressing it either through funding or mandates. In 2022, Congress gave the Department of Energy the authority to launch a Weatherization Readiness Fund;¹² Pennsylvania established the Whole Home Repairs Program that

10 Charlotte Cohn and Nora Wang Efram, “Building Electrification: Programs and Best Practices.” (Washington, DC: ACEEE, February 2022). Available at www.aceee.org/sites/default/files/pdfs/b2201.pdf.

11 Adopt Programs Reduce Greenhouse Gas Emissions Utilities, SB21-264, 2021 Regular Session, Colorado General Assembly. Available at <https://leg.colorado.gov/bills/sb21-264>.

12 “Weatherization Program Notice 23-4.” (Washington, DC: Department of Energy, January 27, 2023). Available at www.energy.gov/sites/default/files/2023-01/WPN_23-4_Weatherization_Readiness_Funds_Expansion_of_Scope.pdf.

same year;¹³ New Jersey launched a Whole House pilot in 2022;¹⁴ and in July 2023, Maryland launched a Comprehensive Energy Efficiency Retrofits Pilot.¹⁵ Several state Medicaid offices have also expanded the use and eligibility of their funds to remediate asthma, lead, and fall hazards, improving the overall quality of low-income housing.¹⁶ Some states have sought to use these funds to improve weatherization and provide cooling appliances. Further, many affordable housing programs also address health and comfort issues. The Low-Income Housing Tax Credit (LIHTC) offers a critical resource for creating and preserving affordable rental housing for low-income U.S. households. States set the regulations for the tax credits through their Qualified Allocation Plans (QAPs). Many state QAPs require affordable housing developments to meet lead-mitigation, water-efficiency, energy-efficiency, and renewable-energy goals to receive the tax credits.¹⁷¹⁸ Massachusetts provides additional points for meeting passive house standards,¹⁹ while Maryland has mandated all-electric new construction through its tax credit regulation.²⁰

Electrification coupled with weatherization and solar power can help lower-income households reduce energy burdens significantly and improve

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- 13 Pennsylvania Department of Community and Economic Development, *COVID-19 ARPA Whole-Home Repairs Program*, available at <https://dced.pa.gov/programs/covid-19-arpa-whole-home-repairs-program/>.
 - 14 “New Jersey Board of Public Utilities Launches ‘Whole House’ Pilot Program in Trenton.” Press release (Trenton, NJ: State of New Jersey Board of Public Utilities, September 26, 2022), available at www.nj.gov/bpu/newsroom/2022/approved/20220926.html.
 - 15 “Governor Moore Announces \$4 Million Comprehensive Energy Efficiency Retrofits Pilot Program.” Press release (Annapolis, MD: Maryland Department of Housing and Community Development, July 25, 2023), available at <https://news.maryland.gov/dhcd/2023/07/25/governor-moore-announces-4-million-comprehensive-energy-efficiency-retrofits-pilot-program/>.
 - 16 Green & Healthy Homes Initiative, “Reimbursement Strategies for Healthy Homes Services,” November 2022. Available at www.greenandhealthyhomes.org/publication/reimbursement-strategies-for-healthy-homes-services/.
 - 17 Green & Healthy Homes Initiative, “Lead Funding Toolkit,” available at www.greenandhealthyhomes.org/wp-content/uploads/Lead-Funding-and-Financing-Toolkit-5-29-19_final.pdf.
 - 18 “2020 Report Update: NHT Finds More States Incentivized Energy and Water Efficiency In 9 Percent LIHTC Properties,” *National Housing Trust*, March 25, 2021. Available at <https://nationalhousingtrust.org/news/2020-report-update-nht-finds-more-states-incentivized-energy-and-water-efficiency-9-percent>.
 - 19 Commonwealth of Massachusetts Department of Housing and Community Development, “Low Income Housing Tax Credit Program: 2022-2023 Qualified Allocation Plan.” Available at www.mass.gov/doc/2022-2023-qap/download.
 - 20 “Multifamily Rental Financing Program Guide: Attachment to Maryland Qualified Allocation Plan for the Allocation of Federal Low Income Housing Tax Credits.” (Lanham, Maryland: Maryland Department of Housing and Community Development, September 21, 2023). Available at <https://dhcd.maryland.gov/HousingDevelopment/Documents/rhf/2023MRFP-Guide.pdf>.

health and thermal comfort. Weatherization can reduce energy use by 25 to 35 percent; it reduces the energy burden for low-income households by an estimated 25 percent.²¹ Further, electric-efficiency programs funded by utilities have avoided more than \$430 million in yearly health costs, by one estimate.²² The Federal Weatherization Assistance Program estimates that for every \$1 spent, program-funded improvements in low-income homes have created \$4.50 in energy- and non-energy benefits.²³ This makes weatherization and energy efficiency much-needed investments and crucial policy levers for addressing energy costs in low-income households.

While utility investments toward energy efficiency have increased, at the existing level of investment it would take 59 years to provide average energy-efficiency services to reach all low-income households—and even longer for more comprehensive measures that would reduce greenhouse gas emissions.²⁴ In addition, solar energy can help to reduce electricity bills. Solar panels generate free electricity that can help offset electricity costs. This benefits low-income households especially; they often spend a disproportionate share of income on energy costs. The District of Columbia’s Solar for All program aims to pair solar installations (both rooftop and community solar) with electrification to maximize health and financial benefits for low-income households.

3. Reduce the Financial Burden of Electricity Costs

Many low-income households, especially Black, Latino, and Native American households, cannot meet household energy needs. This reality existed prior to and was exacerbated by the COVID-19 pandemic. Energy burden—the percentage of gross income spent on energy costs—runs three times higher for low-income households than other households.²⁵

21 Ariel Dreihobl, Lauren Ross, and Roxana Ayala, “How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burdens across the U.S.” *ACEEE*, September 10, 2020. Available at www.aceee.org/research-report/u2006.

22 Energy Efficiency Report, *Co-Benefits with Energy Savings*, available at <https://energyefficiencyimpact.org/co-benefits-with-energy-savings/>.

23 US Department of Energy Office of Energy Efficiency and Renewable Energy, “Weatherization Assistance Program Fact Sheet.” (Washington, DC: U.S. Department of Energy, January 2021). Available at www.energy.gov/sites/default/files/2021/01/f82/WAP-fact-sheet_2021_0.pdf.

24 “Report: Despite Progress, Low-Income Households Underserved by Utilities’ Efficiency Programs.” Press release (Washington, DC: ACEEE, November 18, 2022), available at www.aceee.org/press-release/2022/11/report-despite-progress-low-income-households-underserved-utilities.

25 Ariel Dreihobl, Lauren Ross, and Roxana Ayala, “How High Are Household Energy Burdens.”

Nearly 25 percent of U.S. households face a high energy burden.²⁶ Many have to contend with competing expenses, mainly housing and food costs, a dilemma so common that it has its own term: “eat or heat.” In addition, many low-income homes lack insulation, heating and cooling equipment, back-up power, and other basic habitability requirements.²⁷ Yet access to heating and cooling appliances doesn’t necessarily translate to their use. Many households won’t use them for fear of significant utility bill increases, especially if homes are energy inefficient and lack insulation. For households that already experience high energy burdens, electrification looks particularly unfathomable if it will make utility bills rise even further. To make electrification equitable, utility bills cannot rise for the most energy-burdened households.

Energy-affordability policies reduce the financial burden of energy costs on households and often help avoid utility disconnections. A variety of measures ease the burden, including financial-assistance programs, progressive rate structures, transparency around disconnection rates and policies, and holistic retrofit programs that include weatherization and solar.

Financial assistance programs can take the form of utility bill discounts, percentage of income payment plans (PIPPs), or utility bill assistance—all of which can advance equitable electrification. Utility bill discounts help households afford their bills by reducing the cost of service. PIPPs can help to make electric bills more affordable for low-income households over time, by allowing them to pay their energy bills based on a percentage of their income. Utility bill assistance often refers to financial assistance from government agencies that can help low-income households to afford their energy costs by covering all or part of their utility bills.

Rising utility costs, coupled with increased economic burden owing to the COVID-19 pandemic, has increased utility shut-offs and disconnections at an alarming rate.²⁸ This is particularly true for gas utility shut-offs, which

26 Ibid.

27 “Lights Out in the Cold: Reforming Utility Shut-Off Policies As If Human Rights Matter.” (Baltimore, MD: NAACP, March 2017). Available at <https://naacp.org/resources/lights-out-cold>.

28 Selah Goodson Bell et al., “Powerless in the United States: How Utilities Drive Shutoffs and Energy Injustice.” (Center for Biological Diversity, Energy and Policy Institute, and BailoutWatch). Available at www.biologicaldiversity.org/programs/energy-justice/pdfs/Powerless-in-the-US_Report.pdf?_gl=1*_1tg53h3*_gcl_au*ODYyMTc5MDQuMTY5OTExMTA3OA.

have seen a yearly increase from 2021 to 2022 of 75 percent, primarily because of sharp increases in cost.²⁹ Utility moratoriums that were in place during 2020 were lifted in 2021, leading to a surge in disconnections. However, several studies point to the life-saving benefits of utility moratoriums. According to one study, a national moratorium on utility shut-offs would have reduced COVID-19 deaths by almost 15 percent.³⁰ Many states, like Colorado, already mandate disconnection freezes during peak winter. With increasing extreme heat, such protections are needed during summer as well. Similarly, in the longer-term utilities should be required to include beneficial electrification, solar, and other efficiency programs into their integrated resource plan to ensure that lower-income residents are not facing severe price shifts owing to fossil-fuel gas price volatility.

Rate reform is another way to make electric bills more affordable after electrification. This can be done by changing the way that electricity rates are structured. For example, utilities can offer lower rates to low-income households or to households that have recently switched to electric appliances. A low-income rate is a special electricity rate that is only offered to households that meet certain income requirements. An electrification rate is a special electricity rate that is only offered to households that have recently switched from fossil fuel appliances to electric appliances. Time-of-use rates give customers lower rates for using electricity during off-peak hours. Some states also offer net energy metering rates for residential customers on solar so they can reap monetary benefits when exporting power to the grid.

4. Protect Vulnerable Customers From Rising Fossil Fuel Costs

Equitable electrification is not just about making sure that low-income households and disadvantaged communities can afford to electrify, but also about making sure that no household is burdened by rises in fossil fuel costs. With planned and projected increases in electrification, maintaining gas distribution infrastructure is going to be expensive and passed on to the few customers that are left behind.

29 Selah Goodson Bell et al., “Powerless in the United States: How Utilities Drive Shutoffs and Energy Injustice.” (Center for Biological Diversity, Energy and Policy Institute, and BailoutWatch). Available at www.biologicaldiversity.org/programs/energy-justice/pdfs/Powerless-in-the-US_Report.pdf?_gl=1*_1tg53h3*_gcl_au*ODYyMTc5MDQuMTY5OTExMTA3OA.

30 National Low Income Housing Coalition, “Eviction and Utility Disconnection Moratoriums Led to Fewer COVID-19 Cases and Deaths,” available at <https://nlihc.org/resource/eviction-and-utility-disconnection-moratoriums-led-fewer-covid-19-cases-and-deaths>.

Gas infrastructure spending, such as the construction of new pipelines and the maintenance of existing ones, can have a significant impact on rate-payer costs. When utilities invest in gas infrastructure, they are allowed to pass the costs of those investments on to their customers in the form of higher rates. This is because utilities are regulated monopolies, which means they are the only providers of gas service in their service areas. As a result, customers have no choice but to pay the higher rates.

As an example, an analysis by the Maryland Office of People’s Counsel found that Maryland’s gas utilities are projected to spend over \$34 billion in gas infrastructure investments between 2022-2100, resulting in an estimated 40-56 percent increase in residential customer gas bills by 2035 and an estimated 44-90 percent increase by 2050.³¹ State regulators in Minnesota, New York, Colorado, California, and Massachusetts are using these types of projections to initiate gas infrastructure planning dockets with the goal of avoiding costly gas infrastructure investments and transitioning to zero-emission energy sources. In an American Council for an Energy-Efficient Economy (ACEEE) study that assessed various electrification scenarios, average gas utility costs per customer were projected to increase between approximately 20 percent and 130 percent.³² Even in a scenario with minimum pipeline replacement, utility costs per customer ranged from an increase of 15 percent upward. The utility costs per customer could increase to about 106 percent if many older gas pipes are replaced, a more likely scenario.

The aging gas infrastructure also poses other challenges, such as potential fire and explosions, especially in areas that are already socially vulnerable.³³ Gas infrastructure is also vulnerable to climate extremes, leading to shut-offs during times of critical need, especially for seniors and other

31 “Maryland Gas Utility Spending Projections and Analysis.” (Baltimore, MD: Office of People’s Counsel of Maryland, October 2022). Available at https://opc.maryland.gov/Portals/0/Files/Publications/Reports/Report%20on%20GasUtilitySpending%2010-5-22%20Final%201.pdf?ver=H7iKuRlCfblodFSE_nclhw%3d%3d.

32 Steven Nadel, “Impact of Electrification and Decarbonization on Gas Distribution Costs.” (Washington, DC: ACEEE, June 6, 2023). Available at www.aceee.org/research-report/u2302.

33 Ryan E. Emanuel et al., “Natural Gas Gathering and Transmission Pipelines and Social Vulnerability in the United States,” *GeoHealth* 5 (6) (2021). Available at <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2021GH000442>.

medically vulnerable households.³⁴ Similarly, increasing pipeline leaks also require ongoing maintenance that leads to frequent shut-offs.³⁵ Gas system shut-offs are also time-consuming to restore. Given these conditions, electrification can reduce risks and vulnerabilities both on a day-to-day basis and, critically, during extreme weather events. Gas transition planning is needed to ensure a smooth and equitable adjustment to a clean energy future.

The transition to clean energy must be done in a way that is equitable and affordable for all households. By lowering the upfront costs of electrification, addressing housing quality and conditions, ensuring that utility bills are affordable, and protecting low-income gas customers from rising gas costs and utility disconnection policies, we can help ensure that everyone benefits from the transition to clean energy.

34 Rachel Golden, “Building Electrification Action Plan for Climate Leaders.” (Sierra Club, December 2019). Available at www.sierraclub.org/sites/default/files/Building%20Electrification%20Action%20Plan%20for%20Climate%20Leaders.pdf.

35 Yu Ann Tan and Bomee Jung, “Decarbonizing Homes: Improving Health in Low-Income Communities through Beneficial Electrification.” (RMI, 2021). Available at <https://rmi.org/insight/decarbonizing-homes/>.

SRINIDHI SAMPATH KUMAR oversees RMI’s West Coast building decarbonization campaigns and federal affordable housing policy. She has extensive efficiency and electrification program implementation experience. As part of several coalitions, she has advanced tenant protection and community resiliency policies. She currently serves on the Board for USGBC Northern California.

JAMAL LEWIS is director of state and local policy for the Mid-Atlantic and South at Rewiring America and works to promote equitable electrification policies and programs. Previously, he was Director of Energy, Climate, and Health at the Green & Healthy Homes Initiative. He is a graduate of Columbia University with a master’s in public health, University of Pennsylvania with a bachelor of arts, and the Clean Energy Leadership Institute (2021 DC Cohort).

CLIMATE AND HEALTH: GLOBAL CHALLENGES AND LOCAL SOLUTIONS

Maggie Super Church, *Massachusetts Community Climate Bank*

“It is impossible to have healthy people on a sick planet,” Shweta Narayan, Global Climate and Health Campaigner for Health Care Without Harm, said recently. “The blatant disregard for the environment, which is entrenched in our current economic and social models, has pushed the natural world to its limits.”¹

We can see it clearly: Climate risk is now linked to health risk in every corner of the globe. Communities that already suffer from myriad health issues are facing increased threats from flooding, wildfire, extreme heat, drought, infectious disease, and food insecurity.² Further, the disruption and damages caused by climate change have cascading impacts on physical and mental health, including increased exposure to conflict and violence.³ While the

1 Maayan Hoffman, “‘Impossible to Have Healthy People on a Sick Planet’: Fighting Back Against Air Pollution,” *Health Policy Watch*, June 20, 2023. Available at <https://healthpolicy-watch.news/impossible-to-have-healthy-people-on-a-sick-planet-fighting-back-against-air-pollution>.

2 Marina Romanello et al., “The 2022 report of the Lancet Countdown on health and climate change: health at the mercy of fossil fuels,” *Countdown 400* (10363) (2022): 1619-1654. Available at [https://doi.org/10.1016/S0140-6736\(22\)01540-9](https://doi.org/10.1016/S0140-6736(22)01540-9).

3 Ibid.

sheer scale of these challenges can feel overwhelming, the convergence of climate and health risks at the local level creates a clear imperative for joint action across sectors.

MOBILIZING RESOURCES FOR CLIMATE AND HEALTH

Reducing or eliminating greenhouse gas emissions from all sectors of the economy (often referred to as “decarbonization”) is essential to combating climate change. Decarbonization will also create near-term benefits for public health by cutting toxic air pollution. The United States is poised to make unprecedented investments in decarbonization over the coming decade. The Inflation Reduction Act (IRA) and Bipartisan Infrastructure Law (BIL) provide an estimated \$370 billion dollars in federal funding to facilitate the clean energy transition, representing the largest climate and clean energy investment in U.S. history.⁴ The BIL also includes more than \$50 billion for climate-resilient infrastructure to help communities withstand the impacts of climate change.⁵ In addition to cutting greenhouse gas emissions, these investments hold great promise for improving health, particularly in low-income communities and communities of color on the front lines of the climate crisis.

The health sector also has enormous resources that can be harnessed for reducing emissions and increasing climate resilience. Medicaid spending alone,⁶ which provides health coverage and long-term services and support for low-income residents in the United States, totaled \$734 billion in fiscal year 2021. Medicaid offers several pathways for investing in Social Drivers of Health (SDoH). For example, Section 1115 waivers⁷ give states flexible funding for pilot projects to address a range of community needs, including housing, food, and transportation. Recently, the Centers for Medicare and Medicaid Services approved a California proposal that

4 Justin Badlam et al., “The Inflation Reduction Act: Here’s what’s in it,” *McKinsey and Company*, October 24, 2022. Available at www.mckinsey.com/industries/public-sector/our-insights/the-inflation-reduction-act-heres-whats-in-it.

5 Georgetown Climate Center, *Resilience in the Infrastructure Investment and Jobs Act (IIJA)*, available at www.georgetownclimate.org/adaptation/toolkits/resilient-infrastructure-investments/what-funding-opportunities-does-iija-offer-for-building-resilience-across-sectors.html.

6 Centers for Medicare and Medicaid Services, *National Health Expenditure Factsheet*, KFF, available at <https://www.cms.gov/data-research/statistics-trends-and-reports/national-health-expenditure-data/nhe-fact-sheet>.

7 Medicaid.gov, *About Section 1115 Demonstrations*, available at www.medicaid.gov/medicaid/section-1115-demonstrations/about-section-1115-demonstrations/index.html.

will allow the state to pay for non-medical services in lieu of standard Medicaid benefits without a waiver. This includes proven interventions for addressing drivers of health, such as providing asthma remediation in the home, nutritious and medically tailored meals, and other community supports.⁸ Additionally, seven states now have community reinvestment requirements for commercial health insurers who hold Medicaid managed care contracts.⁹ Hospitals can also promote healthy and resilient communities through their facilities, workforce, contract services, and investment portfolio.¹⁰ In Massachusetts, for example, hospitals that are proposing to build new facilities are required to set aside funding for community projects in consultation with local residents as part of the state's Determination of Need program.¹¹

HEALTH RISKS FROM POOR AIR QUALITY AND EXTREME WEATHER

When looking at the current state of climate change, it's clear just how important mobilization of resources will be for addressing health risks. Research has found that air pollution from fossil fuels is responsible for more than 350,000 deaths per year in the U.S., more than all deaths from drug overdoses, guns, and motor vehicle crashes combined.¹² Burning fossil fuels releases chemicals and fine particulates into the air that increase the risk of cancer, cardiovascular and respiratory disease, diabetes, obesity, and reproductive, neurological, and immune system

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- 8 Cindy Mann and Dori G. Reyneri, "New Policy Opens the Doors for States to Address Drivers of Health in Medicaid," *The Commonwealth Fund*, April 19, 2022. Available at www.commonwealthfund.org/blog/2022/new-policy-opens-door-states-address-drivers-health-medicaid.
 - 9 Jeremy Cantor, Patricia E. Powers, and Anupam Sharma "Medicaid Reinvestment Requirements Can Improve Community Health And Equity," *HealthAffairs*, May 10, 2023. Available at www.healthaffairs.org/content/forefront/medicaid-reinvestment-requirements-emerging-strategy-improve-community-health-and.
 - 10 Robin Hacke and Katie Grace Dean "Improving Community Health by Strengthening Community Investment." (Center for Community Investment, March 2017). Available at <https://www.rwjf.org/en/insights/our-research/2017/03/improving-community-health-by-strengthening-community-investment.html>.
 - 11 MAHealthFunds.org, *Massachusetts Community Health & Healthy Aging Funds*, available at <https://mahealthfunds.org/>.
 - 12 Harvard T.H. Chan School of Public Health, "Fossil fuel air pollution responsible for 1 in 5 deaths worldwide," February 9, 2021. Available at www.hsph.harvard.edu/c-change/news/fossil-fuel-air-pollution-responsible-for-1-in-5-deaths-worldwide/.

disorders.¹³ The health impacts of air pollution are especially acute in lower-income communities and communities of color.¹⁴ A 2021 study by researchers at Duke University found that over the next 50 years, emissions reductions required to keep global average temperatures to the 2°C pathway (the upper limit of international climate agreements) would prevent roughly 4.5 million premature deaths, about 1.4 million hospitalizations and emergency room visits, and approximately 300 million lost workdays in the U.S.¹⁵

Climate change is also contributing to increased frequency and severity of wildfires,¹⁶ which further exacerbate poor air quality and disproportionately impact vulnerable communities.¹⁷ Over the past decade in the U.S., the number of people living in areas with unhealthy air at least one day per year increased from less than half a million to over eight million.¹⁸ In June 2023, more than one-third of the U.S. population was under an air quality alert from wildfire smoke.¹⁹ The health impacts of wildfire smoke are immediate and severe; during the 2007 wildfires in San Diego, emergency department visits for asthma went up 73 percent following a

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- 13 National Institute of Environmental Health Sciences, *Air Pollution and Your Health*, available at www.niehs.nih.gov/health/topics/agents/air-pollution/index.cfm.
 - 14 Harvard T.H. Chan School of Public Health, “Racial, ethnic minorities and low-income groups in U.S. exposed to higher levels of air pollution.” Press release (Boston, MA: January 12, 2022), available at www.hsph.harvard.edu/news/press-releases/racial-ethnic-minorities-low-income-groups-u-s-air-pollution/.
 - 15 Drew Shindell et al., “Temporal and spatial distribution of health, labor, and crop benefits of climate change mitigation in the United States,” *PNAS* 118 (46) (2021). Available at www.pnas.org/doi/10.1073/pnas.2104061118.
 - 16 National Oceanic and Atmospheric Administration, *Wildfire climate connection*, available at www.noaa.gov/noaa-wildfire/wildfire-climate-connection#.
 - 17 Brooke Lappe and Jason Vargo, “Disruptions from Wildfire Smoke: Vulnerabilities in Local Economies and Disadvantaged Communities in the U.S.” (Federal Reserve Bank of San Francisco Community Development Research, 2022). Available at www.frbsf.org/community-development/publications/community-development-research-briefs/2022/november/disruptions-from-wildfire-smoke/.
 - 18 Josie Garthwaite, “Stanford researchers find wildfire smoke is unraveling decades of air quality gains, exposing millions of Americans to extreme pollution levels,” *Stanford News*, September 22, 2022. Available at <https://news.stanford.edu/2022/09/22/wildfire-smoke-unraveling-decades-air-quality-gains/>.
 - 19 Aditi Sangal, Mike Hayes, and Holly Yan, “Millions under air quality alerts in the US due to Canadian wildfire smoke,” *CNN*, June 28, 2023. Available at www.cnn.com/us/live-news/canada-wildfire-smoke-air-quality-06-28-23/index.html.

day designated as “unhealthy for sensitive populations” using the United States EPA’s Air Quality Index.²⁰

Extreme heat is a related and growing health threat,²¹ with older adults, the very young, and people with mental illness and chronic disease at greatest risk.²² Extreme heat was the leading cause of weather-related deaths in the U.S. over a thirty-year period from 1991 to 2020²³ and average annual heat-related deaths increased by 95 percent from 2010 to 2022.²⁴ People experiencing homelessness are especially vulnerable to heat-related deaths, which have been estimated to account for half of all heat deaths nationally.²⁵ In 2023, states with the highest temperatures have already seen heat-related hospitalizations surge up to 51 percent higher than the average seen since 2018.²⁶

Heat poses the greatest health risk to urban dwellers due to the heat island effect, as temperatures in cities rise more quickly and drop more slowly. In the U.S., approximately 41 million people live in urban areas where temperatures are at least 8 degrees hotter than surrounding rural areas, according to the nonprofit research group Climate Central.²⁷ Within cities, low-income and formerly redlined neighborhoods typically

20 JA Hutchinson, et al., “The San Diego 2007 wildfires and Medi-Cal emergency department presentations, inpatient hospitalizations, and outpatient visits: An observational study of smoke exposure periods and a bidirectional case-crossover analysis,” *PLOS Medicine* 15 (7) (2022). Available at <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002601>.

21 Alan Buis, “Too Hot to Handle: How Climate Change May Make Some Places Too Hot to Live,” *Ask NASA Climate*, March 9, 2022. Available at <https://climate.nasa.gov/explore/ask-nasa-climate/3151/too-hot-to-handle-how-climate-change-may-make-some-places-too-hot-to-live/>.

22 Centers for Disease Control and Prevention, About Extreme Heat. available at www.cdc.gov/disasters/extremeheat/heat_guide.html.

23 Buis, “Too Hot to Handle.”

24 Oliver Milman, “‘Silent killer’: experts warn of record US deaths from extreme heat,” *The Guardian*, August 1, 2023. Available at www.theguardian.com/us-news/2023/aug/01/heat-related-deaths-us-temperatures-heatwave.

25 Anita Snow, “Extreme heat can be deadly for people who are homeless,” *Associated Press*, June 20, 2022. Available at www.pbs.org/newshour/nation/extreme-heat-can-be-deadly-for-people-who-are-homeless.

26 Oliver Milman, “Silent killer.”

27 Climate Central, *Urban Heat Spots*, available at www.climatecentral.org/climate-matters/urban-heat-islands-2023.

experience the most intense levels of heat, contributing to spikes in emergency calls and hospitalizations.²⁸

From 1980 to 2020, the U.S. saw a sevenfold increase in billion-dollar climate disasters, primarily driven by increases in severe storms, tropical cyclones, wildfires, and flooding.²⁹ Increased climate risk is now driving major insurers to pull out of large areas of the country that have been hardest hit, including California, Florida, and Louisiana.³⁰ The health impacts of these climate disasters are wide-ranging, including respiratory and cardiovascular disease, exposure to food and waterborne illness and other infectious diseases, poor mental health, injury, and premature death, according to the Centers for Disease Control and Prevention.³¹ The health and financial risks are even more significant for low- and moderate-income homeowners and renters who are unable to get insurance coverage and cannot afford to rebuild their homes.

A HEALTHY HOME IS THE FIRST LINE OF DEFENSE FOR BETTER HEALTH

For households that suffer from poor indoor air quality due to water penetration, mold, pests, and other environmental toxins in the home, there are few places to go for relief from air pollution and extreme heat. Poorly insulated homes and outdated, inefficient appliances also increase utility costs, adding financial burdens on top of health risks.

Numerous studies have documented the health benefits of weatherization and home energy efficiency improvements.³² Health and safety improve-

28 Meg Anderson, “Racist Housing Practices From The 1930s Linked To Hotter Neighborhoods Today,” *NPR*, January 14, 2020. Available at www.npr.org/2020/01/14/795961381/racist-housing-practices-from-the-1930s-linked-to-hotter-neighborhoods-today.

29 Adam Smith, Neal Lott, and Tom Ross, “U.S. Billion-Dollar Weather & Climate Disasters 1980-2023.” (NOAA National Centers for Environmental Information, 2023). Available at www.ncei.noaa.gov/access/billions/events.pdf.

30 Chris Isidore and Ella Nilsen, “Why it’s becoming harder and more expensive to get homeowners insurance,” *CNN Business*, June 19, 2023. Available at www.cnn.com/2023/06/19/business/homeowners-insurance-more-expensive-climate/index.html.

31 Centers for Disease Control and Prevention, *Climate Effects on Health*, available at www.cdc.gov/climateandhealth/effects/default.htm.

32 Jonathan Wilson et al., “Home RX: The Health Benefits of Home Performance.” (Columbia, Maryland: National Center for Healthy Housing (NCHH), (2016). Available at www.energy.gov/sites/default/files/2016/12/f34/Home%20Rx%20The%20Health%20Benefits%20of%20Home%20Performance%20-%20A%20Review%20of%20the%20Current%20Evidence.pdf.

ments in the home can also generate significant health care cost savings.³³ While fewer studies have been conducted on the health benefits of electrification alone, the use of heat pumps for both heating and air conditioning can limit exposure to high heat and associated health risks, including cramps, exhaustion, and heat stroke.³⁴ Replacing gas stoves with induction cooktops can also reduce exposure to air pollution in the home.³⁵

A coordinated and comprehensive “whole house” approach that includes home repairs, equipment upgrades, and electrification holds great promise for simultaneously improving health and cutting emissions. One leading example is the Green and Healthy Homes Initiative (GHHI), which started as a grassroots group working to eliminate childhood lead poisoning in Baltimore in the 1980s. In 2008, GHHI was charged by the White House Office of Recovery with leading national efforts to integrate lead hazard control, healthy homes and weatherization, and energy efficiency work.³⁶ In New Jersey, GHHI is now working with the Board of Public Utilities on a “Whole House” pilot program to address home health and safety issues in low-income neighborhoods in Trenton. In Detroit, GHHI is supporting an innovative partnership with Gilbert Family Foundation, ProMedica, DTE Energy, and Enterprise Community Partners to coordinate energy efficiency funding for low-income homeowners with home repairs that address basic health and safety issues.³⁷ In New York City, GHHI is working with Affinity Healthcare, Northern Trust, and Primary Care Development Corporation to fund home repairs

33 Brennan D. Less, Núria Casquero-Modrego, and Iain S. Walker, “Home Energy Upgrades as a Pathway to Home Decarbonization in the US: A Literature Review,” *Energies* 15 (15) (2022): 5590. Available at www.mdpi.com/1996-1073/15/15/5590.

34 Steven Woolf et al., “The Health Care Costs of Extreme Heat.” (American Progress, June 2023). Available at www.americanprogress.org/article/the-health-care-costs-of-extreme-heat/.

35 Columbia Maltman School of Public Health, “What Science Says About the Health Risks of Gas Stoves,” April 7, 2023. Available at <https://www.publichealth.columbia.edu/news/what-science-says-about-health-risks-gas-stoves>.

36 Green & Healthy Homes Initiative, *Our History*, available at www.greenandhealthyhomes.org/about-us/our-history/.

37 Gilbert Family Foundation, “Gilbert Family Foundation, ProMedica and DTE Energy Launch \$20 Million Detroit Home Repair Fund.” Press release (Detroit: May 3, 2022), available at <https://gilbertfamilyfoundation.org/press-release/gilbert-family-foundation-promedica-and-dte-energy-launch-20-million-detroit-home-repair-fund/>.

that will be repaid through future Medicaid savings.³⁸ And in their hometown of Baltimore, GHHI is providing a full range of services for families in low-income neighborhoods, including energy audits and retrofits, weatherization, lead hazard control, and other healthy home interventions.

NATURE-BASED SOLUTIONS FOR CLIMATE AND HEALTH

Nature-based Solutions (NbS) are another key plank in strategies to mitigate climate risk and improve health. NbS encompasses conservation, restoration, and management of ecosystems, forests, wetlands, farmland, and urban areas to address a range of social and environmental challenges. The United Nations has identified NbS as critically important for tackling the interwoven crises of biodiversity loss, climate change, and pollution.³⁹

In the U.S. and around the world, cities are using NbS to mitigate the health impacts of extreme heat by replacing dark, heat-trapping surfaces like pavement and rooftops with greenery that increases shading, absorbs water, and cools the air. Lower ambient air temperatures reduce the need for mechanical cooling in buildings, lowering electricity demand and conserving energy. Green infrastructure also plays a vital role in cooling down streets and public spaces for pedestrians and supporting mobility and physical activity, which is especially important for residents who rely on walking and public transit for their daily activities. NbS also support better mental health as exposure to green space is strongly associated with well-being and reductions in stress, anxiety, and depression, particularly for residents of urban areas.⁴⁰

Cities can play a key role in coordinating public agencies, community-based organizations, and private property owners to increase tree cover and green spaces and mitigate the impact of rising temperatures. For example, the City of Boston developed the Urban Forest Plan and Heat Resilience Solutions report that include specific recommendations for

38 New York Healthy Homes Collaborative, “New York Healthy Homes Collaborative Project Summary.” (Updated December 2021). Available at <https://www.greenandhealthyhomes.org/publication/new-york-healthy-homes-collaborative-project-summary>.

39 United Nations Environment Programme, “Nature-based Solutions: Opportunities and Challenges for Scaling Up.” (Nairobi: United Nations Environment Programme, October 2022). Available at www.unep.org/resources/report/nature-based-solutions-opportunities-and-challenges-scaling.

40 Jo Barton and Mike Rogerson, “The importance of greenspace for mental health,” *BJPsycho Int.* 14 (4) (2017): 79-81. Available at www.ncbi.nlm.nih.gov/pmc/articles/PMC5663018/.

cooling and greening neighborhoods.⁴¹ Following the recommendations of the Urban Forest Plan, Mayor Michelle Wu recently launched a new Forestry Division within the Parks and Recreation Department that will more than triple the city’s tree-related workforce and provide dedicated resources for new tree planting and maintenance with a focus on underserved neighborhoods.⁴² Green Banks and community development financial institutions (CDFIs) can also support NbS by financing site improvements on private property that reduce flooding and mitigate the impacts of extreme heat.

HARNESSING CLEAN TECHNOLOGY FOR HEALTHY COMMUNITIES

Research has shown that low-income communities and communities of color are disproportionately burdened by tailpipe pollution and they are less likely to have access to zero-emission vehicles.⁴³ These communities lag behind more affluent neighborhoods due in part to high prices and lower rates of car ownership.⁴⁴ EV charging infrastructure is also heavily concentrated in the most affluent areas of the country; an industry study found that in 2023, seven out of ten public charging stations were located in the wealthiest 20 percent of counties.⁴⁵ Meanwhile, a disproportionate share of fossil fuel power plants are located in low-income communities.⁴⁶ While new federal incentives and tax credits and the growing number of used EVs on the market will help, more must be done to make EVs a

41 City of Boston, “Heat Resilience Solutions for Boston.” (Boston, MA: City of Boston, October 2023). Available at <https://www.boston.gov/environment-and-energy/heat-resilience-solutions-boston#content>.

42 “New Forestry Division and Urban Forest Plan to Enhance and Protect the City’s Tree Canopy,” City of Boston, September 26, 2022. Available at www.boston.gov/news/new-forestry-division-and-urban-forest-plan-enhance-and-protect-citys-tree-canopy.

43 UNC Gillings School of Global Public Health, “New UNC study quantifies disparity among marginalized communities exposed to traffic-related air pollution across the US,” June 1, 2023. Available at <https://sph.unc.edu/sph-news/new-unc-study-quantifies-disparity-among-marginalized-communities-exposed-to-traffic-related-air-pollution-across-the-u-s/>.

44 International Council on Clean Transportation, *When might lower-income drivers benefit from electric vehicles? Quantifying the economic equity implications of electric vehicle adoption: WORKING PAPER 2021-06* (2021). Available at <https://theicct.org/sites/default/files/publications/EV-equity-feb2021.pdf>.

45 Emmet White, “Low-Income Areas Are EV Charging Deserts, Study Finds,” *Autoweek*, July 25, 2023. Available at www.autoweek.com/news/industry-news/a44627107/ev-charging-access-inequality-usa/.

46 United States Environmental Protection Agency, *Power Plants and Neighboring Communities Graphs*, available at www.epa.gov/airmarkets/power-plants-and-neighboring-communities-graphs.

practical and affordable option for low- and moderate-income households and communities.

BlueHub Capital is a national CDFI that is trying to change this. In 2022 it launched an innovative Vehicle-to-Grid (V2G) pilot program to install bi-directional EV chargers at affordable housing properties in Boston to help make EVs more affordable for low- and moderate-income households.⁴⁷ V2G is an emerging technology that draws on the power in the vehicles' batteries for the electrical grid during peak electricity demand and when the car is not needed for driving. In return, Eversource pays for power in the battery, which helps offset the cost of EV usage for residents and lowers the cost of installing charging infrastructure for the affordable housing development. Residents participating in the program will have cheaper access to an EV and the neighborhood benefits from reduced air pollution.

City and state governments are also driving innovation in clean tech solutions with climate and health benefits. In New York City, buildings over 25,000 square feet must meet new energy efficiency standards and emissions limits starting in 2024.⁴⁸ The New York City Housing Authority (NYCHA), which provides affordable housing to more than half a million New Yorkers, launched the Clean Heat for All Challenge in 2021 as part of a broader commitment to decarbonizing homes across their portfolio.⁴⁹ NYCHA has partnered with the New York Power Authority and New York State Energy Research and Development Authority (NYSERDA) to invest in the development and production of heat pumps that are cost effective, easy to install, and provide efficient heat and cooling without the need for extensive electrical upgrades, long refrigerant pipe runs, and drilling through walls and floors. This is particularly important for NYCHA residents, nearly half of whom are over 62 or under 18 years

47 Autumn McLaughlin, "A Pattern of Partnership: 2022 Annual Report." (BlueHub Capital, 2022). Available at <https://2022.bluehubannualreports.org/>.

48 NYC Sustainable Buildings, *Local Law 97*, available at www.nyc.gov/site/sustainablebuildings/l197/local-law-97.page.

49 New York Power Authority, "NYCHA, NYPA and NYSERDA Announce Global Innovation Challenge to Decarbonize NYCHA Buildings Using New Heat Pump Electrification Technologies." Press release (New York Power Authority, December 20, 2021), available at <https://www.nypa.gov/news/press-releases/2021/20211220-decarbonize>.

old⁵⁰ and suffer disproportionately from asthma.⁵¹ With close to a million HUD-subsidized public housing units across the country serving 1.6 million low-income people⁵² and spending \$1.9 billion⁵³ annually on utility expenses, there is great potential for new, cost-effective technologies to be adopted in other cities and regions.

The Connecticut Green Bank is a long-standing leader in linking climate and health impacts through its financing programs. The bank provides an overall assessment of the health benefits of its activities, including avoided sick days, hospital visits, and deaths due to air pollution, using the EPA COBRA tool.⁵⁴ Connecticut Green Bank is now working with partners to develop a financing product for backup power (e.g. solar power, battery storage) and stable indoor temperature (e.g. efficient heating and cooling, weatherization) to increase resilience of tenants who rely on Home Medical Devices such as ventilators, CPAP machines, and dialysis machines. In addition, the U.S. Department of Energy is funding a building code project to spread this program to multi-family affordable housing across the country. Nationwide, at least 2.5 million people rely on Home Medical Devices,⁵⁵ while research has shown that only 25 percent of those people have a backup power supply in case of an emergency.⁵⁶

50 “NYCHA 2023 Fact Sheet.” (New York Housing Authority, April 2023). Available at www.nyc.gov/assets/nycha/downloads/pdf/NYCHA-Fact-Sheet-2023.pdf.

51 “Housing Conditions & Instability: A Health Crisis for NYC Residents.” (New York, NY: CHPC New York City). Available at <https://chpcny.org/wp-content/uploads/2016/09/General-Rx-for-Housing-Brief.pdf>.

52 U.S. Department of Housing and Urban Development, *HUD’s Public Housing Program*, available at www.hud.gov/topics/rental_assistance/phprog.

53 U.S. Department of Housing and Urban Development, *Public Housing (PH) Dashboard*, available at https://www.hud.gov/program_offices/public_indian_housing/programs/ph/PH_Dashboard.

54 Connecticut Green Bank, *Strategy + Impact*, available at www.ctgreenbank.com/strategy-impact/.

55 Joan A. Casey et al. “Trends from 2008 to 2018 in Electricity-dependent Durable Medical Equipment Rentals and Sociodemographic Disparities,” *Epidemiology* May 32 (3) (2021): 327-335. Available at www.ncbi.nlm.nih.gov/pmc/articles/PMC8140591/.

56 Sue Anne Bell, “After the storm: The health impacts of weather and climate-related disasters on older adults in the U.S.” *Institute for Healthcare Policy and Innovation*, February 5, 2020. Available at <https://ihpi.umich.edu/news/ihpi-briefs/disasters>.

HEALTH IMPACTS OF LOCAL CLIMATE INVESTMENTS

At the community and neighborhood level, intentional investments in climate and health can produce immediate and tangible improvements. Importantly, most of the health benefits of decarbonization in the U.S. can be achieved regardless of global emissions reductions because air pollution impacts are localized. Similarly, resilience benefits can be achieved regardless of how quickly emissions drawdown occurs. By focusing on health and prioritizing communities most impacted by toxic pollution and climate disasters, we can:

- Retrofit homes to make them healthier and more energy efficient, affordable, and resilient, reducing financial burdens and chronic stress for residents;
- Increase tree cover and green space, mitigating the impacts of extreme heat and flooding and making it easier and safer to spend time outdoors;
- Provide reliable, affordable, and clean transportation that connects people to work, school, childcare, health care, family, and social support networks; and
- Ensure clean and reliable backup power is available for residents who rely on life-saving equipment and medicine to survive an emergency.

Taken together, these interventions can improve quality of life, boost productivity, and save hundreds of thousands of lives and billions of dollars in health care costs. To get there, we will need sustained focus and collaborative effort over the next decade and beyond. There is no single sector, agency, or funder responsible for connecting investments in climate and health. To make progress at the speed and scale required, we need all-hands-on-deck: government, community-based organizations, private investors, utilities, philanthropy, technical assistance providers, insurers, health care providers, educators, labor leaders, and more.

MAGGIE SUPER CHURCH is Director of Policies and Programs for the Massachusetts Community Climate Bank. She is a 1994 Truman Scholar and holds a master's degree in City Planning from M.I.T., a master's degree in Urban Design from the Edinburgh College of Art, and a bachelor of arts in Architecture from Yale University.

CLIMATE CONSTRAINTS ON THE FINANCES OF LOW- AND MIDDLE-INCOME HOUSEHOLDS AND THE TOOLS TO EASE THEM

Leigh Phillips, Maya Pendleton, Rebekah Collinsworth, and Maddy Gorrell, *SaverLife*

Alizha is well aware that her North Carolina hometown is prone to flooding. With a ground floor apartment near a large lake on the edge of town, she knows that severe weather can upset her life quickly and unexpectedly: just like her sister’s was when Hurricane Matthew damaged her home and car in 2016.

And while threats of flooding loom, Alizha knows her response to severe weather and natural disasters depends squarely on the state of her family’s finances. If they have the money, she says they’ll walk to a local hotel and stay there until the weather passes over. But if they don’t have the resources to relocate, Alizha says “we’re going to get inside the tub, put a blanket over us, and hope we just float.”

Truth Be Told: Understanding the Impact of Climate Change on Household Budgets

As a nonprofit and advocacy organization using technology to improve the financial health of people living on low-to-moderate incomes, SaverLife surfaced Alizha’s story, and many others like it, through our

research initiative The Downpour, which examines the intersection of climate change and financial health.

Over the course of the last year, we've had the privilege of working directly with our members—people living on low-to-moderate incomes all across the United States—to better understand their everyday financial realities; their priorities when it comes to planning and preparing for severe weather events; and their desire for products and programs that will better protect them, their families, and their homes.

Between February 2023 and April 2023, we conducted 25 qualitative interviews and distributed a survey to a larger sample of SaverLife members, collecting a total of 1,641 responses from June 2023 to August 2023.

We learned that the impacts of severe weather are widely felt: 76 percent of survey participants have experienced long periods of unusually hot weather, while 35 percent have experienced long periods of unusually cold weather. On top of fluctuating temperatures, 52 percent of members have experienced severe weather, such as floods and more frequent storms, and 71 percent of members have experienced poor air quality.

We also uncovered the ways in which the impacts of severe weather are taking a toll on already maxed-out household budgets. One-quarter of members have already missed a monthly payment or household bill due to financial hardship following a severe weather event, driving home a new reality that the impacts of climate change seep into all areas of our members' financial lives. For SaverLife members, the question is no longer “if” we will be impacted by severe weather, but “when.”

By sharing key insights from this research, we hope to expand the ways in which the public, private, and social sectors think about how severe weather and natural disasters hit household budgets and upend the long-term financial goals of people living on low-to-moderate incomes. This is an opportunity for us to come together as allies in the financial health space and turn these insights into action—using direct feedback from our members to catalyze products, programs, and policies that will support their climate resilience efforts.



Photo courtesy of SaverLife.

Reality: Parents Experience Additional Financial Challenges When It Comes to Planning for and Recovering from Severe Weather Events and Natural Disasters

SaverLife members, and millions of people like them living on low-to-moderate incomes, face everyday realities and challenges that impede their ability to improve their financial health. For 24 percent of survey participants, they say that they do not have enough money to meet their basic expenses, while 32 percent just meet their basic expenses and 30 percent meet their basic expenses with a little left over.

This is especially true for parents, who report greater financial struggle than people without dependents. Fifty-five percent of survey respondents identified as parents with dependents under the age of 18 in their home, and our research shows that they are 53 percent more likely to say that they can't meet their basic expenses on a regular basis. They are also 24 percent more likely to say that they worry about having enough money to make ends meet for their families all of the time. And this is before you add the financial stresses of climate change on already strained budgets.

According to our research, parents are 10 percent less likely than those who are not parents to say their household is prepared to handle a severe

weather event or disaster. Parents are also 57 percent more likely to say that they cannot afford *any* of the costs associated with preparing for severe weather or disasters.

The ability to maintain financial stability *after* a severe weather event or disaster is also particularly challenging for parents. SaverLife members who identify as parents are 28 percent more likely to fall behind on debt and 32 percent more likely to experience a loss of income when dealing with the effects of severe weather.

Solution: Provide Meaningful Financial Support for Families with Dependent Children

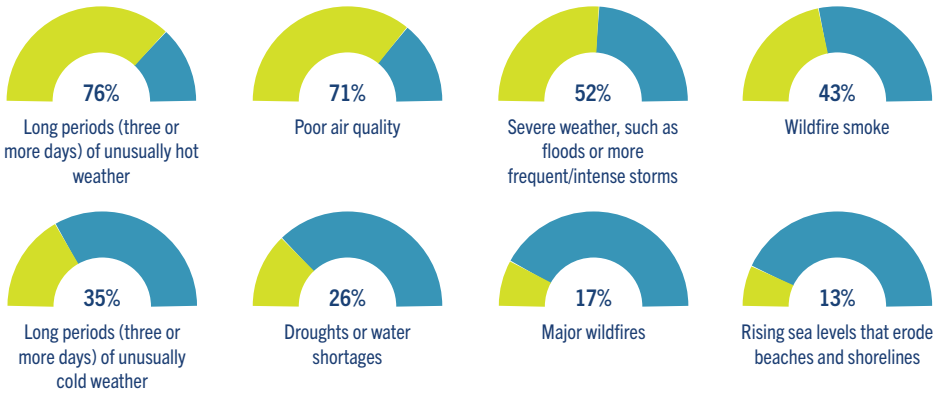
These data clearly show that parents are facing significant financial hardship due to severe weather and natural disasters. The additional stressors place further pressure on already maxed-out budgets and force families to make painful choices between their safety and their financial well-being. Furthermore, every dollar redirected to covering the costs of climate change is a dollar that is not invested in our children's futures. A permanently expanded Child Tax Credit, that includes monthly payments, would help ensure people living on low-to-moderate incomes can protect their families from climate change and still stay on track with their long-term financial goals.

Alizha's son regularly asks her what they will do if their ground floor apartment is flooded during a hurricane. While she knows that they will take some kind of action, she acknowledges that how they respond to severe weather will depend fully on how much money they have on hand at the moment. "When Hurricane Harold happened," she explains, "luckily I had just gotten paid. So in that instance, I knew what we *could* do."

Reality: Planning for and Recovering from Severe Weather Events and Natural Disasters Can Disrupt the Long-Term Financial Health Goals of People Living on Low-to-Moderate Incomes

At SaverLife, we know from our members that financial health is the underpinning of daily life and often dictates their ability to prepare for severe weather and natural disasters.

Figure 1. % of Survey Respondents Who Have Experienced a Weather-Related Event in the Past 12 Months



Preparation doesn't just involve planning for or responding to severe weather events. It can also involve building savings for potential lost hours at work or creating backup transportation options for when the weather shifts unexpectedly. As one SaverLife member explained, "I take Metro Mobility: it's a public transit rotation for disabled people. So, if I know they shut down one morning because of an ice storm, and they're not running for one particular reason, then I don't have a way to work."

The impacts of climate change are a reality that SaverLife members recognize is already affecting their lives. But the ways in which they approach its long-term impacts matters just as much as their capacity to financially cope with its immediate effects. By adopting climate resilience strategies, SaverLife members can prepare for climate change now and in the future. One of the major ways that they can build resilience is by accessing products and services that are tailored to address their financial priorities and their unique experiences with the chronic effects of severe weather events.

Solution: Modernize Our Social Safety Net to Support Households Living on Low-to-Moderate Incomes As They Navigate Climate Change

As we study the short-and long-term effects of climate change, a critical piece of the response is ensuring that our social safety net protects those

who are disproportionately affected by the financial impacts of our changing climate. While certain benefit programs help those directly affected by federally declared disasters—including Disaster Supplemental Nutrition Assistance Programs (D-SNAP) and Disaster Unemployment Assistance (DUA)—a review of the safety net is needed to ensure that those living on low-to-moderate incomes can access supports for a broader array of weather-related events and costs, such as loss of income or food spoilage. A more robust safety net must include various forms of risk management, such as insurance (including renters' insurance), emergency assistance, and cash benefits.

Reality: Climate Resilience Strategies and Products Are Largely out of Reach for People Living on Low-to-Moderate Incomes

While SaverLife members are concerned about weather events and disasters, we learned that there is little room in their already tight budgets to proactively prepare for them. We know from talking to members that balancing income with expenses is an exhausting and frustrating reality—this becomes compounded by impending expenses that accompany adopting climate resilience strategies.

Preparing for the physical and financial impacts of a severe weather event or disaster is often out of reach for people living on low-to-moderate incomes. Only 11 percent of SaverLife members say they can afford all the costs associated with preparing for a severe weather event or disaster, while over half (54 percent) say they can afford none or just a few of the costs. We found that 65 percent of SaverLife members predict that they'll need at least \$3,000 to cover the costs of a weather-related event. At the time this survey was conducted, SaverLife members had an average of \$1,366 in savings.

Solution: Design Tax Refunds and Credits to Offer a Pathway to Healthy Financial Futures for Millions of Households

Provisions such as transferability and refundability of tax credits allow flexibility, expand the reach of the clean energy tax credits, and lower energy costs for families. Fully refundable tax credits would allow families to receive a refund if the amount of the credit exceeds their tax liability. This is important, because tens of millions of low-to moderate income

households owe little or no federal income tax, which means nonrefundable tax credits do little to benefit these households.¹

Transferable tax credits would allow a third party—such as a credit union—to receive the tax credit on behalf of the consumer, opening the door to more innovative and affordable financing options that, for example, could allow credits to be accessed when a loan is originated. This would support households in purchasing renewable and clean energy solutions without having to front the full cost and wait to receive a refund at tax-time. These criteria must be considered for green tax credits to be useful to households living on low-to-moderate incomes. Centering the experiences and needs of the households in the design and implementation of tax credits, and building solutions accordingly, can help usher in a new, equitable climate future.

Reality: People Living on Low-to-Moderate Incomes Are Interested in Adopting Climate Resilience Strategies

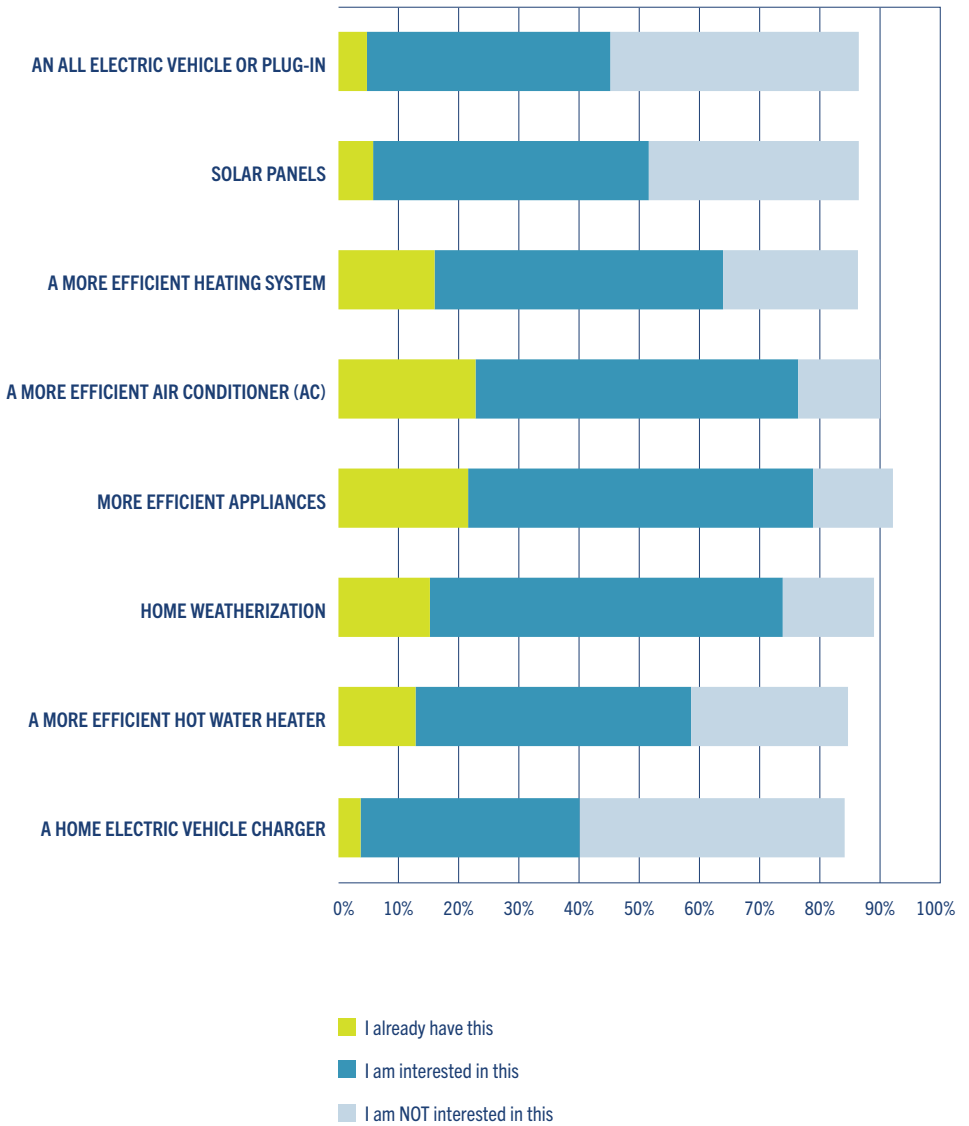
Adopting climate resilience strategies within the financial realities of SaverLife members is almost impossible when budgets are tight. But through our research, we demonstrate that members are interested in proactively addressing the impacts of the chronic climate crisis. To safeguard their homes and families against changing weather patterns, and to manage adverse financial impacts caused by climate change, SaverLife members will need to take specific actions to adapt and build resilience. Policy provisions, like the Inflation Reduction Act, can support households living on low-to-moderate incomes to prepare for the impacts of climate change—but only if they are designed with that goal in mind.

Solution: Support Low-Cost Financing Options for Those Seeking Access to Green Products and Technologies and Ensure Consumers Are Protected from Predatory Practices

The public, private, and nonprofit sectors must conceive financial products and supports that assist consumers living on low-to-moderate incomes. They should also increase access, through low-interest-rate loans, to renewable and clean energy solutions, like electric vehicles and home appliances for consumers, businesses, and landlords. Tools that

1 Drew Desilver, “Who pays, and doesn’t pay, federal income taxes in the U.S.?” *Pew Research Center*, April 18, 2023. Available at www.pewresearch.org/short-reads/2023/04/18/who-pays-and-doesnt-pay-federal-income-taxes-in-the-us/.

Figure 2. Uptake in Energy Efficient Products



help consumers access incentives, credits, and rebates will help usher in a more resilient climate future while also improving household finances. On the flip side, there is a long history of predatory loans, price gouging, and fraudulent actors targeting vulnerable households and communities when new government resources become available. Consumer protections must be established and implemented effectively.

Our member community is filled with hardworking people like Alizha who, despite challenging financial situations, continues taking positive steps forward on her financial health journey; she's got her sights set on financial well-being for her whole family, especially her son. "I am just always trying to move up, be better," she concludes. "That's all you can do."

***LEIGH PHILLIPS** is the president and CEO of SaverLife. Since joining SaverLife in 2015, Leigh has led its transformation from a local direct service organization to a leading national nonprofit and advocacy organization focused on financial health. Previously, Leigh was the founding Director of the San Francisco Office of Financial Empowerment, leading the creation of Bank On and other initiatives.*

***MAYA PENDLETON** is the senior research manager at SaverLife on the Research and Analytics team. Her work supports the development of strategies and innovations to foster greater financial security and to improve financial outcomes for Americans living on low to moderate incomes. Maya has focused her career on developing and advancing solutions to end poverty and eliminate systemic racial inequities.*

***REBEKAH COLLINSWORTH** is the communications director at SaverLife. She has spent her career working at nonprofits and mission-driven organizations as a strategic communicator and storyteller to build community and shift narratives to foster a more inclusive and equitable society.*

***MADDY GORRELL** is the Senior Communications Specialist at SaverLife. With a robust background in writing and rhetoric, Maddy centers her work on amplifying the stories of people living on low-to-moderate incomes and shifting entrenched narratives about the realities associated with living paycheck to paycheck.*

HOUSING, HEAT, AND HEALTH: COMMUNITY-INFORMED ADAPTATIONS FOR CLIMATE SAFETY

Dana Hellman, *CAPA Strategies*

Vivek Shandas, *Portland State University*

Across the United States, local governments are increasingly researching, warning of, and preparing for the impacts of climate change. Whether the salient impact is extreme heat, urban flooding, wildfire smoke, or drought, numerous municipalities are addressing two key facts: first, that the climate is changing and extreme conditions are and will become more frequent; and second, that some populations are disproportionately vulnerable to climate-induced changes to the local weather conditions. While some municipalities have gone further to propose adaptive solutions, such as deploying HVAC filters to maintain indoor air quality after wildfires, air conditioning units to improve indoor conditions on high-heat days, or green infrastructure projects to reduce flooding,¹ fewer have done so with the direct participation of the populations themselves.

Too often, municipalities employ emergency response frameworks for climate events and priority populations without engaging directly with and addressing the underlying causes of community-based vulnerabilities

1 EPA, *Manage Flood Risk*, available at www.epa.gov/green-infrastructure/manage-flood-risk.

to extreme events. While post-disaster response with emergency services is helpful, it generally fails to assess the nuances of personal experiences and challenges or to build capacity proactively. Additionally, the common vulnerability lens, while helpfully directing attention to high-need populations, encourages a paternalistic posture—local leaders know best and will intervene on behalf of affected populations accordingly—and obscures existing sources of resilience already present within affected populations. The resulting solutions may miss important details and community assets, address the wrong issue, or fail to meet the needs of those they are intended to help.

This chapter presents an alternative to the conventional approach taken by governments in their dealings with priority communities—particularly those facing high exposure to climate hazards and with fewer resources to adapt, such as low-income communities and populations of color that have been marginalized. Using a case study from Portland, Oregon, we explain how a cross-sectoral partnership in affordable housing can support a collaborative effort to build resilience to a natural hazard that kills more people in the United States per year than any other: extreme urban heat.² Such engagements are commonplace in several fields, including public health, urban planning, and social work. They are emerging within the fields of disaster management, and arguably represent a more effective approach for building resilience against extreme events.

The theory of change for the Portland case study examined here posits that when community members are engaged with and aware of immediate changes to their physical environment, they will take greater precaution to avoid harmful outcomes during heat waves. To test that, we tracked indoor air temperatures in three public housing properties in Portland. We deployed air temperature monitors, engaged residents about their experiences and primary concerns related to summer heat, and encouraged them to identify appropriate solutions. The outcomes equipped government and community-facing partners with new information and enabled them to reevaluate their heat-response strategies for future years.

2 Denise Chow, “Heat kills more in U.S. each year than any other extreme weather event,” *NBC News*, August 2, 2022. Available at www.nbcnews.com/health/health-news/heat-waves-deadliest-weather-event-united-states-rcna41129.

Likewise, affordable housing residents gained empirical data on heat in their homes, showing the hottest hours of the day, for example, or trends across the summer. In some cases, datasets resulted in illuminating discoveries and in others they affirmed what residents had long felt but did not have the figures to demonstrate. Assessing climate risk and devising solutions with the substantive input of priority populations most impacted by climate change can serve as a model for governments across the country. No matter the specific environmental stressor, it is important for local leaders to acknowledge that priority populations are experts on their own experiences.

BACKGROUND AND ASSUMPTIONS

In late June 2021, the Pacific Northwest experienced an unprecedented heatwave due to a meteorological phenomenon the news media called a “heat dome.” In Multnomah County, Oregon, temperatures reached triple digits on three consecutive days, resulting in a total of 69 excess deaths during that week. The majority of those fatalities occurred in Portland (the county seat and largest city in the state) and disproportionately affected older adults, individuals living alone, residents of multifamily housing, and individuals experiencing homelessness or unstable housing.³

Several fatalities occurred in public or affordable housing facilities managed by Home Forward, the local housing authority. This experience, and a desire to improve outcomes in the future, prompted Home Forward to partner with the Portland Bureau of Emergency Management (PBEM) and the Multnomah County Health Department (MCHD) on a study of indoor conditions, residents’ challenges and cooling strategies, and desirable next steps. The resulting initiative, known as the Home Forward Indoor Temperature Assessment, was funded by PBEM, supported by Home Forward and MCHD, and managed by CAPA Strategies, a climate adaptation consultancy, in a unique public-private and cross-sector collaboration.

Two major assumptions informed this response. The first is that air conditioners (ACs) are an effective tool for preventing heat-related illness

3 “Final Report: Health Impacts from Excessive Heat Events in Multnomah County, Oregon, 2021.” (Portland, Oregon: Multnomah County, June 2022). Available at https://multco-web7-psh-files-usw2-s3-us-west-2.amazonaws.com/s3fs-public/20220624_final-heat-report-2021_SmallFile-2.pdf.

and death, if only ACs could be provided to high-risk, low-resource individuals. Accordingly, Home Forward began a widespread distribution of portable AC units to their residents in 2022, supported by the local Portland Clean Energy Fund and statewide mechanical cooling system distribution programs. The second is that if accessible cooling centers are made available, residents will seek safety there when heat becomes dangerous.

Even before 2021, Home Forward had offered on-site cool rooms at all properties, which open in the event of a local heat advisory. While many other regions around the United States are pursuing similar strategies, few studies have evaluated their effectiveness in the context of public housing or with a multi-pronged approach.

APPROACH

In the summer of 2022, the project team comprising Home Forward, PBEM, MCHD, and CAPA Strategies launched the three-part Home Forward Indoor Temperature Assessment. In phase I, temperature sensors were installed in 53 residential units across three Home Forward properties, two of which had experienced a heat-related resident fatality in 2021. These included two concrete high-rise properties, and one community of one- to two-story wooden structures. Residents chose to participate in the study, maintaining air temperature sensors, which provided live temperature data throughout the summer. Sensors also gave participating residents an alert when indoor temperatures exceeded safe thresholds at 80, 85, and 90 F. The audio effect alerted residents to possible danger so that they could take precautions as needed or desired. This phase captured quantitative temperature data and physical conditions in each unit.

Phase II included the administration of an in-person survey to capture residents' experiences with heat, including health concerns, discomfort and quality-of-life impacts, and coping strategies, as well as individuals' awareness of and likelihood of using an on-site cooling center. Subsequently, Phase III involved a series of workshops with resident participants that provided a synthesis of temperature and survey data (by residence) and that had a four-fold objective: 1) cultivate a sense of community and trust among participating residents; 2) examine temperature datasets and explore results through resident experiences; 3) identify

organizational actions to improve indoor heat conditions; and 4) identify individual actions and adaptations to improve residents' heat safety awareness and preparedness. The workshops prioritized the collection of qualitative information and the translation of data and resident feedback into actionable strategy recommendations.

Residents were compensated for their participation in all phases of this initiative, and study findings were shared with residents in an accessible format during the workshops. All materials, from initial outreach fliers and sensor instructions to surveys and workshop information packets, were provided in appropriate languages. Sensors were brought directly to residents' homes, and surveys and workshops were conducted on-site at Home Forward properties to increase accessibility and participation. The project developed a "playbook" for administering a similar program across any residential setting, and, as such, is scalable.

NOTABLE FINDINGS AND RECOMMENDATIONS

Surprisingly, the air temperature assessment revealed that air-conditioned units were not significantly cooler than non-air-conditioned ones during the hottest days of summer. Owing to essential information provided through surveys and workshops, we have some explanation for this result. Several residents noted issues with insulation and inefficient building envelopes, which prevented ACs from performing effectively. These deficiencies include drafty windows and doors and concrete walls that slowly release heat indoors throughout the evening. Additionally, many of those without an AC took effective, albeit burdensome, steps to keep their homes cool in the absence of mechanical cooling, including homemade insulation in windows and keeping lights and electronics off constantly. While the cost of utility bills did not emerge as an influential factor in this study, likely due to the billing structure of Home Forward, cost may be a barrier to AC use for other low-income populations. Resulting recommendations included upgrades to building insulation, weatherization, improvements for installing ACs securely, and distributing thermal curtains and other simple cooling tools to supplement ACs and reduce the burden on those who do not have them.

We also found that although most residents are aware of on-site cooling centers, many are unlikely to use them or do not find them helpful. Some

stay away due to concerns about interacting or socializing with others, illness (including COVID-19), overcrowding, or discomfort experienced by pets in that environment (though pets are permitted in cooling centers). Others noted that cooling centers are not open at the right hours, especially into the evening when temperatures peak indoors. Cooling centers operate 24 hours only during heat emergencies; however, our study showed that even when outdoor temperatures appear safe, indoor temperatures can become dangerously high. We suggested that organizational partners extend cooling center hours and made recommendations to help make the facilities more accessible and inviting.

The air temperature assessment also revealed differences based on the built environment. Concrete high-rises got hotter, and stayed hotter longer, than low-profile wooden structures. In high-rises, factors like tree shade and lower story position did not mediate heat as expected, perhaps due to issues such as limited air flow and ambient heat coming from streets and other buildings in a dense urban environment. Additionally, we found that residents had a strong desire to learn first aid and cooling tips, and to look out for themselves and their neighbors.

LESSONS TO PUT INTO PRACTICE

As a result of housing segregation practices, such as redlining, exclusionary zoning, racial covenants, and others, marginalized communities across the United States have borne the brunt of a warming planet, though they are often left out of systemic planning decisions. In fact, earlier studies⁴ have found that communities living in historically redlined areas continue to face disproportionate exposure to heat. If current practices in urban planning, public health, or emergency management continue to overlook marginalized communities in adaptation efforts, then practitioners will likely fail to develop effective solutions.

The results of the Home Forward Indoor Temperature Assessment aimed to address past oversights by directly considering the importance of community experience and voice in advancing climate adaptation efforts. The integration of social and environmental data collection processes

4 Jeremy Hoffman, Vivek Shandas, and Nicholas Pendleton, "The Effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat: A Study of 108 US Urban Areas," *Climate* 8 (1) (2020): 12. Available at www.mdpi.com/2225-1154/8/1/12/html.

allowed for a co-production of solutions, such as intervening on extreme heat at multiple scales; supporting individual-level education and information generation and sharing; changing designs of the built environment; reframing emergency response foci and resource distribution; and managing relationships between priority communities and those hoping to support them. The project revealed the need to focus on assets and resilience strategies that many residents already use, rather than simply focusing on vulnerability. This approach encourages capacity-building in addition to resource and AC giveaways and integrates the abilities of high-risk populations into emergency response planning.

Finally, this case study provides a road map for answering the question, “What’s possible?” It is essential to create opportunities for priority communities to learn from each other, participate in research, and articulate solutions that affect them. In fact, these lessons suggest that government agencies and other managing institutions should learn directly and continuously from those they aim to serve, especially when encountering novel or unexpected conditions that threaten communities. Allowing for public-private and cross-sector partnerships can help to catalyze coordinated responses that may reduce precarity during extreme events—which are only increasing in frequency and intensity. Together, the approach and outcomes generated in the Home Forward example are essential to preparing communities across the country for a warmer planet.

DANA HELLMAN *is an environmental social scientist. She holds a doctor of philosophy in Earth, Environment & Society and a master's degree in Community Planning. Working as a climate adaptation consultant, she helps public and nonprofit clients examine climate impacts and solutions using resilience thinking, data integration, and applied research.*

VIVEK SHANDAS *serves as a Professor of Climate Adaptation at Portland State University and as an advisor to CAPA Strategies, a global consulting firm working at the intersection of climate change, built environment, and social justice. He has published over 100 scientific articles and four books, and serves on several national and local advisory boards.*

CLIMATE-RESILIENT HOUSING: HOW TO BUILD AND ADAPT OUR HOMES AND COMMUNITIES FOR A RANGE OF DISASTERS AND CLIMATE IMPACTS

Danielle Arigoni, *National Housing Trust*

Climate change is having a direct and clear impact on affordable housing in ways that present risks for both residents and whole communities. Residents are burdened by the compounding consequences of climate effects, which exacerbate health and economic challenges. Communities are confronted with the increasingly complex task of providing safe, healthy, and well-functioning homes that allow individuals to thrive in the face of a changing climate future. Moreover, housing is responsible for a significant share of carbon emissions that fuel climate change. For these and other reasons, it is essential that local leaders, climate activists, and affordable housing providers prioritize affordable, climate-resilient housing for all in their work.

There is already ample evidence of our country's failure to provide an adequate supply of safe affordable housing. The National Low Income Housing Coalition (NLIHC) reports that in 2023 there was not a single jurisdiction where a minimum-wage earner could afford a modest two-bedroom rental apartment at market rate,¹ and we are at imminent risk

1 NLIHC, "Out of Reach." (2023). Available at <https://nlihc.org/oor>.

of losing half a million currently-affordable subsidized units as a result of expiring tax credits.² When climate risks are layered on top of these preconditions—driving the true cost of housing higher for owners and residents, and exposing more units to damage and obsolescence—the urgency of the challenge begins to emerge.

The risks to affordable housing are particularly high because a disproportionate share of subsidized properties are in areas at higher risk of climate-related disasters. A 2020 report co-authored by Climate Central and National Housing Trust estimated that the number of affordable housing units at risk from coastal flooding and sea level rise will more than triple over the next three decades. By 2050, nearly every coastal state will have at least some affordable housing exposed to more than one “coastal flood risk event” per year, up from about half of the coastal states in 2000.³ Other reports estimate that nearly one-third of HUD-subsidized homes—1.5 million units—are located in areas with very high or relatively high risk of adverse impacts from natural hazards, in comparison to one-quarter of all renter-occupied units and just 14 percent of owner-occupied units.⁴

These are not hypothetical risks. They are real ones, happening in real time. The Louisiana Housing Corporation estimates that one-fifth of the state’s affordable housing stock has been lost in the last 10 years due to climate change impacts. Given the prevailing state of affordable housing in our country—we are not building enough units fast enough to meet the need, nor are we adequately protecting and preserving existing affordable units—we cannot afford to lose a single affordable home to climate change.

That is why National Housing Trust (NHT)—a nonprofit affordable housing developer and advocacy organization where I serve as managing director for policy and solutions—works in the Washington, D.C., area and beyond to address the impacts that climate change has already had on our housing stock and our residents and to demonstrate the potential for

2 AHRC and NLIHC, “Balancing Priorities: Preservation and Neighborhood Opportunity in the Low-Income Housing Tax Credit Program Beyond Year 30.” (2018). Available at <https://nlihc.org/sites/default/files/Balancing-Priorities.pdf>.

3 National Housing Trust and Climate Central, “Report: Coastal Flood Risk to Affordable Housing Projected to Triple by 2050.” (Princeton, NJ: 2020). Available at www.climatecentral.org/report/report-coastal-flood-risk-to-affordable-housing-projected-to-triple-by-2050.

4 PAHRC and NLIHC, “Taking Stock: Natural Hazards and Federally Assisted Housing.” (2021). Available at <https://preservationdatabase.org/wp-content/uploads/2021/06/Taking-Stock.pdf>.

affordable housing to be part of the climate solution. For nearly 40 years, we have sought to preserve affordable housing and implement climate-responsive solutions that improve conditions for the people who call these units home. We are motivated by the fact that more than 70 percent of the District’s CO2 emissions are from buildings,⁵ and that one-quarter of low-income District residents spend more than 14 percent of their gross income on utilities (compared to a median energy expenditure of 2 percent of income) due to energy-inefficient housing and more extreme temperatures.⁶ Furthermore, a devastating 13 percent of D.C. children (more than 16,000) have asthma, exacerbated by poor air quality from mold caused by flooding and pollutants.⁷

For residents in NHT properties and other low-income people outside of the D.C. region, the effects of climate change also manifest in the form of hotter temperatures that lead to higher air-conditioning use and utility costs in the summer and days lost at jobs and school as a result of asthma events or climate-related disruptions, such as flooded streets or power loss. Climate advocates and local leaders seeking to curb emissions and build more resilient communities that create opportunities for all would do well to learn from our experiences to date—and recognize that the journey to a more resilient future must begin with affordable housing.

Climate-Friendly Solutions Deliver Meaningful Benefits for Residents of Affordable Housing

NHT’s work began with a recognition that our residents stand to benefit when we invest in climate-resilient affordable housing. Whether the utilities are paid by the resident or by a property owner, the increased costs of higher fuel prices coupled with a growing need for indoor heating and cooling divert scarce resources from other needs, be they property maintenance (owners) or other household expenses (residents). Increasingly, the very definition of affordability is driven by the cost of utilities—along with the combined cost of rent or mortgage plus transportation—and is

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- 5 D.C. Department of Energy & Environment, *2020 Greenhouse Gas Inventories*, available at <https://doee.dc.gov/service/greenhouse-gas-inventories>.
 - 6 American Council for an Energy Efficient Economy, “Energy Burdens in Washington DC.” (Washington, DC: 2020). Available at www.aceee.org/sites/default/files/pdfs/aceee-01_energy_burden_-_washington_dc.pdf.
 - 7 DQ Shelef DQ et al., “Creation and validation of a citywide pediatric asthma registry for the District of Columbia,” *J Asthma May* 59 (5) (2022): 901-909. Available at <https://pubmed.ncbi.nlm.nih.gov/33635727/>.

significantly impacted by whether and to what extent properties conserve energy use. Notably, Freddie Mac reports that renters are more fearful of the potential rising cost of utilities than they are about the potential for rising rents.

As a result, in the unsubsidized housing market, Freddie Mac notes, renters are willing to pay more for rental properties with sustainability features, provided they can afford them.⁸

Investments in climate-resilient housing also foster greater well-being and mitigate the disproportionate toll that climate change—particularly extreme heat—has on the health of marginalized people. Heat-related illnesses have become more prevalent for all people but pose particularly severe threats for older adults and people with chronic health conditions. Furthermore, according to the U.S. Environmental Protection Agency (EPA), heat-related illnesses are increasing among Black and Latino households at double the rate experienced by white households, and Black households are 40 percent more likely to live in areas with the highest projected increases in premature mortality due to climate-driven changes in extreme temperatures.⁹ This is in part the result of decades of land use planning, which has led to uneven access to green spaces for low-income people and people of color. Green spaces, including tree canopy, can counteract the urban heat island effect¹⁰ and thereby mitigate the risk of heat-related illnesses.

One of the most essential lessons that we have learned is the importance of engaging residents in the process of implementing climate-resilient housing solutions. In an effort to build agency and self-determination among residents, as well as to bolster their understanding of how climate solutions can help, NHT routinely pilots new approaches to engage residents—many of whom are people of color—in discussions about how best to improve their properties. In doing so, we remind ourselves that

8 “Renters Say Cost of Utilities is More Concerning Than Rent Itself,” *Freddie Mac*, November 15, 2016. Available at www.freddiemac.com/research/consumer-research/20161115-renters-cost-of-utilities-more-concerning-than-rent.

9 EPA, “Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts.” (Washington, DC: 2021). Available at www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf.

10 D. H. Locke et al., “Residential housing segregation and urban tree canopy in 37 US Cities,” *npj Urban Sustainability* 1 (15) (2021). Available at <https://doi.org/10.1038/s42949-021-00022-0>.

the actions we take are impacting not just buildings but also—and most importantly—the people who live there. Through resident leadership programs, community events, and outreach, we equip residents with an understanding of how modifications to their home can help reduce cost, improve health, and stabilize the property. These activities also give residents a voice in what solutions work best for them. A family with an asthmatic child, for example, may prioritize removing the gas stove or remediating moisture from flooding to create a healthier and more livable home, while an older adult living on a fixed income might instead value energy efficiency and renewable investments that reduce the cost of utilities and provide greater comfort on increasingly hot days. Understanding the needs, risks, and opportunities of our residents is an essential starting point to creating more climate-resilient housing.

Investments in Climate-Resilient Housing Benefit Owners and Help Preserve and Protect Housing Supply

Affordable housing owners and developers increasingly recognize the benefits of investments in climate-resilient housing as a response to the above-described threats to housing stock and residents. While some have been at the forefront of piloting sustainable building approaches in multifamily housing—often paving the way for broader adoption in the market-rate housing sector—there nevertheless remains a widespread need among affordable housing owners and developers to understand, finance, and implement climate-responsive housing practices. The passage of the Inflation Reduction Act (IRA) in 2022 and its resultant tens of billions of dollars in grants, loans, and tax credits for climate resilience investments in affordable housing certainly catalyzed a recognition of this opportunity among many owners and developers, who previously did not see themselves as part of the climate solution.

Owners rightly view the resources made possible through the IRA and other programs as critical ways to fill the gap to make much-needed investments in affordable housing that extend the life of their asset, improve conditions for their residents, and save money. In master-metered multifamily buildings where owners pay the utilities, the increasingly high costs of heating and cooling apartment homes eat into their already razor-thin margins, limiting their ability to invest in property improvements. Properties exposed to persistent flooding can develop chronic mold

that damages drywall and requires more expensive and extensive remediation, straining limited repair reserves and introducing health risks for residents that put more pressure on onsite staff to provide support. When units have to be taken offline for repairs or remediation, there is a loss of critical rental income that the owner depends on to service the financing of the property and maintain its quality. And increasingly, the risk exposure of affordable housing is evident in higher insurance premiums, which can be mitigated with building- and community-scale investments in resilience.

Climate change also threatens owners' ability to maintain safe and viable homes by contributing to the rapid deterioration and at-times overnight obsolescence of scarce affordable housing—conditions that, again, can be mitigated with investments in climate resilience. Persistent heat can strain aging HVAC systems designed for cooler temperatures, while extreme weather events can damage facades, siding, and roofing. Flooding can infiltrate buildings, leading to the deterioration of internal building components, including carpeting, which can be expensive to replace (and which is largely unsupported by any public subsidy for property owners, unlike other resilience retrofit elements). In the most dire examples of climate impact, weather-related disasters can rip off roofs and walls, destroy critical building infrastructure, and render the home unlivable and too expensive to repair. The resulting loss of property fuels the displacement of people—often those who are least likely to have the financial resources or insurance coverage necessary to withstand a temporary (or permanent) displacement.

At NHT, we routinely look for opportunities to increase energy efficiency and climate resilience in our portfolio—in part to generate cost savings that we can redirect into property improvements. Recently, through the Better Buildings Challenge program of the U.S. Department of Housing and Urban Development (HUD) and U.S. Department of Energy (DOE), we achieved our goal of reducing our portfolio-wide energy consumption by 20 percent over ten years. And we are dedicated to continuing this push for better performance with our commitment to DOE's Better Climate Challenge, in which we aim to reduce our portfolio-wide greenhouse gas emissions by 50 percent over 10 years. In these efforts we've learned the importance of developing in-house expertise in data

management to track utility costs, better integrating sustainability expertise in our asset management practice, and communicating effectively with our residents about how they will benefit from these investments. Furthermore, we strive to achieve Enterprise Green Communities certification or higher in all our properties. This not only delivers cost savings, but also drives us to make more climate-risk-informed decisions about building design and operation. As a result, we can begin to shift the trajectory for affordable housing toward a more secure and resilient future.

Public Subsidies for Climate-Resilient Solutions Remain Essential

For all the benefits of climate-resilient investment, the fact remains that the very nature of affordable housing means that such investments are often financially infeasible without public resources. Increasing investment at the federal, state, and local levels in more climate-friendly, decarbonized, and resilient housing will not only result in an affordable housing stock that will better withstand the risks ahead, but also deliver benefits for owners and residents that in turn benefit whole communities. Arguably, upfront public investment in more resilient affordable housing can help avoid costly public expenditures to replace housing lost in climate disasters or provide for people displaced by them; in that way, they serve as a down payment to a more secure future for all.

But even with ample federal loans, grants, rebates, and tax credits, increased climate funding may not meet the full array of unique needs of affordable housing. Because of the complex nature of multifamily housing development, ownership, and financing, programs to spur climate-friendly housing must be designed with affordable housing in mind if they hope to reach those who can most benefit. For example, federal or state rebates to reduce the cost of high-efficiency HVAC elements must be administered in ways that allow affordable housing developers to capitalize on the benefits of the subsidy at the outset of a redevelopment, while the financing is being assembled, rather than awarded when the project is complete, and the equipment is placed in service. Loans to finance fuel-switching from fossil fuels to electricity that carry near-market-rate terms do little to appeal to developers who require very low-cost money to finance the expense of new systems. And incentives that seek to drive investment in renewable energy or other climate-resilient strategies through tax credits must account for the fact that many affordable housing developers are

nonprofit, and therefore unable to benefit from said credits unless a “direct pay” provision is included.

Sometimes the pathway to delivering climate-resilient solutions in affordable housing requires work well beyond the four walls of any particular property. Community solar, for example, is an approach that allows the financial benefits of renewable energy to be accessed by renters in buildings where rooftops may be unsuitable or inadequate for solar power. In partnership with Urban Ingenuity and DC Water (Washington, D.C.’s water and sewer department), we led an effort to complete a major new solar installation at Brentwood Reservoir that will be the single largest solar installation in the District, reducing energy costs for about 500 income-qualified residents over 15 years. The installation was funded in part by Washington, D.C., through its Solar for All program, which provides qualified residents with a direct credit on their electricity bill. With expanded federal investment made possible in the IRA to support Solar for All programs in every state, solutions like this become broadly replicable.

Other federal programs are also proving to be critical to delivering more resilient affordable housing. HUD’s Green and Resilient Retrofit Program allows developers to stretch their properties to perform better for residents and communities over the long haul. The U.S. Treasury’s bonus tax credit for solar-energy generation and storage equipment installed at affordable housing can significantly improve the cost effectiveness of installing this green infrastructure to create resilience hubs. Rebate programs offered by DOE help to offset the cost for developers to install heat pumps that can provide cooling in properties without air conditioning and where tenants are at risk from rising temperatures, and to replace gas-burning stoves with cleaner alternatives. And EPA’s Greenhouse Gas Reduction Fund will spur an entire new ecosystem of lenders, designers, contractors, and program administrators to deliver carbon-reducing investments in affordable housing that mitigate emissions and stem climate change for all.

NHT’s experiences have helped us to realize several other broad lessons that can and should inform our collective approach to delivering climate-resilient housing. First, there is no one-size-fits-all approach. What will make affordable housing more resilient will vary by location. In areas that have not traditionally experienced high temperatures but are now

experiencing extreme heat, climate-resilient housing may take the form of an improved building envelope and installation of electric heat pump cooling systems. In low-lying or coastal areas facing increased flooding, climate-resilient housing will include floodproofing, the elevation of critical systems, and improved site drainage—ideally in ways that result in less moisture in units and improved indoor air quality. In areas with increased risk of wildfires, climate-resilient housing will include more fire-resistant roofing and building materials, along with landscaping features that double-duty as community space and wildfire-protection areas. In nearly all cases, regardless of climate risk, renewable energy sources plus storage and backup power for critical systems will be essential, as will community resilience spaces that can serve as gathering places in emergencies.

There is much work to do. But for those motivated by the goals of ensuring safe and affordable homes for all people, and a resilient and sustainable world, we have no choice but to look forward and get busy with the work.

*DANIELLE ARIGONI is Managing Director for Policy and Solutions at National Housing Trust, where she oversees NHT's sustainability and resilience policy efforts. She is also author of the book *Climate Resilience for an Aging Nation* (Island Press), and previously held leadership positions in AARP, the U.S. Department of Housing and Urban Development, and the U.S. Environmental Protection Agency. Danielle holds planning degrees from Cornell University and the University of Oregon.*

EMPOWERING COMMUNITIES: LEVERAGING A LOCAL MODEL TO ADVANCE SOCIAL AND CLIMATE RESILIENCE

Debra Gore-Mann, *The Greenlining Institute*

In 1996, a group of moms in the primarily Latino neighborhood of Pacoima on the northern edge of Los Angeles had had enough. Their neighborhood was a dumping ground for trash and suffered from some of the worst air quality in the country. They were worried about their community and the health of their kids. So, they decided to get organized and founded a nonprofit—Pacoima Beautiful—to help repair the neighborhood.

Pacoima Beautiful's work is expansive and includes community and youth organizing, community services, and local planning and advocacy efforts. The organization has had many successes over the years, building deep relationships and trust with community members and advocating for safer, healthier, and more resilient neighborhoods. In the decades since their founding, they have transformed from a small, community-based organization to an anchor in the community, bringing in more than \$61 million to invest in community priorities and needs.

Pacoima and neighboring Sun Valley are suburban communities located in the Northeast San Fernando Valley of Los Angeles County. Both

communities were constructed after World War II to house factory workers and are typified by single-family homes, industrial facilities, and wide, auto-oriented roads. The Northeast San Fernando Valley is surrounded by three freeways, a heavy rail line, a local airport, and other industrially zoned lands.¹ The community experiences some of the highest levels of air pollution in the state, a lack of green spaces, and overcrowded housing conditions.² Moreover, Pacoima and Sun Valley suffer from some of the most severe heat in Los Angeles County, with temperatures regularly reaching into the triple digits during the summer months.³

Pacoima Beautiful is tackling these issues head-on with its Green Together Collaborative.⁴ The work demonstrates how combining the expertise and wisdom of community residents with effective public policies and properly funded programs ensures that investments in climate-resilient infrastructure are tailored to successfully meet the needs of specific communities.⁵

TRANSFORMATIVE CLIMATE COMMUNITIES

Communities of color have historically been underrepresented in decision-making processes related to climate change and environmental policies. The lack of representation leads to inadequate consideration of their specific needs and concerns. As a result, policies and initiatives often fail to address the unique challenges that communities of color face.

In 2016, Greenlining, a public policy, research, and advocacy organization, and the California Environmental Justice Alliance (CEJA), a state-wide coalition of grassroots environmental justice organizations, helped

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- 1 EPA, *Reducing Toxic Risks In L.A. Community of Pacoima*, available at <https://archive.epa.gov/care/web/html/pacoima.html>.
 - 2 Gillian Moran-Perez, "Pacoima Beautiful: The Voice for Environmental Injustice," *Daily Sundial*, October 14, 2019. Available at <https://sundial.csun.edu/154919/news/pacoima-beautiful-the-voice-for-environmental-injustice/>.
 - 3 Todd Woody, "How one San Fernando Valley neighborhood is guarding against deadly heat," *Los Angeles Daily News*, July 25, 2022. Available at www.dailynews.com/2022/07/25/how-one-los-angeles-neighborhood-is-guarding-against-deadly-heat/.
 - 4 Green Together Collaborative, *Together We Invest in Energy*, available at <https://www.pacoimabeautiful.org/programs/green-together-collaborative>.
 - 5 Pacoima Beautiful, *About Pacoima Beautiful*, available at www.pacoimabeautiful.org/.

pass Assembly Bill 2722.⁶ Authored by Assemblymember Autumn Burke, the legislation established the Transformative Climate Communities (TCC) program to support a community-centered approach to planning and climate action. This has catalyzed \$326 million in investments in communities across the state.⁷

As co-sponsors of the legislation, Greenlining and CEJA offered extensive feedback on how to design the program to best meet community needs, elevate community leadership, and deliver multiple benefits.

TCC is the first climate program in California to thread equity through every aspect of design—from the program’s goals, values, and vision all the way through to evaluation.⁸ TCC is unique in two ways: 1) it puts community leadership first, requiring all projects to develop a collaborative governance structure between stakeholders, such as local government, community-based organizations, and residents; and 2) the work responds to resident-identified needs, giving community members ownership over needed changes in their own neighborhoods. TCC then funds communities to develop and implement holistic projects that reduce CO₂ emissions and provide meaningful community benefits, such as cleaner air, improved health, and job opportunities.

TCC Case Study: Pacoima Beautiful’s Green Together Collaborative

An example of TCC’s priorities in action is the Green Together Collaborative, a proposal that grew out of Pacoima Beautiful’s outreach and community engagement over the course of two decades and two major community planning efforts. The first was the 2008 Pacoima Wash Vision Plan, an effort to transform the concrete Pacoima Wash tributary into a multipurpose greenway.⁹ The second was the 2013 Pacoima

6 California Legislative Information, *Bill Information: AB-2722 Transformative Climate Communities Program*, available at https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB2722.

7 California Strategic Growth Council, “Transformative Climate Communities: Community-led climate solutions for equitable transformation.” (California Department of Conservation, April 2023). Available at https://sgc.ca.gov/programs/tcc/docs/20230424-TCC-Fact_Sheet-en.pdf.

8 Emi Wang and Rachel Lu, “Case Study: Northeast San Fernando Valley: Community-Controlled Solutions Built On Decades of Organizing.” (The Greenlining Institute, November 2021). Available at <https://greenlining.org/publications/community-controlled-solution-tcc-case-study/>.

9 “Pacoima Wash Vision Plan: Imagining a new multipurpose greenway for the Northeast San Fernando Valley.” (Los Angeles, CA: LA County Department of Public Health). Available at http://www.publichealth.lacounty.gov/place/docs/Pacoima_Wash_Vision_Plan%20Book_FINAL.pdf.

Urban Greening Vision Plan, which identified a menu of multi-benefit green infrastructure projects.¹⁰ Both initiatives engaged residents through Pacoima Beautiful’s monthly meetings, over 100 community planning meetings, house meetings, over 600 surveys, door-to-door canvassing by *promotoras* (community health workers) and community organizers, 50 focus groups, and outreach to existing community groups.

Through the initiatives, residents were able to envision neighborhoods that were safe, green, and resilient to climate change. Building from the shared community priorities developed over its decades of organizing, Pacoima Beautiful identified a vision for TCC centered around pedestrian safety, street improvements, greening, and climate resilience. The organization brought together several partners, including other local organizations, government agencies, and technical assistance providers, to form the Green Together Collaborative to lead and implement the work.¹¹ TCC selected project partners because each group brought essential expertise to the implementation of the TCC projects in addition to their existing relationships with Pacoima Beautiful. Green Together offers, therefore, a tangible example of what community-controlled transformation and investments look like in practice.

In late 2018, the Green Together Collaborative won a \$23 million grant through TCC to bring its vision of a “neighborhood that is safe, green, socially inclusive and resilient to climate change” to life.¹² Along with previously funded TCC projects, Green Together serves as one of the first initiatives in the country to pilot a community-led, multi-benefit, and place-based climate change mitigation program that specifically responds to the needs of low-income households.

Importantly, Green Together offers a replicable model for community-led governance with community engagement processes and outcomes built from the ground up. And the model works, according to Jose Gardea of Urbanism Advisors in an interview with TCC, because Pacoima Beautiful

10 “Pacoima Urban Greening Vision Plan.” (Pacoima, CA: Pacoima Beautiful, February 2016). Available at https://issuu.com/mas4la/docs/160114_greening_vision_plan.

11 Green Together Collaborative, *Together We Invest*.

12 UCLA Luskin Center for Innovation, “Green Together: 2023 Progress Report on Implementation of the Transformative Climate Communities Program Grant.” (Los Angeles, CA: Regents of the University of California, May 2023). Available at <https://innovation.luskin.ucla.edu/wp-content/uploads/2023/06/Green-Together-2023-Progress-Report.pdf>.

has a history of “fighting for issues that relate to economic resiliency, environmental resiliency, workforce development, [and] job creation.” He added, “it was a validation of all the previous work that Pacoima and so many other leaders, both elected and non-elected, have been doing in that part of the San Fernando Valley now for 30, 40 years.”¹³

Taken together, the 12 projects that make up Green Together’s work strive to deliver integrated climate strategies with a focus on urban greening, energy efficiency, and transportation and mobility options. The projects are still in the first years of a six-year TCC cycle (2020-2026), which is to say they are still in early development. They include pedestrian improvements, the creation of three mobility hubs¹⁴ equipped with electric vehicle charging infrastructure and air quality monitoring, electrification of the public bus fleet, installation of solar photovoltaic systems on 175 single-family homes, a seven-acre park renovation, and an urban and community forestry project to plant and maintain 2,000 new trees. As part of its application for TCC funds, Green Together raised an additional \$38.7 million that it is using to install 35 cool roofs, retrofit an existing community center with solar panels, transform a blighted alley and plaza into a community asset, construct three Metro light rail stops, and install bioswales along major arterials to capture and infiltrate stormwater.¹⁵

TRANSFORMATIVE PLANS TO REFLECT COMMUNITY PRIORITIES

TCC is unique from other state-funded greenhouse gas reduction programs because it requires grantees to develop four transformative plans to maximize the benefits of the previously described projects and to minimize unintended harms. Specifically, grantees are required to develop a community engagement plan, a displacement avoidance plan, a

13 Emi Wang and Rachel Lu, “Case Study: Northeast San Fernando Valley: Community-Controlled Solutions Built On Decades of Organizing.” (The Greenlining Institute, November 2021). Available at <https://greenlining.org/publications/community-controlled-solution-tcc-case-study/>.

14 A mobility hub is a location, often a housing complex or community center, that offers multiple mobility options, such as bikesharing, car sharing, or transit access.

15 UCLA Luskin Center for Innovation, “Green Together: 2023 Progress Report on Implementation of the Transformative Climate Communities Program Grant.” (Los Angeles, CA: Regents of the University of California, May 2023). Available at <https://innovation.luskin.ucla.edu/wp-content/uploads/2023/06/Green-Together-2023-Progress-Report.pdf>.

workforce development plan, and a climate action and resiliency plan.¹⁶ Together, these plans ensure that TCC investments reflect the community's vision and goals, bring economic opportunities to low-income households, and minimize the risk of gentrification and displacement of existing residents and businesses. Green Together's approach includes:

Community Engagement Plan (CEP)

Multiple community engagement strategies are integrated across the various project types. Door-to-door outreach forms a central part of the engagement and is used in conjunction with community meetings, charrettes, and educational workshops to inform residents about projects. The Green Together Resource Center, project website, and quarterly forums all provide up-to-date information and solicit feedback from residents. Youth and adult residents are engaged through a neighborhood-scale air quality and temperature monitoring program.

Displacement Avoidance Plan (DAP)

The DAP weaves together five strategies to address overcrowded housing conditions while protecting residents—as well as supporting small business owners from the economic pressures that can come with large-scale public investments. The plan includes the development of a Community Land Trust Feasibility Study, an Accessory Dwelling Unit Legalization Action Plan, tenant protections workshops, small business development workshops, and an artists' business development workshop.

Workforce Development & Economic Opportunities Plan (WDEOP)

The WDEOP provides two workforce training programs to advance career pathways and quality jobs for low-income residents, including technical training for 96 green energy installers, most of whom are guaranteed a job when they are certified. More specifically, the Los Angeles Conservation Corps is offering paid work experience on an urban forestry project followed by brownfields remediation job skills training for 50 opportunity youth participants¹⁷ to receive federal-, state-, and industry-recognized certifications.

16 California Strategic Growth Council, *SGC Catalyst Model: Centering Communities in Place-Based Investment: Multi-Benefit Projects at the Neighborhood Scale*, available at <https://sgc.ca.gov/tools/catalyst-models/multi-benefit-projects/>.

17 Opportunity youth are young people who are between the ages of 16 to 24 years old and are disconnected from school and work. Youth.gov, *Opportunity Youth*, available at <https://youth.gov/youth-topics/opportunity-youth>.

Climate Action and Resiliency Plan (CARP)

The CARP ensures that climate resilience strategies are interwoven through the projects. Examples include extensive tree planting to reduce extreme heat, a suite of low-cost zero-emission vehicles to reduce local sources of air pollution, improved active transportation options like walking or biking, increased stormwater retention and infiltration measures, and the retrofit of a community resiliency center to serve as a cooling hub during extreme heat events.

EVALUATING SUCCESS

Green Together began implementing TCC projects in early 2020. While the work is still in its early stages, these projects are expected to deliver many tangible benefits to the community. From the establishment of safe and sustainable transportation options to expanded green space and job creation for community members, Green Together is focused on building resilience and deepening connectivity in the communities it serves.

UCLA Luskin Center for Innovation has released three annual reports on Green Together. The reports offer updates on progress made through 2022, with baseline data from which to compare future years of TCC implementation as well as details on changing conditions, lessons learned, and results of TCC investments.¹⁸ The analysis cites “considerable progress toward implementing an ambitious climate action initiative,” pointing to the hundreds of trees planted, maintained, and dispersed to residents; electric buses currently being manufactured for use within the project area; and solar photovoltaic systems installed on residential properties occupied by low-income households, among other findings.¹⁹

In addition to the TCC-funded project outcomes, the collaborative structure of Green Together and its emphasis on community organizing and empowerment have already demonstrated a meaningful impact. Pacoima Beautiful was able to pursue TCC as the lead nonprofit because of the

18 UCLA Luskin Center for Innovation, *Transformative Climate Communities (TCC): Tracking groundbreaking community-led climate action*, available at <https://innovation.luskin.ucla.edu/tracking-groundbreaking-climate-action/#toggle-id-3>.

19 UCLA Luskin Center for Innovation, “Green Together: 2023 Progress Report on Implementation of the Transformative Climate Communities Program Grant.” (Los Angeles, CA: Regents of the University of California, May 2023). Available at <https://innovation.luskin.ucla.edu/wp-content/uploads/2023/06/Green-Together-2023-Progress-Report.pdf>.

deep trust of community members, as well as the strong relationships built with other community-based organizations (CBOs) and the city leadership in Pacoima and Sun Valley. It formalized those relationships into a collaborative governance infrastructure that has yielded success.

Green Together's structure has helped build community capacity and cultivate community leadership that can serve as a strong foundation for future organizing and resilience efforts in Pacoima.

REPLICATING THE TCC MODEL

Communities of color have a wealth of knowledge and experience that is often overlooked in decision-making processes around climate infrastructure investments. By involving these communities in the process, we can tailor investments to meet their specific needs. Community-led solutions to climate change have the potential to reach far beyond what is possible with top-down macro-level solutions. They have the power to cultivate deeper community connections, create local jobs and economic opportunity, establish community-based resources, and more.

As such, TCC offers a model for this work—fighting climate change, building economic prosperity, and redressing the historic oppression of our most under-resourced communities. It empowers the communities most impacted by poverty and pollution to choose their own goals, strategies, and projects to reduce greenhouse gas emissions and deliver multiple tangible benefits.

For funders and policymakers, TCC demonstrates how to simultaneously fight climate change and build local health and prosperity—by helping build and invest in community-led transformations. Successful climate projects must be anchored in a strong vision driven by community needs and priorities and implemented by multi-stakeholder partnerships that transform that vision into reality. Strong working relationships built on trust and alignment on vision are the most important aspect of any successful engagement, and they can take many years to form. By working together and embracing community-based solutions, we can build a more equitable and sustainable future for all.

20 Emi Wang and Rachel Lu, “Case Study San Fernando Valley: Community-Controlled Solutions Built on Decades of Organizing.”

DEBRA GORE-MANN is President and CEO of The Greenlining Institute. Debra has 25 years' experience leading nonprofits and private research universities, and 12 years in investment banking and business development. She serves on multiple nonprofit governance boards in the financial industry, community health, and education.

Special thanks to **EMI WANG**, Director of Capacity Building, at The Greenlining Institute and **RACHEL LU**, Policy and Research Consultant for The Greenlining Institute, co-authors of "Case Study San Fernando Valley: Community-Controlled Solutions Built On Decades of Organizing."²⁰

CONNECTING CLIMATE AND HEALTH: MAKING CLINICS RESILIENT

Becky Regan, *Capital Link*

When asked why she was leading the work to install solar microgrids on her community health center as a backup power source, a dynamic chief operating officer said, “My staff demands it; my patients deserve it.”

Electric power is critical in the delivery of health care services, which requires electricity to operate medical and diagnostic equipment, keep medication and vaccines refrigerated, and access patient records. Aging equipment and downed power lines, alongside increasing temperatures and extreme climate events, are causing longer-lasting outages that are hitting low-income communities—many served by Federally Qualified Health Centers (FQHCs)—harder and more often.



Photo courtesy of CrescentCare Community Health Center, New Orleans, LA.



Photo courtesy of Atlantic Medical Center, Barceloneta, PR.

FQHCs provide medical care in underserved areas regardless of a patient's ability to pay. Based on 2022 data, 90 percent of FQHC patients are low-income and 64 percent are racial or ethnic minorities. The potential benefits of solar microgrids are compelling—my firm estimates they could deliver 870,000 tons per year in carbon offsets, \$20 million per year in avoided losses for health centers and \$115 million per year in energy savings and benefit 21 million patients in over 11,000 communities. The Inflation Reduction Act could provide \$2 billion of benefit to FQHCs.

In addition to providing resilient backup power to health centers, solar microgrids with energy storage allow FQHCs to strengthen the resilience of their communities. During power outages, health centers are also able to provide residents with a central location to access information and vital services, including cell phone charging, medicine storage, heating and cooling stations, and the powering of medical equipment.

The bottom line: renewable energy delivers better and more reliable medical care, reduces pollution, and saves money.

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TOWARD GREEN INFRASTRUCTURE & ENERGY SYSTEMS



ENSURING CONSUMER PROTECTIONS IN THE DELIVERY OF ENERGY-EFFICIENCY FINANCING AND RENEWABLE-ENERGY PROGRAMS

Alys Cohen and Karen Lusson, *National Consumer Law Center*

More than a quarter of U.S. households struggle to meet their energy needs.¹ They frequently face the risk of utility service termination, which can put their housing at risk. Low-income families spend a substantial portion of annual income on electricity and heating—8.6 percent, compared to 3 percent for higher-income households, according to the Department of Energy.² Because of high energy costs, low-income families often face the “heat or eat” conundrum and must sacrifice other important needs, including groceries and medicine, or reduce energy use in ways that can harm their health and safety.

Levels of energy insecurity differ clearly by race: 52 percent of Black households and 47 percent of Latino households reported instances

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- 1 U.S. Energy Information Administration, “In 2020, 27% of U.S. households had difficulty meeting their energy needs,” *Today in Energy*, Apr. 11, 2022. Available at www.eia.gov/todayinenergy/detail.php?id=51979.
 - 2 Energy.gov Office of State and Community Energy Programs, *Low-Income Community Energy Solutions*, available at www.energy.gov/scep/slsc/low-income-community-energy-solutions. According to the same report, energy burdens vary across different areas of the country and in some areas are estimated to be as high as 30 percent.

of energy insecurity, compared with 23 percent of white households.³ Low-income households and communities of color are also more likely to live in areas where projections suggest that climate change will cause significant increases in asthma and heat-related deaths.⁴ Poor state of repair in housing contributes significantly to high energy burdens among low-income populations and in communities of color.⁵

Renewable energy and energy-efficiency technologies provide opportunities for reducing energy bills, but their cost presents a particular challenge for low- and moderate-income customers.⁶ Programs to expand access to energy efficiency, including financing mechanisms, must ensure affordability, transparency, accountability, and data-informed design. The lowest-income households may be able to rely fully or primarily on grant programs when they are financially eligible and where they are available. Many households that do not qualify for grants or cannot access zero-cost programs, however, would face financial difficulty paying for efficiency upgrades. Financial products represent one way to reach financially struggling households, but only if consumer protections are ensured and monthly bills are sustainable.

This chapter describes existing energy-reduction and financing programs, some of which pose significant consumer-protection risks, particularly for low-income homeowners, while others offer lessons for sustainable financing and funding. It then outlines consumer protections designed to ensure access to sustainable-energy and climate-retrofit opportunities and more affordable bills for existing housing stock.

3 U.S. Energy Information Administration, “In 2020, 27% of U.S. households.”

4 U.S. Environmental Protection Agency, “Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts.” (Washington, DC: EPA, (2021), p 9. Available at www.epa.gov/cira/social-vulnerability-report. According to the report, Black individuals are 40 percent more likely than non-Black individuals to live in areas with the highest projected increases in mortality rates due to climate-driven increases in extreme temperatures and are 34 percent more likely to live in areas with the highest projected increases in childhood asthma diagnoses due to climate-driven increases in particulate air pollution. *Id.* at 6.

5 Ariel Drehbohl et al., “How High Are Household Energy Burdens—An Assessment of National and Metropolitan Energy Burden Across the United States.” (Washington, DC: American Council for an Energy Efficient Economy, September 2020). Available at www.aceee.org/sites/default/files/pdfs/u2006.pdf.

6 Marilyn A. Brown et al., “Low-Income Energy Affordability: Conclusions from a Literature Review.” (Oak Ridge, TN: Oak Ridge National Laboratory, March 2020). Available at <https://info.ornl.gov/sites/publications/Files/Pub124723.pdf>.

ENERGY-EFFICIENCY AND RENEWABLE-ENERGY PROGRAMS WITH SIGNIFICANT CONSUMER-PROTECTION RISKS

To increase low-income households' access to affordable weatherization, electrification, and more efficient HVAC and appliances, some environmental advocates, states, and the federal government⁷ have promoted energy-efficiency financing programs. Unlike the federal Weatherization Assistance Program and other zero-cost, utility-sponsored programs for low-income households, energy-efficiency financing programs add surcharges to monthly utility or mortgage bills. Depending on program design, they can carry significant risk, especially for households with little to no discretionary income. Programs must balance access to financing, where needed, with consumer protections.

Tariffed On-Bill (TOB) Financing

Proponents promote TOB financing programs for homeowners and renters as ways to make otherwise unaffordable energy-efficiency and renewable-energy measures accessible to utility customers through monthly financing payments on the utility bill.⁸ On-bill financing (OBF), in general, takes different forms. Under the traditional OBF form, the debt is personal and will follow the consumer even if they move. Under the TOB model, e.g., PAYS® (Pay As You Save®) or Inclusive Utility Investment, the debt is tied to the meter, not the individual, a feature proponents cite as a tool for addressing the lack of incentives for tenants of multifamily buildings to invest in energy efficiency. This discussion focuses on the latter version. In 2022, according to one estimate, 20 utilities in 10 states—primarily electric cooperatives—offered PAYS® programs.⁹

PAYS® models, like all forms of OBF, rely on disconnecting essential utility service to ensure repayment. Unlike traditional OBF, a PAYS®

7 Energy Star, “Inclusive Utility Investment: Expanding access to comprehensive efficiency and electrification upgrades,” May 2023. Available at www.energystar.gov/products/inclusive_utility_investment; U.S. Environmental Protection Agency, Energy Resources for State and Local Governments, *Inclusive Utility Investment: Tariffed On-Bill Programs*, last updated September 29, 2023. Available at www.epa.gov/statelocalenergy/inclusive-utility-investments-tariffed-bill-programs.

8 Tom Stanton and Scott Sklar, “Utility Tariff On-Bill Financing: Provisions and Precautions for Equitable Programs,” *RRI Insights—Practical Perspectives on Critical Policy Issues* (January 2020): 1. Available at <https://pubs.naruc.org/pub/0E0B2716-947E-B0A8-2899-3DCA0F0C8F16>.

9 Energy Efficiency Institute, Inc., *2022 Status Update*, available at www.eeivt.com/status-reports/.

loan requires no credit check. It bases repayment, generally, on monthly surcharges of up to 80 percent of the upgrade’s estimated annual savings over no more than 80 percent of its expected life cycle. The theory is that customers pocket the remaining 20 percent of savings over that period.¹⁰

This model, however, doesn’t guarantee projected energy savings, which poses a particular problem for cash-strapped customers trying to finance larger, more expensive projects while trying to afford monthly utility bills. As PAYS® programs continue to be promoted for wider adoption by large, investor-owned utilities, early data indicate potential problems with relying on projected energy savings. For example, a study of one PAYS® program found that about half of participants did not save enough money from the energy-efficiency improvements to offset the tariff levied to cover the price of the improvements.¹¹

Customers with the means to cover monthly TOB surcharges and any required upfront, lump-sum payment may find this product useful, particularly in states with limited or no access to energy-efficiency retrofit programs. Yet, programs that require up-front payments to achieve the payment cost based on 80 percent of savings, however, are not likely to be well-subscribed.¹² Moreover, unless a TOB program includes consumer protections, such as a reserve fund that compensates customers when projected energy savings don’t materialize, customers with little or no discretionary income may face significant risk of disconnection of essential utility service due to the unaffordability of the monthly TOB payments. Because energy use varies by season, customer, and household size, projected savings for one tenant or homeowner don’t necessarily guarantee comparable savings each month or for the next customer. Reliance

10 Energy Efficiency Institute, *PAYS® Essential Elements & Minimum Program Requirements*, available at www.eeivt.com/pays-essential-elements-minimum-program-requirements-2/.

11 Jeff Deason, Sean Murphy, and Greg Leventis, “Customer Outcomes in Pay-As-You-Save Programs.” (Electricity Markets & Policy Energy Analysis & Environmental Impacts Division, Lawrence Berkeley National Laboratory reprinted from 2022 ACEEE Summer Study on Energy Efficiency in Buildings proceeding, August 2022), p 17. Available at https://eta-publications.lbl.gov/sites/default/files/deason_aceee_2022_preprint.pdf.

12 A 2023 independent evaluation report of Ameren Missouri’s PAYS® program indicates that only 10.7 percent of customers marketed to for program participation ended up proceeding to “Tier 4,” the contracting stage for PAYS® financing. Ameren management cited the need for a significant co-pay in order to make the 80/20 fee arrangement work as a major reason for such low participation. See “Ameren Missouri Program Year 2022 Annual EM&V Report, Volume 2: Residential Portfolio Report.” (Boston, MA: Opinion Dynamics, June 9, 2023). Available at www.efis.psc.mo.gov/Document/Display/17592.

on disconnection as a collection tool puts financially struggling customers at risk of losing essential utility service, and risks a customer's ability to stay housed, healthy, and safe.¹³

Rooftop Solar

Rooftop solar can provide substantial energy savings for consumers, especially in states with generous net metering rules or installation subsidies and strong consumer protections. But deceptive marketing, contractor fraud, and weak consumer protections can create significant consumer risks that policy makers must address. Typical abuses include high-pressure door-to-door sales tactics; misrepresentation of quality, price, financing, tax credits, and other aspects of the transaction; forgery of electronic signatures; failure of promised energy savings to materialize; and installation of panels on rooftops needing repair.¹⁴ Unethical marketing that promises but doesn't deliver significantly lower bills from solar panels represents a particular threat to low-income consumers.

PACE

Commercial and residential Property Assessed Clean Energy (PACE) programs allow property owners to finance upfront costs of energy improvements and pay those costs back over time through an assessment attached to the property rather than the owner. Multifamily rental properties typically utilize commercial PACE (C-PACE) programs, which have significant distinctions from residential PACE (R-PACE) programs utilized with owner-occupied single-family homes. R-PACE programs typically engage home-improvement contractors and secure loans through voluntary property tax liens. State and local governments authorize these privately run R-PACE programs but conduct little or no oversight of them.

13 Berneta Haynes, "Tariff-based On-Bill Financing: Assessing the Risks for Low-Income Consumers." (National Consumer Law Center, February 2023): 3-5. Available at www.nclc.org/wp-content/uploads/2023/02/NCLC-PAYS-issue-brief_final-2.14.23.pdf; John Howat & Olivia Wein, "Reaction to Tom Stanton and Scott Sklar's Paper 'Utility Tariff On-Bill Financing: Provisions and Precautions for Equitable Programs,'" *RRI Insights—Practical Perspectives on Critical Policy Issues*, (January 2020): 7-8. Available at <https://pubs.naruc.org/pub/0E0B2716-947E-B0A8-2899-3DCA0F0C8F16>.

14 Complaint, *City of Chicago v. Sun Badger Solar*, IL Circuit Court, Cook County, Case No. 2023CH04627 (May 10, 2023), available at www.chicago.gov/content/dam/city/depts/mayor/Press%20Room/Press%20Releases/2023/May/SuesSolarPanelCompanyOperatingDeceptiveBusiness.pdf; Complaint, *Ellison v. Brio Energy*, Case No. 27-CV-22-6187, MN District Court, Fourth District, Hennepin County (April 25, 2022), available at www.ag.state.mn.us/Office/Communications/2022/docs/Brio_Complaint.pdf; Letter from Nine State Attorneys General to Pink Energy Lending Partners (November 22, 2022), available at www.ag.ky.gov/Press%20Release%20Attachments/Attorney%20General%20Letter%20To%20Solar%20Lenders.pdf.

Authorized in 38 states and the District of Columbia, R-PACE programs operate actively only in California, Florida, and Missouri. While R-PACE loan sales may provide quick access to retrofits for homeowners with the means to cover the higher tax payments they bring, the program structure has fostered abuse and increased mortgage default and foreclosure risk through push-marketing, use of contractors as sales agents, and closings on tablets and smartphones (even for homeowners with no email address or computer).¹⁵ A study by the Consumer Financial Protection Bureau (CFPB) found that R-PACE loans increased mortgage delinquency by about 35 percent over two years, with the greatest impact on consumers with lower credit scores.¹⁶ R-PACE loans have gone disproportionately to consumers in census tracts with more Black and Hispanic residents.¹⁷

Counties in California and Florida have ended their R-PACE programs. In 2018, California adopted consumer protections, including an ability-to-repay requirement. In May 2023, the CFPB proposed a rule subjecting R-PACE loans to most of the protections that apply to new mortgages, including ability-to-repay requirements, advance disclosures, and meaningful remedies.¹⁸ As of December 2023, at least 30 tax collectors across Florida counties were opposed to implementing PACE and suing the Florida PACE Funding Agency to implement consumer protections.¹⁹

15 “FTC, California Act to Stop Ygrene Energy Fund from Deceiving Consumers About PACE Financing, Placing Liens on Homes Without Consumers’ Consent.” Press release (The Federal Trade Commission, October 28, 2022), available at <https://www.ftc.gov/news-events/news/press-releases/2022/10/ftc-california-act-stop-ygrene-energy-fund-deceiving-consumers-about-pace-financing-placing-liens>; Claudia Polsky et al., “The Dark Side of the Sun: How PACE Financing Has Under-Delivered Green Benefits and Harmed Low-Income Homeowners.” (Berkeley Law, Berkeley Environmental Law Clinic, 2021). Available at <https://lawcat.berkeley.edu/record/1198493?ln=en>; National Consumer Law Center and National Housing Law Project, “Comments to Consumer Financial Protection Bureau, Advance Notice of Proposed Rulemaking for Residential Property Assessed Clean Energy (PACE) Financing,” May 7, 2019. Available at <https://www.nclc.org/resources/advance-notice-of-proposed-rulemaking-for-residential-property-assessed-clean-energy-pace-financing/>.pdf; John Rao, “Residential PACE Loans: The Perils of Easy Money for Clean Energy Improvements.” (National Consumer Law Center, September 2017). Available at www.nclc.org/resources/residential-pace-loans-the-perils-of-easy-money-for-clean-energy-improvements/.

16 Siobhan McAlister and Ryan Sandler, “Property Assessed Clean Energy (PACE) Financing and Consumer Financial Outcomes.” (Washington, DC: Consumer Financial Protection Bureau, May 2023): 3. Available at https://files.consumerfinance.gov/f/documents/cfpb_pace-rulemaking-report_2023-04.pdf.

17 *Ibid*, p 20.

18 Consumer Financial Protection Bureau, 88 Fed. Reg. 30388 (May 11, 2023), available at www.federalregister.gov/documents/2023/05/11/2023-09468/residential-property-assessed-clean-energy-financing-regulation-z.

19 Alex Harris, “Florida counties say PACE home loan program needs more consumer protections,” *Tampa Bay Times*, December 20, 2023. Available at www.tampabay.com/news/business/2023/12/20/pace-home-loans-tax-collectors-energy-lawsuit/.

Assumed Savings in Government-Backed Single-Family Green Mortgages

The Federal Housing Administration (FHA) offers Energy Efficient Mortgages along with single-family home-purchase or refinance loans that don't require qualification of the borrower for the energy-efficiency portion on the risky assumption that projected savings will consistently materialize and make the loan affordable.²⁰ Many factors—household behavior, seasonal fluctuations in energy use, and external factors, such as utility rates, increased cooling needs, or unexpected family expenses—make it impossible to ensure that projected energy savings actually offset increased payments. In fact, a Fannie Mae study in the multifamily context makes clear that while there are often savings at the program and portfolio level, individual savings vary widely, which can present significant risks in the single-family context.²¹ While some research shows that energy efficiency generally can contribute to better mortgage performance due to lower utility bills,²² risks in connection with financing retrofits remain.

FHA, the U.S. Department of Agriculture (USDA), Fannie Mae, and Freddie Mac offer programs allowing homeowners to borrow more money than otherwise allowable through the explicit use of “stretch ratios,” which accommodate higher debt-to-income ratios based on a home's efficiency, thus assuming regular savings.²³ If borrowers don't save as much as the increase in the mortgage payment, they face increased default and foreclosure risk.

20 FHA Single Family Housing Policy Handbook 4000.1 at 410, available at www.hud.gov/sites/dfiles/OCHCO/documents/4000.1hgh_Update8.pdf.

21 “Spotlight on Fannie Mae's Green Measurement and Verification Service.” (Fannie Mae, November 2021): 8-9. Available at <https://multifamily.fanniemae.com/media/15226/display>. The study found that “energy savings projections are often overestimated, with multifamily utility efficiency program realization rates ranging from 61 to 87 percent,” and concluding that “meaningful savings accrue at the program and portfolio level; however, savings examined at a property level can be highly variable.”

22 UNC Center for Community Capital & Institute for Market Transformation, “Home Energy Efficiency and Mortgage Risks.” (March 2013). Available at www.imt.org/wp-content/uploads/2018/02/IMT_UNC_HomeEEMortgageRisksfinal.pdf.

23 U.S. Dep't of Hous. & Urb. Dev., Handbook 4000.1, *FHA Single Family Housing Policy Handbook* 335 (2021); U.S. Dep't of Agric. (USDA), Handbook HB-1-3550, *Direct Single Family Housing Loans & Grants Field Office Handbook* 4-67 (2022); USDA, Handbook HB-1-3555, *Single Family Housing Guaranteed Loan Program App. I-48* (2022); Fannie Mae, *Selling Guide: Fannie Mae Single Family 732* (2023); Freddie Mac, *Single Family Seller/Service Guide* 5041-4 (2023).

SUSTAINABLE ENERGY-EFFICIENCY AND RENEWABLE-ENERGY PROGRAMS

Several proven models for delivering affordable energy-efficiency and climate-resilience upgrades minimize risks to low-income consumers.

Community Solar

Community solar programs give customers access to the benefits of solar energy without requiring installation of expensive rooftop panels through subscriptions to a solar array or farm, often within their utility's service territory.²⁴ Renters and homeowners interested in reducing energy bills can share the benefits of solar more affordably through credits on their electric bill based on their proportional contribution to the installation. Community solar offers a less risky, more beneficial option for low-income utility customers. A customer doesn't need to own a home or have a roof in good repair; membership doesn't require financing; and customers don't have the responsibility of system maintenance or solving operational problems. These subscriptions generally make sense when they waive monthly subscription fees or set them at levels that ensure net monthly energy savings.

Zero-Cost Weatherization Programs

Access to zero-cost weatherization programs that provide robust, whole-building energy efficiency represents a critical tool for reducing energy consumption and costs for low-income households. The U.S. Department of Energy's Weatherization Assistance Program (WAP) helps lower costs for low-income households by decreasing energy use through whole-building assessment and installation of energy-saving equipment. WAP serves all 50 states, Washington D.C., Native American tribes, and all five U.S. territories. WAP offers free installation of insulation, air sealing, ventilation, certain HVAC systems (including heat pumps), lighting, appliances, and home health and safety measures. Households qualify for WAP if income falls at or below 60 percent of state median income. A household also qualifies for WAP if income falls at or below 200 percent of the

24 Berneta Haynes, "Community Solar: Expanding Access and Safeguarding Low-Income Families." (National Consumer Law Center, January 2024); U.S. Department of Housing and Urban Development, "HUD memorandum on Treatment of Community Solar Credits on Tenant Utility Bills," July 15, 2022. Available at www.hud.gov/sites/dfiles/Housing/documents/MF_Memo_Community_Solar_Credits_signed.pdf.

federal poverty level or if it receives Supplemental Security Income or Aid to Families with Dependent Children. Households that take advantage of the program save an average of \$372 each year on energy costs, according to the U.S. Department of Energy.²⁵

Additional weatherization funding comes from the U.S. Department of Health and Human Services' Low Income Home Energy Assistance Program (LIHEAP), state-authorized funding, and utility companies' customer-funded programs. Immense need and limited and variable funding, however, limit access to these services, as does the challenge of subscribing multifamily properties.

Government-backed green mortgages and building codes

Fannie Mae, Freddie Mac, FHA, USDA, and the U.S. Department of Veterans Affairs (VA) offer loans to finance energy- and water-efficiency upgrades, resilience against natural disasters, and to pay off some energy-related debts, such as PACE loans. Other than the assumed savings and stretch ratios described above, these loans generally use conventional, sustainable underwriting. Fannie and Freddie also maintain green mortgage-backed securities to promote energy-efficiency lending. Notably, FHA and USDA have proposed to update energy efficiency codes for new single family and multifamily construction loans²⁶ (with VA making a similar announcement²⁷) and the Federal Housing Finance Agency is also considering adoption of similar standards.²⁸

25 Office of Energy Efficiency and Renewable Energy, "Weatherization Assistance Program Fact Sheet," *U.S. Department of Energy*. Available at www.energy.gov/sites/default/files/2022-06/wap-fact-sheet_0622.pdf.

26 U.S. Dep't of Housing and Urban Development and U.S. Dep't of Agriculture, Notice of Preliminary Determination, 88 FR 31773 (May 18, 2023). Available at www.federalregister.gov/documents/2023/05/18/2023-10596/adoption-of-energy-efficiency-standards-for-new-construction-of-hud--and-usda-financed-housing.

27 U.S. Dep't of Veterans Affairs and Office of Construction and Facilities Management, "Standards Alert, Energy Efficient Design Criteria Update," April 1, 2023. Available at www.cfm.va.gov/til/sAlert/sAlert020.pdf.

28 Christian Robles, "Feds Urged to Update Energy Standards for New Homes," *Politico Energy Wire*, December 4, 2023. Available at <https://subscriber.politicopro.com/article/eenews/2023/12/04/feds-urged-to-update-energy-standards-for-new-homes-00129673>.

FINANCING PROGRAMS MUST INCLUDE ROBUST CONSUMER PROTECTIONS

Robust consumer protections represent critical components of any energy-efficiency financing program and must provide *affordability, transparency and accountability, and data-informed program development.*

Affordability

Lead with zero- or low-cost programs. Financing programs should not be marketed directly to low-income customers who can obtain the same measures cost-free through other programs. Regulations should require that consumers receive information about rebates, tax credits, and other means of obtaining more affordable funding for projects, ideally with one-stop shopping. Policy makers must increase funding for programs that expand access to affordable weatherization and solar.

Braid and stack benefits. Integrating (braiding) rebates and other incentives, such as those under the Inflation Reduction Act of 2022,²⁹ into energy-affordability programs (such as WAP, utility-sponsored energy efficiency programs, LIHEAP, and state programs) represents a critical step in making improvements affordable and their delivery efficient. Customers using conventional financing may also save money by using such rebates and incentives.

Protect ability to repay. Any energy-efficiency financing program must build in strong “ability to repay” standards, verifying debt and income, accounting for other secured debt where applicable, assuring a reasonable relationship to property value, and adopting a generally accepted monthly affordability measure, such as debt-to-income ratio or cash-flow analysis. Projected energy savings should not serve as justifications for payments above levels otherwise deemed affordable. Financing terms must not extend beyond the projected “useful life” of the improvements. Disconnection from essential utility service must not serve as a collection tool. Tariffed on-bill programs must reserve funds for making customers “whole” when the charge for a service exceeds projected energy savings.

²⁹ Inflation Reduction Act of 2022, H.R. 5376, 117th Cong., available at [www.congress.gov/bill/117th-congress/house-bill/5376](https://www.congress.gov/bills/117/congress-house-bill/5376). In particular see the IRA Home Energy Rebate Programs at 42 U.S.C. Sect.18795 et seq (HOMES rebate) and Sect.18795a (HEEH rebate).

Ensure affordable monthly utility bills. To keep utility bills affordable, states should adopt robust affordability measures—including percentage-of-income payment plans, discount rates, and restrictions on disconnection—to mitigate the risks of energy-efficiency financing. For TOB customers, consumer protections should cover subsequent home occupants for as long as the TOB debt remains on the bill. Financing large projects requires lengthy payback periods and raises the risk of customer disconnections, particularly when measure surcharges exacerbate already unaffordable utility bills.

Transparency and Accountability

Require independent energy audits. Policymakers should require energy audits—which give homeowners useful information about ways to improve energy efficiency—performed by independent parties with no financial incentive in a potential project.

Require written disclosures. Consumers should receive clear, written disclosures, in their preferred language, that explain costs and terms, with a waiting period before consummation and a right to cancel for a period after the transaction. For required contracts or disclosures that are provided electronically, the consumer must first have consented to receive the electronic records as required by federal law, which requires in part that the consumer must provide their consent in a “manner that reasonably demonstrates” the consumer’s ability to access the records. If a document is signed with an electronic symbol or process, the consumer’s signature is valid only if the consumer applied the symbol or process and by doing so intended to sign the electronic record. Subsequent occupants of houses or apartments with existing TOB debt tied to the meter should receive clear disclosure of the obligation (monthly surcharge amount) before signing a lease or making a home purchase.

Assure oversight of contractors, remedies, and fair lending practices. Regulations should restrict marketing of financing programs to parties other than the contractors doing the work, due to the financial incentive they may have in the sale. Contractors must undergo pre-approval and, following completion of the work, an independent inspection should ensure proper installation and operation. Customers with complaints should have a meaningful dispute-resolution process without mandatory

arbitration, with compensation for financial harm, including against investors. Utilities should guarantee energy savings from installed measures and should hold low-income households harmless if savings fall short of projections. Program design and implementation should include considerations of equitable access, language access, and community engagement.

Data-Informed Programs

Collect data. Meaningful data on initial financing and product performance, including demographic data, should be collected and published to ensure equitable and sustainable program design.

Energy-efficiency financing and renewable-energy programs can increase access to affordable weatherization, electrification, and more efficient HVAC and appliances in states with limited or no access to zero-cost energy efficiency retrofit programs. In order for these programs to be truly successful in helping the people they are meant to serve, however, they must incorporate consumer protections, reducing risk while enabling households to meet their energy needs.

ALYS COHEN is a senior attorney at the National Consumer Law Center focusing on federal housing advocacy, energy efficiency housing finance, and disaster response. She is a graduate of the University of Pennsylvania Law School and a member of ACEEE's Research Advisory Board.

KAREN LUSSON is a senior attorney at the National Consumer Law Center, focusing on energy and utility issues that affect low-income customers. She is a graduate of DePaul University College of Law.

Special thanks to our National Consumer Law Center colleagues, JENIFER BOSCO, BERNETA HAYNES, and OLIVIA WEIN, for their insights and edits and to our thought partner on energy efficiency housing finance, STACEY TUTT, of the National Housing Law Project.

ENABLING COMMUNITY DEVELOPMENT THROUGH HOME RETROFIT PROGRAMS

Michael Reiner and Michael Garvey, *U.S. Department of Energy*
Tony Reames, *University of Michigan*

Facing a growing battle to preserve local housing and stabilize historic neighborhoods, the city of Philadelphia established a series of home investment programs in the 1990s. Since then, the Basic Systems Repair Program (BSRP) has provided low-income households with free home repairs for structural, mechanical, electrical, plumbing, and heating upgrades. Beyond the direct benefits to low-income homeowners, the program's deeper impacts are most evident at the community level. BSRP has helped deter property abandonment by fourfold and likely saved the city millions of dollars by deferring maintenance costs of deteriorated properties.¹ In addition to combating urban disinvestment, BSRP produced quality-of-life improvements for entire neighborhoods. A recent study found that after even a single home was repaired through BSRP, crime rates on that block dropped by nearly 22 percent.²

1 Gordon Whitman, "Blight Free Philadelphia: A Public-Private Strategy to Create and Enhance Neighborhood Value." (Philadelphia, PA: Temple University Center for Public Policy, January 2001). Available at [10.13140/RG.2.1.5187.0484](https://doi.org/10.13140/RG.2.1.5187.0484).

2 Eugenia South, John MacDonald, and Vincent Reina, "Association Between Structural Housing Repairs for Low-Income Homeowners and Neighborhood Crime," *JAMA Netw Open* 4 (7) (2021): e2117067.

Philadelphia’s home repair program highlights that even modest improvements to local housing quality can catalyze broader transformation in communities and the built environment. As an investment in local housing, energy-efficiency programs can, for example, deliver broader economic, health, and social opportunities for historically underserved and overburdened communities. The potential scale of these benefits has expanded significantly with the Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act (IRA), which allocate more than \$50 billion in direct programs and incentives to decarbonize the nation’s building stock through energy-efficiency and electrification upgrades.

These programs provide an unprecedented opportunity to address historic inequalities in housing and energy systems. An estimated one in four U.S. households face high energy burdens— spending more than 6 percent of their income on energy costs. In fact, low-income households face energy burdens that are more than two and half times the national average.³

BIL and IRA funding will bridge gaps within the existing patchwork of federal, state, local, and utility energy efficiency programs. In 2021, an estimated \$7.66 billion was spent on utility and public benefit energy efficiency programs.⁴ Yet many of these programs underperform in distributing benefits to low-income customers.⁵ Lower-income households are more likely to live in older homes with existing repair needs, restricting participation in many efficiency offerings. While programs, notably the federal Weatherization Assistance Program (WAP), cover a portion of repair costs, a major funding gap still exists for households with additional remediation needs.⁶ The influx of new federal funding presents a critical opportunity to align utility and state programming with state and federal funds to drive impact in underserved communities.

3 Energy.gov, *Low-Income Energy Affordability Data (LEAD) Tool*, available at www.energy.gov/scep/spsc/low-income-energy-affordability-data-lead-tool.

4 Sagarika Subramanian et al., “2022 State Energy Efficiency Scorecard.” (Washington, DC: ACEEE, December 2022). Available at www.aceee.org/research-report/u2206.

5 Tony G. Reames, Ben Stacey, and Michael Zimmerman, “A Multi-State Analysis of Equity in Utility-Sponsored Energy Efficiency Investments for Residential Electric Customers.” (Ann Arbor, Michigan: University of Michigan, April 2019).

6 Molly Graham, “Income-Qualified Program Innovations to Reduce Deferral Rates.” Proceedings of the 2022 ACEEE Summer Study on Energy Efficiency in Buildings 6: 496–511. (Washington, DC: ACEEE, 2022).

TENETS FOR WHOLE-HOME RETROFIT PROGRAMS

Against this backdrop, energy-efficiency programs can leverage new resources to redesign how whole-home energy solutions are delivered. In this chapter, we expand on the idea of the “one-stop shop” approach, with key considerations for state policymakers and program implementers to scale low-income energy retrofit programs. We explore existing examples of programs and policies in action that represent opportunities to:

- Address building repair and local energy needs that reflect the acute housing challenges of low- and moderate-income families.
- Focus on weatherization as an objective and precursor to electrification.
- Design for whole-home solutions that minimize energy demand, reflect life-cycle cost reductions, and minimize disruptions to tenants.⁷
- Coordinate programs as part of an energy assistance and outreach strategy to reduce program burdens for tenants, administrators, and contractors.

THE BASELINE: IMPROVING EXISTING HOUSING

Low-income retrofit programs must address the persistent needs of the current building stock and anticipate future energy affordability considerations.

Home Repair Needs

Homes located within underserved communities often require remediation work before energy-efficiency measures can be installed. For whole-home retrofit programs to effectively serve lower-income households, there must also be funding to address basic repair work. Within weatherization assistance programs, for example, health and safety repairs are typically capped at 15 percent of the total project cost per unit; beyond that, clients are “deferred” for funding until that work is completed.

⁷ Weatherization refers to efficiency measures that primarily target streamlined efficiency improvements, such as air and duct sealing, insulation, and heating system repairs. Whole-home retrofits take a more comprehensive approach to achieve deeper improvements and may consider several measures, such as electrification, smart controls, and rooftop solar.

Deferral rates vary widely across the country, with some agencies reporting rates as low as 5 percent and others as high as 60 percent.⁸ Local weatherization programs often refer deferred clients to third-party repair programs, with only a portion of those clients going on to eventually receive weatherization services.⁹ In an effort to begin addressing deferral rates from within the program, Congress created a \$15 million Weatherization Readiness Fund for the 2022 program year with additional proposed legislation to expand funding.¹⁰

Acknowledging this fundamental gap, states and cities have created retrofit programs that combine additional funding to address home repair needs. In 2021, local weatherization agencies leveraged an additional \$371 million from non-federal sources.¹¹ To bring in additional funding for health and safety repairs, some states are looking to other federal health services such as Health & Human Services' (HHS) Medicaid Program, Preventative Health & Health Services Block grant, and HUD's Lead Hazard Controls Grant.¹² North Carolina's Community Action Agencies created the Healthy Homes Initiative in partnership with BlueCross and BlueShield to provide additional health and safety repairs.¹³

In other cases, programs will combine multiple resources to improve program administrative burdens and streamline services to better serve eligible households. Philadelphia's Built to Last pilot program was designed to address this fundamental gap in programming, with the goal of coordinating various restoration and upgrade services under one service

8 Laura Benshoff, "A low-income energy-efficiency program gets \$3.5B boost, but leaves out many in need," *NPR*, May 13, 2022. Available at www.npr.org/2022/05/13/1096114029/low-income-energy-efficient-weatherization-program-3-5b-needed.

9 Ibid.

10 AnnaMaria Garcia, "Weatherization Program Notice 22-6." (Washington, DC: Department of Energy, 2022). Available at www.energy.gov/sites/default/files/2022-04/wpn-22-6.pdf.

11 "Weatherization Assistance Program Funding Report Program Year 2021." (Washington, DC: National Association for State Community Services Programs). Available at https://nascsp.org/wp-content/uploads/2022/12/PY21-WAP-Funding-Report_Final-1.pdf.

12 Sara Hayes and Christine Gerbode, "Braiding Energy and Health Funding for In-Home Programs: Federal Funding Opportunities." (Washington, DC: ACEEE, 2020). Available at www.aceee.org/research-report/h2002.

13 North Carolina Community Action Association, *Healthy Homes Initiative*, available at www.nccaa.net/healthy-homes-initiative.

delivery model.¹⁴ Lessons learned from the initial 50 household pilot will inform the direction of Pennsylvania’s statewide Whole-Home Repairs Program.¹⁵

Additional Drivers for Energy Efficiency Programming

The examples above underscore the reality that energy improvements cannot always be the primary objective when more pressing needs exist. Whole-home retrofit programs should consider additional drivers that speak to other household needs, such as energy access, reliability, and resilience to growing climate threats.

According to the latest survey by the Energy Information Administration, 88 percent of homes use air conditioning (AC), although only two-thirds have central AC.¹⁶ Retrofit programs provide an opportunity to expand access to AC through the installation of heat pumps. California’s Bay Area Multifamily Building Enhancement (BAMBE) program provides additional rebates and incentives for heat pumps and envelope improvements for properties located in communities with high vulnerability to extreme heat.¹⁷ In response to the 2021 heatwave that killed at least 96 residents, Oregon established the Rental Home Heat Pump Program to provide rebates for heat pumps and electrical upgrades for rental properties, with additional incentives for low- or moderate-income tenants.¹⁸

As climate change puts increased strain on energy infrastructure, communities will face growing challenges to maintain local energy systems. Particularly in rural areas, whole-home retrofit programs can address fuel availability and rising energy demand, and serve as an opportunity for economic development. For instance, electric cooperatives (co-ops) in

14 “Built to Last: An Initiative to Restore Safe, Healthy, and Affordable Homes.” (Philadelphia, PA: Philadelphia Energy Authority, 2022). Available at <https://philaenergy.org/wp-content/uploads/2022/10/10-2022-PEA-Built-to-Last-summary.pdf>.

15 Pennsylvania Department of Community and Economic Development, *COVID-19 ARPA Whole-Home Repairs Program*, available at <https://dced.pa.gov/programs/covid-19-arpa-whole-home-repairs-program/>.

16 U.S. Energy Information Administration, *Residential Energy Consumption Survey 2020*, available at www.eia.gov/consumption/residential/.

17 “BayREN Increases Rebates for Energy-Efficiency and Electrification Retrofits in Multifamily Buildings.” Press release (San Francisco, CA: Bay Area Regional Energy Network, January 27, 2023). Available at www.bayren.org/news/multifamily-rebates-2023.

18 Oregon.gov, *Oregon Rental Home Heat Pump Program: Owners and Tenants*, available at www.oregon.gov/energy/Incentives/Pages/ORHHPP-Owners-Tenants.aspx.

Figure 1. Examples of Programs Designed to Tackle Local Community Housing and Energy Needs

CHALLENGE	PROGRAM EXAMPLE
COORDINATE MULTIPLE RESOURCES TO TACKLE HOME REPAIR NEEDS	Philadelphia's Built to Last Pilot Program combined various restoration resources and upgrade services under one service delivery model.
TACKLE HEALTH & SAFETY ISSUES	North Carolina's Healthy Homes Initiative combines funding from BlueCross and BlueShield to tackle health-related repair needs alongside weatherizations.
ADDRESS EMERGING CLIMATE RISKS	California's Bay Area Multifamily Building Enhancement (BAMBE) program provides additional rebates and incentives for installations within buildings with higher vulnerability to extreme heat.
OFFSET LOCAL ENERGY INFRASTRUCTURE COSTS	South Carolina's Help My House Program created efficiency financing to electric co-op members as a demand-side strategy to defer larger energy infrastructure investments.

South Carolina established the Help My House energy efficiency program as a demand-side strategy to defer investments in new power resources and infrastructure.¹⁹ Help My House offered on-bill financing—with costs added to electric bills—so co-op members could make comprehensive energy-efficiency improvements that align with the needs of their local co-op.²⁰ By addressing energy affordability from a holistic-perspective, retrofit programs can better serve the immediate and future needs of communities.

WEATHERIZATION: THE LINCHPIN BETWEEN HOME REPAIRS AND ELECTRIFICATION

Weatherization measures can take place in conjunction with home repairs to mitigate increased technical and financial costs of building electrification.

19 Tri-County Electric Cooperative, *Help My House!*, available at <https://tri-countyelectric.net/help-my-house>.

20 Environmental and Energy Study Institute, *The Help My House Model*, available at www.eesi.org/obf/case-study/helpmyhouse.

Weatherization Assistance Program

The U.S. Department of Energy’s (DOE) Weatherization Assistance Program (WAP) is the primary federal program for improving energy-efficiency for low-income households. Formed in 1976 as a response to the 1973 oil crisis, WAP was designed to focus on fundamental energy conservation improvements. Since its introduction, WAP has serviced more than 7.2 million homes, averaging about 35,000 homes annually, with average annual home energy savings of \$372 per weatherized unit. The BIL offered a major boost to this work with \$3.5 billion for WAP, marking a national commitment to energy-efficient housing in historically underserved communities. The funding will primarily expand the reach of WAP to serve at least 700,000 additional households. But it will also pilot new exploratory projects to better understand the integration of electrification, braiding of multiple funding sources, and expansion of technical assistance to local programs.²¹

As the central federal program for home energy improvements, WAP offers an expansive network of programs and experienced contractors knowledgeable in the communities they serve.²² Weatherization acts as a linchpin between basic home remediation and deeper efficiency improvements needed to decarbonize our affordable housing stock.²³ And with an additional \$25 billion available²⁴—including \$8.8 specifically for home energy rebates²⁵—in the IRA and BIL for home energy retrofits, local weatherization programs will play an even greater role in delivering sustained energy cost and emission reductions to communities that need it the most.

21 These programs include the Enhancement & Innovation (E&I) grant, Sustainable Energy Resources for Consumers (SERC) grant, and the Community Scale Pilot Program (CSPP).

22 Carlos Martín et al., “Targeting Weatherization: Supporting Low-Income Renters in Multifamily Properties through the Infrastructure Investment and Jobs Act’s Funding of the Weatherization Assistance Program and Beyond.” (Cambridge, MA: Joint Center for Housing Studies, January 2023).

23 Brennan D. Less et al., “The cost of decarbonization and energy upgrade retrofits for US homes.” (Berkeley, CA: Lawrence Berkeley National Lab (LBNL), 2021).

24 “Home Energy Upgrade Incentives: Programs in the Inflation Reduction Act and other recent federal laws.” (Washington, DC: ACEEE, February 2023). Available at www.aceee.org/sites/default/files/pdfs/home_energy_upgrade_incentives_2-1-23_1.pdf.

25 Office of State and Community Energy Programs, *About the Home Energy Rebates*, available at www.energy.gov/scep/home-energy-rebates-programs.

DESIGNING FOR WHOLE-HOME SOLUTIONS

One-stop shop retrofit programs should integrate home repairs, weatherization services, and electrification upgrades into approaches that minimize energy demand, reflect life-cycle cost reductions, and limit disruptions to tenants.

Thoughtful Retrofit Design

In regions where natural gas prices remain low, the shift to electric appliances can result in increased energy costs.²⁶ Energy load reductions that minimize the net energy required to heat and cool a home can mitigate potential bill increases. Envelope improvements, air sealing, and other weatherization measures not only ensure energy savings can be realized but also mitigate against future energy price increases.

This enables the installation of smaller-sized equipment, which leads to lower upfront costs and avoids upgrades to electric panels and wiring that might otherwise be required.²⁷ Massachusetts Whole-Home Heat Pump Pilot offers valuable insight on how weatherization measures allow for smaller-sized heat pump installations.²⁸ Related reports from the state commission reinforce the need for appliance replacement programs to include additional resources for weatherization and repair measures. It allows those programs to mitigate bill increases and address participation barriers facing lower-income households.²⁹

The shift to whole-home design does not always fit the mold of traditional cost-benefit tests. Federal weatherization guidelines assess upgrades on a per-measure—as opposed to a whole-home—basis, which can lead

26 Emily Levin and Becky Schaaf, “Equitable Electrification: Solving the Affordability Catch-22 for LMI Households That Heat with Natural Gas.” Presented at the 2022 ACEEE Summer Study on Energy Efficiency in Buildings. Available at www.veic.org/clients-results/reports/equitable-electrification-solving-the-affordability-catch-22-for-lmi-households-that-heat-with-natural-gas.

27 Hannah Bastian and Charlotte Cohn, “Ready to Upgrade: Barriers and Strategies for Residential Electrification.” (Washington, DC: American Council for an Energy-Efficient Economy, 2022). Available at www.aceee.org/research-report/b2206.

28 Massachusetts Clean Energy Center, *Whole-Home Air-Source Heat Pump Pilot*, available at www.masscec.com/program/whole-home-air-source-heat-pump-pilot; Meg Howard, “MassCEC Pilot Showcases Success of Whole Home Heat Pumps,” *MassCEC* September 24, 2021. Available at www.masscec.com/blog/masscec-pilot-showcases-success-whole-home-heat-pumps.

29 “Final Report Massachusetts Commission on Clean Heat.” (Massachusetts: Massachusetts Commission on Clean Heat, 2022). Available at www.mass.gov/doc/massachusetts-commission-on-clean-heat-final-report-november-30-2022/download.

to incremental solutions that overlook deeper savings opportunities.³⁰ Particularly for cold-climate scenarios, where homes may require backup heating, a whole-home approach is key to analyzing potential energy savings. In other cases, access to new energy services, such as air conditioning, offers a distorted snapshot of retrofit savings if compared to past bills. A whole-builds approach means impacts can be measured based on energy performance, offering a more complete understanding of a home's efficiency capabilities.

Reducing Risk Through Resilience

Weatherization plus electrification retrofit packages, when modeled, generate savings in nearly all states for households below 80 percent of the area median income.³¹ Yet, there are many reasons for retrofit programs to adopt a more stepwise approach for scaling home decarbonization solutions. Successful retrofit strategies may consider a more incremental approach to ensure safe, affordable, and reliable energy services are maintained over the course of an investment.

In colder climates, programs can prioritize heat pump and efficiency installations, but leave the original heating system in place as a secondary backup to ensure heating needs are met. Dual-heating solutions have found notable success across the Midwest through rural electric co-op programs.³² For multifamily housing properties, envelope improvements can be coordinated with capital improvement schedules. More complex heat pump installations and other mechanical system improvements can then be coordinated to mitigate unanticipated challenges.³³

Longer-term planning can also align retrofits with planned infrastructure investments. As energy infrastructure faces increased stress due to rising temperatures, increased demand, and the adoption of new loads, such

30 Rebecca Mann and Jenny Schuetz, "The U.S. needs better, more accessible home weatherization programs," *Brookings*, October 10, 2022. Available at www.brookings.edu/articles/the-u-s-needs-better-more-accessible-home-weatherization-programs/.

31 Jes Brossman et al., "State Level Residential Building Stock and Energy Efficiency & Electrification Packages Analysis." (Golden, CO: National Renewable Energy Laboratory, 2023).

32 EESI, "Equitable Beneficial Electrification (EBE) for Rural Electric Cooperatives." (Washington DC: Environmental and Energy Study Institute, 2019).

33 Christopher Perry, Amruta Khanolkar, and Hannah Bastian, "Increasing Sustainability of Multifamily Buildings with Heat Pump Water Heaters." (Washington, DC: American Council for an Energy-Efficient Economy, 2021). Available at aceee.org/research-report/b2101.

as electric vehicles, energy efficiency will serve an elevated role for grid stability. In fact, some state regulators, including the California Public Utilities Commission (CPUC), are setting new requirements to ensure energy efficiency programs align with utility infrastructure planning, decarbonization goals, and energy equity objectives.

Retrofit programs can also advance energy resilience at the community scale to address larger infrastructure gaps. The San Joaquin Valley Affordable Energy Pilot, funded by the California Public Utilities Commission, provides free home electrification upgrades in 11 low-income communities, an alternative to expanding a natural gas pipeline to those areas.³⁴ Through extensive engagement, communities opted to pursue electrification over connecting to gas distribution—prioritizing energy affordability, reliability, and community health.³⁵

PRIORITIZING CUSTOMER ENGAGEMENT AND PROGRAM ACCESSIBILITY

The concept of one-stop shop retrofit programs extends to broader energy assistance programming as well. Scaling whole-home retrofit programs is a balancing act of resources, labor, and time. From home repair needs to lack of familiarity, households with limited financial means face numerous challenges to participating in these retrofit programs. Successful programs can proactively target energy-burdened households and aggregate resources to serve as a one-stop shop for home energy retrofits.

Tapping into broader social services networks

Actions to streamline application processes and client outreach ultimately unlock the capacity of programs to better serve households in greatest need of energy improvements. Several states have passed legislation to coordinate enrollment across state social services programs, including energy assistance and utility efficiency programming. This not only makes the application process easier for residents but also reduces administrative

34 Gabriela Ornelas, “Electrifying the San Joaquin Valley,” *Edison International*, August 24, 2022. Available at <https://energized.edison.com/stories/electrifying-the-san-joaquin-valley>.

35 Carmelita Miller et al., “Equitable Building Electrification: A Framework for Powering Resilient Communities.” (Oakland, CA: Greenlining Institute). Available at https://greenlining.org/wpcontent/uploads/2019/09/Greenlining_EquitableElectrificationReport_2019_WEB.pdf.

burdens for local agencies.³⁶ A referral network of energy assistance and social services creates a single point of entry for programs to deliver holistic energy, housing, and health efficiency resources.³⁷ New Jersey recently launched a Whole House pilot program to deliver comprehensive home repair and energy-efficiency upgrades.³⁸ The program will leverage the state’s Universal Service Fund (USF) and Low Income Home Energy Assistance Program (LIHEAP) programs, which provide an established referral network along with household energy bill data.

Coordinating bill assistance and efficiency

By centralizing weatherization and efficiency programs alongside utility bill assistance, states can address energy affordability. Massachusetts’ Mass Save program³⁹ has had notable success serving households with high energy burdens by working with local community action agencies that manage both utility discounts and efficiency improvements.⁴⁰ This model can help ensure that home electrification investments are aligned with utility rates to ensure households see savings.⁴¹ Similarly, efficiency organizations in Michigan pushed Detroit’s utility, DTE, to establish a troubled customer pilot program to target energy-efficiency upgrades for households in danger of having their power shut off.⁴²

36 Jennifer Bratburd, “Increasing Access to Energy Efficiency: Options for Improving Weatherization Assistance.” (Jefferson City, MO: MOST Policy Initiative, May 2021).

37 “New Jersey Whole House Pilot Design Project: Asset And Gap Analysis.” (Baltimore, MD: Green and Healthy Homes Initiative). Available at www.njcleanenergy.com/files/file/Library/6_17_22_GHH-NJ-Report-Final-revised.pdf.

38 Ibid.

39 “Mass Save 2019 Residential Program Review: Opportunities and Recommendations for 2020 and Beyond.” (Massachusetts: MA Energy Efficiency Advisory Council, December 2019). Available at <https://ma-eeac.org/wp-content/uploads/2019-Residential-Program-Review-and-Recs.pdf>.

40 “Energy Affordability Study Survey Of Programs – In-Depth Analysis.” (Princeton, NJ: APPRISE Incorporated, December 2020). Available at <https://opc-dc.gov/wp-content/uploads/2022/03/DC-OPC-Energy-Affordability-Study-State-Energy-Assistance-Programs-FINAL-12-7-2020.pdf>.

41 “Massachusetts Joint State Wide Electric and Gas Three-Year Energy Efficiency Plan: 2022-2024.” (Massachusetts: Mass Save, November 2021). Available at <https://ma-eeac.org/wp-content/uploads/Exhibit-1-Three-Year-Plan-2022-2024-11-1-21-w-App-1.pdf>.

42 April Thomas, “Sierra Club and DTE Reach Agreement for Groundbreaking Energy Efficiency Pilot Program to Minimize Utility Shut-offs.” Press release (Detroit, Michigan: Sierra Club, March 5, 2020), available at www.sierraclub.org/press-releases/2020/03/sierra-club-and-dte-reach-agreement-for-groundbreaking-energy-efficiency.

POLICY, PROGRAMMING, AND BEYOND

Investments in sustainable housing deliver tangible solutions to ensure all communities participate and benefit from our energy transition. Through the design of whole-home retrofit programs, states and local administrators can deliver meaningful energy savings to improve the overall quality of housing within communities. Administrators also need to establish meaningful safeguards and protections to protect against unintended outcomes.

For instance, NYSERDA's Multifamily Performance Program requires projects to submit an energy savings and rent affordability plan for tenant protections.⁴³ Pennsylvania's Whole-Home Repairs Program requires landlords to sign similar commitments around rent increases to prevent tenants from getting priced out.⁴⁴ Finally, our approach to evaluating program effectiveness must evolve to consider benefits beyond what's captured in a traditional cost-effectiveness test. In turn, programs can focus more on helping households affordably access basic energy services with sufficient heating and cooling.

These are snapshots of whole-home retrofit programs that can serve as a vehicle for meaningful community investment. There are numerous successful programs, both current and past, that reflect key design principles in practice. Additional examples can be found, including in the DOE's State and Local Solution Center,⁴⁵ in the EPA's Energy Resources for State and Local Governments,⁴⁶ in ACEEE's Underserved Residential Programs Toolkit,⁴⁷ and in the Clean Energy States Alliance Directory of

43 NYSERDA, *MPP Provider Portal*, available at www.nyserda.ny.gov/ny/MPP-Existing-Buildings/Document-Library; "Heat Pump Demonstration Study Frequently Asked Questions for Multifamily Building Solutions Providers." (Albany, NY: NYSERDA, 2021).

44 Energy.gov, *About the State and Local Solution Center*, available at www.energy.gov/scep/slsc/about-state-and-local-solution-center.

45 Ibid.

46 EPA, *Bringing the Benefits of Energy Efficiency and Renewable Energy to Low-Income Communities: Case Studies and Program Profiles*, available at www.epa.gov/statelocalenergy/bringing-benefits-energy-efficiency-and-renewable-energy-low-income-communities.

47 "Toolkit: Adapting Energy Efficiency Programs to Reach Underserved Residents." (Washington, DC: ACEEE, November 2023). Available at https://www.aceee.org/sites/default/files/pdfs/adapting_energy_efficiency_programs_to_reach_underserved_residents_-_encrypt.pdf [aceee.org].

State Low- and Moderate-Income Clean Energy Programs.⁴⁸ By taking a whole-home approach, efficiency programs can tackle both existing and future challenges, centering community needs at the heart of their overall mission.

48 Clean Energy States Alliance, *Directory of State Low- and Moderate-Income Clean Energy Programs*, www.cesa.org/resource-library/resource/directory-of-state-low-and-moderate-clean-energy-programs/.

MICHAEL REINER is an Analyst and Policy Advisor within the U.S. Department of Energy's Office of Energy Justice and Equity. Michael works with other DOE offices to embed energy justice priorities within their funding opportunities, strategic planning, and program design. He leads the development of a national energy poverty framework alongside other research on household energy needs.

MICHAEL GARVEY is an economist at the U.S. Department of Energy. Previously, he was a macroeconomic policy analyst at the Washington Center for Equitable Growth. Prior to joining Equitable Growth, Michael interned at the National Oceanic and Atmospheric Administration as a NCAS-M research fellow, analyzing the economic impacts of climate change. Michael received his doctor of philosophy from Howard University, and his research agenda focuses on analyzing the economic effects of climate change. He earned a master of arts in economics, a master of science in project management, and a bachelor of science in business management from Virginia State University.

TONY G. REAMES is the Director of the Detroit Sustainability Clinic & Tishman Professor of Environmental Justice at the University of Michigan. He was also DOE's first-ever Deputy Director for Energy Justice Policy and Analysis. He is an associate professor of environment and sustainability at the University of Michigan, where he established the Urban Energy Justice Lab and the Energy Equity Project.

APPENDIX

- **Pennsylvania Basic Systems Repair Program (BSRP):** Provides low-income households with free home repairs for structural, mechanical, electrical, plumbing, and heating upgrades.
- **California Bay Area Multifamily Building Enhancement (BAMBE):** Provides additional rebates and incentives for heat pumps and envelope improvements for properties located in communities with high vulnerability to extreme heat.
- **South Carolina Help My House energy efficiency program:** A demand-side strategy to defer investments in new power resources.
- **Massachusetts Whole-Home Heat Pump Pilot:** Offers valuable insight on how weatherization measures allow for small heat pump installations.
- **Massachusetts' Mass Save program:** Ensures that home electrification investments are aligned with utility rates to ensure households see savings.
- **NYSERDA's Multifamily Performance Program:** Helps developers, building owners, and their representatives to plan and implement energy efficiency projects within existing affordable multifamily buildings with five or more units.
- **Philadelphia's Built to Last Pilot Program:** Designed to address a fundamental gap in programming, with the goal of coordinating various restoration and upgrade services under one service delivery model.
- **Oregon Rental Home Heat Pump Program:** Provides rebates for heat pumps and electrical upgrades for rental properties, with additional incentives for low- or moderate-income tenants.
- **California's San Joaquin Valley Affordable Energy Pilot:** Provides free home electrification upgrades in 11 low-income communities as an alternative to expanding a natural gas pipeline to those areas.

- **New Jersey's Whole House pilot program:** Delivers comprehensive home repair and energy-efficiency upgrades, leveraging the state's Universal Service Fund (USF) and LIHEAP programs. Provides an established referral network along with household energy bill data.
- **Philadelphia's Whole-Home Repairs Program:** Provides funding for county-wide agencies to address habitability and safety concerns, provide measures to improve energy or water efficiency, and make units accessible for individuals with disabilities.

WANT TO DECARBONIZE TRANSPORTATION? EMBRACE FAIR AND EFFICIENT LAND USE

Calvin Gladney, *Smart Growth America*

t's the land use, stupid. Though it may seem counterintuitive, investments and strategies for more equitable land use are the most important path to ensuring that everyone, no matter who they are or where they live, has access to greener forms of transportation—including electric vehicles (EVs), public transit, and forms of micro-mobility, such as bicycles and scooters.

Land-use decisions not only play a major part in where you'll find EV charging stations, transit stops, and greenways, but also powerfully shape our built environments overall. They determine the distance families must travel for shopping, work, or school and, to a significant extent, how they can get there. Lower-income people, Black and Latino communities, and rural communities have been marginalized again and again by land-use policies that make low-carbon transportation impractical or impossible.

We stand at a watershed moment, with government investments and policies focused as never before on building a better-connected and resilient future. Greening the transportation sector, the nation's largest

source of greenhouse gas emissions,¹ is a crucial part of the project. But in the United States, the most prominent green transportation strategy has been investment and incentives to electrify personal vehicles and fleets of buses and delivery vehicles. These investments create momentum toward a lower-carbon economy but are insufficient to meet the needs of underserved communities.

Alongside the investment strategy, we must advocate zoning and other land-use regulations that foster inclusive, location-efficient development. Investing in communities that are compact, connected, walkable, and mixed-use and with a variety of housing forms will certainly help decarbonize transportation. Doing so reduces vehicle miles traveled, a key driver of greenhouse gas emissions even as we move to electrify our vehicle fleet. A land-use approach will also make our communities healthier, safer, more affordable, and more connected.

WHY ELECTRIFYING VEHICLES CAN'T BE THE ONLY ANSWER

Electrification, to be sure, is one key to a greener future. It helps slow climate change and brings other tangible benefits, including lower costs² and better air quality. These benefits may be most important to communities that disproportionately experience the negative health consequences of internal combustion engine vehicles. According to the Union of Concerned Scientists,³ people of color, who are more likely to live near highways and other busy roadways, are exposed to significantly higher levels of fine particulate matter (PM 2.5) emissions than white Americans.

But there are many pitfalls in focusing only on electrification to green our transportation sector. First, the transition to electric vehicles will not happen overnight. Many folks struggle to afford any type of vehicle,

1 U.S. Environmental Protection Agency, *Fast Facts: Transportation Greenhouse Gas Emissions*, available at www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions.

2 U.S. Department of Energy, *Saving Money with Electric Vehicles*, available at www.energy.gov/energysaver/articles/saving-money-electric-vehicles.

3 Union of Concerned Scientists, "Communities of Color Breathe 66% More Air Pollution from Vehicles," June 27, 2019. Available at www.ucsusa.org/about/news/communities-color-breathe-66-more-air-pollution-vehicles.

let alone a new electric vehicle.⁴ According to the National Equity Atlas, in 2015, just 6.5 percent of white households lacked access to a car, compared to 19.7 percent of Black households, 13.6 percent of Native American households, and 12 percent of Latino households.⁵ And the average price of a new electric car in 2021 was about \$10,000 higher⁶ than the average for cars with an internal combustion engine. If strategies for greening rely on technology that only higher earners can afford, low-income communities and communities of color will continue to experience the health consequences of vehicle emissions into the future.

Additionally, driving comes with numerous hidden environmental impacts, even if you use an electric vehicle.⁷ Currently, many EVs are charged using electricity that is still generated from fossil fuels, so they continue to contribute to harmful greenhouse gas emissions.⁸ Further, researchers recently found that a car's tires and brakes often produce more lung-damaging particulate (PM 2.5 and PM 10) pollution than its tailpipe. Another report found tire emissions are 20 percent higher in EVs than in fossil-fuel vehicles because they weigh more and have greater torque.⁹

That's another drawback: vehicles powered by electricity are still large objects that hurdle along at high speeds. They pose a tremendous risk to personal safety in our current system of wide, fast roads that (by design!¹⁰) cut through Black and Latino communities in particular. Black and Native Americans, older adults, and people walking in low-income

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- 4 Leslie Albrecht, "The UAW Strike Could Raise Car Prices. They Were Already Way Too High for Most Americans," *MarketWatch*, October 5, 2023. Available at www.marketwatch.com/story/the-uaw-strike-could-raise-car-prices-they-were-already-way-too-high-for-most-americans-59fd9ed4.
 - 5 National Equity Atlas, *Car Access*, available at https://nationalequityatlas.org/indicators/Car_access.
 - 6 Kelly Blue Book, "Eight Straight New Vehicle Prices Mark Another Record High in November 2021, According to Kelley Blue Book." Press release (Irvine, CA: PR Newswire, December 10, 2021), available at www.prnewswire.com/news-releases/eight-straight-new-vehicle-prices-mark-another-record-high-in-november-2021-according-to-kelley-blue-book-301442015.html.
 - 7 Emily Mangan, "Driving Down Emissions: Transportation, land use, and climate change." (Washington, DC: Smart Growth America, October 2020). Available at <https://smartgrowthamerica.org/wp-content/uploads/2020/10/Driving-Down-Emissions-FINAL.pdf>.
 - 8 U.S. Department of Energy, *Alternative Fuels Data Center: Emissions from Electric Vehicles*, available at https://afdc.energy.gov/vehicles/electric_emissions.html.
 - 9 Jim Robbins, "Road Hazard: Evidence Mounts on Toxic Pollution from Tires," *Yale Environment 360*, September 19, 2023. Available at <https://e360.yale.edu/features/tire-pollution-toxic-chemicals>.
 - 10 Smart Growth America, *Divided by Design*, available at <https://smartgrowthamerica.org/program/divided-by-design/>.

communities remain the most at risk of being hit and killed by cars. In the latest *Dangerous by Design*¹¹ report by my organization, Smart Growth America, we found that from 2016 to 2020, Black pedestrians were twice as likely to be killed while walking than white, non-Hispanic pedestrians; Native Americans faced risks nearly three times greater. Without policies to control traffic flow, these communities, tragically, will face even greater danger as EVs, which are hundreds to thousands of pounds heavier than similar-sized gas-powered cars, proliferate.¹²

The disparities present a strong argument for the expansion of greener public transportation. There is a great deal of energy, effort, and funding focused on greening the public transit sector, with zero-emission buses as one example.¹³ Though a positive step, electrifying existing public transit also has its limitations as a tool to equitably advance decarbonization and resilience. A Pew Research survey found that only one in ten Americans¹⁴ (11 percent) say they take public transportation on a daily or weekly basis and that nearly half have no access to public transportation at all.¹⁵ The vast majority of public transportation riders live in urban areas, as transit systems are out of reach for many rural communities and limited in many suburbs. For this reason, expanding uptake of green transit options depends as much or more on land-use decisions—where we site public transit and which areas we target for housing development—as on electrification of vehicles.

Finally, a myopic focus on electrifying vehicles steers our resilience strategy away from the greenest forms of transportation, which require only human power—walking, biking, scootering, etc. Building walkable, bike-friendly communities is one important way to get folks engaged in

11 Smart Growth America, *Dangerous by Design*, available at <https://smartgrowthamerica.org/dangerous-by-design/>.

12 Axios, “Electric vehicles, weight safety problems,” (<https://www.axios.com/2023/04/28/evs-weight-safety-problems>).

13 “Biden-Harris Administration Announces Nearly \$1.7 Billion to Help Put Better, Cleaner Buses on the Roads in Communities Across the Country.” Press release (Washington, DC: Federal Transit Administration, June 26, 2023), available at www.transit.dot.gov/about/news/biden-harris-administration-announces-nearly-17-billion-help-put-better-cleaner-buses.

14 Monica Anderson, “Who relies on public transit in the U.S.,” *Pew Research*, April 7, 2016. Available at www.pewresearch.org/short-reads/2016/04/07/who-relies-on-public-transit-in-the-u-s/.

15 American Public Transportation Association, *Public Transportation Facts*, available at www.apta.com/news-publications/public-transportation-facts/.

active transportation, helping to reduce emissions in a way that's resource-efficient, equitable, and community-oriented.¹⁶ Creating environments where people can safely and conveniently walk, bike, or scoot to common destinations would also promote the regular physical activity that, according to the U.S. Centers for Disease Control and Prevention, reduces risk for at least 20 chronic diseases and conditions.¹⁷

While big cities tend to come to mind when you imagine places with land-use planning that allows for active transportation and public transit, the reality is that all types of communities—from urban to rural—want to live in places where there are other choices for getting around besides a car. Recent studies have shown that people in rural areas are just as likely as city dwellers to walk if the options are safe and accessible.¹⁸ Ruston, LA, is one example of a small community that prioritized walkability to improve quality of life, building a multi-use greenway along its downtown corridor that connects high- and low-income residents to local businesses and their local university.¹⁹

WHAT SMARTER LAND USE LOOKS LIKE

All this speaks to the need for a much more holistic strategy to decarbonize transportation, one that rests on smarter land-use policies that allow for a mix of transportation modes, incrementally driving down emissions. We need to deprioritize highways and limit sprawl by avoiding single-use zoning, which places homes at a distance from other centers of activity, in favor of mixed-use zoning and transit-oriented development. We should move away from zoning that limits density or disallows a diversity of housing types, and, in particular, reduce the very large amount of residential-zoned land (upward of 75 percent in many cities) reserved

16 Joseph Mendonca, "Complete Streets Are a Climate Solution," *Smart Growth America*, September 15, 2023. Available at <https://smartgrowthamerica.org/complete-streets-are-a-climate-solution/>.

17 Centers for Disease Control and Prevention, *About Active People, Healthy Nation*, available at <https://www.cdc.gov/physicalactivity/activepeoplehealthynation/about-active-people-healthy-nation.html>.

18 G.P. Whitfield et al., "National level environmental perceptions and walking among urban and rural residents: Informing surveillance of walkability," *Prev Med* (123) (2019): 101-108.

19 Anushka Thakkar, "Active Roadmap Case Study: Ruston, LA," *Smart Growth America*, July 27, 2023. Available at <https://smartgrowthamerica.org/active-roadmap-case-study-ruston-la/>.

for detached single-family homes.²⁰ Such regulations exclude lower-income people and renters from neighborhoods of opportunity, including those that are walkable and served by transit. Historically and to this day, zoning has been used as a tool to prevent Black and Latino communities from accessing amenities and building wealth²¹ and has perpetuated their disproportionate exposure to climate hazards such as flooding²² and extreme heat.²³

Land-use reforms that help green transportation also advance climate resilience in the communities most vulnerable to weather-related disasters. Especially when served by transit, compact, connected areas can provide alternatives to the car during extreme weather events caused or worsened by climate change. Shifting from building on the outskirts to investing in denser neighborhoods will also allow more people to access emergency services, such as Community Resilience Hubs, which can serve as cooling shelters or house refrigerators for food and medicines.

Communities around the country²⁴ have already begun to leverage the power of land-use regulation to boost resiliency. In coastal Norfolk, Virginia,²⁵ for example, a decade of climate-informed zoning reforms protects existing assets but limits future development in flood-prone areas, directing more intensive development to higher ground—with an aim to create “walkable, bikeable, transit-rich communities” there.²⁶ Similar

20 Alanna Browdy and Arvind Sindhvani, “Our Region Needs More Housing: End Single-Family Zoning,” *Regional Plan Association*, June 20, 2019. Available at <https://rpa.org/latest/lab/our-region-needs-more-housing-end-single-family-zoning>.

21 Smart Growth America, “Knowing and eliminating systemic barriers to homeownership: leveraging renters to build wealth.” Available at <https://smartgrowthamerica.org/wp-content/uploads/2023/04/Wealthbuilding-DG.pdf>.

22 Lily Katz, “A Racist Past, a Flooded Future: Formerly Redlined Areas Have \$107 Billion Worth of Homes Facing High Flood Risk—25% More Than Non-Redlined Areas,” *Redfin*, March 14, 2021. Available at www.redfin.com/news/redlining-flood-risk/.

23 Brad Plumer and Nadja Popovich, “How Decades of Racist Housing Policy Left Neighborhoods Sweltering,” *The New York Times*, August 24, 2020. Available at www.nytimes.com/interactive/2020/08/24/climate/racism-redlining-cities-global-warming.html.

24 Joseph Mendonca, “Zoning for Climate Change: How cities are preparing for future threats,” *Smart Growth America*, September 20, 2023. Available at <https://smartgrowthamerica.org/zoning-for-climate/>.

25 Lincoln Institute of Land Policy, *The Case for Climate-Informed Zoning: A Study of Fiscal Impact in Norfolk, VA: Working Paper WP23KB1* (2023). Available at <https://smartgrowthamerica.org/resources/the-case-for-climate-informed-zoning-a-study-of-fiscal-impact-in-norfolk-va/>.

26 “The General Plan of the City Of Norfolk.” (Norfolk, VA: plaNorfolk2030, revised August 2022). Available at www.norfolk.gov/DocumentCenter/View/2483/plaNorfolk2030.

land-use reforms will be a game changer for climate resilience and serving historically excluded communities.

FOR FAIR ACCESS TO EVS, LOOK TO LAND USE

In effect, land-use policy is transportation policy. And it's in this context that we must consider the development of electric vehicle infrastructure. Where we locate chargers is a land-use question that's pivotal for how we integrate EVs into our transportation mix—one fraught with the potential for unjust outcomes, but also ripe with opportunities to democratize access.

While some will be able to charge their EVs at home with the appropriate investments, not every residence includes access to a driveway or parking spot, much less charging infrastructure. This is certainly the case for many who live in denser urban environments, especially in multifamily buildings. Low-income communities and communities of color are much less likely to have the kind of dedicated parking where overnight charging from one's own outlet is possible.²⁷

Land-use innovation and investments are needed to extend charging opportunities to those who cannot charge at home, and also to support charging infrastructure in locations where it can serve a higher number of people.

Importantly, strategic charger placement can potentially enable exciting and affordable approaches to transportation, such as EV car-sharing, an alternative to automobile ownership, which can eat up a sizable portion of household budgets. We can see one example in the Twin Cities' municipally owned Evie Carshare, which offers discounted membership for low-income households.²⁸ With investments from the public and private sectors, compact communities offer a great opportunity to install the necessary charging infrastructure in locations that would make greener transportation a possibility for far more people, especially when chargers are deployed in underserved areas and transit deserts. By locating charging

27 David Goldberg and Chris Rall, "Sparking Progress: Making the most of federal investment in zero-emission transportation." (Charging US Forward, 2023). Available at www.chargingusforward.com/charge-report-2023.

28 Jasper Green, "What Is EVIE Carshare and Is It a Good Option for the Twin Cities?" *streets.mn*, December 5, 2022. Available at <https://streets.mn/2022/12/05/what-is-evie-carshare/>.

infrastructure in places with transit access, EVs would be well-positioned to support households that largely rely on transit but could use an EV car-share for trips to more difficult-to-access places, such as medical appointments. Reliable access to EV car-share would significantly reduce household costs, reduce emissions, and reduce the amount of space required for parking.

To prepare the ground for broader use of EVs generally, local governments should provide fast-charging public networks in dense, underserved areas and at key community amenities, such as city halls, libraries, and parks. EV charging stations should also be available by right so they can be installed throughout a community, not just in select locations. This includes allowing installation at multifamily buildings, particularly those in transit deserts where residents rely on personal vehicles.

Additionally, EV chargers can be used in tandem with land-use policy to spur economic development. Depending on the charger's capacity, it can take between 20 minutes and multiple hours to charge a vehicle. If we locate chargers adjacent to main streets and near locally-owned businesses and multifamily housing, we bring increased economic activity to these areas. People are also more likely to feel safe and have an enjoyable experience accessing other amenities if they can stop to charge their car in a shopping district with multiple destinations within walking distance, as opposed to a truck stop where there's nothing to see and nowhere to go on foot. Unfortunately, Congress missed the boat on this opportunity with the 2021 Bipartisan Infrastructure Law's National Electric Vehicle Infrastructure Formula Program (NEVI), requiring charging stations to be within one mile of the interstate. In practice, this has led state departments of transportation to place many chargers²⁹ at relatively isolated gas stations, truck stops, and travel centers. Local governments, business owners, and other stakeholders can help offset the effects by advocating for, permitting, and incentivizing public charging near mom-and-pop stores.

²⁹ Corrigan Salerno, "Why NEVI needs an upgrade," *Transportation for America*, September 27, 2023. Available at <https://t4america.org/2023/09/27/nevi-stations-going-nowhere/>.

WHOSE STREETS? OUR STREETS!

If careful land-use decisions can widen access to EV infrastructure, they also can promote more equitable sharing of the oldest, most universal transportation infrastructure there is—our streets. Adapted or constructed during the twentieth century for the car dominance we see today, our street networks must now be made safe and comfortable for a diversity of users and modes of travel.

Complete Streets³⁰ is a process for doing just that. Since the movement's inception in the early 2000s, more than 1,700 jurisdictions of all sizes and contexts have adopted Complete Streets policies that put people, regardless of the transportation mode they choose, back at the center of transportation planning and design. A good Complete Streets policy involves building infrastructure to support bicyclists, pedestrians, and users of public transportation, such as sidewalks, bike lanes, dedicated bus lanes, signalized crosswalks, median islands, comfortable public transportation stops, and more.

People-centric policies, which often come to bear in places already zoned or earmarked for greater density and a mix of uses, can increase uptake of non-car-based forms of transportation, reducing greenhouse gas emissions, improving health outcomes through increased physical activity and cleaner air, and sparking economic vitality. This is what happened in Pittsburgh, PA, after it adopted a robust Complete Streets policy in 2016.³¹ Since its adoption, the policy has provided paths for people of all ages, income levels, races, and physical abilities to safely navigate Pittsburgh's streets using a variety of (often greener) methods. The policy's keen focus on equity has been crucial to its success.

EQUITY FIRST FOR A GREENER FUTURE

How we transition to greener forms of transportation is of paramount importance to life on our planet and in communities everywhere. We must get it right. If we continue to invest in the same transportation programs

30 Smart Growth America, *Complete Streets*, available at <http://completestreets.org/>.

31 The City of Pittsburgh, *Complete Streets: Overview*, available at <https://engage.pittsburghpa.gov/complete-streets>; Steve Davis, "Complete Streets in Pittsburgh Are Vital for Improving Public Health," *Smart Growth America*, February 9, 2022. Available at <https://smartgrowthamerica.org/video-complete-streets-in-pittsburgh-are-vital-for-improving-public-health>.

using the same tools that have produced inequitable results, the negative effects for Black and Latino communities will not just continue, they will multiply. And if we allow marginalized populations to be excluded from greener ways of getting around, we will have failed in our objective to decarbonize transportation.

Each time we consider an investment in green transportation, we should pose two questions: 1) will the benefits of these investments reach the communities that need them most, and 2) will these investments exacerbate existing inequities, and if so, how do we mitigate those potential harms?

Leaders must also create new funding streams to help localities reduce greenhouse gas emissions using strategies that address land use, for example by investing in compact, connected areas. The U.S. Environmental Protection Agency recently took a step in this direction by allowing the Greenhouse Gas Reduction Fund to sponsor adaptive reuses of vacant buildings or land in location-efficient, economically disadvantaged places. This followed advocacy³² led by Smart Growth America and Main Street America.

The case is strong and we'll continue to make it: Decision makers must embrace green transportation strategies that go well beyond electrification to prioritize equity and the widely-shared benefits of shaping our land use for safe, convenient, affordable multi-modal travel. That's the way to ensure our transportation system works for everyone—no matter who they are or where they live.

³² Abigail Araya, "EPA Delivers for Rural and Low-Income Communities," *Smart Growth America*, August 8, 2023. Available at <https://smartgrowthamerica.org/epa-delivers-for-rural-and-low-income-communities/>.

CALVIN GLADNEY, LEED AP, is President and CEO of Smart Growth America (SGA) and has led community revitalization efforts in dozens of communities around the country as a private consultant, a real estate developer, and a government official. His work over the last 15 years has been centered on the intersection of land use, transportation, and economic development—all of which will be important in addressing our climate crisis and our longstanding racial equity issues.

BRIDGES TO GREEN JOBS: CENTERING CLIMATE ACTION, RACIAL EQUITY, AND ECONOMIC OPPORTUNITY

Silvana Bastante, *Local Initiatives Support Corporation (LISC) Boston*

Climate adaptation and mitigation practices are increasingly integral to any real estate development project. But the key to achieving greenhouse gas reduction goals is establishing the skilled workforce needed to build new or rehab existing buildings. To ensure equitable access to the jobs created through real estate projects, underserved and underrepresented communities must have access to training and employment opportunities in in-demand fields.

To that end, LISC Boston created the Bridges to Green Jobs program, a two-week training initiative designed to help Massachusetts residents enter the growing clean energy industry as entry-level weatherization



Steeve Dejean, a 2022 graduate of LISC's Bridges to Green Jobs program, is on track to open his own weatherization business. (Image courtesy of LISC Boston).



Juan Wilkins (right), a Bridges to Green Jobs graduate, with technical trainer Jason Taylor. Wilkins is now a traveling weatherization technician making over \$40 an hour. (Image courtesy of LISC Boston).

technicians. These high-demand positions, which don't require extensive entry requirements, put participants on a career path that can offer up to six-figure salaries after just one year. They can also be a launch pad to other opportunities in clean energy and to generational wealth-building.

In addition to the skills training itself, the program offers soft skills training; resume building, interview skills, and job placement support; financial coaching; 1:1 mental health support; and assistance for clients facing barriers to job retention.

Since the program's inception in 2022, LISC has graduated 53 residents and piqued the interest of potential state and national supporters. Those graduates are now working as weatherization technicians with large residential and commercial contractors, and as energy auditors with community development corporations. Some are on track to launch their own weatherization and clean energy businesses. The Bridges to Green Jobs program will soon be replicated in Lawrence, MA, Detroit, MI, and Newark, NJ, with more cities to participate as funding partners come onboard.

4



FINANCING A RESILIENT FUTURE

INVESTING FOR MORE PROSPEROUS AND CLIMATE-RESILIENT COMMUNITIES: HOW INVESTORS CAN CONSTRUCT A PORTFOLIO THAT DOES BOTH

Javier Hernandez and Lisa Richter, *Avivar Capital*

Growing up on the Navajo Nation, Brett Isaac watched coal get transported off the reservation to power electricity elsewhere, while thousands of Navajo households lacked electricity. Tribal members working for the local coal company earned more than their neighbors, but in jobs so demanding, their families rarely saw them. Yet there were no Navajos in the coal company C-suite.

The coal company was the major employer in town and skilled tribal members not employed there typically had to leave to find work, with the reservation losing its talent. Those who stayed could no longer clearly see the Grand Canyon from the reservation thanks to pollution from a nearby coal-powered power plant.¹ Sacred and once plentiful aquifers for drinking water and farm animals began to dry up—due, tribal members asserted, to the coal company’s diversion of some 3 million gallons of

1 Tim Vanderpool, “After the Local Coal Mine Shuts Down, These Navajo and Hopi Communities Seek a Just Transition,” *NRDC*, October 20, 2020. Available at www.nrdc.org/stories/after-local-coal-mine-shuts-down-these-navajo-and-hopi-communities-seek-just-transition.

water per day in slurries for propelling coal.² Asthma rates for children reached an estimated two times the national average, given pollutants from decades of mining coal and metals, such as uranium, and dependence on woodburning stoves.³

Brett was looking for ways that the Navajo people could be the owners, decisionmakers, and stewards of their own economy—to build on the talents of tribal members and honor the value system of their community. The coal industry was on the decline. Solar energy was an emerging alternative, though not yet economical at utility scale.

Brett learned the business of solar energy and, in 2017, co-founded Navajo Power to catalyze tribal renewable energy potential and shift the energy development mindset on tribal lands to one that bolsters cultural values, ecosystems, sovereignty, and the local economy. The vision centered on creating jobs for tribal members and changing peoples' minds about what is possible. For Navajo and surrounding tribes, reclaiming the view of and clean waters from the Grand Canyon were also pressing goals.⁴

Today Navajo Power has an expanding slate of solar developments underway across the West. Brett cites the partnership with impact investors that seek social and environmental benefits alongside financial returns as critical to Navajo Power's success: "I don't know that we would have been able to get this company off the ground without the impact and philanthropic world taking this risk with us."⁵

Having the opportunity to invest in Navajo Power was equally important to those impact investors. Institutional impact investors, such as the Sierra Club Foundation, represent the supply side of an emerging climate justice

2 Jessica Kutz, "The fight for an equitable energy economy for the Navajo Nation," *High Country News*, February 1, 2021. Available at www.hcn.org/issues/53.2/south-coal-the-fight-for-an-equitable-energy-economy-for-the-navajo-nation.

3 Ashley A. Lowe, "Asthma Severity Determinants and Needs Assessment in Children Living on the Navajo Nation: A Pilot Study." (Tucson, AZ: University of Arizona). Available at https://nnhrb.navajonnsn.gov/pdf/2017/2017conf_day1/AllPDFs_102517.pdf.

4 Amber Reimondo, "Tribes Propose New Baaj Nwaavjo Itah Kukveni Grand Canyon National Monument," *Grand Canyon Trust*, April 11 2023. Available at www.grandcanyontrust.org/blog/tribes-propose-baaj-nwaavjo-itah-kukveni-grand-canyon-national-monument.

5 Jessica Pothering, "Native-led Navajo Power leans into the just transition with community benefits and local jobs," *ImpactAlpha*, July 24, 2023. Available at <https://impactalpha.com/native-led-navajo-power-leans-into-the-just-transition-with-community-benefits-and-local-jobs/>.

capital market that is coming together with demand side organizations such as Navajo Power. Both entrepreneur and investor recognize a once-in-a-generation opportunity to leverage current public policies to grow this capital market and co-create a more just and sustainable future.

AN “ALL DOLLARS ON DECK” MOMENT FOR CLIMATE INVESTING

The urgency and scale of addressing climate change represents an “all dollars on deck” call to action. Impact investors who invest in funds and organizations to generate positive social and environmental impact alongside a financial return have never had a more critical role to play. There is an even more important opportunity for *all* investors—institutions, public charities, social enterprises, families, donor advised funds, and individuals, including the many interested Millennial and Next Gen investors—to adjust their savings and investment strategies in ways that catalyze climate solutions and ensure all of the nation’s residents can benefit.

For some, this will mean finding investment opportunities that focus on reaching net zero carbon emissions as quickly as possible, including through carbon dioxide removal (CDR) technologies, such as carbon capture and storage and ocean-based carbon removal. For others, such technological solutions—as well as carbon offsets that enable companies to continue high levels of emissions while supporting carbon reduction elsewhere—risk potential additional harm to communities and the environment. For them, climate justice is the overriding priority.

Climate justice investors share the urgency to reach net zero but prioritize investing to advance a just transition to a low carbon world.⁶ They recognize that systemic factors have long caused the burden of climate change to fall disproportionately upon low-income communities and communities of color. Their investment strategies address the interlinked root causes of climate change and socio-economic marginalization. Accordingly, they target capital to companies or organizations that are

6 As described by the Just Transition Alliance, “Just transition is a principle, a process and a practice. The principle of just transition is that a healthy economy and a clean environment can and should co-exist. The process for achieving this vision should be a fair one; it should not cost workers their jobs, nor adversely impact the health, environment, or economic assets of communities. And the practice of just transition means that the people who are most affected by pollution should be leading the crafting of policy solutions.”

diverse-led or dedicated to ensuring that the communities most threatened by climate change gain access to clean energy, energy efficiency, clean water, electric vehicles, transit-oriented and disaster-resistant development, adequate insurance, healthy and sustainable food systems, and other benefits of the emerging, low carbon economy.

These investors further seek climate solutions that are wealth building in historically burdened communities, including through democratically-owned businesses such as credit unions, community-owned solar farms, community-controlled equipment trusts that enable sharing the equipment needed to implement regenerative agriculture practices among multiple farmers, ranchers and fisheries of color, worker-owned cooperatives, and Employee Stock Ownership Plans (ESOPs). Such investment strategies frequently combine subsidies and incentives embedded in policies like the Inflation Reduction Act (IRA) with grants and investment capital in “integrated capital” strategies that best support climate resilient business in early stages of the growth cycle and in communities that have historically lacked access to flexible development capital.

There is a growing universe of investment opportunities that further climate justice goals. Some represent tested approaches that need large volumes of relatively low-risk capital to scale, while others represent emerging technologies or services that need higher-risk capital to refine prototypes. They span a range of asset classes (investment structures such as stocks and bonds) and expected financial returns (see Figures 1 and 2), and can easily contribute to a diversified, market-rate institutional investment portfolio or meet the needs of organizations and individuals seeking secure investment opportunities for limited savings. Many leverage federal and local programs to protect private investor capital while accelerating the nation’s progress toward net zero.

BUILDING A CLIMATE JUSTICE INVESTMENT PORTFOLIO

When considering how to build a climate justice investment portfolio, any investor—institutional, public charity, donor advised fund, nonprofit organization, or individual—can direct capital in ways that address specific unequal burdens low-income communities and communities of color face from ongoing exposure to toxic emissions, harm in climate disasters, and limited access to efficient and clean energy solutions, electric

Figure 1. Building a Climate Justice Investment Portfolio

Any institutional or individual investor can build a climate justice investment portfolio that advances a just transition to a low carbon world. Qualifying investments demonstrate the principle that a healthy economy and a clean environment can co-exist; fair processes that preserve community jobs, health, and economic assets; and just practices through which the people most affected by climate risks lead the crafting of solutions.



vehicles (EVs), and safe water and sanitation systems. The following are examples of investments across asset classes.

Cash and Cash Equivalents

Investors and savers often use insured depositories—banks and credit unions—to hold their cash or savings in certificate of deposit, money market, and checking accounts that allow easy access when they must meet spending obligations. Climate justice investors can choose banks that have signed on to the UN Environmental Programme’s Net Zero Banking Alliance.⁷ They can further place insured deposits in mission-driven Community Development Financial Institution (CDFI) banks and credit unions, an increasing number of which offer climate justice-aligned products and services, such as:

- Beneficial State Bank, a bank that “finances clean energy systems.”⁸ The Bank provides financing for clean, renewable energy and the environmental sustainability sector, including environmental advocates, eco-friendly producers, green building professionals, conservation groups, and environmental education programs.
- Inclusiv, the CDFI credit union sector’s trade association, is working to ensure that credit unions can leverage the IRA’s \$27 billion Greenhouse Gas Reduction Fund (GHGRF) to provide low-to-moderate income (LMI) households and communities of color with affordable financing for clean energy systems and EVs. Inclusiv’s Virtual Solar Lending Professional Training and Certificate Program is creating a national cadre of locally-based clean energy lenders serving LMI households and community organizations. Credit unions have also been on the forefront of providing disaster relief loans to their members, whether from hurricanes or wildfire (see the Inclusiv chapter in this book). As member-owned financial institutions, credit unions share the earnings from their lending programs with members. Inclusiv’s membership comprises 33 percent minority designated credit unions.⁹

7 UN Environment Programme, *Our Members*, available at www.unepfi.org/members/.

8 Beneficial State Bank, available at www.beneficialstatebank.com/.

9 Inclusiv, *Our Commitment to Diversity, Equity and Inclusion*, available at <https://inclusiv.org/diversity-equity-inclusion/>.

Figure 2. Climate Justice Investments Across Impact Themes, Financial Objectives, Asset Classes & Vehicles

FINANCIAL OBJECTIVE	LIQUIDITY		INCOME & WEALTH PRESERVATION	
	CASH & CASH EQUIVALENTS	DEBT	FIXED-INCOME (BONDS)	GUARANTEES
ASSET CLASS				
MECHANISM	Deposits in credit unions and banks (typically federally insured and thus risk-free) provide the capital for loans to individual small businesses, nonprofit organizations, and households that are implementing climate risk mitigation strategies. These may range from small businesses or nonprofit organizations offering climate risk mitigation products and services in low-income communities to low-income households installing renewable energy systems. CDFI credit unions and banks are often diverse-led and provide disaster response loans and provide non-predatory financial services.	Debt capital investments (long-term loans) to CDFIs and loan funds provide the capital those intermediaries relend to individual small businesses, nonprofit organizations, and households that are implementing climate risk mitigation strategies. Increasingly, these entities are diverse-led.	Municipal bond purchases from urban, rural, and tribal governments provide the capital these entities need to purchase climate mitigation and workforce development services and green infrastructure upgrades. Bond purchases from nonprofit agencies or corporations provide the capital these entities need for similar uses.	Local and national loan guarantees provide credit enhancement or “loss protection” to third party bank or other lenders who in turn provide financing for governments, large and small businesses, nonprofit organizations, and households that are implementing climate risk mitigation strategies.

IMPACT THEMES & OUTCOMES

Disaster Prevention & Response. Affordable, accessible insurance and disaster relief and non-predatory financial services; loans to consumer/small business/nonprofit/cooperatives/government agencies to provide and/or install energy efficiency systems.

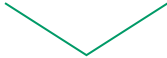
Community Electrification. Affordable, accessible financing for energy efficiency upgrades, solar and wind installations, new and used EVs for households, businesses, farms, nonprofit organizations, and cooperatives.

Clean Water Access & Conservation. Affordable, accessible clean water, sanitation, and conservation systems for households, businesses, farms, nonprofit organizations, and cooperatives.

Climate Workforce Development. Governments, corporations, and small businesses promoting and/or requiring diverse hiring and suppliers and strong worker benefits in installing clean energy and climate resilience systems. Worker ownership as an additional benefit, where possible.

Each investment asset class and investment vehicle offers climate justice investors a different lever or channel for driving the positive impact needed to create an equitable and sustainable low carbon world, while also meeting financial objectives. Strategies can be geographically targeted for place-based impact.

FINANCIAL OBJECTIVE		CAPITAL APPRECIATION			INFLATION PROTECTION
		PUBLIC EQUITY	PRIVATE EQUITY	VENTURE CAPITAL	REAL ASSETS, INCL. REAL ESTATE & COMMODITIES
ASSET CLASS					
	MECHANISM	<p>Stock purchases in publicly traded companies and utilities contribute to the company's market capitalization and influence the stock price. Investors can target stock purchases to companies with strong track records of climate risk mitigation, environmental hazard avoidance, strengthening of regional supply chains, and equitable leadership and labor force practices.</p>	<p>Ownership interests in diverse-led climate justice-focused equity funds or for-profit businesses provide the capital these entities need to scale or significantly expand the distribution of their products and services.</p>	<p>Ownership interests in diverse-led climate justice-focused venture capital funds or startup ventures provide early stage capital to fuel the development and testing of innovative products and services that offer new or better solutions to climate justice challenges.</p>	<p>Ownership interests or loans to funds or projects focused on inclusive and sustainable timber and/or agriculture management, green real estate, or green infrastructure provide the capital that enables new approaches to managing these assets in ways that reduce carbon.</p>



IMPACT THEMES & OUTCOMES

Disaster Prevention & Response. Innovative insurance products that provide security for lower income households. Innovative affordable housing that is extreme weather or fire event resistant. Corporations and organizations that strengthen inclusive and sustainable local supply chains.

Community Electrification. Innovation in battery storage capacity for renewables; scalable models of energy storage.

Clean Water Access & Conservation. Innovation in water quality testing devices and scaling of energy efficient clean water and waste water systems.

Climate Workforce Development. Innovation in inclusive worker recruitment, training, credentialing, placement, and benefits for workers involved in all aspects of the low carbon economy.

Fixed Income

Investors typically seek fixed income securities (bonds) to provide current income, diversification of the higher risk that comes with higher expected return equity investments, and liquidity or the ready access to cash that comes with securities that can be traded in the public markets. For the bond issuers, including municipal and other organizations facing capital needs to scale energy efficiency, clean energy, transportation, and infrastructure investment in local communities, bonds provide large amounts of long-term, relatively affordable, fixed-rate debt.

The Climate Bonds Initiative (CBI) reported green bond issuances of almost \$500 billion worldwide in 2022, of which just under 20 percent were government-issued, including municipal bonds.¹⁰ As with all impact investments, investors must scrutinize the expected environmental and social benefits along with the financial returns.¹¹ Fortunately, there are a number of organizations that are closely evaluating these factors¹² and an increasing number of model climate justice bonds and bond funds that can meet the needs of large or small investors. Examples include:¹³

- **Bonds Issued by Cities.** Portland, Oregon and Denver, Colorado have both issued bonds that enable them to undertake five-year planning cycles for regional environmental mitigation and adaptation investments.¹⁴ In Portland, annual proceeds have been up to \$90 million and prioritize investments that benefit people with low incomes, communities of color, and workers facing discrimination. In Denver, bond proceeds are projected to generate \$30 to \$40 million annually for climate action,

10 Initiative Climate Bonds, *Issuer Type*, available at www.climatebonds.net/market/data/#issuer-type-charts.

11 The Center for American Progress noted that the performance standards for these securities may not be grounded in climate science or environmental justice, but rather may be put forth by the issuers themselves. Kevin DeGood, “A Framework for Strengthening Municipal Market Green Bond Labeling,” *CAP 20*, March 29, 2021. Available at www.americanprogress.org/article/framework-strengthening-municipal-market-green-bond-labeling/.

12 Tommy Wilkes and Virginia Furness, “Explainer: Decoding COP27: the many shades of green bonds,” *Reuters*, November 9, 2022. Available at www.reuters.com/business/cop/decoding-cop27-many-shades-green-bonds-2022-11-09/; See also Climate Bonds Initiatives, *Climate Bonds Taxonomy*, available at www.climatebonds.net/standard/taxonomy.

13 For additional municipal bond examples, see <https://www.wri.org/insights/funding-models-climate-equity-cities-us>.

14 Caroline George, Joseph W. Kane, and Adie Tomer, “How US cities are finding creative ways to fund climate progress,” *Brookings*, February 22, 2023. Available at www.brookings.edu/articles/how-us-cities-are-finding-creative-ways-to-fund-climate-progress/.

with 50 percent of proceeds going toward social equity-focused projects. Allowable uses of proceeds include workforce development, renewable energy, energy efficiency for buildings and homes, sustainable transportation, adaptation and resiliency, and environmental justice.¹⁵

- **Environmental Impact Bonds (EIBs).**¹⁶ The DC Water Bond offered an environmentally friendly way for Washington to reduce its storm water runoff while avoiding costly and environmentally harmful concrete canals to do so. The innovative financing structure enabled DC Water to pay the costs of constructing regional green infrastructure—parks, rain gardens, and other natural water absorbers—to reduce stormwater runoff. The performance risks and benefits of scaling the effort were shared among DC Water and a small group of impact investors. Under this “Pay for Success” model, outcome payments to the investors varied based on the success of the project. According to DC Water, it met all three of the criteria for their repayment: 1) the agency transferred some of the green infrastructure performance risk from DC Water to the bond investors; 2) the agency improved transparency to local ratepayers by formally predicting, measuring, and publicly reporting the environmental impact of its new green infrastructure, and 3) the agency strengthened future decision-making about how much and which types of green infrastructure to build.
- **Green Bond Funds.**¹⁷ Available as either mutual funds or ETFs (Electronically Traded Funds), green bond funds allow investors to participate in a professionally managed portfolio of green bond-financed environmental projects while seeking market-based returns. While many investors may prefer to identify specific green bonds that benefit their own communities, bond funds represent a convenient way to support a range of projects across the nation and the world.

Municipal bond issues can also provide capital for regional green banks—public, quasi-public, or nonprofit financing entities that leverage public and private capital to pursue goals for clean energy projects that

15 Ibid.; see also “Office of Climate Action Sustainability & Resiliency Annual Report: 2021.” (Denver Climate, Action, Sustainability, and Resiliency and Climate Protection Fund). Available at https://denvergov.org/files/assets/public/climate-action/documents/cpf/cpf_annualreport_63022.pdf.

16 DC Water Is Life, *FACT SHEET: DC Water Environmental Impact Bond Results-Successful*, available at <https://dcwater.com/sites/default/files/finance/eib-factsheet.pdf>.

17 Sustainable Investing, *Green bond funds update-April 2023*, available at <https://sustainableinvest.com/green-bond-funds-update-april-2023/>.

reduce emissions. Green banks provide financing for projects that do not meet conventional lending criteria, particularly in underserved market segments.¹⁸ They will be the conduit for \$20 billion of the IRA's \$27 billion GHGRF.¹⁹

For enhanced impact, investors may allocate a portion of their fixed income portfolios to debt investments in CDFIs.²⁰ While these investments are not formal fixed income securities, they are similar in providing long-term, typically fixed-rate, debt capital (loans) to organizational borrowers.

Selected CDFIs, such as Coastal Enterprises, Craft3, Hope Credit Union, Partner Community Capital, RCAC, Enterprise, and LISC, have long innovated climate justice lending—from supporting sustainable farming and fisheries and green building to ensuring that households in rural and tribal areas have safe water and sanitation systems. The CDFI industry is now focused on ensuring that CDFIs can help to leverage the GHGRF and other climate justice federal and state funds. This includes the African American Alliance of CDFIs, whose Climate Justice Fund is focused on ensuring that low-income communities and communities of color equitably benefit from the GHGRF.²¹

Private Debt & Guarantees

Beyond CDFIs, there are a range of climate-justice focused private debt funds and direct debt investment opportunities that are driving deep impact in communities of color and rural communities. Examples include:

- People's Solar Energy Fund (PSEF). This tax-exempt loan fund cooperative of BIPOC and low-income community organizations is working to build community-led, community-owned solar. PSEF's Founders include

18 The American Green Bank Consortium's 38 members include green banks, capital providers, developers, and other clean energy supporters working together to accelerate innovative clean energy investment across the United States. Coalition for Green Capital, *American Green Bank Consortium*, available at <https://coalitionforgreencapital.com/american-green-bank-consortium/>.

19 Kevin Buehler, "Delivering impact from US green bank financing," *McKinsey Sustainability*, April 20, 2023. Available at www.mckinsey.com/capabilities/sustainability/our-insights/delivering-impact-from-us-green-bank-financing.

20 There are over 1,200 CDFIs certified by the U.S. Department of Treasury as operating with a primary mission of community development in urban, rural, and tribal communities lacking access to financing nationwide. U.S. Department of the Treasury Community Development Financial Institutions Fund, *CDFI Certification*, available at <https://www.cdfifund.gov/programs-training/certification/cdfi>.

21 African American Alliance of CDFI CEOs, *The Justice Climate Fund*, available at <https://aaacdfi.org/justice-climate-fund/>.

the NAACP, Climate Justice Alliance, Emerald Cities, Cooperative Energy Futures, Co-op Power, People Power Solar Cooperative, Cleveland Owns, Local Clean Energy Alliance, and Seed Commons. PSEF’s “energy democracy” strategy²² is grounded in the observations that energy costs disproportionately impact people of color and low-income communities.²³ Solar energy is a renewable resource central to reducing greenhouse gas emissions and mitigating climate change that can be developed and owned within low-income communities, including communities of color. Given that existing electricity capital markets favor large scale developers that can lower development costs by attracting equity investors who take advantage of energy-related tax credits, PSEF aggregates multiple small projects to attract tax credits and distribute the cost savings across projects. To further lower project financing costs, PSEF secured a guarantee from the Community Investment Guarantee Pool (more on this strategy below).²⁴

- Potlikker Capital. Potlikker Capital describes itself as “a farm community-governed, charitable integrated capital fund created to holistically serve BIPOC farmers in America who operate at the intersection of racial and climate justice.”²⁵ The Fund says it is “committed to preserving and increasing the diversity of America’s farmers, ranchers, fisheries, and agricultural managers” who commit to: 1) increase equitable access to healthy food for their communities; 2) build wealth and knowledge within their local BIPOC farming communities; and 3) farm to address climate change through adopting regenerative farming practices. The Fund’s integrated capital structures front capital to timber farmers of color to enable participation on carbon sequestration programs that defer payments for many years, while its Black, Indigenous, People of Color (BIPOC) National Equipment Trust enables

22 People’s Solar Energy Fund, *Communities of Color Building Solar Capacity*, available at www.psef.network/cbsc-info-page.

23 A 2020 American Council for an Energy-Efficient Economy study found that Black households spend 43 percent more of their income on energy costs than white non-Hispanic households; Hispanic households spend 20 percent more and Native American households spend 45 percent more. “Report: Low-Income Households, Communities of Color Face High ‘Energy Burden’ Entering Recession.” Press release (Washington, DC: ACEEE, September 10, 2020), available at www.aceee.org/press-release/2020/09/report-low-income-households-communities-color-face-high-energy-burden.

24 People’s Solar Energy Fund, *Why community-led, community-owned solar?*, available at www.psef.network/why-community-led-community-owned-solar.

25 Potlikker Capital, available at www.potlikkercapital.com/.

farmers, ranchers, and fisheries of color to borrow equipment needed to fully implement regenerative approaches to their industries.

- Invest Appalachia. This regional debt fund’s investment strategy is based on a “common vision for a more equitable, sustainable, and resilient Appalachian economy.” With a goal to “drive inclusive regional prosperity,” the Fund takes a “systems approach” to investment that focuses on “catalytic deals” in its key sectors of clean energy, health, “creative placemaking,” and food and agriculture; invests in “clusters of enterprises or projects that collectively strengthen a sector or industry;” connects “under-served geographies to revenue-generating market opportunities; and builds community infrastructure, place-based capacity, and ‘investability’ along the way.”²⁶
- Navajo Power. As profiled above, Navajo Power is a majority Native-owned renewables infrastructure developer that maximizes economic benefits from its tribal partners. With a focus on helping Native communities transition to more equitable economies focused on clean energy, the company takes on the challenging pre-development stage of utility-scale solar projects on tribal lands (obtaining site control, local approvals, etc.). Once these activities have significant traction, Navajo Power currently sells the projects to a Fortune 500 Independent Power Producer (IPP) and co-develops in exchange for development fees, which they use to provide community benefits and fund new projects.²⁷ An equity purchase option is also provided to the tribes if they want to invest alongside the IPP in the long-term ownership of the infrastructure asset.
- SAGE Development Authority (SAGE). SAGE is a 100 percent Native-led organization dedicated to community development, institution-building, and self-determination for the Standing Rock Sioux Tribe (Fort Yates, North Dakota). As the Public Power Authority (PPA) that controls and operates all the energy production assets within the reservation, SAGE describes its purpose as to ensure energy independence, protect the environment, and promote regional economic growth for the tribe.²⁸ SAGE’s Anpetu Wi (“morning light”) project is

26 Invest Appalachia, *How IA Works*, available at www.investappalachia.org/how-ia-works.

27 Jessica Pothering, “Native-led Navajo Power.”

28 SAGE, *Our Purpose*, available at <https://sagesrst.org/our-purpose/>.

a 235-megawatt, 60-turbine wind farm that the firm says will provide clean energy, economic independence, and sustainability for the tribe. Recoverable grants from philanthropy, which have the potential to convert into debt or equity, were part of the original project capitalization. Repayment obligations on recoverable grants depend upon project success. For the Anpetu Wi project, recoverable grants fully shared risk on the project's early development between the investor and the tribe. Having successfully completed early project development, the tribe now seeks to convert recoverable grants to flexible debt. This will allow the project to raise additional capital while retaining tribal ownership.

Guarantees

Loan guarantees are an agreement by a guarantor to repay a guaranteed loan if that loan defaults. Guarantees offer impact investors a way to leverage their balance sheets to mobilize significant additional capital that might not commit to climate justice and other impact investments absent some form of credit enhancement (loss protection).²⁹ Guarantees are particularly helpful in financing of organizations that are testing new strategies or developing projects for which the market is not yet fully demonstrated. While guarantees of all sizes are useful at the regional level, the national Community Investment Guarantee Pool serves larger transactions, including climate-related financings:

- The Community Investment Guarantee Pool (CIGP). This pooled commitment of financial guarantees by numerous foundations and other impact investors nationwide guarantees loans by intermediaries in the affordable housing, small business, and climate finance sectors. CIGP facilitates these investors' use of the guarantee strategy by sourcing, underwriting, managing, and reserving for loans in its targeted sectors nationwide. CIGP's climate-focused guarantees include a \$2.5 million, multi-year guarantee to expand Inclusive Prosperity Capital Inc.'s (IPC) Smart-E Residential Green Lending Program (Smart-E Program). A spin-out and partner of the Connecticut Green Bank,³⁰ IPC's goal in the national Smart-E Program is to "demonstrate that unsecured residential

²⁹ For example, make a pledge to repay guaranteed loans on the off chance that the loans might default, without needing to make any outlay of cash unless they do.

³⁰ "CIGP Closes Multimillion Dollar Guarantee to Inclusive Prosperity Capital ("IPC") to Expand Residential Green Lending to Low/Moderate-Income and BIPOC Homeowners." Press release (CIGP, January 23, 2023), available at www.guaranteepool.org/new-investments-fuel-change/.

green lending to predominantly low/moderate-income and/or BIPOC homeowners can be a successful business line for credit unions and other community lenders.” It “projects that CIGP’s guarantee will ultimately enhance nearly \$24 million in 2,000 Smart-E loans over four years.” They also include a guarantee for PSEF’s financing for community-owned solar utilities (described above).

Alternatives

Private market venture capital, private equity, and real estate investments offer investors potential outsized financial returns in exchange for the risk they take in providing long-term risk capital to early and growth stage businesses and projects. Venture capital provides founders with essential early-stage funding for the development and market testing of innovative approaches to decarbonization through new business and consumer products, while private equity helps to scale and restructure organizations providing tested solutions. Real estate private equity is a specialized segment that invests in the development of commercial and residential space, with increasing use of green designs that conserve energy and water.

While risk capital provided by such investments is universally needed by entrepreneurs and communities, BIPOC and female fund managers and founders—and thus their communities—have seldom had access. A 2022 report from the nonprofit DiverseVC found that less than 2 percent of investments flowed to diverse fund managers—despite increased public commitments to such firms in recent years.³¹ Given that BIPOC fund managers and founders tend to bring unique insights to the services and delivery systems needed within their communities, climate justice impact investors have an opportunity to catalyze the important climate solutions they lead, while helping to dismantle barriers in capital access. The following are diverse fund managers and founders:

- **Radicle Impact:** With a mission to change the venture industry so that it invests in early-stage companies that drive social justice and environmental resilience with economic sustainability and measurable impact, this San Francisco-based, diverse-led venture capital fund invests in

31 Dean Takahashi, “Diversity VC reports 1.87% of venture capital allocated to women and minority-owned startups,” *Venture Beat*, November 9, 2022. Available at <https://venturebeat.com/games/diversity-vc-reports-1-87-of-venture-capital-allocated-to-women-and-minority-owned-startups/>. See also VC Include, available at www.vcinclude.com/.

early-stage companies. The Fund’s priority sectors include Sustainable and Just Resource Use; Grid Modernization; Circular Economy; Electrification and Mobility; Environmental and Urban Intelligence; Regenerative Agriculture; Plant Based Protein; and Cellular Agriculture. Examples of their portfolio companies include Air Protein, Aclima, and MoCaFi, which are primarily led by women or BIPOC founders or CEOs.

- **The 22 Fund:** With a mission to invest growth equity capital in women- and BIPOC-led tech-based manufacturing companies to increase their international export sales, this Los Angeles-based, African American woman-led venture capital fund seeks companies that are creating “clean, quality jobs.” Founder Tracy Gray brings experience from prior technology, cleantech, and export positions to target capital to women- and BIPOC-led firms that can achieve these objectives while generating market-rate, private equity returns.
- **BlocPower:** With a mission to help create a world where every home and building can be an engine for change from one that pollutes to one that powers the next generation of the green economy, this venture capital-backed, Brooklyn-based, African American-owned climate technology company analyzes, finances, and upgrades homes and buildings nationwide by electrifying them and powering them with renewable energy (see their chapter in this book). BlocPower integrates climate solutions with LMI community economic benefit at every level of its strategy—affordable and reliable clean energy for community residents, recruitment of local contractors of color, and a Civilian Climate Corps workforce recruited from LMI communities, including citizens who were formerly incarcerated. BlocPower raises money from the community it serves (i.e., crowdsourcing local investors with as little as \$100 to contribute) and from institutional investors, such as Goldman Sachs.
- **Chargerhelp! (CH!):** With a mission to increase the uptime of EV charging stations, thereby accelerating mass EV adoption, this venture capital-backed, Los Angeles-based, African American woman-owned company has developed a safety and training curriculum and EMPWR, a charging station servicing needs tracking system that enable CH!’s trained workforce to diagnose and repair the range of unique EV charging technologies. Self-described as “obsessed with leveraging

technology to remove barriers and enable economic development within all communities,” CH! provides ongoing training and “cultivates an energetic and fun culture, and strives to better people’s lives and our environment.” CH!’s three-pronged workforce development strategy recruits workers through community-based workforce development organizations.

Public Equities (Stocks)

Public equities offer investors the potential upside of stock appreciation along with liquidity. Due to these attributes, investors of any size typically invest the majority of their holdings in stocks. The investment profession also increasingly sees the incorporation of environmental, social and governance (ESG) considerations as material to the performance of investment portfolios, recent countervailing political sentiment notwithstanding.³² While there are thus social and financial incentives for investors to align their investment strategies with ESG factors—including achieving a low carbon, equitable society—there is no single playbook to do so. Guidance continues to emerge, however, from investors, such as the Sierra Club Foundation, that are leading the way and sharing information about their practices to support like-minded investors in adapting similar approaches.

INVESTOR CASE STUDY: THE SIERRA CLUB FOUNDATION

The Sierra Club Foundation (SCF) has committed to aligning all of its assets with its mission and values while achieving financial returns. Its experience illustrates that an institutional investor can achieve overall financial objectives while investing in the range of climate justice solutions outlined above.

In addition to screening its public securities for ESG alignment, SCF’s investment policy calls for shareholder engagement while buying and

32 Deborah Christie, Madeline Clark, and Eliza Noyes, “Investing for Climate Justice: An Intersectional Approach,” *Cambridge Associates*, October 2021. Available at www.cambridgeassociates.com/insight/investing-for-climate-justice-an-intersectional-approach/. See also Business Roundtable, “Business Roundtable Redefines the Purpose of a Corporation to Promote ‘An Economy That Serves All Americans.’” Press release (Washington: August 19, 2019), available at www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans.

selling securities.³³ This practice of voting proxies, filing resolutions, and otherwise engaging as responsible corporate shareholders has continued to be a powerful tool for driving change. SCF has further carved out a Catalytic Capital Portfolio that invests a portion of foundation assets in climate solutions that specifically advance racial and economic justice.³⁴ Finally, SCF's Shifting Trillions initiative lifts up the common cause that climate justice investors have with health, social justice, and place-based institutional investors, among many others who can amplify their missions through aligning assets to climate justice.³⁵ The vision is a collaborative “both and” rather than “either or” approach.

In surveying SCF's investments across asset classes, the foundation:

- Maintains its banking relationship (including cash management) with Amalgamated Bank, one of four U.S. banks to join the Net Zero Banking Alliance. Amalgamated has pledged not to lend to fossil fuel companies, directs 32 percent of its loan portfolio to climate solutions,³⁶ and has worked with impact investors, including SCF, to structure loan guarantees for early stage climate justice initiatives, including Solar Holler.³⁷
- Invested in the Calvert Green Bond Fund, an actively managed portfolio of green bonds that seeks to maximize impact and income consistent with preservation of capital.³⁸
- Committed to divest from companies with material involvement in the fossil fuels industry in 2013.
- Practices shareholder engagement to promote climate disclosure as well as climate justice-informed practices among publicly traded companies.

33 Sierra Club Foundation, “Investment Policy Statement.” (November 2022). Available at www.sierraclub-foundation.org/sites/foundation/files/uploads/Investment%20Policy%20Statement%20November%202022%20Board%20Approved%2011172022.pdf.

34 Sierra Club Foundation, *Catalytic Capital Portfolio*, available at www.sierraclubfoundation.org/catalytic-capital-portfolio.

35 Sierra Club Foundation, *Shifting Trillions*, www.sierraclubfoundation.org/shifting-trillions.

36 Amalgamated Bank, *Climate Justice*, available at <https://amalgamatedbank.com/climate-justice>.

37 Sierra Club Foundation, “People & Nature: Powerful Together.” (2022). Available at <https://static.sierraclub.org/foundation/annual-report/2021/>.

38 Calvert, *Calvert Green Bond Fund (A)*, available at www.calvert.com/Calvert-Green-Bond-Fund-CGAFX.php.

- Under its Catalytic Capital Portfolio, invested in Working Power Impact Fund, Prime Impact Fund, and a number of the opportunities profiled above, including Navajo Power, SAGE, Solar Holler, Inclusive Prosperity Capital, and CIGP.

SCF's approach represents an “all dollars on deck” approach for both climate and justice. SCF's executive director, Dan Chu, noted in 2021, “Solving the climate crisis is not just about reducing carbon in the air, but also making sure that as we do that, we're creating a more just society.”³⁹

SCF is not alone in blazing trails for how institutional investors can advance climate justice. The Russell Family Foundation and the McKnight Foundation are among a growing number of investors who have committed to achieving net zero in their investment portfolios. These foundations—as well as corporations, family offices, other institutional investors, and climate justice-focused individuals—gain knowledge, practical guidance, and collaboration opportunities on climate investment strategies through investor networks such as those identified below.

INCONVENIENT TRUTH, CONVENIENT INVESTMENT OPPORTUNITY

Many have called out climate change as the existential risk of our time.⁴⁰ Similarly, many cite the inextricable link between climate and social justice, with low-income communities and communities of color being communities most at risk and having the most urgent needs for targeted investment to achieve climate resilience.⁴¹ All acknowledge that solving the climate crisis involves significant and sustained investment, realities that represent a call to action for investors to:

- **Leverage public dollars to accelerate and target investment for a just transition to a more sustainable economy.** Engage with like-minded

39 Erik Ortiz, “‘The numbers don't lie’: The green movement remains overwhelmingly white, report finds,” *NBC News*, January 13, 2021. Available at www.nbcnews.com/news/us-news/numbers-don-t-lie-green-movement-remains-overwhelmingly-white-report-n1253972.

40 Andrew Moseman, “Why do some people call climate change an ‘existential threat’?” *MIT*, November 7, 2023. Available at <https://climate.mit.edu/ask-mit/why-do-some-people-call-climate-change-existential-threat>.

41 “EPA Report Shows Disproportionate Impacts of Climate Change on Socially Vulnerable Populations in the United States.” Press release (Washington: EPA Press Office, September 2, 2021). Available at www.epa.gov/newsreleases/epa-report-shows-disproportionate-impacts-climate-change-socially-vulnerable.

investors, funds, and trade associations that are honing methods to leverage the current, unprecedented public dollars through safe investment strategies that ensure all communities can quickly achieve a just transition to a lower carbon economy.

- **Align publicly traded stocks and bonds with climate justice goals.** Numerous institutional investors, trusted networks, and investment advisors can provide guidance.
- **Invest in continued climate risk mitigation technologies.** Expand investment in funds and firms that are driving innovation in the products, services, and processes necessary to fully realize inclusive, resilient communities. This includes innovation and prototype testing and scaling of products and services that reverse or contain climate change (e.g., carbon capture and storage), “clean” fuels development (including biogas), energy grid connection and storage, sustainable mining, development and recycling of energy transition minerals (including from batteries), and data tracking to better understand climate effects throughout supply chains as well as communities.
- **Invest in financial product innovation to ensure equitable access to the full range of financial resources needed for climate resilience.** Backing is needed for financial innovation to ensure that all people can gain equitable access to insurance and disaster response loans, and to accelerate emerging models for secondary markets in climate finance that will improve financial standardization and liquidity.

While climate justice strategies are challenging to implement all at once or in isolation, trusted investor networks have long supported investors with carefully researched insights and collaboration opportunities. These include Ceres Investor Network on Climate Risk and Sustainability, Climate Solutions Collaborative, Confluence Philanthropy, DivestInvest, Intentional Endowments Network, Mission Investors Exchange, Net Zero Asset Owners Alliance, PRI: Principles for Responsible Investment, Sierra Club Foundation Shifting Trillions, and US Social Investment Forum (USSIF). For education, guidance, and investor collaboration on shareholder engagement strategies, investors frequently turn to the Interfaith Center on Corporate Responsibility (an ecumenical group that spearheaded the U.S. practice of shareholder engagement in the 1970s) and As You Sow.

The trailblazing climate justice leaders described in this chapter have demonstrated that creative entrepreneurs and investors can join forces to align investment assets to the urgent climate justice cause before us all.

JAVIER HERNANDEZ is a Director at Avivar Capital. He partners with institutional investors in the design and execution of impact investment strategies that can mobilize capital at scale while addressing systemic barriers for underinvested communities, including the impact of climate change.

LISA RICHTER is a co-founder and managing partner of Avivar Capital, a Securities and Exchange Commission-registered investment advisor focused on the design and execution of impact investing strategies, across asset classes and return expectations, that bring investors together with communities to advance equitable, healthy, and sustainable urban, rural, and tribal regions.

UNTAPPED POTENTIAL: SCALING WORKFORCE DEVELOPMENT FOR A GREEN ECONOMY

Donnel Baird with Siobhan Johnson, *BlocPower*

A SECOND CHANCE AT LIFE

Garey Scurry grew up playing basketball in the Bed-Stuy neighborhood of Brooklyn, which kept him off the streets and out of trouble. He was drafted into the NBA and played for the Utah Jazz and then his hometown New York Knicks until a traumatic car accident in 1997 caused a neck injury that forced him to retire from the game.

Scurry consistently battled deep depression after his basketball career ended. He realized he didn't have marketable skills outside of basketball, and he struggled with drugs and petty crime. He was eventually incarcerated. While in prison, Scurry began to work on developing himself. He took general business administration and building maintenance courses and began to build a platform from which to mentor young men. After being released from prison, Scurry, like so many formerly incarcerated people, had a hard time finding steady work.

While walking in his Brooklyn neighborhood in 2022, Scurry saw a sign for Mayor Eric Adams' workforce development program called the

NYC “Civilian Climate Corps.” Scurry was told that there were no open spots in the program, but he persistently explained to the case manager that he truly needed the opportunity; he enrolled the next day. During the Civilian Climate Corp program, Scurry learned the fundamentals of green construction, along with soft skills like teamwork, punctuality, and personal responsibility. Scurry now calls the Civilian Climate Corps his second chance at life.

THE BLOCPower MODEL

The Civilian Climate Corps that Carey Scurry joined was born out of a public-private partnership between my climate technology company BlocPower and the New York City Mayor Eric Adams’ Office of Criminal Justice. Goldman Sachs provided working capital to the program as a partner.

BlocPower analyzes, finances, and installs clean energy and decarbonization upgrades in buildings in underserved communities. One of BlocPower’s unofficial mottos is that we are trying to “Turn Buildings into Teslas.” In the same way that Tesla removes gas-guzzling engines from vehicles and replaces them with smart, all-electric engines, BlocPower aims to replace heating and hot water systems with clean, all-electric heat pumps, electric water heaters and stoves, and solar panels.

There is no realistic path forward to address the climate crisis at scale that doesn’t include the participation of low- and moderate-income (LMI) communities, yet these communities are often ignored in climate policy and climate technology initiatives. BlocPower focuses on providing clean energy services for LMI communities as the priority for our day-to-day operations.

There are several barriers BlocPower needed to overcome to begin to fulfill our mission. One issue that we needed to address was the lack of actionable energy and engineering data in low-income communities, which is needed to identify and target the buildings most in need of electrification and decarbonization. We partner with Amazon Web Services and the Bezos Earth Fund to aggregate into a machine learning platform terabytes of data on all of the more than 100 million buildings across America, allowing us to analyze building characteristics and recommend the right

clean energy equipment at both the individual building level and at the neighborhood and city-scale building electrification level. We've also developed software that helps cities design electrification programs to target communities most in need of environmental justice.

Financing presented a second barrier. Full-scale electrification projects can cost tens of thousands of dollars to initiate, which isn't feasible for the average American—let alone feasible for LMI communities. BlocPower has worked with partners on Wall Street and in Silicon Valley—including Goldman Sachs, Microsoft's Climate Innovation Fund, Salesforce, Eric and Wendy Schmidt, Andreessen Horowitz, and American Family Insurance Institute for Corporate and Social Impact—to create a new financing product that will fit the needs of our LMI customers.

We structure zero-dollar down green equipment leases that stretch out the repayments of an energy efficiency upgrade over 10 to 15 years. We sometimes think of it as our version of a green mortgage—we take an investment that's not typically affordable for most people, and break it into manageable chunks, payable over a longer period of time. We also help families to apply for incentives and subsidies, which can improve financial access to building electrification, but often require a complex maze of paperwork.

In 2023, for example, we managed the installation of a heat pump system in a two-unit apartment building in the Bronx. The project involved more than 10 pieces of equipment, and the total cost was over \$64,000. We were able to secure about \$44,000 worth of incentives, so our customer's out of pocket cost was only \$310 per month—and no down payment was required.

We had similar success at a historic Roman Catholic church, also in the Bronx. The Catholic diocese administration was replacing an old, inefficient, and expensive-to-run oil boiler in the basement with heat pumps in the lobby and rectory. The church's monthly payment ended up being around \$600, an annual energy bill savings of approximately \$3,000.

As BlocPower has completed projects and formed relationships with local contractors across the U.S., we've run into another challenge: a shortage of well-trained and highly-skilled clean energy workers and

green construction technicians. There is an acute demand for skilled labor in America’s construction industry, with a gap of more than half a million workers.¹ Older workers are retiring—about one in five are 55 and older²—and not enough young people are choosing to enter training and apprenticeship in skilled construction trades like plumbing and electrical.³

CIVILIAN CLIMATE CORPS AS AN EXAMPLE OF A CUTTING-EDGE TRAINING PROGRAM

The labor shortage, BlocPower’s focus on financially underserved communities, and the Mayor of New York’s desire to expand economic opportunities in communities impacted by gun violence combined to make the NYC Civilian Climate Corps (CCC) a reality. We launched our first training cohort in 2021, and the New York City Mayor’s Office invested \$54 million the following year. Mayor Adams asked the team at BlocPower to expand the NYC CCC program to serve thousands of New Yorkers, reaching people in neighborhoods across the five boroughs, including East New York and East Flatbush in Brooklyn; Far Rockaway, Queens; East Harlem and West Harlem, Manhattan; and the South Bronx.

Currently, BlocPower runs 40-member Civilian Climate Corps training cohorts every two weeks. Every participant goes through the Occupational Safety and Health Administration’s (OSHA) 40-hour safety training required for construction workers under Local Law 196 in New York City and Site Safety Training (SST), as well as foundational HVAC and electrician training.

This broad introduction to the construction trades allows CCC members to develop skills and acquire the certifications required to work on any construction site in New York City. After the initial two-month introductory training, participants have the option to continue with supplemental training in areas like solar panel installation, heat pump installation, or

1 “Construction Workforce Shortage Tops Half a Million in 2023, Says ABC.” Press release (Washington: ABC, February 3, 2023). Available at www.abc.org/News-Media/News-Releases/construction-workforce-shortage-tops-half-a-million-in-2023-says-abc.

2 U.S. Bureau Of Labor Statistics, *Spotlight on Statistics*, available at www.bls.gov/spotlight/2022/the-construction-industry-labor-force-2003-to-2020/home.htm.

3 Jill Barshay, “Proof Points: Number of students enrolled in job-focused degree programs dropping by double digits,” *The Hechinger Report*, December 21, 2020. Available at <https://hechingerreport.org/students-enrolled-in-job-focused-degree-programs-dropping/>.

EV charging station maintenance. We have clean energy partners across the city that offer on-the-job training and many participants are hired full-time at the end of their on-site training.

Wraparound services that include career readiness and trauma-based counseling are a core component of our CCC program, as many members have had limited access to professional development. Resume workshops, workplace etiquette, business communication, interview preparation, digital and financial literacy, navigating interpersonal relationships, managing conflict, and many more resources are available to all trainees.

Each Civilian Climate Corps participant is paid \$20 per hour for every hour spent in the program—simulating a traditional work environment that allows members to bring their full focus to the training. Moreover, being paid a livable wage is the only way many trainees could afford to participate.

One recent CCC participant struggled to make ends meet while working in fast food, so he supplemented his income by selling illegal drugs. Enrolling in the CCC program allowed him to avoid the distraction of street gang life—while still allowing him to provide for his family. This trainee’s perseverance and discipline paid off, as he was recently hired by one of our partners as a solar installer, making \$50,000 annually, and receiving health and employment benefits.

Since its inception, the NYC Civilian Climate Corps has enrolled over 2,900 members and has a 94 percent graduation rate. Our members are 97 percent Black and Latino, and 25 percent women—all populations that have been historically underrepresented in the construction industry.⁴

We focus on training people in the use of cutting-edge hardware and software tools, and the installation of all-electric, distributed energy resource systems as they emerge as a new financial and energy asset class. Trainees acquire the skills to use innovative construction program management software, the Internet of Things (IoT), and augmented reality. The CCC program bridges the gap between the clean energy construction and installation work of the future and the material needs of under-resourced people in the communities we serve.

4 U.S. Bureau Of Labor Statistics, Spotlight.

We've created a model green jobs program that delivers the benefits of the clean energy economy where they're needed most. But when Carey Scurry walked into our Brooklyn training hub, there wasn't an immediate opening for him—he just happened to luck out. We currently have hundreds of people on the Civilian Climate Corps waiting list.

FLAWS IN TRADITIONAL WORKFORCE PROGRAMS

Discussions of how to scale workforce development for low- and moderate-income communities tend to default to three conventional solutions: community colleges, nonprofit workforce development organizations, and labor unions. But community colleges and nonprofits too often lack the resources to keep pace with evolving technology,⁵ and aren't aligned closely enough with the private sector to provide market ready technical expertise.⁶ And while construction labor unions have historically had a good track record of producing market ready workers, union membership has declined over the last several decades due to globalization, technology, and the rise of the service sector.⁷

THREE WAYS TO REVOLUTIONIZE WORKFORCE TRAINING

To truly scale and revolutionize workforce development, we need to reinvent our current practices and create a new category of workforce-oriented, public-private partnerships that can combine scale, expertise, speed, and reliability to train market-ready workers.

1. Take a Regional Approach

Most notably, workforce needs and opportunities in the United States should be gauged through a regional lens. Not all buildings are created equal, and there are multiple pathways to reducing the greenhouse gas emissions of each one. BlocPower—a Brooklyn-based company—has focused on replacing heating systems with air source heat pumps because

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- 5 Carl Smith, "A Troubling Disconnect Between Community Colleges and Employers," *Governing*, Dec. 19, 2022. Available at www.governing.com/work/a-troubling-disconnect-between-community-colleges-and-employers.
 - 6 Joseph B. Fuller and Manjari Raman, "The Partnership Imperative: Community Colleges, Employers, and America's Chronic Skills Gap." (Harvard Business School, December 2022). Available at www.hbs.edu/managing-the-future-of-work/Documents/research/The%20Partnership%20Imperative%2012.12.2022.pdf.
 - 7 Diane Katz, "The decline of the American labor union," *GIS*, April 28, 2023. Available at www.gisreportsonline.com/tr/decline-american-union/.

New Yorkers have historically heated their homes with fuel oil. Our Civilian Climate Corps focuses on teaching people the skills to remove ancient oil boilers and install heat pumps, as this is a retrofitting strategy that works well for New York’s mostly nineteenth-and twentieth-century housing stock.

But people in different parts of the country use vastly different ways to heat their homes.⁸ The skills taught in a workforce development program in the Midwest where natural gas and propane systems reign supreme should differ from what BlocPower provides. Out West, focusing on training workers to install all-electric hot water heating systems and electric ovens may be needed.

The characteristics of vulnerable communities with the greatest need for resources and skills training also vary by region. The Civilian Climate Corps targets low-income communities impacted by gun violence because gun violence is a significant problem in urban areas like Brooklyn and the Bronx. However, low-income, rural communities may have different pressing problems, like methamphetamine abuse⁹ and high rates of suicide.¹⁰ Workforce programs must examine the needs of each community and work with trusted local organizations to customize effective solutions. It isn’t—nor should it be—a one-size-fits-all approach.

2. Engage Corporations with Skin in the Game

One way to attract more attention—and more funding—to climate-centered workforce needs is to hold large, heavily-resourced industries accountable for their connection to the benefits of electrification. For example, inadequate HVAC systems and fossil fuel appliances that leak volatile organic compounds, carbon monoxide, and nitrogen dioxide have long been cited as causes of Sick Building Syndrome,¹¹ which affects

8 John Muyskens, Shannon Osaka, and Naema Ahmed, “U.S. home heating is fractured in surprising ways: Look up your neighborhood,” *The Washington Post*, March 6, 2023. Available at www.washingtonpost.com/climate-environment/interactive/2023/home-electrification-heat-pumps-gas-furnace/.

9 Andrew A. Lukowiak and Angela G. Huskey, “Millennium Health Signals Report™: National Drug Use Trends, Volume 2.” (Millennium Health, February 2020). Available at https://region8news.files.wordpress.com/2020/02/2020_mh_signals_report.pdf.

10 Heather Saunders and Nirmita Panchal, “A Look at the Latest Suicide Data and Change Over the Last Decade,” *KFF*, August 4, 2023. Available at www.kff.org/mental-health/issue-brief/a-look-at-the-latest-suicide-data-and-change-over-the-last-decade.

11 Sumedha M. Joshi, “The sick building syndrome,” *Indian J Occup Environ Med* 12 (2) (2008): 61-4. Available at www.ncbi.nlm.nih.gov/pmc/articles/PMC2796751/.

as many as one in four Americans.¹² More recent studies have linked gas stoves to 13 percent of childhood asthma cases¹³ and have found that their presence in American homes has roughly the same climate impact as 500,000 gasoline-powered cars.¹⁴

Despite the proven negative health impacts of fossil fuel emissions in buildings, there has yet to be any explicit healthcare funding invested in building electrification. BlocPower has been working with Baltimore's Green & Healthy Homes Initiative to quantify the health impacts of building electrification and assess the feasibility of integrating health-related services into electrification building upgrades in Alameda County in California. The goal of our research is to convince healthcare stakeholders and healthcare corporations to become advocates, funders, or operational partners in resident-focused electrification projects and, by default, green workforce programs.

Tech companies are another opportunity to engage corporate partnership. Research has shown that the tech industry is more concerned about climate change and is more likely than non-tech industries to have taken significant steps toward mitigating it,¹⁵ like hiring executive-level sustainability personnel and setting aggressive emissions reduction targets.¹⁶ As part of these mitigation efforts, tech giants have a unique opportunity to play a pivotal role in addressing the pressing need for skilled labor in the green economy—after all, who better to help create and update training curricula for a tech-enabled construction industry than those developing the technology? But their involvement in energy efficiency training that can green the communities surrounding their headquarters and data centers remains at a nascent stage, at best.

12 Anne Steinemann, "National Prevalence and Effects of Multiple Chemical Sensitivities," *Journal of Occupational and Environmental Medicine* 60 (3) (2018): e152-e156. Available at <https://pubmed.ncbi.nlm.nih.gov/29329146/>.

13 Talor Gruenwald et al., "Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States," *Int J Environ Res Public Health* 20 (1) (2022): 75.

14 Rob Jordan, "Stanford scientists find the climate and health impacts of natural gas stoves are greater than previously thought," *Stanford News*, January 27, 2022. Available at <https://news.stanford.edu/2022/01/27/rethinking-cooking-gas/>.

15 Ariane Bucaille et al., "TMT Predictions 2024," *Deloitte Insights*. Available at www2.deloitte.com/us/en/insights/industry/technology/technology-media-and-telecom-predictions.html.

16 Tim Quinson, "Tech Companies Are Setting the Most Ambitious Net-Zero Goals," *Bloomberg*, April 7, 2021. Available at www.bloomberg.com/news/articles/2021-04-07/tech-firms-are-setting-the-most-ambitious-net-zero-goals-green-insight.

In 2018, Google partnered with the nonprofit Jobs of the Future (JFF) to train and prepare low-income adults for IT careers. The Google IT Support Professional Certificate was developed to provide online training in basic and advanced IT concepts, hands-on projects, and access to career services. With Google’s support, JFF has built a network of 100 community colleges across the country that offer the certificate.¹⁷

BlocPower is partnering with Goodwill Industries International and Accenture on a similar national training model. Goodwill—a company with a long history of career training—asked us to develop a heat pump training curriculum for the Goodwill Clean Tech Accelerator pilot program that’s based in Houston. The training will equip people with the skills and certifications required to enter the field as apprentices and secure well-paid, high-demand, entry-level positions in the clean energy sector.

We’re leveraging the expertise of our engineering and construction teams at BlocPower to create this specialized curriculum from scratch. Once completed and pressure-tested, it can be distributed to Goodwill locations all over the country. There are more than 3,300 Goodwill locations in the United States and Canada—and 81 percent of U.S. households are within a 10 mile radius of a Goodwill store—so we hope to provide opportunities for people in areas that lack large corporate headquarters or heavily-resourced industries.¹⁸

3. Align Corporations’ Climate Goals with Municipal Climate Plans

Large, multinational companies have not been involved in a significant way with green workforce development. Although many corporations have ambitious net-zero goals, they are addressing them asynchronously with regional public counterparts that have similar objectives, issues, and solutions.

Seattle’s Climate Action Plan, for example, aims to reduce greenhouse gas emissions 58 percent below 2008 levels by 2030.¹⁹ Microsoft, head-

17 Natalie Van Kleef Conley, “Our IT Support Certificate comes to 100 community colleges,” *Google*, October 03, 2019. Available at <https://blog.google/outreach-initiatives/grow-with-google/it-support-community-colleges/>.

18 Goodwill, *Shoppers*, available at www.goodwill.org/shoppers.

19 ACEEE, *Community-Wide Climate Mitigation and Energy Goals*, available at <https://database.aceee.org/city/seattle-wa>.

quartered in the Seattle metropolitan area, has similarly ambitious climate goals of being carbon negative as a company by 2030.²⁰

Imagine the progress that could be made if there were seats at the collective table for Seattle’s Green New Deal Oversight Board (which recommended \$1 million in annual funding for clean energy jobs programs starting in 2023²¹), the Seattle Mayor’s Office for Economic Development, members of Microsoft’s sustainability and innovation technology teams, local community leaders and stakeholders (like the high school principal, or local rabbis and imams), and climate tech companies like BlocPower that can facilitate the curriculum and training for a workforce development program. The result could become an important option for effectively connecting the communities that have been most impacted by socioeconomic and environmental challenges to the jobs and economic development generated by local green infrastructure projects.

ELIMINATING WASTE, UNLEASHING POTENTIAL

Just like Carey Scurry, I grew up in Bed-Stuy, Brooklyn, where I was exposed to two kinds of pervasive waste: wasted energy and the waste of the human potential of my friends and neighbors.

The apartment my family lived in had a heating system that rarely worked. My parents both worked nights, so I was taught at six years old that when it got cold, I should strike a match to light the gas and open the oven door to heat the apartment. But I was also taught to open the apartment windows, so that carbon monoxide could escape and we wouldn’t suffocate while we slept. It wasn’t just my family dealing with inefficient

heating—many of my neighbors were living the same way. People were risking their health while energy was literally being paid for and blown out of the window.

20 Microsoft, *Our Microsoft sustainability journey*, available at www.microsoft.com/en-us/corporate-responsibility/sustainability-journey.

21 Green New Deal Oversight Board, “Green New Deal Oversight Board 2022 & 2023 Budget Recommendations.” (Seattle: Office of Sustainability & Environment, June 2022). Available at www.seattle.gov/documents/Departments/OSE/GreenNewDealBoard/Board%20Documents/GNDOB_22-23_Budget_Recommendations.pdf.

When I was a kid, I could walk around Bed-Stuy or Brownsville or Crown Heights in Brooklyn and see scores of unemployed or under-employed young people engaged in dangerous and illicit activity to generate income and purpose. These young people are blessed with talent, genius, and dreams, but they lack the resources and opportunity to access their own potential.

Genius is evenly distributed among the human population—so what if the breakthrough technology to reduce greenhouse gas emissions is developed by someone growing up in a homeless shelter or refugee camp? What if the radical innovation that saves the entire planet is invented by someone in a foster care facility or juvenile detention center?

Using workforce development opportunities to unleash the talent and potential of all Americans is inextricable from fighting the climate crisis and saving the planet.

Everything depends on it.

DONNEL BAIRD *is the founder of BlocPower. He's a member of the Second District Advisory Council at New York Federal Reserve Bank, The Climate Reality Project, and the Coalition for Green Capital. He's been a political and community organizer and worked to leverage federal energy efficiency investments in underserved communities. Donnel is TIME Magazine's 2022 "Dreamer of the Year."*

SIOBHAN JOHNSON *is Co-Lead of the Content and Community team at BlocPower. Prior to BlocPower, she spent the majority of her career in financial services, implementing marketing and content strategies across a variety of platforms, both digital and offline. Companies she's worked for include Wells Fargo, Truist Financial, Ally Financial, and TIAA.*

COMMUNITY-BASED LENDERS PROVIDE CRITICAL FINANCIAL SERVICES AFTER CLIMATE EVENTS: LESSONS FROM HURRICANES MARIA AND IRMA IN PUERTO RICO

Cathie Mahon and René Vargas Martínez, *Inclusiv*

As climate change intensifies, weather patterns have been shifting and the rate of severe climate events has been rising around the world. The need for comprehensive climate solutions becomes ever clearer. Low- and moderate-income communities, already the most vulnerable, are experiencing increased suffering due to the more frequent and damaging impacts of climate change. With governments straining to respond to increasingly destructive disasters, financial institutions can play a principal role in driving disaster relief and recovery, helping to build resilient communities and local economies.

Created by and embedded in the communities they serve, community financial institutions have built trust through their local presence and infrastructure, dedicated staff, and expertise in mobilizing resources. They serve as financial first responders in moments of crisis, bringing multiple stakeholders together to provide critical services and serving as resilience hubs during extreme weather and natural disasters.

Inclusiv is a certified Community Development Financial Institution intermediary that helps low- and moderate-income people and communities

achieve financial independence through credit unions. Across the United States, community development credit unions (CDCUs)—credit unions with a mission of serving low-income people and communities—have demonstrated their commitment to supporting communities affected by natural disasters. CDCUs in Puerto Rico are known as *cooperativas de ahorro y crédito*, or savings and loan cooperatives (*cooperativas*). Since 2018, Inclusiv has been working to strengthen the Puerto Rican cooperativa network and amplify its role in helping communities recover from the impacts of recent natural disasters, along with new disasters that continue to hit the island.

Puerto Rico’s century-old network of community-owned cooperativas has deep roots in rural and urban working-class communities, where most mainstream financial institutions have no presence. Cooperativas represent a lifeline for their communities, providing access to affordable financial services and credit. As the number of bank branches in Puerto Rico has fallen (from 429 in 2012 to 261 in 2022), the importance of cooperativas has grown.¹ Today, 98 state-chartered cooperativas and five federal credit unions operate on the island. Collectively, they hold more than \$11.7 billion in community-owned assets, provide financial services to more than 1.1 million member-owners (*members*) (roughly one-third of Puerto Rico’s population), and maintain a brick-and-mortar presence in 75 of the island’s 78 municipalities.²

In September 2017, Hurricane María made landfall in Puerto Rico with Category 4 winds and rain that produced massive flooding. The ensuing devastation had a profound impact on the island’s 3.3 million residents, especially those living in rural and low-income areas. María damaged or destroyed 95 percent of cell towers; the power grid, crippled two weeks previously by Hurricane Irma, was destroyed.³ Power, communications, water, food, and roads suffered severe disruption throughout the island.

1 Government of Puerto Rico Office of the Commissioner of Financial Institutions, “Statistics of Banks in Puerto Rico.” Available at <https://ocif.pr.gov/DatosEstadisticos/Datos%20Estadisticos/Datos%20Estad%20C3%ADsticos%20Financieros%20por%20Bancos.pdf>.

2 “Estadísticas Industria Cooperativas de Ahorro y Crédito.” (San Juan, PR: COSSEC, September 2023). Available at https://docs.pr.gov/files/COSSEC/Documentos%20Cooperativas/Estadisticas%20Industria%20Cooperativas%20de%20Ahorro%20y%20Credito/Estad%20C3%ADstics_Industria_Cooperativas_AC_SEP_2023.pdf.

3 Michon Scott, “Hurricane Maria’s devastation of Puerto Rico,” *Climate.gov*, August 1, 2018. Available at www.climate.gov/news-features/understanding-climate/hurricane-marias-devastation-puerto-rico.

In the days following Hurricane María, Puerto Rico's cooperativas became financial first responders. They reopened long before other financial institutions, ensuring that the island's communities could meet critical needs in a time of crisis.

To share best practices and learn how cooperativas provided services under very difficult conditions, we organized the first-ever gathering of eight cooperativa leaders, who experienced Hurricane María firsthand, to analyze what worked and what they could teach other communities facing similar crises. These leaders represented cooperativas from different areas of Puerto Rico, each with unique experiences, but all shared a commitment to the communities they serve. The fact that many mainstream financial institutions didn't reopen for weeks or months (and some not at all) makes it important to share the cooperativas' experiences as a guide to ensuring continuity of service, financial access, and support during similar events and their aftermath.

WHAT WORKED FOR CLIMATE RESILIENCE

Preparation Is Key

Well before Hurricane María arrived, cooperativas had developed contingency plans based on experiences with prior natural disasters. Before the storm, they inspected emergency generators, prepared backups of software systems, purchased food and water, ordered additional cash for their vaults, and designated emergency-response roles for all staff. None of them, however, predicted the total collapse of basic services that followed Hurricane María and continued for months. Cooperativas have adjusted their contingency plans to reflect this risk of collapse. Examples of the adjustments include additional layers of redundancy in communication sources, powering computer and server rooms with renewable energy sources, building fuel tanks for reserves, and installing backup power generators.

"The protocols were reinvented according to the situations that were experienced. Nobody thought that they would be without power and communications for so long. In my case, all the branches are in the center of the island. The roads were impassable. A group of employees and volunteers had to be found to open the way. Even with a saw."

Carlos M. De Jesús, Executive President, LarCoop, Lares, PR

Communication Is Essential

Before the storm hit, cooperativas assigned responsibilities to staff. Staff communicated with their members and communities through automated phone calls, texts, and social media to explain the emergency services they could provide. They reached out to government officials, local businesses, NGOs, vendors, and community groups to coordinate in advance of the storm. Even with so much preparation, the collapse in communications following the storm meant that some cooperativas had to operate their systems independently. They manually entered transactions gathered from branch operations, physically uploaded electronic transactions, and processed transactions relying on an honor system.

“The meeting with staff before the hurricane was very important. It allowed us to discuss our priorities, the contingency plan, work schedule, and determine how to restart operations after the hurricane.”

Frances Rivera, Executive President, SaliCoop, Salinas, PR

Quickly Resuming Operations Must Be the Priority

Most cooperativas opened their doors 48 hours after the storm, even as other mainstream financial institutions, particularly banks, remained closed for weeks and months. A month after Hurricane María, 35 percent of banks remained closed.⁴ After a disaster, immediate access to financial services—specifically cash—is essential for buying food, fuel, and basic supplies. The ability to reopen branches shortly after the storm had a profound impact on the communities these cooperativas serve.

“The cooperativa was flooded with eight (8) feet of water from Lake La Plata, and everything was lost, including the customer service area, cash registers, vault, and ATMs. Even with these challenges, we were able to open less than a week after the hurricane. The local bank opened after 9 months.”

Ruth Berrios, Executive President, La Comerieña Coop, Comerio, PR

Staff Must Be Safe and Their Basic Needs Met

Cooperativas understood that to resume operations, they needed to meet the immediate needs of their employees. After Hurricanes María

4 Patrick Gillespie, “Puerto Rico’s cash crisis: 35% of banks still closed,” *CNN Business*, October 18, 2017. Available at <https://money.cnn.com/2017/10/16/news/economy/puerto-rico-banks/index.html?iid=EL>.

and Fiona (in 2022), many cooperativas provided financial assistance, food, supplies, laundry services, childcare, and other support to their employees. To support cooperativas, Inclusiv collaborated with the New York Credit Union Association (NYCUA) and the National Credit Union Foundation's CU Aid (a disaster response fund administered by NCUF) to raise resources and deploy funds. As a response to Hurricane María, the NYCUA started a fundraising campaign to help local credit unions get back on their feet. Those efforts were leveraged with funding from CU Aid. Inclusiv played a key role in deploying those funds at the local level. In the case of Hurricane Fiona, Inclusiv served as the entity that received and distributed NCUF CU Aid funds.

Together, Inclusiv, NYCUA, and the National Credit Union Foundation distributed \$500,000 to help cooperativa employees in the aftermath of Hurricane María, and another \$300,000 after Hurricane Fiona, highlighting the role that national infrastructure can play in supporting lenders on the ground in deploying capital during emergencies.

“We provided childcare, food, and gasoline to our employees so they could come to work every day at the cooperativa and feel that they were taken care of.”

Sara Jiménez, Executive President, Cooperativa San Rafael, Quebradillas, PR

The Response Must Be Flexible and Adaptive

To respond to the immediate needs of their communities, cooperativas demonstrated a flexibility that proved crucial to their success. Without power and communications, they had to adapt. Cooperativas cashed checks from other institutions without the capacity to verify the availability of funds. Cash, as well as the files to be able to run ACH transactions, were in San Juan at the Banco Cooperativo. This meant that for ACH transactions to be posted, and for new cash to reach these communities, cooperativa leaders had to travel to the capital city and back under very difficult conditions. Their efforts allowed the processing of direct deposits and transfers. They collected cash, procured diesel on makeshift trucks, cleared roads, and gathered supplies to bring to their communities. These initiatives all required a greater risk tolerance during the crisis, including more flexible interim controls, such as limits on cash

amounts, verification of prior ACH history, and manual processing and reconciliation.

“Cooperativas operated under an honor system. We did not have the capacity to update ACH files, or verify check funds availability, but our members needed their deposits. We honored them, without question. Our members trusted us, and we trusted them. When the systems were back online, all transactions reconciled perfectly.”

Aurelio Arroyo, Executive President, Cooperativa Jesús Obrero, Guaynabo, PR

Partnerships with Community Stakeholders Multiply the Impact of Response Efforts

Cooperativas partnered with community organizations to make cash and supplies available to everyone in the community. They formed alliances with supermarkets, gas stations, hospitals, primary care centers, and municipalities. They shared facilities, services, supplies, and gas. Many of these alliances were planned beforehand, but others had to be improvised. These partnerships kept cash circulating, especially in rural areas where roads were blocked and cash delivery wasn't available.

“I couldn't reach the cooperativa until two days after the hurricane. There was substantial damage, and no open hardware stores open nearby. The owner of a hardware store that had a close relationship with the cooperativa granted me access and let me go in to find what I needed to deal with the situation. Eventually we were able to resume operations.”

Carlos Crespo, CEO, Maunacoop, Maunabo, PR

Branches Can Serve As Community-Resilience Hubs

After the storms, cooperativa branches operated in ways that transcended traditional financial services. They quickly converted into emergency community centers that opened access to food, water, power for charging medical and other devices, and a place to rest. In many instances, cooperativas became the only source in the community of both cash and necessities.

“The cooperativa opened its facilities so that the community could benefit from the electricity produced by the generator and receive their medical therapies. The Red Cross delivered water and supplies from the cooperativa as well.”

Carlos Ortíz, Executive President, Bonicoop, Aibonito

IMPORTANT LESSONS LEARNED TO HELP PREPARE FOR THE NEXT CLIMATE EVENT

In Emergencies, the Financial Regulator Must Act as a Facilitator

A significant obstacle Puerto Rico’s financial cooperativas have faced is reconciling the regulatory framework with the reality of operating post-disaster. Cooperativa flexibility has proved essential during a crisis, but often individual institutions have borne the full risk of taking essential steps that enable people to withstand the crisis. Financial regulators, such as COSSEC (the Spanish-language acronym of the Public Corporation for the Supervision and Insurance of Cooperatives in Puerto Rico), NCUA (National Credit Union Administration), and FDIC (Federal Deposit Insurance Corporation) need to support these institutions to mitigate that risk—and even to provide emergency cash reserves to support this responsiveness. Regulators could also help save lives and livelihoods by developing standing policies that make regulations more flexible during emergencies. Examples include allowing more flexibility in reporting requirements and in capital and liquidity ratios; general loan modifications; expanding loan-payment extensions and funds availability; and other steps, depending on the nature and extent of the crisis.

The new COSSEC executive president, Mabel Jimenez Miranda, acknowledged that the magnitude of the crisis in 2017 complicated the agency’s response. Since then, COSSEC has listened closely to the cooperativas’ concerns and implemented substantial changes to address them. Hurricane Fiona highlighted this positive shift in 2022, when COSSEC adopted a preemptive and supportive stance toward the cooperativa system during the storm and its aftermath.

“In this instance, the regulator failed to act as a facilitator. A team of six staff from the regulator met with our board in the aftermath of Hurricane María. They demanded numerous daily reports on compliance and security, even as we were the only financial institution serving our community.”

Ruth Berrios, Executive President, Coop La Comerieña, Comerio, PR

A Community Can Start Investing Now to Create Resiliency for the Next Climate Disaster

After the experiences of Irma and María, and ongoing power grid failures, cooperativas invested heavily in developing green loan products, focusing on residential solar. They created the first solar lending product on the island,⁵ and have financed more than \$166 million in green loans since 2021. They’ve also invested in branch infrastructure. Thanks to an alliance between the Asociación de Ejecutivos de Cooperativas de Puerto Rico and Inclusiv, in 2023 cooperativas presented a proposal for Community Development Block Grant Mitigation (CDBG-MIT) funds that would transform their branches into community resiliency centers.⁶

“After Hurricane María, we created The Oasis, a resiliency center with water, food, diesel, and telecommunications. We expanded our policies to finance solar projects. We also formed the ‘Viva la Montaña Alliance’ with organizations providing emergency health services, food, and financial services, along with support from the local mayors.”

Eddie W. Alicea, Executive President, Cooperativa Sagrada Familia, Corozal, PR

The increasing frequency and severity of natural disasters around the country make it imperative for financial institutions to prepare to play a key role in emergency response and recovery. Roughly 10,000 community-based, -owned, and -operated financial institutions around the United States can provide financial services to help people rebuild their homes and businesses. They can also serve as partners to communities and as

5 Avery Ellfeldt, “Meet Puerto Rico’s unlikely climate champions: Credit unions,” *Climatewire*, October 11, 2022. Available at www.eenews.net/articles/meet-puerto-ricos-unlikely-climate-champions-credit-unions/.

6 CDBG-MIT Funds, available at <https://recuperacion.pr.gov/en/cdbg-mit/>.

safe spaces for meeting the most basic of needs—pillars that communities can depend on when everything else fails and nothing works.⁷

Alongside the growth of fintech, electronic payments, and mobile banking, people remain a key component of resilience in climate-affected communities. Committed, dedicated, and ingenious local leaders with local control of community assets and capital can keep entire communities afloat during a crisis. In Puerto Rico, cooperativas proved a lifeline for many communities after Hurricane María. Based on a comparison of COSSEC annual reports from 2017 and 2023, since September 2017, when María hit, the cooperativa system has seen membership grow by 13.8 percent; assets rise by 36.4 percent; and loans increase by 37.1 percent. Such strong growth underscores the demand for and success of the cooperativa system.⁸

By taking a preemptive stance—implementing disaster-response plans and weaving resilience into operations and financial offerings— financial institutions can serve as the lifeblood of their communities in the face of climate-driven events. We have an opportunity and a responsibility to be part of the response and to build stronger, more resilient communities. This is what works.

7 NCUA, FDIC, and CDFI Fund data.

8 “Análisis información estadística de cooperativas de ahorro y crédito.” (San Juan, PR: COSSEC, 2017). Available at https://docs.pr.gov/files/COSSEC/Documentos%20Cooperativas/Estadisticas%20Industria%20Cooperativas%20de%20Ahorro%20y%20Credito/Estad%20C3%ADstic%20Industria%20Cooperativas_AC_sept_2017.pdf; “Estadísticas Industria Cooperativas de Ahorro y Crédito.”

CATHIE MAHON has led Inclusiv since 2012, overseeing dramatic organizational growth. Cathie has dedicated her career to driving financial empowerment and climate justice. Beyond Inclusiv, her depth and breadth of experience includes serving as Deputy Commissioner, NYC Department of Consumer Affairs, and founding Board Member, Justice Climate Fund.

RENÉ VARGAS MARTÍNEZ is Director of the Puerto Rico Network at Inclusiv. He directs an initiative to build a network of community development financial institution cooperativas in Puerto Rico and oversees the Juntos Avanzamos credit union network in the continental U.S. René holds a Juris Doctor from the University of Puerto Rico School of Law and was admitted to the practice of law in 2014.

BRIDGING THE GAP: A FINANCING STRATEGY TO SPEED DISASTER RECOVERY FOR LOW-INCOME COMMUNITIES

Michelle Whetten, *Enterprise Community Partners*

Hurricane Laura passed over Lake Charles, LA, on August 27, 2020. It was the strongest hurricane to strike the state since Hurricane Camille in 1969¹ and caused an estimated \$19 billion in damage.² Hurricane Delta followed just six weeks later, making landfall less than 20 miles from where Laura hit and adding nearly \$3 billion in damage³ to the already devastated region. Of the roughly 40,000 Louisiana homes damaged by storms in 2020, over half were rental units—and nearly three quarters of these damaged rentals were home to low- and moderate-income (LMI) families.

The State of Louisiana stood ready to deploy a set of proven programs to help residents repair and rebuild housing. But for a full year after the

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- 1 Richard J. Pasch et al., “National Hurricane Center Tropical Cyclone Report: Hurricane Laura.” (Silver Spring, Maryland: NOAA, May 2021). Available at www.nhc.noaa.gov/data/tcr/AL132020_Laura.pdf.
 - 2 “Proposed Master Action Plan for the Utilization of Community Development Block Grant Funds.” (Baton Rouge, LA: Louisiana Office of Community Development, April 2022). Available at <https://cdn2.assets-servd.host/utopian-bustard/production/OCD-Laura-Delta-Action-Plan-FINAL-7-28-22.pdf>.
 - 3 John P. Cangialosi and Robbie Berg, “National Hurricane Center Tropical Cyclone Report: Hurricane Delta.” (Silver Spring, Maryland: NOAA, April 2021). Available at www.nhc.noaa.gov/data/tcr/AL262020_Delta.pdf.

twin hurricanes struck, the state had no funds available to activate the rebuilding efforts.⁴ Despite the gravity of the combined disasters, Congress had yet to pass the spending bill needed to begin the flow of federal dollars for long-term disaster relief, including repair and rebuilding of single- and multifamily homes.

Because of this, displaced renters and homeowners who lacked sufficient savings or insurance to make timely repairs relied on temporary housing assistance to keep a roof—any roof—over their heads. For many renters, this meant living temporarily in New Orleans, some 200 miles east of Lake Charles, or in other cities that happened to have available apartments and hotel rooms. Far too many families found themselves temporarily relocated, for an indefinite amount of time, several hours away from home—from their jobs, schools, and community—and with only the belongings they could carry with them on the bus.

This is the opening scene of a story we've seen play out again and again over the last two decades: disaster recovery becomes a matter of haves and have-nots. Families with wealth are more likely to live in climate-resilient homes, but can also more readily evacuate if need be, with access to transportation, alternative housing (a second home, say, or family and friends with available space), and the immediate access to cash to cover rent and other unexpected expenses. They can use personal resources and insurance payouts to begin replacing possessions and rebuilding homes. Low-wealth families, on the other hand, are more likely to be renters or, if homeowners, to lack title, savings, or proper insurance. Typically hit hardest by weather-related catastrophes, these households and especially households of color are also slowest to bounce back financially, physically, and even socially.

Our well-intentioned but flawed system of federal disaster response plays a pivotal role in this story. It's too slow moving to support low-wealth families in their time of need. After most federally declared disasters that involve damage to housing, the Federal Emergency Management Agency (FEMA) provides financial assistance for short-term stays and temporary housing repairs. Once the immediate crisis has passed and FEMA

4 Mike Smith, "A year after Hurricane Laura, Lake Charles fears becoming 'expendable,'" *The Advocate*, Aug 27, 2021. Available at www.theadvocate.com/lake-charles/a-year-after-hurricane-laura-lake-charles-fears-becoming-expendable/article_50d8dd20-06ad-11ec-8973-af45983832ab.html.

short-term assistance is depleted, the wait begins for long-term help. For households with the above-mentioned resources, this wait is agonizing but in relative terms a short-term inconvenience. They are generally able to make decisions about work and school and begin to make plans for the future. Households without those resources must depend on extensions of temporary rental assistance, available shelters, and emergency help from churches and nonprofit organizations.

For Lake Charles, a small, low-lying city where nearly half of the residents are Black, the effects of delayed and inequitable recovery from the hurricane season of 2020 have been severe. Due to the lack of nearby housing options and the long wait for additional federal resources, countless families have been unable to restore their homes, routines, and community ties: Lake Charles has seen an increase in homelessness and dramatic population loss.⁵ Fifteen years after Hurricane Katrina taught the same harsh lesson, Laura and Delta once again illustrated how a climate disaster can become a social catastrophe of widening inequality.

It does not have to be this way. Policymakers and other stakeholders in both the public and private sectors must come together to design a national recovery apparatus that's targeted to the needs of low-wealth households—and nimble enough to reach them before it's too late.

WHAT WORKS: CDBG-DR, A TOOL FOR EQUITABLE RECOVERY AND RESILIENCE

We can start by building on components of the federal disaster recovery system that have proven effective. One is the Community Development Block Grant Disaster Recovery (CDBG-DR) program. Administered by the U.S. Department of Housing and Urban Development (HUD), since 1993 CDBG-DR has poured nearly \$100 billion into restoring housing, infrastructure, and local economies following disasters. In FY 2021 alone, Congress appropriated \$5 billion in CDBG-DR funds to assist recovery from events in 2020 and 2021. Once the necessary appropriation is made, HUD allocates CDBG-DR funds to states and local governments within

5 Carly Berlin, "Evictions, homelessness surge in southwest Louisiana after hurricanes," *The Current*, February 18, 2021. Available at <https://thecurrentla.com/2021/evictions-homelessness-surge-in-southwest-louisiana-after-hurricanes/>.

the disaster zone based on unmet recovery needs—those not covered by insurance payouts, FEMA assistance, or other public programs.

As a tool to promote more equitable recovery, CDBG-DR has four primary strengths.

1. CDBG-DR Targets Assistance to Those Most in Need

And it's the *only* major source of disaster-recovery funds to do so. HUD currently requires that at least 70 percent of program resources benefit LMI households. States achieve these benefits in part by prioritizing the repair and construction of affordable multifamily and single-family housing, helping renters and homeowners alike get back into permanent homes.

2. CDBG-DR Promotes Climate Resiliency for LMI Communities

In February 2022, HUD issued updated guidelines that strengthen CDBG-DR policies for disaster resilience, including requiring that all recovery activities involving construction incorporate disaster-mitigation measures.⁶

These energy-efficiency and resiliency requirements will not only reduce operating costs for owners and residents of affordable housing developments, but also harden that housing stock against future disasters, minimizing damage so that residents can safely remain in place during extreme weather or return home sooner. What we'll see are more storm-safe affordable homes like the 35 duplex and triplexes of Les Maisons de Bayou Lafourche in Lockport, LA, about 50 miles southwest of New Orleans.

The project, developed by Gulf Coast Housing Partnership, was the first-ever built to meet both Enterprise Green Communities⁷ resiliency criteria and the FORTIFIED standard of the Institute for Business Health & Safety (IBHS).⁸ The requirement for this dual certification came out of a community-led planning process for storm-impacted areas of the state,

6 "Allocations for Community Development Block Grant Disaster Recovery and Implementation of the CDBG-DR Consolidated Waivers and Alternative Requirements Notice," *Federal Register* 87 (23) (2022). Available at www.govinfo.gov/content/pkg/FR-2022-02-03/pdf/2022-02209.pdf.

7 Enterprise, *Green Communities*, available at www.enterprisecommunity.org/impact-areas/resilience/green-communities.

8 Fortified, *Your Family Deserves a Strong Home*, available at <https://fortifiedhome.org/>.

Louisiana’s Strategic Adaptations for Future Environments (LA SAFE).⁹ Les Maisons includes state-of-the-art protective features such as:

- A tight, well-insulated building envelope that lowers utility bills and offers passive survivability—meaning that habitable temperatures are maintained even during extended power outages.
- Electric power lines and switch panels installed underground so they won’t be knocked down by wind, decreasing likelihood of power loss, and generators to reduce the impact of power loss.
- Paperless drywall, tile floors, and dehumidifiers that minimize flood impact.
- Exterior fiber cement siding and missile-impact-rated windows for protection against hurricane-force wind.

Construction on Les Maisons was nearly finished by August 2021 when Hurricane Ida, one of the most destructive storms on record, struck the area. The new development sustained minimal damage and the first resident moved in on schedule just weeks later. In contrast, an established housing community less than a mile away not built to any above-code standard suffered significant damage. More than two years after Ida, it remains unoccupied, awaiting repairs.

3. CDBG-DR Effectively Leverages Private Investment To Support Recovery

These investments from the private sector are not just desirable, but indispensable. According to a 2019 estimate by the Congressional Budget Office, hurricane winds and storm-related flooding are expected to produce annual losses of \$34 billion in the U.S. residential sector—with only about *half* that amount covered by insurance policies and federal assistance programs combined.¹⁰

Fortunately, states can and often do structure CDBG-DR programs and selection criteria to prioritize projects that maximize leverage of private resources. This expands the overall pool of money available to

9 LA Safe, *Regional and Parish Adaptation Strategies*, available at <https://lasafe.la.gov/>.

10 “Expected Costs of Damage From Hurricane Winds and Storm-Related Flooding.” (Washington, DC: Congress of the United States Congressional Budget Office, 2019). Available at www.cbo.gov/system/files/2019-04/55019-ExpectedCostsFromWindStorm.pdf.

fund recovery, and ultimately increases the amount of housing repaired or rebuilt.

Indeed, financial institutions have demonstrated an appetite for investment in areas affected by disaster, for example investing in affordable-housing projects through the federal Low-Income Housing Tax Credit (LIHTC) program. Many financial institutions also support disaster recovery through investment in community development financial institutions (CDFIs), such as the Enterprise Community Loan Fund and the Local Initiatives Support Corporation (LISC). Following various disasters, these CDFIs have created pooled recovery funds that make available loans to help with property acquisition and predevelopment costs, and sometimes to bridge insurance proceeds for repair of damaged housing.

Banks may be motivated to invest in recovery to support the return of residents and businesses to areas where they have deposits and make loans, and to demonstrate good corporate citizenship. The Community Reinvestment Act (CRA), a 1977 federal law that requires financial institutions to meet the credit needs of areas where they operate, including LMI communities, is certainly a key factor as well.

After hurricanes Katrina, Rita, and Wilma lashed the Gulf Coast in 2005, federal financial regulators made several changes to the CRA that made it more influential in disaster recovery, explicitly adding designated disaster areas to the definition of CRA-eligible geographies.¹¹ Banks generally have 36 months following the date of a major disaster declaration by FEMA to engage in institutional activities that revitalize and stabilize a FEMA-designated disaster area. This period can be extended by the federal financial regulatory agencies when a clear community need exists to facilitate long-term recovery efforts.¹² For example, regulators granted an extension in 2008, three years after Hurricane Katrina, which

11 Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, and Office of the Comptroller of the Currency, “Banking Agencies Issue Final Community Reinvestment Act Rules.” Press release (The Federal Reserve Board, July 19, 2005), available at www.federalreserve.gov/BoardDocs/Press/bcreg/2005/20050719/default.htm.

12 Comptroller of the Currency, the Federal Reserve System, and the Federal Deposit Insurance Corporation, “Community Reinvestment Act; Interagency Questions and Answers Regarding Community Reinvestment; Notice,” *The Federal Register* 78 (224) (2013). Available at www.federalregister.gov/documents/2013/11/20/2013-27738/community-reinvestment-act-interagency-questions-and-answers-regarding-community-reinvestment-notice.

contributed to significant additional private investment that supported the region’s recovery.¹³

Whether or not directly influenced by these regulatory changes, many banks that otherwise would have had no CRA motivation for investment and had no history of investing in the Gulf region stepped up to help storm-damaged communities by investing in multifamily affordable and mixed-income housing, financing construction of single-family homes, and supporting redevelopment of key commercial corridors.

4. States Have Already Developed CDBG–DR Programs that Work for Rebuilding Multifamily Affordable Housing

States that have experienced multiple disasters now have in place tested, effective programs that address affordable housing needs, improve resilience, and leverage private resources. One notable example is Louisiana’s Piggyback Resilience Mixed-Income (PRIME) program. PRIME combines CDBG-DR funds with equity from the sale to investors of 4% Low-Income Housing Tax Credits (LIHTCs) along with bond-financed mortgage proceeds—“piggybacking” CDBG–DR on the LIHTC—to repair and rebuild multifamily homes in hurricane-impacted areas. To receive the funding, developers must certify projects to the 2020 Enterprise Green Communities criteria¹⁴ and the IBHS FORTIFIED Multifamily standard (launched in 2022).¹⁵ This structure builds on the model that emerged from the LA SAFE planning process, piloted in the storm-tested Les Maisons de Bayou Lafourche mentioned above.

In responding to multiple disasters, Louisiana has so far provided nearly \$364 million in CDBG-DR to support the development or redevelopment of 39 multifamily affordable housing properties across the state through the PRIME program, resulting in 3,930 resilient, energy-efficient rental apartments. Another \$540 million has been committed to this program, which combined with the completed apartments should result in a total of over 10,000 climate resilient rental apartments.

13 Sandra F. Braunstein, “Extension of CRA Consideration Period for Community Development Activities in Hurricanes Rita and Katrina Disaster Areas for an Additional 36 Months.” (Washington, DC: Board of Governors of the Federal Reserve System, October 2008). Available at www.federalreserve.gov/boarddocs/caletters/2008/0809/caltr0809.htm.

14 Enterprise, *Green Communities Criteria and Certification*, available at www.greencommunitiesonline.org/.

15 Fortified, *Your Family Deserves*.

WHAT DOESN'T WORK: A WAITING GAME THAT HARMS LOW-WEALTH HOUSEHOLDS

While they can be highly effective, CDBG–DR awards and the private investment that follows take too long to reach state and local governments for deployment on the ground. Property owners with the means can start making repairs immediately and hope for reimbursement. But displaced renters may have to wait as long as two to five years for repaired or rebuilt apartments. When shorter-term assistance ends, many of the lowest-income households and people of color—who are disproportionately affected by disasters, yet receive the least amount of assistance—face a second displacement from temporary housing and the threat of homelessness. The harm to affected families can be deep and lasting.

The wait for long-term resources is due to a lengthy, many-step process for approving and distributing CDBG–DR funds.

Unlike FEMA disaster-recovery funds, which are permanently authorized, CDBG-DR funds have to be reauthorized *every single time a disaster strikes*. So the first step is for Congress to pass a federal appropriations bill permanently authorizing CDBG-DR. There is no set timeline for this to occur—and in fact, no guarantee that CDBG–DR will be appropriated for any disaster. After the congressional appropriations process, HUD has to create formula allocations to counties and states based on damage estimates, make rules governing the use of the funds, and publish these rules for comment. Finally, jurisdictions (usually states) receiving allocations of CDBG-DR must produce detailed action plans describing the extent of the damage, the unmet needs, and specific programs that will be operated to address the unmet needs. This action plan must incorporate a public comment process before it is submitted to HUD for review and ultimate approval. Only after an action plan is approved can a jurisdiction sign its grant agreement with HUD and begin to access the resources.

Each of these steps can take months or even over a year. For residents of Lake Charles affected by hurricanes Laura and Delta, for instance, the timeline from storm to money-in-hand for reconstruction activities proceeded as follows:

- **August–October 2020.** Hurricanes Laura and Delta made landfall six weeks apart.
- **September 30, 2021.** Congress appropriated \$5 billion to CDBG-DR to support recovery from disasters.
- **November 2021.** HUD allocated more than \$2 billion of the \$5 billion appropriation for recovery from 2020 disasters, including hurricanes Laura and Delta.
- **May 2022.** The State of Louisiana submitted to HUD its required action plan defining the need for resources and describing its housing recovery programs and use of CDBG-DR.
- **July 2022.** HUD approved the State of Louisiana Action Plan.
- **August 2022.** The Louisiana Housing Corporation issued a Notice of Funding Availability (NOFA) for developers to apply for CDBG-DR through the Piggyback Resilience Mixed-Income (PRIME) initiative to repair or redevelop mixed-income rental housing.
- **April 2023.** First awards under this NOFA were made to developers.

WHAT WORKS TO PREVENT THESE DELAYS?

There’s no single fix for this complex problem. Still, experience over the past 20 years has informed two key breakthroughs that hold promise for dramatically speeding up the funding timeline in the near future. One is a legislative solution that demands action from Congress. The other calls on the private sector to step up and bridge finance recovery activities while jurisdictions await the arrival of federal CDBG-DR funds.

A Legislative Solution

The first partial but necessary solution is the permanent authorization of CDBG-DR. The program has been utilized since 1993, enjoys strong bipartisan support, and is proven effective. And because extreme weather events are becoming more frequent, CDBG-DR needs to remain active and ready to deploy at all times.

The bipartisan Reforming Disaster Recovery Act (S. 1686), introduced by leaders in both the House and the Senate in 2023, would permanently authorize CDBG-DR so the flow of federal recovery dollars needn’t await special congressional action, a major cause of delay and uncertainty. The

legislation also includes reforms to promote more efficient and equitable post-disaster recovery and to mitigate future risk.

Specifically, the bill would:

- authorize the creation of a CDBG–DR reserve fund that can quickly disperse initial recovery funding after disasters without waiting for congressional approval;
- maintain the current requirement that 70 percent of the funds benefit low- and moderate-income people;
- create a capacity-building and technical-assistance set-aside for grantees;
- require federal agencies to share all data to improve coordination of the disaster recovery process, as well as increase oversight and data transparency;
- promote disaster mitigation and resiliency by establishing an Office of Disaster Management and Resiliency at HUD;
- create a significant set-aside for disaster-mitigation activities; and
- create specific minimum construction standards for areas designated as hazard-prone by HUD and FEMA.

A Private-Sector Solution

Enterprise Community Partners, the national community development organization where I work as vice president for the Gulf Coast market, began discussing potential private-sector solutions with HUD and several disaster-impacted jurisdictions following the disasters of 2020 and 2021. We came up with the concept of an innovative private-sector bridge loan to accelerate rebuilding of disaster-impacted affordable rental housing in areas that have been allocated CDBG–DR resources but do not yet have them in hand.

With private financing to bridge expected CDBG-DR monies, jurisdictions could start construction *18 months earlier* on average. Communities and households could minimize tenant-relocation expenses, along with the trauma and other less quantifiable impacts of displacement.

The bridge financing addresses the time lag between when HUD allocates resources to jurisdictions through notice in the Federal Register and when

Figure 1. Disaster Recovery Accelerator Fund



those funds become accessible to jurisdictions. [See Enterprise’s Disaster Recovery Accelerator Fund timeline, below.] As noted, this timing gap is roughly 18 months, but can vary depending on the jurisdiction’s experience and how quickly it completes requirements. (The bridge does *not* address the time it takes Congress to appropriate resources after a disaster, nor the time it takes HUD to allocate to specific jurisdictions and issue new regulations.)

Notably, this private-sector solution also helps address a disparity in the way CDBG–DR regulations treat single-family versus multifamily housing. Following Superstorm Sandy in 2012, new rules made it allowable to use CDBG–DR funds to *reimburse* for single-family rebuilding expenses incurred before the final award of funds.¹⁶ But the same reimbursement model has not been possible for multifamily housing, compounding the

16 “Guidance for Charging Pre-Award Costs of Homeowners, Businesses, and Other Qualifying Entities to CDBG Disaster Recovery Grants.” (Washington, DC: U.S. Department of Housing and Urban Development Community Planning and Development, July 30, 2013). Available at www.hud.gov/sites/documents/CDBG_PREAWARD_NOTICE.PDF.

inequities faced by the renters and families of color who predominate in this type of housing.

The bridge financing concept is moving forward. Working with Enterprise, the State of Louisiana obtained explicit approval from HUD in 2021 for use of CDBG-DR to pay principal and interest on bridge financing for post-disaster multifamily rebuilding projects. It's encouraging that now—for the first time—CDBG-DR can be used to repay bridge loans that accelerate recovery.

However, there are risks for lenders that need to be carefully managed. Jurisdictions cannot formally commit CDBG-DR awards to projects until those jurisdictions have executed grant agreements with HUD. So bridge lenders must rely on conditional commitments of CDBG-DR to projects and are not able to receive assignments of the CDBG-DR. Lenders will therefore have to underwrite the risk inherent in assumptions that a jurisdiction's action plan will be approved by HUD, that the project will ultimately receive a formal award of CDBG-DR from the jurisdiction, and that the project will comply with applicable regulations.

Lenders can take a number of steps to mitigate these risks, including:

- work with grantee jurisdictions that have extensive experience writing approved action plans;
- collaborate closely with the jurisdiction in the design of the bridge product to make sure it aligns with the specifics of the jurisdiction's multifamily program;
- use jurisdictions' agreed-upon competitive project-selection processes to generate a pipeline of priority projects for bridge financing;
- ensure projects financed meet all required income, fair housing, environmental, resilience, and other requirements; and
- generate and share underwriting documents with appropriate state or local government agencies.

In addition, the confirmation from HUD that CDBG-DR funds can be used to repay bridge financing includes two problematic limitations.

The guidance:

- restricts the use of CDBG–DR to paying pre-award costs that occur within one year of the relevant disaster, and
- restricts eligible activity to rehabilitation of damaged properties (no new construction).

Both of these issues can be addressed through waivers from HUD, but the federal government could provide more certainty and encourage more private lending activity by issuing specific guidance to allow repayment of pre-award costs that occur within three years from the date of the disaster and by specifying both new construction and rehabilitation as eligible activities.

In a consolidated notice issued February 2022 (and relating to CDBG–DR funds appropriated in response to events of 2020 and 2021), HUD specified that jurisdictions can use funds to support the demolition, rehabilitation, and reconstruction of multifamily housing, and also to pay for the costs of pre-award bridge loans such as those issued by Enterprise’s innovative Disaster Recovery Accelerator Fund. This explicit guidance should give CDBG–DR grantees (state and local governments) as well as private-sector lenders confidence that this activity is not only permitted but encouraged.

CONCLUSION

Natural disasters and climate shocks are growing more severe with each passing year. Storms that were once considered “once in a generation” have become the norm. After a record-setting 2020 hurricane season that included hurricanes Laura and Delta, in 2021 the U.S. recorded at least 20 disasters that cost \$1 billion or more in losses, totaling more than \$145 billion in recovery costs.¹⁷ Damage from Hurricane Ida alone has been estimated to be more than \$80 billion.¹⁸ Poorer communities of color are often the hardest hit, the least prepared, and the last to recover.

17 Adam B. Smith, “2021 U.S. billion-dollar weather and climate disasters in historical context,” *Climate.gov*, January 24, 2022. Available at www.climate.gov/news-features/blogs/beyond-data/2021-us-billion-dollar-weather-and-climate-disasters-historical.

18 NOAA National Centers for Environmental Information (NCEI), “U.S. Billion-Dollar Weather and Climate Disasters.” (Silver Spring, Maryland: NOAA, 2023). Available at <https://www.ncei.noaa.gov/access/billions>.

In the places affected by weather-based disasters, one thing has held true: recovery has not come fast enough. At each phase of recovery, there have been delays and missed opportunities to improve the flow of resources to spur rebuilding and stability. States, counties, and other local governments now have tested programs that effectively utilize CDBG–DR to repair and develop new high-quality, energy-efficient affordable housing that will reduce displacement in future disasters. These programs also leverage willing and eager private-sector investment that helps stretch the inadequate federal resources.

Federal resources must move faster—and more equitably—to keep pace with disasters. In the meantime, private-sector bridge loans are now able to speed up the rebuilding of multifamily housing by eighteen months or more. With some additional clarification from HUD, this lending activity can happen on a broad scale, and, although not a complete solution, when paired with permanent authorization of the CDBG-DR program it will prevent delays like those still being experienced by residents of Lake Charles.

MICHELLE WHETTEN *leads Enterprise Community Partners' Gulf Coast office, advancing effective policies, working with public- and private-sector partners to invest in capital and design solutions to increase the supply of affordable housing, and helping communities prepare for and respond to disasters. Michelle graduated from the University of California - Davis and received a master's degree in urban and regional planning from the University of Illinois.*

GROWING COMMUNITY-BASED RESILIENCE IN THE VALLEY OF THE SUN

Terry Benelli, *Local Initiatives Support Corporation (LISC) Phoenix*

In the Southside neighborhoods of west Mesa, Arizona, residents are accustomed to a hot desert climate, but rising temperatures and extended extreme heat events related to global warming led to the most heat-related deaths on record in the area in 2023, according to the Maricopa County Department of Public Health. While local governments increasingly recognize their responsibility for mitigating the impacts of extreme heat, there is also growing consensus that an effective and durable response to this and many other environmental, social, and economic challenges demands a neighbor-to-neighbor, community-led effort.

The Southside Neighborhood Hubs project is just that: an initiative of local community group RAIL CDC that is focused on improving the health of residents, preparing people for disasters, and building capacity to promote a more equitable future. The primary goal of the initiative is to create community-run physical spaces that are responsive to the community's day-to-day and emergency-related needs—what is commonly referred to as a resilience hub. As a first step toward that goal, RAIL CDC engages with residents to identify immediate environmental and safety concerns. The team then works with residents to plan and execute projects that address these issues. To date, projects have included tree planting, shade structure construction, and debris clean-up. Through this process and these projects, trust is built.

What does resilience mean to the members of Southside neighborhoods? Today, it is the creation of beautiful spaces of respite from increasingly punishing heat and an acknowledgement that the experiences and well-being of residents and families matter. As we navigate an increasingly volatile future, this initiative reminds us that resilient communities are, first and foremost, engaged and empowered communities.



Photo from the Southside Mesa Community Cleanup Day, Oct 7th, 2023. Taken by RAIL CDC. Thus far the Southside Neighborhood Hubs project has resulted in the planting of 48 trees, the creation of 8 temporary shade structures, the disposal of ~25 tons of trash, and repair/beautification of 5 fences.

5

POLICY PROGRAMS & OTHER TOOLS



COMMUNITY-LED, GOVERNMENT FUNDED: FEDERAL, STATE, AND LOCAL POLICIES FOR RESILIENCE

Marion McFadden and Rachel Kyes,
U.S. Department of Housing and Urban Development

Americans once used terms like “storm of the century” and “once-in-a-lifetime event” to describe catastrophic disasters that occurred relatively rarely. In April 1997, for example, the Red River crested at 54 feet in Grand Forks, North Dakota, overwhelming levees with floodwaters that reached more than three miles inland.¹

Ninety percent of residents were forced to evacuate; eighty-three percent of homes suffered damage. A downtown fire burned 11 buildings. The city suffered an estimated \$1.5 billion in damage (roughly \$2.88 billion in 2023 dollars); the loss to the community felt immeasurable.

Working with federal and state partners, however, Grand Forks began to rebuild. Through extensive community engagement, elected officials, community leaders, and individuals worked together to define what recovery meant beyond just reconstruction, reimagining what life in Grand Forks could become. Crucially, community members worked to integrate resilience measures throughout the recovery process. Today, the

¹ City of Grand Forks, “Grand Forks Disaster and Recovery Lessons Learned.” (Grand Forks, ND: City of Grand Forks, 2011). Available at www.grandforksgov.com/our-city/history/flood-recovery.

people of Grand Forks aren't simply ready to weather the next storm—they're thriving.

Disasters on this scale will become more common as the effects of climate instability grow more pronounced. Between 1998 and December 2023, the U.S. experienced 299 disasters that produced damage in excess of \$1 billion; all told, they cost \$2.1 trillion over those 25 years—and that doesn't include hundreds of other disasters that didn't reach the billion-dollar threshold.² The magnitude of impacts from a changing climate demand coordination across all levels of government. No single actor can adequately mitigate rising sea levels, more powerful storms, colder winters, or hotter summers. Similarly, no single actor can address the long-range vulnerability that racism, exclusion, and discrimination have baked into the built environment. Federal, state, and local policies need to line up to create a “whole of government approach.”³ Climate-resilience policy must reach across borders, bridge sectors, and bring people together to build stronger communities in the face of a climate disaster. Fortunately, we've witnessed growing federal, state, local, Tribal, territorial, and private-sector commitment to creating a more resilient nation.

FEDERAL POLICY AND INVESTMENTS

Natural disasters cost billions of dollars every year. Equitable, intentional, and robust resilience work may require front-end investments, but those investments yield immense savings when disasters strike. Each federal dollar invested in climate mitigation yields an estimated \$6 return,⁴ but each dollar also yields non-monetary payoffs—the very definition of a smart investment.

The federal government has already invested billions into resilience. Landmark legislation passed by the Biden administration, such as the

2 National Centers for Environmental Information, NOAA, *Summary Stats: Billion-Dollar Weather and Climate Disasters*, available at www.ncei.noaa.gov/access/billions/summary-stats#temporal-comparison-stats.

3 The White House, “Executive Order on Tackling the Climate Crisis at Home and Abroad.” (Washington, DC: The White House, January 2021). Available at www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/.

4 Multi-Hazard Mitigation Council, “Natural Hazard Mitigation Saves: 2019 Report.” (Washington, DC: National Institute of Building Sciences, 2019). Available at www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report.

Bipartisan Infrastructure Law (BIL) of 2021 and the Inflation Reduction Act (IRA) of 2022, bring federal dollars to communities striving to defend themselves against climate threats. These dollars do double duty: even as they increase resilience to reduce damage from future disasters, they also lower energy costs for homeowners, support small businesses, and make transportation more affordable. Examples of the types of investment the IRA provides to underserved communities can be found in the table on the facing page—nearly \$200 billion is being allocated across several agencies to strengthen local economies, reduce emissions, and improve resilience.⁵

The federal budget proposal for 2024 promotes climate resilience and a whole-of-government approach to increasing resilience to climate disruption. It expands climate programs, like the Tribal Climate Resilience Annual Awards Program under the Department of the Interior, and introduces new resilience and energy-efficiency standards for Americans wherever they live.⁶ The budget request for the Department of Agriculture’s Rural Housing Service, for example, includes a requirement that all construction or rehabilitation funding flow to projects that improve energy efficiency, incorporate green features, or build resilience in other ways.⁷ Integrating resilience requirements into funding opportunities merits expansion to ensure that all federal funds promote climate goals while supporting every program’s mission.

The Department of Housing and Urban Development (HUD) has quietly led climate-resilience work at the federal level for decades, with a focus on protecting people of modest means. Since the 1990s, HUD has provided recovery funding through the Community Development Block Grant (CDBG) Program. In the 2010s, special appropriations for disaster recovery officially became “CDBG-Disaster Recovery” (CDBG-DR). Approximately \$100 billion in CDBG-DR focuses not only on recovery, but also on addressing the threat of future crises by building community resilience. HUD’s 2022 CDBG-DR Consolidated Notice requires

5 Eric Van Nostrand and Laura Feiveson, “The Inflation Reduction Act and U.S. Business Investment,” *U.S. Department of the Treasury*, August 16, 2023. Available at <https://home.treasury.gov/news/featured-stories/the-inflation-reduction-act-and-us-business-investment>.

6 U.S. Department of the Interior, *BIA Budget*, available at www.doi.gov/ocl/bia-budget.

7 United States Department of Agriculture, “FY 2024 Budget Summary.” (Washington, DC: USDA, 2023). Available at www.usda.gov/sites/default/files/documents/2024-usda-budget-summary.pdf.

Figure 1. Inflation Reduction Act (IRA) of 2022 Funding Opportunities for Disadvantaged Communities

CATEGORY	FEDERAL AGENCY	SPEND BY	FUNDING LEVEL	ELIGIBLE APPLICANTS	DISADVANTAGED COMMUNITIES?	COMPETITIVE?
GREENHOUSE GAS REDUCTION FUND	EPA	2029	\$7 B	States, municipalities, tribes, nonprofits	Only	Yes
		2031	\$14 B	Nonprofits	At least 40%	Yes
SOLAR FOR ALL NATIONAL CLEAN INVESTMENT FUND CLEAN COMMUNITIES INVESTMENT ACCELERATOR		2030	\$6 B	Nonprofits	Only	Yes
CLIMATE POLLUTION REDUCTION GRANTS	EPA	2026	\$5 B	States, municipalities, tribes	n/a	Yes
ENVIRONMENTAL AND CLIMATE JUSTICE COMMUNITY CHANGE GRANTS	EPA	2024	\$2 B	Community-based organizations	Only	Yes
ENERGY CODE ADOPTION & IMPLEMENTATION	DOE	2029	\$1 B	States, municipalities	n/a	No
HOME ENERGY REBATES	DOE	2031	\$4.3 B	State energy offices, tribes	Encouraged	No
		2031	\$4.5 B	State energy offices, tribes	Only	No
GREEN AND RESILIENT RETROFIT PROGRAM	HUD	2024	\$2 B	HUD-assisted property owners	Only	Yes
TAX CREDITS (EFFICIENCY, ELECTRIFICATION, CLEAN ENERGY)	Treasury	2032	\$149 B	Consumers	n/a	No

CDBG-DR grantees to incorporate disaster-mitigation measures into all recovery activities involving construction. The requirement helps ensure that every dollar spent on recovery also serves as a dollar spent on helping communities protect against future damage.

Recognizing the need for strong planning and intentional design to meet post-disaster community needs and build regional resilience, HUD has helped create innovative partnerships to advance these goals for more than a decade. In the wake of Hurricane Sandy, Rebuild by Design was launched in 2013 as a multistage planning-and-design competition to make the region that Sandy hit more resilient as it rebuilt. A collaboration among HUD, the Hurricane Sandy Rebuilding Task Force, and local and regional philanthropic partners, the competition promoted project designs that met local needs while incorporating a deeper understanding of regional vulnerabilities. In 2014, seven winning ideas received \$930 million from HUD to implement the first phase of master plans developed through the competition.

Buoyed by Rebuild by Design's success, HUD launched the National Disaster Resilience Competition (NDRC) in 2014, a two-phase competition that awarded nearly \$1 billion in recovery funding to help communities build resilience frameworks. The first phase provided participants significant technical assistance and capacity building in partnership with the Rockefeller Foundation.⁸ The two-phase structure ensured that every applicant community benefited from the competition as it developed a resilience approach, even if it didn't receive some of the limited funding available in phase two.

Funding recipients represented a range of states and municipalities—from the State of California to the City of Springfield, Massachusetts—with varying levels of capacity and local challenges. For example, Springfield weathered five presidentially-declared disasters between 2011 and 2013; existing economic distress and aging infrastructure multiplied the disasters' impacts. As the city planned recovery from a tornado, a tropical storm, and three blizzards that all hit within two years, it used a \$17 million award from HUD to establish an Urban Watershed Resilience Zone

8 "HUD Awards \$1 Billion Through National Disaster Resilience Competition." Press release (Washington, DC: The Rockefeller Foundation, January 21, 2016), available at www.rockefellerfoundation.org/news/hud-awards-1-billion-through-national-disaster-resilience-competition/.

focused on energy resilience, housing rehabilitation, and job opportunities within economically-distressed neighborhoods.⁹ The city also created innovative new community-engagement opportunities, like an extensive tree-canopy-restoration program focused on greatly expanding the tree canopy in target neighborhoods. Springfield has built on the initial grant with projects that focused on whole-community resilience as the city rebuilt after two devastating years.

Although HUD has historically focused resilience efforts on disaster recovery, resilience now guides decision making across most of its portfolio. As the federal agency dedicated to creating strong, sustainable, inclusive communities and quality affordable homes, HUD works on the front lines of efforts to tackle the climate crisis, build resilient communities, and address environmental injustice. Responding to Executive Order 14008, Tackling the Climate Crisis at Home and Abroad, Secretary Marcia Fudge created an ambitious Climate Action Plan designed to build climate resilience and adaptation, reduce carbon emissions, and pursue environmental justice.¹⁰ Under the plan, each HUD program and office commits to specific actions, with deadlines, on climate and environmental justice that will sharpen the focus of spending and policies on resilience efforts in the communities served.

The Choice Neighborhoods program offers another example of how HUD funding now builds resilience into efforts to address community needs. An Obama Administration initiative, Choice Neighborhoods expanded the scope of the HOPE VI public-housing revitalization program to strengthen entire neighborhoods. In Phoenix, Arizona—which endures extreme heat and faces the growing threat of catastrophic drought—the Choice program incorporates essential resilience measures. Edison-Eastlake, the focus of Phoenix’s grant, ranks as one of the hottest neighborhoods in the U.S.¹¹ Phoenix will use a \$30 million HUD grant to attract \$190 million

9 “City of Springfield National Disaster Resilience Competition Phase II,” City of Springfield, MA, October 27, 2015. Available at www.springfield-ma.gov/planning/fileadmin/community_dev/DR/NDRC_Phase_II_Complete_Application_public.pdf

10 U.S. Department of Housing and Urban Development, “Climate Action Plan.” (Washington, DC: U.S. Department of Housing and Urban Development, November 2021). Available at www.hud.gov/sites/dfiles/Main/documents/HUD-Climate-Action-Plan.pdf.

11 Kate Gallego, “Towards a More Resilient Phoenix: How One Desert City is Tackling Extreme Heat Challenges,” *SDG Knowledge Hub*, April 26, 2023. Available at <https://sdg.iisd.org/commentary/guest-articles/towards-a-more-resilient-phoenix-how-one-desert-city-is-tackling-extreme-heat-challenges/>.

of investment to replace 557 outdated public housing units with 1,000 new homes in a mixed-income community.¹² The redevelopment will consciously incorporate resilience to extreme heat by using cool building materials, maximizing shade and ventilation, and providing backup water supply and generators. Recognizing that community connectivity has proved lifesaving in extreme heat waves, each block will have a community meeting place. As Phoenix—and communities across the country—get hotter, such investments will play a crucial role in assuring that development protects those most in need.

Even before the recent elevation of climate-mitigation efforts across HUD's portfolio, grantees had led resilience work under department programs for years. Section 108 Loan Guarantees, for example, let states and localities borrow five times the amount of their CDBG grant at low rates to finance a wide range of community development. Mount Vernon, Washington, used \$1 million in Section 108 loans to build a FEMA-certified 100-year flood wall to protect its historic downtown and create a new riverside linear park. The City combined the loan with local, state, and federal dollars—including annual CDBG funds—as well as federal guarantees of private sector loans to pay for the project. In 2021, Mount Vernon experienced its second-worst flood since 1990, but the floodwall worked, holding back the surging Skagit River and preventing major damage.¹³

The Inflation Reduction Act supplemented existing HUD resources for creating safe and resilient communities with \$837.5 million in grant funding and \$4 billion in loan-commitment authority for the Green and Resilient Retrofit Program (GRRP).¹⁴ This program in the Office of Multifamily Housing—the first to couple sustainability and resilience explicitly—provides grant and loan funding to make multifamily assisted-housing properties more energy efficient, healthier, and resilient in the face of natural disasters and climate change. GRRP will improve

12 Kate Gallego, "Towards a More Resilient Phoenix: How One Desert City is Tackling Extreme Heat Challenges," *SDG Knowledge Hub*, April 26, 2023. Available at <https://sdg.iisd.org/commentary/guest-articles/towards-a-more-resilient-phoenix-how-one-desert-city-is-tackling-extreme-heat-challenges/>.

13 Jacqueline Allison, "Mount Vernon floodwall does the job," *GoSKagit.com*, November 21, 2021. Available at www.goskagit.com/news/local_news/mount-vernon-floodwall-does-the-job/article_c3908955-ca22-5d25-95de-caf4138ff333.html.

14 U.S. Department of Housing and Urban Development, *The Green and Resilient Retrofit Program*, available at www.hud.gov/GRRP.

such properties in HUD’s portfolio, benefitting residents and furthering environmental justice. The program will lower these properties’ climate vulnerability and shrink the portfolio’s environmental impact.

Cataloging these efforts means little unless we measure them. To track their effectiveness, HUD will collect and assess data using \$42.5 million in funding from the IRA. Measurements of energy and water consumption established by this initiative will lead to new initiatives to increase energy efficiency across HUD-assisted housing, building on what the department and building owners have learned from the Better Building Challenge, a collaboration between HUD and the Department of Energy. These funding streams—alongside dozens of other HUD programs that also support sustainable community development—create crucial opportunities for state and local governments to expand resilience initiatives.

STATE AND LOCAL RESILIENCE FUNDING

Many states have also created programs to fund resilience activities. In 2017, the governor of Massachusetts signed an executive order establishing the Municipal Vulnerability Preparedness (MVP) grant program.¹⁵ The program operates in two stages: first, communities complete a planning-grant process that focuses on identifying climate hazards and community vulnerabilities. That opens eligibility for an MVP Action Grant that provides funding to implement key resilience activities identified in the planning process. Since 2018, the state has awarded more than 230 of the grants.

In that period the state has remained flexible, with an eye toward better serving communities’ needs. The initial planning grants focused narrowly on climate resilience, but a second round will require grantees to incorporate broader community engagement and provide more robust analyses of equity and climate justice, shifting the focus of resilience planning to root causes of social vulnerability. These MVP 2.0 grants also require municipalities to organize a team of community members to lead resilience work. Recognizing a critical shortcoming of the initial planning grants and adapting the program to make the process more equitable stands out among state programs. As other states set up climate-resilience

15 Resilient Mass, *Municipal Vulnerability Preparedness Program*, available at <https://resilientma.mass.gov/mvp/>.

funding programs, they should look to this model and include extensive community engagement, a clear focus on equity, and analysis of social vulnerabilities—and remain open to adapting programs to best meet the needs of the people served.

Local governments have also established funding streams for climate activities, many with the direct support of voters. North Dakota’s fourth-largest city, Minot, sits along the Souris (Mouse) River and serves as a regional economic hub. In 2011, record-breaking flooding on the Souris overwhelmed levees, damaging 27 percent of housing stock citywide.¹⁶ Within the same period, an oil-field fracking boom brought hundreds of newcomers, overwhelming the limited supply of housing. Minot—a winner of HUD’s National Disaster Resilience Competition—recognized that climate change and land development upstream raised flooding risk. With \$74 million from HUD, Minot launched a three-part plan to reduce flood risk, build affordable neighborhoods, and foster economic diversification—all with a focus on resilience and sustainability.¹⁷ Resilience for Minot, however, reaches beyond the life of the HUD grant. With community support, the city dedicated a one-half-cent sales tax to fund the local share for construction and implementation of a basin-wide flood-protection plan. This tax will generate \$337 million for the city to invest over 30 years to protect against flooding damage.

Taxes funding climate work have become more common. In 2018, voters in Portland, Oregon, approved a ballot measure establishing a one percent clean-energy surcharge on gross revenue from sales by large retailers.¹⁸ This initiative, which has far exceeded expected revenue, will fund competitive awards for climate action and resilience projects, from workforce programs to energy-efficiency projects.¹⁹ In Denver, Colorado, a ballot measure increasing the sales tax by 0.25 percent created a dedicated

16 National Disaster Resiliency Competition, “Pathway to a Resilient Future: Housing, Economy and the River that Connects Us.” (Minot, North Dakota: City of Minot, March 6, 2015). Available at www.minotnd.gov/DocumentCenter/View/617/NDRC_Phase1_Submissionpdf?bidId=.

17 “National Disaster Resilience Competition Phase 2 Application.” (Minot, North Dakota: City of Minot). Available at https://cdbg.minotnd.org/pdf/action-plan/ndr/NDR_%20Phase_II_Submission.pdf.

18 Portland.gov, *Clean Energy Surcharge*, available at www.portland.gov/revenue/business-tax/clean-energy-surcharge.

19 Monica Samayoa, “Portland Clean Energy Fund unveils 5-year plan, \$750M projected spending after overhaul,” *OPB*, August 24, 2023. Available at www.opb.org/article/2023/08/24/portland-clean-energy-fund/.

funding stream for climate action, with half earmarked for equity-focused projects. In 2021, Denver committed \$57 million to projects to improve energy efficiency, develop the green-energy workforce, provide renewable-energy technology, and target specific resilience and climate-justice needs.²⁰ Community engagement and buy-in played a key role in both initiatives: Elected officials and local organizations built on long-term organizing and campaigning by climate action advocacy groups, which delivered significant voter support.

South of Denver, voters in Colorado Springs created a \$20 million fire-mitigation fund in 2021, allowing the city to keep revenue above limits imposed by the state's Taxpayer's Bill of Rights for the narrow purpose of reducing community vulnerability to wildfires.²¹ The city's extensive wildland/urban interface (WUI) covers at least 36,000 homes. Alongside the new funding, the city has adopted additional code requirements in the WUI, setting standards that mandate wildfire-risk mitigation in all new construction and reconstruction. Building on lessons from previous fires, the city has released additional design guidance to support developers and homeowners working to mitigate vulnerability in the WUI. Combining code changes with dedicated revenue streams represents the type of comprehensive policy change that communities must adopt to advance resilience.

Voter-approved taxes don't represent the only way to fund investments in climate resilience. In 2018, the District of Columbia created the DC Green Bank to align public investments in climate resilience, carbon neutrality, and inclusive economic growth with private financing.²² The Green Bank connects to multiple local climate-finance programs through one central access point for residents, business owners, and commercial developers. The District government provided initial funding, but the bank has aimed for self-sufficiency by providing private sustainability finance to bolster public dollars. Initial projects will target solar power systems,

20 "Office of Climate Action Sustainability and Resiliency Annual Report: 2021." (Denver, Colorado: City of Denver, 2021). Available at https://denvergov.org/files/assets/public/climate-action/documents/cpf/cpf_annualreport_63022.pdf.

21 Pam Zubeck, "City launches spending from 2021 fire mitigation ballot measure funding," *Colorado Springs Indy*, April 6, 2023. Available at www.csindy.com/news/city-launches-spending-from-2021-fire-mitigation-ballot-measure-funding/article_4eb22bc0-d580-11ed-9869-c3c1867fa117.html.

22 DC Green Bank, available at <https://dcgreenbank.com/>.

transportation electrification, energy efficiency, and stormwater resilience. In January 2023, developers broke ground on a 125-unit affordable housing project, The Faircliff, that will rise alongside 197 market-rate apartments.²³ Both buildings will be all-electric and LEED platinum and passive house certified, achieving goals of affordable housing production and green building—all launched with a \$1.85 million predevelopment loan from the Green Bank. Public-private partnerships like the Green Bank hold the key to furthering climate resilience, particularly for affordable housing, which already faces significant financial hurdles. A one-time infusion of federal funding under the Inflation Reduction Act looks likely to allow similar green banks nationwide to expand their work for years to come.

SETTING STANDARDS

Even though funding plays a central role in driving climate resilience, it represents only part of a large and complex framework that can further sustainable community development. Building codes represent a key policy for ensuring resilience in housing and other buildings. Though human safety and community well-being far outweigh monetary benefits, updated building codes clearly produce disaster-recovery savings. In 2019, the National Institute of Building Science found that modern codes save up to \$11 for every \$1 invested.²⁴ In 2022, Hurricane Ian—which caused massive devastation across Florida—hit hard in Punta Gorda, a city on the Gulf Coast,²⁵ but homes and buildings remained largely intact, thanks to building codes updated in 2007. When Punta Gorda rebuilt after disasters in the 2000s, it rebuilt stronger, and post-Ian recovery dramatically highlighted the success of those efforts.

The State of California adopted new building codes in 2008, establishing minimum fire-resistance standards for new residential and commercial

23 “The Faircliff Affordable Housing Project in Columbia Heights Neighborhood of Washington, DC has begun Construction.” Press release (Washington, DC: DC Green Bank, January 18, 2023), available at <https://dcgreenbank.com/press/the-faircliff-affordable-housing-project-in-columbia-heights-neighborhood-of-washington-dc-has-begun-construction/>.

24 “Natural Hazard Mitigation Saves: 2019 Report.” (Washington, DC: National Institute of Building Sciences, 2019). Available at www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report.

25 Allyson Chiu, “Why many homes and buildings in this Florida city still stand, even after Ian,” *Washington Post*, October 1, 2022. Available at www.washingtonpost.com/climate-solutions/2022/10/01/punta-gorda-hurricane-ian-damage/.

construction. Chapter 7A of the California Building Codes applies to buildings in any Fire Hazard Severity Zone or any WUI Fire Area.²⁶ Building exteriors must be flame- and ember-resistant and the code sets specific testing conditions for all material and assemblies. A 2021 study of the impact of the 2008 codes found that a complying home stood a 40 percent lower chance of destruction by identical wildfire exposure than a non-compliant home built in 1990.²⁷ This reduction became clear almost immediately after the codes went into effect, clearly demonstrating how resilience-focused building codes reduce community vulnerability. These building standards dovetail with Chapter 49 of the statewide Fire Code, which requires homeowners and businesses to reduce conditions, like hazardous vegetation or fuels, that facilitate the spread of fire.²⁸

Since 2019, the Governor's Office of Emergency Services and the state's Department of Forestry and Fire Protection have worked to develop and administer the Home Hardening Program, an effort to implement wildfire mitigation through retrofits for older homes and creation of defensible spaces around homes.²⁹ The program, still in a pilot phase, identifies socially-vulnerable communities based on six factors (poverty, disability, age above 65, age below five, language barriers, and lack of access to a car) plus fire and climate-change risks. The program provides grants for low- and moderate-income homeowners. The growing severity and number of wildfires, coupled with data on the performance of resilience updates in building codes, has triggered statewide mitigation efforts for older buildings. Other states and localities can take valuable lessons from this model.

As states and municipalities update building codes to strengthen community resilience, the federal government also has an important role

26 "Chapter 7A [SFM] Materials and Construction Methods for Exterior Wildlife Exposure," 2010 California Building Code. (California: California Department of Housing and Community Development, 2010). Available at www.hcd.ca.gov/building-standards/state-housing-law/wildland-urban-interface/docs/2010-part-2-cbc-ch7a.pdf.

27 Patrick Baylis and Judson Boomhower, *Mandated vs. Voluntary Adaptation to Natural Disasters: The Case of U.S. Wildfires: Working Paper No. 29621* (2021). Available at www.nber.org/papers/w29621.

28 Chapter 49 Requirements for Wildland-Urban Interface Fire Areas, California Department of Forestry and Fire Protection.

29 California Governor's Office of Emergency Services, *California Wildfire Mitigation Program*, available at www.caloes.ca.gov/office-of-the-director/operations/recovery-directorate/hazard-mitigation/california-wildfire-mitigation-program/.

to play in protecting taxpayer-financed investments in the most at-risk and vulnerable communities. In 2021, President Biden signed Executive Order 14008, Tackling the Climate Crisis at Home and Abroad. It centers climate in national policy decisions, spurring bolder federal action while emphasizing the roles that other levels of government and the private sector play in responding to the climate crisis. In additional executive orders, the administration has established requirements for smart infrastructure design and placement to promote resilience.

HUD has adopted these and other critical climate priorities through ongoing rulemaking for future development and investment. Its NSPIRE rule introduces a new inspection model for HUD programs, focusing on residents' health and safety needs. The rulemaking process for the Federal Flood Risk Management Standard was designed to update floodplain regulations for HUD-funded projects. These new and ongoing efforts put priority on long-term sustainability for federal investments—and more importantly, the safety and prosperity of people living and working in disaster-prone areas.

BUYOUTS AND ACQUISITIONS

Voluntary buyouts represent another essential tool for building community resilience. They allow governments to step in to protect residents most vulnerable to future disasters while using disaster-prone spaces for mitigation that protects everyone else. Since the 1990s, for example, Charlotte-Mecklenburg County in North Carolina has operated a flood-buyout program that has prevented more than \$300 million in damages—a figure that only represents homes purchased through the program.³⁰ Local stormwater fees, relatively free of restrictions, largely fund the program, which can assign priorities based on local risks and needs. Federal dollars, which must meet specific FEMA criteria, have accounted for 43 percent of the \$90.5 million invested in the program since 1999.³¹ The Storm Water Services utility has created a (literal) “rainy day fund” that underwrites a quick-buy program allowing the County to purchase

30 Frances Stead Sellers, “One city’s plan to combat climate change: Bulldoze homes, rebuild paradise,” *The Washington Post*, November 26, 2019. Available at www.washingtonpost.com/climate-solutions/2019/11/26/one-citys-plan-combat-climate-change-bulldoze-homes-rebuild-paradise/.

31 Mecklenburg County, *Floodplain Buyout Program*, available at <https://stormwaterservices.mecknc.gov/floodplain-buyout-program>.

buildings that suffer significant damage from flooding. Recognizing the need to avoid new development that risks becoming a future buyout, the service area has also adopted higher flood standards for development near and in floodplains and discourages new development upstream.

Milwaukee, Wisconsin, has taken a slightly different tack, with a focus on preserving undeveloped land within the metropolitan area. In 1997 and 1998, flooding from major storms caused millions of dollars in damage. The Greenseams program, launched in 2001 by The Conservation Fund and the Milwaukee Metropolitan Sewerage District, purchases watershed land and conservation easements ahead of anticipated growth and development.³² The program has preserved 5,000 acres of flood-prone land, protecting an area home to 1.57 million people. With public access for recreation, the Greenseams program creates dual-use spaces that both protect water sources and preserve the natural environment.

Grand Forks, North Dakota, began its response to extensive damage from the 1997 flood by pursuing buyouts. The city used HUD's Community Development Block Grant to fund the program, acquiring more than 700 properties and moving salvageable houses outside the floodplain. The city then worked to develop new housing in a safer area for affected residents, including those from the Lincoln Drive neighborhood; completely wiped out by the flood, the neighborhood would have sat on the "wet" side of new dikes. The city turned the land it purchased into a 2,200-acre greenway between the new levees and the river that can hold excess water during flooding. Such buyout programs deliver multiple benefits: safer neighborhoods, natural protection against floods, and public recreational spaces that draw communities together to enjoy trails, sports fields, and other natural spaces when the weather permits.

ZONING

Buyout programs seek to reverse development in high-risk areas; sound land-use policies get ahead of development to reduce future vulnerabilities. With threats from coastal and inland flooding on the rise, Charleston, South Carolina, has devised a development strategy within its citywide comprehensive plan to direct future growth to higher-elevation

³² The Conservation Fund, *Greenseams Milwaukee*, available at www.conservationfund.org/projects/greenseams-program.

areas.³³ It continues to pursue efforts to update zoning to incorporate elevation criteria.

Planning and recommendations for floodplain management and development help communities understand risk and can guide decisions; mandatory zoning standards that control growth in lower-lying neighborhoods represent stronger policy for communities at risk of flooding.

Norfolk, Virginia, has incorporated resilience strategies into its community plan and passed zoning ordinances to achieve those goals. A partner in the Commonwealth of Virginia's \$112 million award under the National Disaster Resilience Competition (NDRC), Norfolk adopted *plaNorfolk 2030* in 2013 specifically to address threats posed by sea-level rise and the impact of land-use planning on flooding risks.³⁴ Building on that work, Norfolk's *Vision 2100*, adopted in 2016, established a citywide strategy for adapting to rising sea levels and flooding, setting specific resilience actions for different parts of the city based on risk.³⁵ These two planning processes shaped the zoning ordinance adopted in 2018 to further flood resilience.

The 2018 ordinance incorporates innovative requirements, including establishment of a freeboard—additional height above the base flood elevation—for construction in 100-year and 500-year floodplains, and a coastal-resilience overlay requiring permeable surfaces on new parking spaces and additional stormwater infiltration.³⁶ Beyond these practices, the ordinance established an upland resilience overlay (URO) outside of flood-hazard areas and new policies to create transit-oriented, walkable, and bikeable neighborhoods in the URO zone. They encourage development in parts of the city with lower flood risk and further specific activities that increase equity. Finally, the ordinance also added a resilience

33 "Charleston City Plan 2021." (Charleston, South Carolina: City of Charleston, October 12, 2021). Available at www.charleston-sc.gov/DocumentCenter/View/31227/Final-City-Plan-Adopted-October-12-2021.

34 "plaNorfolk 2030." (Norfolk, VA: City of Norfolk, March 26, 2013). Available at www.norfolk.gov/1376/plaNorfolk2030.

35 "Norfolk Vision 2100." (Norfolk, VA: City of Norfolk, November 22, 2016). Available at www.norfolk.gov/DocumentCenter/View/27768/Vision-2100---FINAL?bidId=.

36 City of Norfolk, *Norfolk's Zoning Ordinance and Map*, available at www.norfolk.gov/3910/Zoning-Ordinance-Rewrite.

quotient system that goes into effect for new developments that don't meet specific standards for elevation and drainage.

Minneapolis, Minnesota—which shocked the world by doing away with single-family-only zoning in 2018—also strives to change environmental outcomes through zoning policies. The city has created Green Zones in two neighborhoods that have endured both environmental damage and marginalization. The designation encourages extensive community-led planning to drive action, including development of affordable housing and economic opportunities. In targeting these areas for remediation of environmental stressors while promoting equity, the city hopes to create more sustainable, resilient communities with greater capacity to face future disasters and climate impacts.

Land-use policies that put priority on housing density, shared green spaces, and infrastructure that can withstand storms will help build stronger communities. Further, they represent an opportunity for local governments and other entities to learn from residents how they want their community to look and what issues need addressing first. As challenging as these process reforms may seem, they hold the key to furthering resilience and equitable development.

CROSS-CUTTING DEVELOPMENT

Where local motivation or financial challenges make some recommended strategies infeasible, regional or statewide resilience planning can trigger local action—and these coordinated approaches can lead to better outcomes. Following flooding that hit 70 percent of the state, the State of Iowa developed an innovative, comprehensive program to address watersheds in its application to HUD's NDRC. The state used the \$97 million awarded to develop the Iowa Watershed Approach (IWA), setting the grounds for extensive hydrologic assessment and planning followed by flood-resilience action in nine watersheds.³⁷ The Iowa Economic Development Authority, the grant recipient, worked collaboratively on the IWA with other state agencies, county governments, and academic centers. Collaboration proved key for this approach. The IWA's flood-resilience focuses on community-based resilience, bringing social resources

³⁷ Iowa Watershed Approach, *Flood Resilience Program*, available at <https://iowawatershedapproach.org/programs/resilience/>.

to the table to engage in watershed planning. The attention devoted to community engagement and social resilience sets this approach apart.

The approach consciously pursues the goal of making solutions scalable and replicable across the Midwest and the U.S. Louisiana developed a similar comprehensive approach in 2018. The Louisiana Watershed Initiative (LWI) represents a reworking of flood-mitigation measures put in place after disastrous flooding in 2016.³⁸ Existing, siloed approaches to flood management had failed, as shown by \$16 billion in cumulative damages from floods experienced over the previous two decades.³⁹ Backed by \$1.2 billion from HUD in the form of a CDBG-Mitigation (CDBG-MIT) grant, LWI has launched a statewide planning, modeling, and project-based approach to reducing flood risk. Among other initiatives, the LWI directs buyout programs, drainage improvement, floodplain acquisition, and green infrastructure projects in each of nine regional watersheds, coordinating work among parishes (the state's equivalent of counties) to ensure a comprehensive approach.

Both the Iowa and Louisiana programs trigger statewide action without mandating regulations that fail to account for local or regional differences and needs. Each watershed region has the flexibility to implement resilience projects tailored to its specific physical and built environments while receiving financial support and coordination guidance from the state backed by funding from the federal government. Flood-resilience initiatives must reach beyond the city or county jurisdictions, as no storm recognizes artificial boundaries set by humans. These lessons on coordination and regional cooperation apply equally to resilience planning for any climate threat.

RELOCATION AND MIGRATION

Even with extensive resilience and mitigation work, climate change will eventually make certain areas uninhabitable. Rising sea levels, inland flooding, extreme heat, and drought represent hazards that may drive communities to relocate in part or in whole. Communities may choose

38 Louisiana Watershed Initiative, available at <https://watershed.la.gov/>.

39 Louisiana Office Of Community Development, "Master Action Plan for the Utilization of Community Development Block Grant Mitigation Funds (CDBG-MIT)," August 30, 2019. Available at www.doa.la.gov/media/y/hkkgcl/cdbg-mit-master-ap-approved-2_20_20_inc_attachments.pdf.

managed retreat, the practice of moving community members from the highest-risk areas to safer spaces elsewhere in the community. Community-planned relocation, on the other hand, refers to the effort to relocate an entire population to a new physical space, with efforts to preserve the community.

Worth noting in this context are the terms “choose” and “community-planned.” Community-planned relocation must be just that—relocation driven by the people affected in ways that meet their needs. Moving away from land—especially when culture or ancestry binds people to the land—brings intense challenges for those moving. Relocation often means loss of livelihoods or investments, like houses. Poorly implemented relocation that doesn’t pre-emptively involve consensus building, engagement, and equity considerations creates deep harms.

Alaska Native communities have pursued relocation planning for decades. The Qaluyaarmiut people of Newtok, Alaska, have long planned to relocate their community in response to extensive and continual erosion along the Ninglick River.⁴⁰ The selected location, nine miles southeast of Newtok, sits on Nelson Island in the Yukon Delta National Wildlife Refuge (managed by the U.S. Fish and Wildlife Service) where four other villages of Qaluyaarmiut peoples already exist. Finalizing the land transfer required extensive cooperation with the federal government. Increased erosion and the community’s intention to relocate has made Newtok ineligible for many investments in infrastructure maintenance, yet continued flooding raises the risk of significant public health hazards. The Newtok Planning Group, established in 2006, brought together local, state, and federal partners to begin working on a new village. Though work must now move faster to meet urgent relocation needs, the collaboration among the Planning Group’s members provides an avenue forward with community support.

In 2022, the Biden administration announced \$115 million in funding for 11 severely affected tribes—including the people of Newtok—for relocation and adaptation planning. Funded by federal BIL and IRA dollars, the program comprises three relocation grants of \$25 million each

40 Newtok Planning Group, “Newtok Village Relocation History,” Alaska Department of Commerce, Community, and Economic Development. Available at www.commerce.alaska.gov/web/dcra/PlanningLandManagement/NewtokPlanningGroup/NewtokVillageRelocationHistory.aspx.

for Newtok; Napakiak, another Native village; and the Quinault Indian Nation and eight planning grants of \$5 million each to help communities prepare for relocation or increased resilience measures. The program represents a first—it puts federal funding to work alongside community leaders to implement critical relocation activities and build comprehensive resilience in the face of severe climate hazards.

Community relocation brings significant challenges, despite additional access to federal funding and intentional planning. Isle de Jean Charles, along Louisiana's Gulf Coast, faces imminent destruction due to climate change; rising sea levels and subsidence have put 98 percent of the island—all but 320 acres of land—under water over the last 70 years. With \$48.3 million in funds from HUD's National Disaster Resilience Competition, the State of Louisiana has worked with those still living on the island, many of them members of the Isle de Jean Charles Band of Biloxi-Chitimacha-Choctaw Indians, to design a new community site 40 miles inland.⁴¹

The process has faced significant challenges, however, with tribal leaders claiming the plan hasn't met their needs—including their desire to reunite all members of the tribe in one place. The state's ability to tailor the project to community need has been constrained, in part by the short time-frame imposed by the statute for expenditure of the HUD grant funding.

This work to relocate the inhabitants of Isle de Jean Charles demonstrates a broad need for greater coordination among actors and more extensive community engagement, in no small part to address long standing mistrust among communities still impacted by forced relocation—the communities that today face the greatest threats from climate change. Such initiatives often struggle to balance the dueling demands of thoughtful and culturally-sensitive community engagement and getting people out of harm's way as quickly as possible.

Even where relocation doesn't involve an entire community, climate migration has already begun. As individuals and families choose to move to safer locations, receiving communities must prepare to accommodate

41 "National Disaster Resilience Competition Grantee Profiles." (Washington, DC: U.S. Department of Housing and Urban Development, January 2016). Available at <https://archives.hud.gov/news/2016/pr16-006-NDRCGrantProf.pdf>.

new residents. Communities may face increased competition for limited resources—housing, jobs, social services—and social divisions.⁴² Planning must adopt a broad focus for resilience that both prepares target communities to absorb climate-driven migrants and supports the people forced to move. Economic, health care, and recreational institutions must play a role in preparing for the influx as public and private entities coordinate to expand housing supply. Receiving communities must also put in place anti-displacement measures to protect housing opportunity and affordability for existing residents, especially low-income communities of color.

COLLABORATION FOR A BRIGHTER FUTURE

Today, Grand Forks has a new flood-control project to mitigate future floods, comprising, in part, a 2,200-acre greenway that provides recreational space for the community. Meredith Richards, the city’s community development director, says this project gives the community “confidence that what was rebuilt would never face a similar disaster again.” Grand Forks boasts new housing developments and a booming commercial sector. Population has surpassed its pre-flood level, and the University of North Dakota, based in Grand Forks, has expanded. A community that once faced devastation now thrives, with a quiet certainty it has built back better. “‘Sustainability’ was not really part of the recovery language in 1997,” Richards said, “but I’m very proud that Grand Forks’s recovery efforts created a much more resilient community in all aspects, not just as it relates to natural disasters.”

The examples throughout this chapter demonstrate that collaboration and coordination among community members, local, state, and federal actors, and private-sector funders has played a crucial role in achieving resilience goals. Federal funds have frequently provided the financial backing for innovative local policies that create projects directly tailored to community needs. In other instances, community-driven actions have incorporated state or federal expertise through use of resources or partnerships with experts.

⁴² Anne N. Junod et al., “Climate Migration and Receiving Community Institutional Capacity in the US Gulf Coast.” (Washington, DC: Urban Institute, February 27, 2023). Available at <https://www.urban.org/research/publication/climate-migration-and-receiving-community-institutional-capacity-us-gulf-coast>.

These examples represent best practices for community development and resilience policy, planning, and execution. Initiatives must include the people most affected by climate change—and those who have for decades experienced the climate threats now becoming widespread, especially low-income communities and communities of color. Generations of marginalization and discrimination have often dictated which physical spaces these communities occupy. These spaces may face specific environmental challenges, such as increased exposure to pollutants, or they may be the most vulnerable to the symptoms of climate change. Spaces may also lack physical infrastructure—like adequate housing or green space—that can protect against or alleviate some climate-change impacts. Most significantly, decision making has long excluded these communities. Giving power back through robust engagement that determines the types of resilience measures undertaken represents an essential way to further equitable and resilient community development. Communities, the experts on their own needs, must lead development.

The need for resilience has become urgent as the impacts of a rapidly changing climate have become increasingly visible, threatening thousands of lives each year. Yet giving resilience priority, as Grand Forks did, yields benefits far beyond simply protecting against physical damage. Policymakers and government actors must give priority to both resilience and equity in every aspect of community development. We know the tools that build stronger communities. Now, we must use them.

MARION MOLLEGEN MCFADDEN serves as *Principal Deputy Assistant Secretary for Community Planning and Development at the U.S. Department of Housing and Urban Development. In this role, she oversees the administration of federal financial assistance to assist communities in ending homelessness, creating and preserving affordable housing, strengthening local economies, and mitigating and recovering from disasters.*

RACHEL KYES is a *Community Planning and Development Specialist in the Office of the Deputy Assistant Secretary for Grant Programs at the U.S. Department of Housing and Urban Development (HUD). She joined HUD as a Presidential Management Fellow in 2021. She holds a master's degree in International Studies from the University of Denver and a bachelor's degree in Political Science from the University of Texas at Dallas.*

CLIMATE + COMMUNITY DEVELOPMENT: EMERGING INVESTMENT FRAMEWORKS FUEL TRANSFORMATIVE IMPACT

Laura Mixer, *Local Initiatives Support Corporation (LISC)*
Anna Smukowski, *Enterprise Community Loan Fund*

In the early 1950s, predominately white neighbors in Bedford, NY, worked to protect a 60-acre hemlock forest in the Mianus River Gorge, a “wild and free river running through a primeval forest,” that was at risk of being turned into a housing development.¹ They formed a new conservation group, pledged their life insurance policies, and gained financing from the Nature Conservancy to preserve the land. In the following decade, Rachel Carson published *Silent Spring*, a book largely seen as launching the modern environmental movement that also became a rallying point for social activists in the 1960s.²

At the same time, in another Bedford not so far away, real estate agents and speculators employed “blockbusting” to stoke and profit from middle class white flight in the Bedford-Stuyvesant neighborhood of Brooklyn.³

1 Mianus River Gorge, *The Early Years*, available at <https://mianus.org/the-early-years/>.

2 Katharine Rooney, “This is how climate science went mainstream,” *International Institute for Sustainable Development*, November 5, 2019. Available at www.iisd.org/articles/insight/how-climate-science-went-mainstream.

3 Blockbusting is an illegal practice used to convince homeowners to cheaply sell their property by appealing to fears of a new minority group moving in, then reselling at a higher price.

Economic investment declined, with more than 50 percent of its housing stock being classified as dilapidated and insufficient.⁴ By 1967, recognizing something had to change, the first community development corporations (CDCs) were formed—including the Bedford-Stuyvesant Restoration Corporation—to design, implement, and secure financing to reduce poverty and spur economic growth. This was paired with other positive changes driven by the civil rights movement, righting some of the wrongs of decades of discrimination, redlining, and economic disinvestment.

Over the years, both the environmental and community development movements have grown and evolved, and both have had numerous successes. But until recently, they have rarely intersected.

We can no longer afford to work like this. Communities with a history of economic disinvestment bear the greatest costs of environmental disasters and face the greatest risks from climate change. If we are to comprehensively address the challenges facing people and the planet in the twenty-first century, leaders from both the environmental and community development movements need to integrate their approaches.

Climate issues are community development issues and vice versa. Those in community development finance must address the impacts of climate change in order to meet impact goals for economic opportunity and growth. Likewise, those in climate finance need to adopt an equity lens to focus investments in areas grappling with significant pollution and heat challenges, making sure that low-income communities and communities of color are not left behind.

What do investors need to replicate and expand innovative funds and strategies that account for climate and community? How should they evaluate their existing portfolios for risks, and what frameworks do they need to effectively deploy capital in the future?

The tools already exist, as we will discuss throughout this essay. Tools include data and reporting frameworks that can help investors analyze projects and investments and standardize impact measurement and discussion. From that vantage point, we can see the challenges in aligning

4 Jack Newfield, “Bedford-Stuyvesant: Giving a Damn About Hell.” In *Robert Kennedy: a memoir*, (New York: New American Library, 1988).

climate and community development work, better understand the missteps of the past, and develop strategies that can help us work more equitably and holistically going forward. While not an exhaustive list, the examples that follow include the key ingredients for success: standardization, accessibility, and scalability.

MEASURING THE MOVEMENT: STANDARDIZED, ACCESSIBLE, AND SCALABLE FRAMEWORKS

Decarbonization and retrofitting take time, money, and expertise. Community development financial institutions (CDFIs)—which invest in the well-being of low-income communities and underserved populations—have decades of experience providing patient, tailored capital and technical assistance, but less experience applying these tools to the climate sector. At the same time, climate investors regularly screen their portfolios for carbon exposure but have less experience understanding the economic forces that affect marginalized communities. When investors find ways to bridge those two worlds, they can mitigate environmental and social risks at the same time.

In recent years, this has been particularly evident in the field of affordable housing. Habitat for Humanity is raising a \$100 million flexible loan fund to support development of affordable for-sale housing, with an explicit focus on both Black homeownership and climate resiliency. Similarly, Local Initiatives Support Corporation (LISC) has blended an award from the Treasury Department's CDFI Fund with investment capital to finance energy-efficient affordable rental housing. And an increasing number of state housing finance agencies, which allocate Low Income Housing Tax Credits to projects, now prioritize climate and racial equity in determining which projects are awarded credits. That shift means that tens of millions of dollars in private investment capital that flows to affordable housing development also advances energy efficiency and climate resilience.

Overcoming Obstacles

Though community development and climate investors have long worked to solve intractable problems, they have not blended their value propositions to fully account for financial, environmental, and social impacts. In part, this is a function of cost and complexity. Over the past decade,

the sustainable investing ecosystem has become increasingly complicated and data intensive. For smaller community development and climate lenders, the additional reporting requirements and increased legal and compliance costs that are involved can detract from their core business purpose of delivering low-cost and efficient capital. Larger, better resourced organizations may have the capacity to pay for services like third-party verifications, data subscriptions, and systems or processes to track and disclose data. But their “virtue signaling” to investors may be viewed with skepticism. When impact analysis is, essentially, for sale, it raises questions about green- or impact-washing and compromises efforts to advance climate justice and healthy communities.

To counter these challenges, market forces are increasingly migrating toward standardized impact frameworks to enable a more equitable flow of capital. These frameworks provide an opportunity for actors in community development finance and climate investing to intersect, while also educating the broader financing ecosystem on how to shift and align investment incentives.

FOR COMMUNITY DEVELOPMENT FINANCE: STRATEGIES TO ADOPT A CLIMATE LENS

Community development finance has a business imperative to adopt climate-first approaches to a just transition.⁵ Looking through past projects, we can see the long-term effects of overlooking environmental outcomes when building vital community amenities, like affordable housing. To reverse those practices, we must look at both how and where we are investing and building, and whether those decisions are disadvantaging low-income communities and communities of color.

For example, government-backed affordable housing is overwhelmingly located in low-income communities, which tend to be at greater risk of

⁵ Just transition is the concept that all communities can and must benefit from the transition to a net-zero future.

disaster from extreme weather events.⁶ Researchers predict that by 2050, the number of affordable housing units that flood each year could triple, from 7,668 to 24,519.⁷ To mitigate that risk, affordable housing financing entities must consider climate resiliency in every project so that we are investing in sustainable, long-term solutions and not setting up residents to be displaced by flooding or other climate effects.

The same can be said of wildfires. Consider California, a state that is suffering from an acute affordable housing crisis while also facing fires that have displaced tens of thousands of families. These are not two separate challenges. Developers have worked to expand housing availability, in part by building in the “wildland-urban interface” areas at some of the highest risk of wildfires.⁸ The city of Paradise, California, for instance, lost around 13,000 housing units, many of which were naturally occurring affordable housing, in the 2018 Camp Fire—housing that is very difficult to replace.⁹ ¹⁰ It would be easy to say “just build in areas better protected from the risk of fire,” but many of those communities have made it difficult to develop affordable, equitable housing. The situation makes clear that we must take on both the housing and climate challenges simultaneously.

Pollution should also be a key consideration. Look at Gordon Plaza in New Orleans, a development built in the 1970s and marketed specifically to Black families, many of which had never had the opportunity to own

6 Benny Docter and Martha Galvez, “The Future of Public Housing Public Housing Fact Sheet.” (Washington, DC: Urban Institute, October 2019). Available at www.urban.org/sites/default/files/publication/101482/the20future20of20public20housing20public20housing20fact20sheet_0.pdf;

Safia Samee Ali, “How Chicago’s affordable housing system perpetuates city’s long history of segregation,” *NBC News*, April 4, 2021. Available at <https://www.nbcnews.com/news/us-news/how-chicago-s-affordable-housing-system-perpetuates-city-s-long-n1262119>.

7 “Flood Risk for Low-Income Housing in U.S. Could Triple by 2050,” *Yale Environment 360*, December 1, 2020. Available at <https://e360.yale.edu/digest/flood-risk-for-low-income-housing-in-u-s-could-triple-by-2050>.

8 Brian Hanlon, “The next phase of California housing reforms? Climate-safe homeownership,” *Cal Matters*, January 4, 2023. Available at <https://calmatters.org/commentary/2023/01/housing-climate-wildfire-risk-homeownership/>.

9 Natalie Hanson and Nick Silva, “Countywide study reveals Camp Fire disparities in housing,” *Chico Enterprise-Record*, November 1, 2020. Available at www.chicoer.com/2020/11/01/countywide-study-reveals-camp-fire-disparities-in-housing/.

10 “The Impacts of Camp Fire Disaster on Housing Market Conditions and Housing Opportunities in the Tri-County Region.” (Peloton Research and Economics, 2020). Available at https://uphelp.org/wp-content/uploads/2020/11/camp_fire_housing_study_-_final_9-1-20.pdf.

their own home. For years, the community flourished. But, in 1994, the EPA declared the area to be a superfund site, with Gordon Plaza sitting on a former landfill. Not only had Black families been exposed to dozens of cancer-causing chemicals for over two decades, but they were financially victimized as well. The state and city failed to protect people, now mostly seniors, from the loss of equity in homes that are no longer habitable or sellable.¹¹ While the dangers of building on this plot of land were not as well understood in the 1970s, it is not uncommon for low-income households and communities of color to be directed to less desirable areas for development.

In the transition to a just, green future, we have to make different decisions. We need public policies and financing programs that reward affordable housing development in areas that are less likely to experience extreme environmental impacts. In many cities, these areas are also areas of “high opportunity,” offering residents strong schools, economic opportunity, and access to public transit and other amenities¹² that would not otherwise be available.

To effectively account for and mitigate climate risks, we recommend two tools for community lenders to coalesce around.

Carbon Accounting

By measuring and disclosing financed greenhouse gas emissions, lenders can understand and begin to address the climate-related risks in their portfolios. Carbon accounting is in line with recommendations from the Task Force on Climate-Related Financial Disclosures (TCFD) with regard to disclosure. It provides an opportunity to develop a baseline for climate impact, identify sectors where there is the greatest opportunity to reduce emissions, and demonstrate climate-smart investment and disclosure practices to industry participants.

Framework in Action: In December 2021, community development lenders Coastal Enterprises, Inc. (CEI), Partner Community Capital, and Self-Help Credit Union & Ventures Fund teamed up with the Partnership

11 Darryl Fears, “Gordon Plaza Was Sold as a Dream for Black Home Buyers. It Was a Toxic Nightmare,” *The Washington Post*, April 1, 2022. Available at www.washingtonpost.com/climate-environment/2022/04/01/new-orleans-gordon-plaza-epa/.

12 “Spotlight on Underserved Markets: Affordable Housing in High Opportunity Areas.” (Freddie Mac Multifamily). Available at https://mf.freddiemac.com/docs/high_opportunity_case_studies.pdf.

for Carbon Accounting Financials (PCAF), a financial industry initiative, to develop guidelines on carbon accounting. The result is “Process Documentation: Portfolio GHG Accounting for CDFIs,” which addresses common questions and makes sense of the complicated work of GHG accounting. It aligns with PCAF’s Global GHG Accounting and Reporting Standard for the Financial Industry but is specifically designed for CDFIs.¹³

The Five Dimensions of Impact

The Five Dimensions of Impact is a framework developed by the Impact Management Project (IMP) to help organizations measure, manage, and communicate the impact of an investment on people and planet.¹⁴ It includes:

- **What** – What is the outcome our financing is contributing to?
- **Who** – Who are we providing the investment to and who will benefit from the investment?
- **How Much** – What is the project’s scale, depth, and duration of impact?
- **Contribution** – Could the project occur without us?
- **Risk** – Are there risks to people and planet to mitigate associated with this project?

The five dimensions allow organizations to compare investments across industries, asset classes, and stages of financing, while tailoring sub-indicators that are specific to their investment theses and theories of change. The Global Impact Investing Network’s (GIIN) Navigating Impact Project provides ready-made, five-dimension frameworks to help investors apply the measures.¹⁵

Framework in Action: In 2021, LISC joined peer organizations in the Impact Frontiers CDFI Cohort, which supports investors in establishing or improving their own practice of impact management. Impact Frontiers seeks to answer three primary questions for impact investors:

13 Coastal Enterprises, Inc., Partner Community Capital, and Self-Help Credit Union & Ventures Fund, *Process Documentation: Portfolio GHG Accounting for CDFIs* (2021). Available at https://www.self-help.org/docs/default-source/PDFs/pcaf-working-guide-for-cdfis_20220418.pdf.

14 Impact Frontiers, *A shared logic for managing impacts on people and the planet*, available at <https://impactfrontiers.org/norms/five-dimensions-of-impact/>.

15 Global Impact Investing Network, *Investing for impact? Quit Guessing*, available at <https://navigatingimpact.thegiin.org/>.

- Which loans make more or less impact, and how do we know?
- Which loans make more or less money?
- How can we use these insights about impact and profitability to inform decision making on individual loans, to improve the impact and/or financial performance of our portfolio as a whole, and to communicate externally about our financial/impact goals and performance?

LISC set out to answer the first question by building an impact rating tool to score each loan in its on-balance-sheet loan fund. The resulting LISC Impact Matrix became the first step of a data-informed approach to lending.¹⁶ It embeds an assessment of climate mitigation and resilience strategies alongside an analysis of community support, feedback, and ultimate benefit of a project.

In addition to helping track what projects include climate mitigation and resilience tools, the Impact Matrix also flags projects that do not include green features or address climate risks. By analyzing these types of projects, LISC can better target technical assistance, capacity building, and subsidized capital to asset classes that have been slower to adopt climate adaptations.

FOR CLIMATE FINANCE: STRATEGIES TO ADOPT A COMMUNITY LENS

The transition to clean energy requires land for wind turbines, solar farms, and long-distance transmission lines.¹⁷ The US Department of Energy has estimated that we would need almost 20,000 square miles to achieve 100 percent clean electricity by 2035.¹⁸ Finding locations for this new infrastructure requires us to account for the history, culture, needs, and desires of the communities that will be surrounded by these projects—especially since low-income communities and communities of color have long had their interests ignored in the planning and development of infrastructure

16 LISC, *LISC Impact Matrix*, available at www.lisc.org/our-resources/resource/lisc-impact-matrix/.

17 Steve Clemmer, “How Much Land Would it Require to Get Most of Our Electricity from Wind and Solar?” *Union of Concerned Scientists*, February 22, 2023. Available at <https://blog.ucsusa.org/steve-clemmer/how-much-land-would-it-require-to-get-most-of-our-electricity-from-wind-and-solar>.

18 Paul Denholm et al., “Examining Supply-Side Options to Achieve 100% Clean Electricity by 2035.” (Golden, CO: National Renewable Energy Laboratory, 2022). Available at www.nrel.gov/docs/fy22osti/81644.pdf.

projects. The transition to the green economy should not disproportionately burden communities that are already experiencing the worst effects of climate change.

Take, for example, the Lava Ridge Wind Project in Jerome County, ID. The project would include up to 400 740-foot wind turbines and create enough energy to power around 350,000 homes—nearly half the households in the state.¹⁹ However, the project is located near the Minidoka National Historic Site, a former internment camp where thousands of Japanese-Americans and Alaska Natives were imprisoned during World War II. It is a pilgrimage site, and the wind turbines will permanently change the vistas surrounding it. By locating this project so close to a sacred site, advocates are ignoring both history and trauma, and exacerbating their impact.

Yet another example occurred in Florida during the early days of the COVID-19 pandemic. In 2020, local power companies proposed a 650-acre solar power plant in the town of Archer, an historically Black community just south of Gainesville. The site is near a largely residential neighborhood and threatened an historic Black cemetery in the area.²⁰ Many Archer residents are descendants of the Rosewood Massacre²¹—their ancestors were driven out of one community decades earlier and forced to build anew. And in Idaho, proponents are imposing infrastructure in a way that exacerbates generational trauma and unfairly burdens an already marginalized community—even if it is for the public good. The Archer project has since stalled, with residents rising up against the effort and the state and county reconsidering their options.

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- 19 Austin De Dios, “Proposed Idaho wind farm near former Minidoka prison camp sparks concern in Oregon,” *The Oregonian/OregonLive*, February 28, 2023. Available at www.oregonlive.com/news/2023/03/proposed-idaho-wind-farm-near-former-minidoka-prison-camp-sparks-concern-in-oregon.html; “Lava Ridge Wind Project Draft Environmental Impact Statement.” (Shoshone, ID: U.S. Department of the Interior Bureau of Land Management, January 2023). Available at [https://eplanning.blm.gov/public_projects/2013782/200493266/20072051/250078233/Lava_Ridge_DEIS_V2a_App1_POD_\(1%20of%202\).pdf](https://eplanning.blm.gov/public_projects/2013782/200493266/20072051/250078233/Lava_Ridge_DEIS_V2a_App1_POD_(1%20of%202).pdf).
- 20 Aman Azhar, “An African American Community in Florida Blocked Two Proposed Solar Farms. Then the Florida Legislature Stepped In,” *Inside Climate News*, January 2, 2022. Available at <https://insideclimatenews.org/news/02012022/environmental-justice-florida-solar-preemption-legislature-desantis/>.
- 21 In 1923, the Black town of Rosewood, FL was destroyed and at least eight people were killed in a race riot. After lynching a Black Rosewood resident, several hundred white people burned almost every structure in Rosewood while hunting for additional victims. The town was abandoned by both Black and white residents and ceased to exist.

As both of these examples demonstrate, community concerns cannot be ignored when pursuing climate projects. It leads to operational delays, increased legal and labor costs, and significant reputational risks—all while diminishing property values, leading to dislocation and negatively impacting community health and safety.²²

We recommend two frameworks to incorporate community voice and needs in climate investments and to avoid those risks.

International Association for Public Participations (IAP2)’s Spectrum of Public Participation

Community investors have decades of experience organizing and convening community members to make sure that voices are heard and incorporated in development decisions. As we accelerate the transition to clean energy, these same approaches can help determine where to place energy facilities and production sites. What’s more, the Biden administration has explicitly included “Improve Community Engagement” as one of its goals in accelerating the transition to clean energy. Tools like the International Association for Public Participation (IAP2)’s Spectrum of Public Participation can be used to ensure communities are empowered to determine development in the local area.²³

In the prior examples, public officials started by informing residents of pending development—but that is largely where the engagement ended. In Idaho, community meetings were held to consult the public but there has been no commitment to incorporate and empower the voices of residents. In Florida, residents organized themselves after being informed of the pending development and were able to effect change; however, state legislation actually removed²⁴ this ability after the fact. As we continue to develop wind and solar farms on millions of acres, government officials, utility companies, and investors can use tools like the IAP2’s Spectrum of

22 Nick Robins, Vonda Brunsting, and David Wood, “Climate change and the just transition: A guide for investor action.” (London, United Kingdom: The Grantham Research Institute on Climate Change and the Environment, December 2018). Available at www.unpri.org/download?ac=9452.

23 Organizing Engagement, *Spectrum of Public Participation*, available at <https://organizingengagement.org/models/spectrum-of-public-participation/>.

24 Aman Azhar, “An African American Community in Florida Blocked Two Proposed Solar Farms. Then the Florida Legislature Stepped In,” *Inside Climate News*, January 2, 2022. Available at <https://insideclimatenews.org/news/02012022/environmental-justice-florida-solar-preemption-legislature-desantis/>.

Public Participation to fully engage residents in the development process and the clean energy transition.

Framework in Action: The Environmental Protection Agency explicitly draws on IPA2’s model for its Public Participation Guide, as it urges public agencies and investors to go beyond cursory notifications and constructively engage with stakeholders. “Conducting meaningful public participation involves seeking public input at the specific points in the decision process and on the specific issues where such input has a real potential to help shape the decision or action,” the EPA stresses. It adds, “Public participation is a process, not a single event.”

Just Transition

The Just Transition concept has been around since the 1970s, when trade unions coined the term to protect workers at risk for job loss due to increased regulation of polluting industries. Over time, unions began forming relationships with environmental justice advocates in the hopes that all communities might benefit from the transition to a net-zero future. The Just Transition movement focuses on the social aspects of climate change for workers and communities so that rapid decarbonization contributes to equitable and resilient economies.

Framework in Action: While there is no universal framework for the Just Transition, we recommend “Climate Change and the Just Transition – A Guide for Investor Action.” It was developed by the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science in concert with the Initiative for Responsible Investment at Harvard University’s Kennedy School, and it aligns with the UN Principles for Responsible Investment, a UN supported network of investors that promotes responsible investing. Notably, it incorporates backward-looking frameworks to assess the social dimension of climate investments that have already been deployed. Just as community development investors can calculate their financed emissions, climate investors can use this framework to assess their portfolios for a broad range of social issues related to workers and communities, leveraging additional frameworks like the Committee on Workers’ Capital Guidelines for the Evaluation of Workers’ Human Rights and Labour

Standards,²⁵ the Workforce Disclosure Initiative, and/or the Corporate Human Rights Benchmark.

INTEGRATED INVESTMENT SOLUTIONS: USING GREEN, SOCIAL, SUSTAINABILITY, AND SUSTAINABILITY-LINKED BONDS

In 2007, research from the Intergovernmental Panel for Climate Change strongly linked human action to climate change.²⁶ It spurred a group of Swedish pension funds to think about how their role as fiduciaries could finance projects that would create climate benefits while reducing risk for their investors. Without a ready-made investment opportunity, they turned to the World Bank, which issued the world's first green bond in 2008. That effort formed the basis for the Green Bond Principles coordinated by the International Capital Market Association (ICMA).²⁷

The principles apply a framework for issuers to raise capital for projects with environmental and climate impacts. Green bonds are evaluated based on use of proceeds, process for project evaluation and selection, management of proceeds, and reporting. These four components create a clear disclosure process for issuers, which investors, banks, underwriters, arrangers, placement agents, and others can use to understand the characteristics of any given green bond.

Once the green bond market took off, issuers noticed that bonds could address persistent market gaps in ways that go beyond pure environmental projects. That recognition gave rise to the Social Bond Principles, sustainability-linked bonds, transition bonds, and the Sustainability Bond Guidelines—all of which incorporate a focus on both green and social projects or activities. Over time, the influence of these designations has

25 Committee on Workers' Capital, "CWC Guidelines for the Evaluation of Workers' Human Rights and Labour Standards," CWC, May 1, 2017. Available at <https://www.workerscapital.org/our-resources/cwc-guidelines-for-the-evaluation-of-workers-human-rights-and-labour-standards/>.

26 Rajendra K. Pachauri and Andy Reisinger, "Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change." (Geneva, Switzerland: Intergovernmental Panel on Climate Change, 2008). Available at www.ipcc.ch/report/ar4/syr/.

27 "10 Years of Green Bonds: Creating the Blueprint for Sustainability Across Capital Markets," *The World Bank*, March 18, 2019. Available at www.worldbank.org/en/news/immersive-story/2019/03/18/10-years-of-green-bonds-creating-the-blueprint-for-sustainability-across-capital-markets.

grown. In 2017, LISC became the first CDFI issuer to align with the Sustainability Bond Guidelines in a rated bond offering. In 2019, the Low Income Investment Fund (LIIF) became the first CDFI issuer to receive a second-party opinion confirming that its bond was aligned with the Sustainability Bond Guidelines. With these precedents, CDFI issuers increasingly aligned their offerings with the ICMA Sustainability Bond Guidelines, with six out of ten rated bond offerings aligning with the guidelines and four receiving a second party opinion.²⁸

While social and sustainability bonds that incorporate target populations have grown, the green bond subset of the market still holds the majority market share by dollar volume. There is great potential to integrate the target population definitions in the social bond designation further with green use of proceeds bonds to educate stakeholders on how climate finance impacts communities. In 2020, ICMA introduced its Climate Transition Handbook to help investors craft approaches to climate risk that mitigate both environmental and social externalities and contribute to progress on the UN Sustainable Development Goals.²⁹

Case Study: Fully Blending Climate and Community into Capital Flows

The federal Greenhouse Gas Reduction Fund (GGRF) is a first-of-its-kind program designed to mobilize financing and leverage private capital for clean energy and climate projects, with an emphasis on projects that benefit low-income and disadvantaged communities.³⁰

This program, if implemented well, could provide catalytic resources to support and scale the work of CDFIs and mission-based lenders in financing projects that lower greenhouse gas emissions. It could dramatically and permanently increase the CDFI sector's climate-focused lending, training, technical assistance, and capacity-building activities in disadvantaged communities. And it could help scale the ways that green banks work with CDFIs, as they deploy GGRF capital in ways that fulfill the White House's Justice40 goals (which require that 40 percent of certain

28 Elise Balboni, Kathleen Keefe, and Anna Smukowski, "CDFIs and the Capital Markets: Trends in Investment & Impact Measurement." (Enterprise and LISC, May 2023). Available at www.enterprisecommunity.org/sites/default/files/2023-05/CDFIs-and-the-Capital-Markets-May2023.pdf.

29 ICMA, *Climate Transition Finance Handbook*, available at www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/climate-transition-finance-handbook/.

30 Environmental Protection Agency, *Greenhouse Gas Reduction Fund*, available at www.epa.gov/greenhouse-gas-reduction-fund.

federal investments be made in disadvantaged communities). By providing flexible funding that can be used to upskill and invest in back-office infrastructure, the GGRF is also building the internal capacity of the field to carry out this work long into the future.

We can see how some of this might play out based on existing collaborations. In 2022, the D.C. Green Bank, for example, participated in a \$7.5 million loan with Enterprise Community Loan Fund to install solar panels at four affordable housing properties owned and operated by Enterprise Community Development. The solar panels are expected to eliminate the equivalent of up to 1,794 tons of carbon dioxide each year. In addition, residents can take advantage of a new community solar program that will provide subscribers a 25 percent discount on their electric bills. Enterprise Community Development is also working with local community providers and the project's installer, Prospect Solar, on a workforce development program for residents interested in a career in solar energy.³¹

Another example is the Solar and Energy Loan Fund of St. Lucie County (SELF). Established in 2010 as America's first local green bank, SELF spun-off to become its own independent nonprofit organization before becoming a certified CDFI in 2012. SELF's mission is to rebuild and empower underserved communities by providing access to affordable and innovative financing for sustainable property improvements, with the primary focus on energy efficiency, renewable energy, and climate resilience in low- and moderate-income neighborhoods.

LOOKING AHEAD: CLIMATE AND COMMUNITY FIRST-APPROACHES TO CAPITAL ALLOCATION

In order to equitably drive capital into communities and to support their climate resilience, it is imperative that community and climate investors coalesce around frameworks that send a clear market signal. Like the frameworks described above, these tools should be:

- **Standardized** – The market needs to be able to measure and report the same types of metrics in order to easily compare one investment

31 Enterprise Community Partners, "Enterprise and DC Green Bank Bring Solar Power to 530+ Affordable Homes in Washington, DC" *Enterprise*, January 26, 2023. Available at www.enterprisecommunity.org/news/enterprise-and-dc-green-bank-bring-solar-power-530-affordable-homes-washington-dc.

Figure 1. Summary of Tools & Frameworks

FRAMEWORK	GOVERNING/CREATING BODY	INTENDED USER	DESCRIPTION/PURPOSE	STANDARDIZED	ACCESSIBLE	SCALABLE
SPECTRUM OF PUBLIC PARTICIPATION	International Association for Public Participation	Investors & Enterprises	IAP2's Spectrum of Public Participation was designed to assist with the selection of the level of participation that defines the public's role in any public participation process. The Spectrum is used internationally, and it is found in public participation plans around the world. It measures how much the public has been engaged on a decision, from informed (notified but not brought into the process) to empowered (the community has the final decision).	✓	✓	✓
PORTFOLIO GHG ACCOUNTING	Partnership for Carbon Accounting Financials	Financial Institutions (all)	Enable financial institutions to consistently measure and disclose the absolute GHG emissions associated with their financing activity. By helping to establish baselines, organizations can then set goals and strategies to reduce financed emissions.	✓	✓	✓
CLIMATE CHANGE AND THE JUST TRANSITION— A GUIDE FOR INVESTOR ACTION	Grantham Research Institute on Climate Change and the Environment and Initiative for Responsible Investment	Climate Investor	The Just Transition movement focuses on the social aspects of climate change for workers and the community so that rapid decarbonization contributes to equitable and resilient economies. This backward-looking guide assesses the social impact of investments.	✓	✓	✓
FIVE DIMENSIONS OF IMPACT	Impact Frontiers/The Impact Management Project	Investors & Enterprises	The Five Dimensions of Impact provide a framework for assessing the impact of any investment/enterprise and give organizations a shared lens/language to use in discussing and measuring impact.	✓	✓	✓
GREEN, SOCIAL, SUSTAINABILITY & LINKED BOND PRINCIPLES	International Capital Market Association	Investors & Enterprises	The principles apply a framework for issuers to raise capital for new and existing projects with environmental and social impacts through use of bond proceeds.	✓	✓	✓

to another. An impact measurement tool can reflect the priorities and mission of an organization while also aligning to an industry-wide standard.

- **Accessible** – Navigating the ecosystem for sustainable and impact investing data and reporting requires time, staff, and financial resources—making it inaccessible for smaller organizations, especially those serving low-income communities. For them to participate, and to promote widespread adoption, those organizations need access to free or, at the very least, tiered pricing.
- **Scalable** – Investors need to work together to invest in and leverage technology platforms, as well as to build the requisite capacity to educate the market on what platforms exist. The resulting standardized data can be aggregated and reported to stakeholders, driving scalable solutions.

While we recognize there is not a one-size-fits-all approach, finding shared tools and a common language can help organizations be explicit about their climate and community impacts. In doing so, organizations can learn best practices from one another and create a community of practice. Frameworks exist to support this work and can help drive capital into projects and investments that build a resilient, just, and equitable future for all American communities.

LAURA MIXTER is the first director of ESG & Impact Reporting at LISC. She oversees LISC's impact measurement and management work, including the implementation of the LISC Impact Matrix, for all loans financed through LISC's loan fund.

ANNA SMUKOWSKI is Senior Director of Capital Programs at Enterprise Community Loan Fund, the community development financial institution arm of Enterprise Community Partners. She works across the capital and lending teams with capital raising, fund structuring, and impact measurement and management.

BUILDING FUTURES: INDIGENOUS COMMUNITIES, THE GREEN ECONOMY, AND INCLUSIVE EMPLOYMENT

Joseph Kunkel, *MASS Design Group*

The ongoing climate crisis demands an urgent paradigm shift in our economic and social structures, with Indigenous knowledge and practices at its core. Indigenous and under-resourced communities have long stewarded the environment, combining ancestral knowledge with a capacity for modern adaptation to foster sustainability. Our Indigenous communities' direct engagement and leadership are essential in underpinning an effective response to climate change. By empowering these communities, we can catalyze a transition toward a greener economy and a more dynamic climate movement, laying the groundwork for an equitable, resilient, and just future for all.

A GREEN ECONOMY: A BEACON OF OPPORTUNITY

The green economy will move toward renewable energy, eco-tourism, a blend of advanced and traditional agricultural practices, pioneering green technology, sustainable building practices, and more, setting the stage for a more balanced future in harmony with our planet.

We must acknowledge that transitioning from our current dependencies will take time and come with challenges. Our built environment, as currently constructed and operated, drives nearly 40 percent of global emissions of carbon dioxide, the most important human-generated greenhouse gas.¹ This underscores the urgent need for a widespread transition to sustainable construction practices and for profound investment in aging infrastructure.

Yet the green economy's vision is clear. Sustainability is more than ecological balance; it's a blueprint for holistic growth that respects our environment, prioritizes inclusivity, and creates avenues for economic opportunity and cultural empowerment for our communities most at risk from a changing climate.

INDIGENOUS KNOWLEDGE: A CORNERSTONE OF SUSTAINABILITY

Historically, Indigenous communities have been stewards of the land, with profound respect for nature rooted in centuries-old traditions. These communities developed ways of living that protected the natural world, whose generativity, in turn, supported their livelihoods, health, customs, and cultures for many generations. Thus anchored in holistic sustainability, Indigenous knowledge holds invaluable insights for the green economy's evolution.

At the same time, our Indigenous communities often find themselves at the front lines of climate change's adverse effects—from rising sea levels to shifting agricultural patterns and the onslaught of natural and man-made disasters—threatening a new chapter in the long, terrible history of displacement.² While empowering our Indigenous communities is undeniably both an ethical mandate and a strategic imperative for the transition to a green economy, it's equally important to create spaces where Indigenous knowledge isn't just integrated but revered, and thrives on its own terms, free from Western or Eurocentric constraints.

1 United Nations Environment Programme, “2022 Global Status Report for Buildings and Construction: Towards a Zero-emission, Efficient and Resilient Buildings and Construction Sector.” (Nairobi: 2022). Available at www.unep.org/resources/publication/2022-global-status-report-buildings-and-construction.

2 “Dispossessed Again: Climate Change Hits Native Americans Especially Hard,” *The New York Times*, June 27, 2021. Available at www.nytimes.com/2021/06/27/climate/climate-Native-Americans.html.

GREEN ENERGY, EMPOWERED PEOPLE

Henry Red Cloud's work bringing renewable energy to tribal lands stands as a testament to the synergy between Indigenous knowledge and contemporary sustainable practices. His legacy combines lineage with visionary leadership. Based on the Pine Ridge Reservation in South Dakota, where he was born and raised, Red Cloud is a direct descendant of the Oglala Lakota chief famous for resisting U.S. government encroachments on Native lands in the nineteenth century.³ Through the renewable energy company he founded in 2006, Lakota Solar Enterprises, and the nonprofit Red Cloud Renewable,⁴ Red Cloud and his son, John Red Cloud, have spearheaded the manufacture or installation of home solar heaters on upward of a dozen reservations including Pine Ridge, partnered with 70 federally recognized tribes to share green-energy solutions, and trained well over a thousand Indigenous people as solar installers.

Red Cloud Renewable actively ensures Indigenous communities reclaim control over our energy sources, leading to economic empowerment and energy independence. When Native households can heat their homes against the bitter cold of Great Plains winters by harnessing the abundant sunshine instead of buying propane, electricity, or wood, they not only protect the environment but also alleviate the financial burden of the astronomically high cost of those fuel expenses for families. Moreover, when Indigenous educators teach Indigenous students, they cultivate a workforce uniquely positioned to advance energy sovereignty within their own tribal communities, throughout Indian Country, and beyond.

This work serves as a potent reminder that allowing Indigenous knowledge to guide modern endeavors often leads to transformative, boldly forward-looking solutions that, at the same time, are deeply rooted in respect for the land and its history. As John Red Cloud has said, "Indigenous people have been embracing the sun for eons. It's in our

3 "Gift to Honor Chief Henry Red Cloud," *Western Spirit Scottsdale's Museum of the West*, September 30, 2022. Available at <https://scottsdalemuseumwest.org/news/gift-to-chief-henry-red-cloud/>.

4 Red Cloud Renewable, available at www.redcloudrenewable.org.

culture, our ceremony, our song, our dance. So, we're taking this new way to honor the old way."⁵

GREEN BUILDINGS, GREEN JOBS

Just as Red Cloud Renewable harnesses the sun (and wind), the architectural practices of Indigenous communities tap into the earth and nature in profound ways. These techniques offer insights into how we can reshape our built environment to be more conscious of the land, people, and animals—all living things.

Indigenous construction practices have, for centuries, showcased the value of eco-friendly and culturally significant natural materials. When applied today, these practices offer a path toward drastically reducing our dependence on high embodied energy materials, creating sustainable structures that carry the weight of tradition into the future.

Foundations from the Earth

While rubble foundations are a testament to the ingenuity of Indigenous communities and early industrial societies worldwide, their integration into modern construction practices remains limited. However, initiatives akin to the work of Red Cloud Renewable, which blends ancestral methods with contemporary engineering, are beginning to emerge. These modern applications of rubble foundations require minimal concrete, offering a sustainable and structural alternative to today's concrete-heavy methods. Although not yet widespread, projects with rubble foundations have a significantly lower embodied carbon footprint when compared to a more traditional continuous concrete grade beam. The primary challenges in adopting such practices broadly include economic considerations, technical feasibility, and the specificities of each geographic region. As we seek to minimize the embodied carbon in our structures, particularly in foundations, the need to elevate and implement these time-tested, eco-friendly solutions becomes more pressing, calling for innovative strategies that respect and incorporate traditional and local knowledge.

5 Karen Petersen, "Indian Energy Champions: Chief Henry Red Cloud and John Red Cloud," *Energy.gov*, February 21, 2023. Available at www.energy.gov/indianenergy/articles/indian-energy-champions-chief-henry-red-cloud-and-john-red-cloud.

Earthen Walls that Breathe

Adobe and mud bricks represent another facet of Indigenous innovation. These materials, crafted from the very soil beneath our feet, have sheltered countless generations. Modern construction's inclination toward concrete block and steel framing often neglects the low embodied energy and thermal benefits these natural bricks offer. Their inherent ability to regulate indoor temperatures can lead to reduced energy demands for heating and cooling. By marrying traditional and contemporary building techniques focused on the bones of our buildings, we can significantly reduce our carbon footprint and open up avenues for a new labor force. Training a workforce in the art and science of adobe and other natural construction materials is a way to propagate invaluable Indigenous knowledge while providing meaningful employment opportunities. Such a labor force, rooted in time-tested traditions yet adaptable to modern requirements, showcases construction practices that integrate knowledge beyond a solely Western, Eurocentric perspective, fostering a more holistic and sustainable approach to building.

Nature's Exterior

Shifting the lens to building exteriors, the use of thatch siding offers a stark contrast to the plastic siding and cement stucco dominant in contemporary building practices. Thatch is biodegradable, and its use celebrates an Indigenous art form that dates back millennia. Beyond its aesthetic appeal, thatch provides excellent insulation, further contributing to a building's energy efficiency. When properly installed and maintained, thatch siding also boasts impressive durability, often outlasting many modern materials and requiring less frequent replacements. This longevity translates to long-term cost savings, making thatch not only an environmentally conscious choice but a financially prudent one as well.

Today, architects around the world are increasingly turning to Indigenous precedents and construction techniques, integrating them with modern sustainability goals. In my capacity as a practitioner and the director of the Sustainable Native Communities Design Lab at MASS Design in Oga Po'geh (Santa Fe, NM), I collaborate with Indigenous communities to create built environments that are rooted within the context of community, culture, and place. These designs stand in respectful contrast to the ubiquitous, Eurocentric models of the past that stripped away one's

identity and connection to place, instead honoring the unique cultural practices and interactions with the land of each community.

One example of this is our work with the Kewa Pueblo in New Mexico, where a preference for dense, communal living informed the design of a neighborhood of culturally responsive homes. These structures speak to the Kewa's architectural vernacular and are strategically planned for passive solar heating. Likewise, our work with the Mohawk Nation at Akwesasne in Upstate New York has led to the design of affordable housing that pays homage to the traditional longhouse while also incorporating landscape strategies for resilience, such as terraced landscapes that work with the St. Regis River's natural movements and floods. This collaborative effort came on the heels of the community's significant victory in 2016, which celebrated the removal of an old dam on the St. Regis and the restoration of stream pathways crucial for migratory fish that are significant to the Akwesasne way of life.

As a citizen of the Northern Cheyenne Nation, I stand as an outsider to these communities. Yet, I respect the distinct identities of these communities, approaching each project with the intention to listen and learn. This approach is essential to truly embedding Indigenous knowledge in our move toward a green economy, steering clear of cultural appropriation. The achievements of leaders like Henry Red Cloud serve as a beacon, showing us that when we let ancestral knowledge lead, we carve out a future that is not only greener but also more inclusive and fair. The successes of visionaries like Henry Red Cloud exemplify how Indigenous knowledge can illuminate our journey, leading to a more sustainable, equitable, and all-encompassing future.

STRATEGIES FOR INCLUSION AND EMPOWERMENT

We can illuminate a promising path toward sustainability by weaving Indigenous knowledge with contemporary practices. But how we approach this work will determine its legacy. An effective, just, and inclusive approach rests on four fundamental pillars:

- **Education and Training** to infuse age-old knowledge into new-age technologies;

- **Financial Instruments** tailored to both amplify Indigenous-led endeavors and bolster initiatives that lack the critical capital to advance;
- **Partnerships** that champion collaboration and holistic decision-making; and
- **Recognition and Rights** to safeguard the legacy and entitlements of Indigenous communities.

Education and Training

Transitioning to a green economy will require skills and know-how based on both centuries-old traditions and cutting-edge advances. When fused with modern techniques, construction with mud bricks and thatch can pave the way for sustainable building practices. When Indigenous expertise on the sustainable use of land and resources aligns with today's solar and wind technologies, we open doors to endless possibilities. Recognizing this, it's essential to cultivate tailored educational programs that equip both Indigenous and under-resourced communities with the skills to navigate and innovate within these spheres. By doing so, we enable members of these communities to be not just participants but leading contributors to the green transformation. These programs, looking ahead, must be firmly anchored in culture, community, and place, ensuring that training and education enhance rather than eclipse traditional practices and insights.

Financial Instruments

Capital can often be a double-edged sword, particularly when conventional funding mechanisms impose terms and initiate projects that do not align with the values and needs of Indigenous and under-resourced communities. These systems, rooted in Western capitalism, frequently neglect Indigenous perspectives on communal wealth and stewardship, creating barriers to inclusion. Despite this, securing capital within these frameworks remains essential, as Indigenous communities must navigate the existing capitalistic frameworks that show no signs of reform. The challenge of accessing funds underscores the significant role that social impact investors, philanthropic groups, and governmental bodies can play. By deploying financial tools—from green bonds and philanthropic funds to debt capital and government grants—that are designed to respect and promote Indigenous participation in sectors like construction and

renewable energy, we can establish the groundwork for turning ideas into impactful realities. Prioritizing Indigenous perspectives within financial and economic systems is essential, and investment in Indigenous and under-resourced communities is more than just monetary support; it represents an innovative leap toward a green economy that melds time-honored traditions with contemporary progress.

Partnerships

This work aims to connect diverse worlds and multiply our collective strengths as a society. When Indigenous practitioners are brought together with industry leaders and rigor in education and training, the result is a blending that drives unparalleled transformation. By creating partnerships that bridge Indigenous and under-resourced organizations with industries, universities, and governmental bodies—from local municipalities to federal entities—we enable a diversity of knowledge to come together. Such collaborations aren't just about participation; they're about shared leadership. This means elevating Indigenous insights to guide decision-making, ensuring that communities most at risk from climate change and economic inequities are empowered to co-create and shape the mainstream, especially within the green economy. Through these partnerships, we are not only embracing Indigenous knowledge but amplifying the potential for these communities to thrive in and contribute to our collective sustainable future.

Recognition and Rights

Moving a green economy forward necessitates recognizing and upholding the rights of Indigenous communities and individuals. From an Indigenous perspective, land represents more than just territorial boundaries; it symbolizes centuries of sustainable practices, a living testament to Indigenous environmental stewardship. This connection to the land challenges and reframes Western, Eurocentric viewpoints on environmental management. It's not enough to merely acknowledge this; we must deeply integrate Indigenous perspectives. By championing land rights and honoring the longstanding environmental contributions of Indigenous peoples, we counteract damaging industrial activities and lay the foundation for a richer, more effective, and more inclusive green economy. Propelling the green economy without grounding it in

Indigenous recognition and rights is like constructing a building without understanding the land upon which it stands.

Intertwining these four pillars of activity with Indigenous knowledge and practices allows us to cultivate a sustainable future while also shaping an employment landscape that values diverse expertise and histories. This integrated approach ensures that as jobs evolve and industries flourish, they remain deeply rooted in respect for the land and its custodians. Moreover, it allows for a more holistic employment ecosystem where Indigenous and under-resourced communities are not just participants but also leaders and decision-makers. Our journey toward a sustainable green economy is also a reimagining of work, one where every hand that contributes is honored for its cultural and communal knowledge and innovative potential, where every job underscores the seamless blend of past, present, and future.

CONCLUDING THOUGHTS

The green economy's narrative goes beyond technology. It's thoroughly interlaced with Indigenous and under-resourced communities' stories of culture and resilience, deep traditional knowledge, and connection to the land. These insights don't just enrich our understanding; they have the power to advance civil society into a brighter future.

Building upon this foundation, the pursuit of green employment for Indigenous and under-resourced communities can be seen as a strategic step and a moral imperative. This work is about creating the framework for a robust, sustainable workforce and economy for the future.

The time is now to highlight the pressing need for upskilling and inclusion. As Indigenous peoples, we cannot be confined to supporting roles in the drive toward a green economy. We must lead it, aligning seamlessly with society at large as partners, collaborators, and irreplaceable vanguards. The vision is clear: a green economy that lifts up everyone. It's more than just an environmental cause—it's our pledge to a future where every voice carries weight, every individual has significance, and collective prosperity becomes a shared reality.

JOSEPH KUNKEL, a citizen of the Northern Cheyenne Nation, is a community designer and educator focused on sustainable development practices for Indigenous communities. As a Principal at MASS Design Group, Joseph directs the Sustainable Native Communities Design Lab in O'ghe P'oghe (Santa Fe, New Mexico).

BRIDGING COMMUNITY INVESTMENT AND RESILIENCE IN THE COMMUNITY REINVESTMENT ACT

Jesse M. Keenan, *Tulane University*

Elizabeth Mattiuzzi, *Federal Reserve Bank of San Francisco*

Dontá T. Council, *Federal Reserve Bank of Atlanta*

The Community Reinvestment Act (CRA) is an important catalyst for investments in communities. Low-to-moderate income (LMI) communities often face a great deal of financial and personal stress from challenges associated with the access and affordability of education, healthcare, and housing, among other socioeconomic stressors.¹ The impacts of disasters and extreme weather represent not only an immediate risk to life, property, and prosperity, but they also are an additional stressor for American households and communities. Extreme weather and climate change impacts are already disproportionately affecting LMI communities through the increased costs of financial products, commodities, food, and housing.² Despite these challenges, climate resilience has only recently become a theme of institutional community investment strategies.

1 Board of Governors of the Federal Reserve, “Report on the Economic Well-Being of U.S. Households in 2018-2019.” (Washington, DC: 2019). Available at www.federalreserve.gov/publications/2019-economic-well-being-of-us-households-in-2018-dealing-with-unexpected-expenses.htm.

2 A. R. Crimmins et al., “Fifth National Climate Assessment.” (Washington, DC: U.S. Global Change Research Program, 2023). Available at doi: 10.7930/NCA5.2023.

Over the past decade, public programs have moved from a largely singular focus on disasters and post-disaster recovery to risk reduction and resilience. Cycles of disaster³ and cycles of poverty and social vulnerability have coincided in time and space with a greater occurrence of extreme weather events, many of which have scientific attribution to climate change.⁴ Long-standing federal programs, such as the Hazard Mitigation Grant Program, that advance pre-disaster investments provide robust empirical support for the benefits of reducing risk and promoting community resilience.⁵ In this context, frames associated with the shocks of disasters and post-disaster recovery have been expanded to include pre-disaster preparedness and community resilience as well.⁶

The CRA “was enacted to help promote credit flows to neighborhoods that had historically been disinvested, in that less credit was flowing into them relative to the level of deposits associated with their residents.”⁷ The purpose of the CRA is “to ensure that banks meet the lending needs of people and places” where they take deposits “...Bank regulators consider this in the approval process for bank mergers and acquisitions, as well as for bank branching requests. Banks are encouraged to engage with community stakeholders to identify and fulfill their credit needs in order to strengthen the links between bank activity, profitability and community development.”⁸

Recent regulatory updates to the CRA carry forward this expansion of themes—from post-disaster recovery to pre-disaster preparedness—by recognizing bank activities in qualified place-based communities, including

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- 3 J. Alfredo Gómez, “Climate Change: Opportunities to Reduce Federal Fiscal Exposure.” (Washington, DC: US Government Accountability Office, 2019). Available at www.gao.gov/assets/700/699605.pdf.
 - 4 S. Hallegatte et al., “From poverty to disaster and back: A review of the literature,” *Economics of Disasters and Climate Change* 4 (2020): 223-247.; F. Cappelli, V. Costantini, and D. Consoli, “The trap of climate change-induced ‘natural’ disasters and inequality,” *Global Environmental Change* 70 (2021): 102329.
 - 5 H. Ji and D. Lee, “Disaster risk reduction, community resilience, and policy effectiveness: The case of the Hazard Mitigation Grant Program in the United States,” *Disasters* 45 (2) (2021): 378-402.
 - 6 E. H. Walpole, J. Loerzel, and M. Dillard, “A Review of Community Resilience Frameworks and Assessment Tools: An Annotated Bibliography.” (Washington, DC: National Institute for Standards and Technology, 2021).
 - 7 H. Lee and R. Bostic, “Bank adaptation to neighborhood change: Mortgage lending and the Community Reinvestment Act,” *Journal of Urban Economics* 116 (2020): 103211.
 - 8 S. Wachter and L. Ding, “The Past, Present, and Future of the Community Reinvestment Act,” *Housing Policy Debate* 30 (1) (2020): 1-3.

risk reduction and other interventions that promote community resilience.⁹ Formally referenced as “disaster preparedness and weather resiliency” (DP&WR), this category recognizes a range of investments in targeted census tracts and Native Land Areas that seek to “assist individuals and communities to prepare for, adapt to, and withstand natural disasters or weather-related risks or disasters.”¹⁰ For the purpose of discussion, we will refer to the regulatory language as the “Resiliency Category” and the activities it encompasses as “DP&WR activities.” The scope of this new regulation is such that a broad array of loans, services, and investments in affordable housing, gray and green infrastructure, landscapes, and community facilities are qualifying activities.

MODERNIZING THE CRA

In October 2023, the three U.S. banking regulatory agencies—the Board of Governors of the Federal Reserve System (FRS), the Office of the Comptroller of the Currency (OCC) of the U.S. Treasury Department, and the Federal Deposit Insurance Corporation (FDIC) (hereafter, the Agencies)—released a revised regulation pertaining to their statutory authority to implement the Community Reinvestment Act (CRA) of 1977.¹¹ These new regulations were the culmination of a multi-year rulemaking process, with a comment period that reviewed and considered hundreds of comment letters from depository institutions, community development organizations, and others impacted by the regulations.¹² The rulemaking process sought to modernize the regulations in response to changes to the banking system, such as online banking, that had occurred since the last major revision to the regulations in 1995. Additionally, the process sought to integrate the regulations with guidance that the

9 J.M. Keenan and E. Mattiuzzi, “Climate Adaptation Investment and the Community Reinvestment Act.” (San Francisco, CA: Federal Reserve Bank of San Francisco, 2019). Available at doi:10.24148/cdrb2019-05.

10 U.S. Department of the Treasury, Office of the Comptroller of the Currency (OCC)[12 CFR Part 25], Board of Governors of the Federal Reserve System (FRS)[12 CFR Part 228], and the Federal Deposit Insurance Corporation (FDIC)[12 CFR Part 345], *Community Reinvestment Act* (October 24, 2023) [See § __.13(i) Disaster Preparedness and Weather Resiliency] p. 258). Available at www.federalreserve.gov/aboutthefed/boardmeetings/files/frn-cra-20231024.pdf.

11 OCC, FRS, and FDIC, *Community Reinvestment Act*.

12 Federal Reserve System 12 CFR Part 228, “Community Reinvestment Act,” *Federal Register* 85 (202) (2020). Available at www.govinfo.gov/content/pkg/FR-2020-10-19/pdf/2020-21227.pdf.

Agencies had provided through the Interagency Questions and Answers (Q&As) about the CRA in the years since the previous revision.

Among the changes that the agencies made to the CRA was a new definition of community development (CD) to apply to community development loans, grants, investments, and services under the CD financing and CD services performance tests.¹³ The new CD definition includes an expanded list of CD activities and new definitions of those activities.¹⁴ This was partly in response to calls from financial institutions for greater clarity about what activities would or could receive CRA consideration. The Agencies further stated that they would release an illustrative, non-exhaustive list of examples of activities that would be eligible for consideration, and that they would create a process for financial institutions to receive feedback on proposed activities before they submit them for consideration.¹⁵

The final regulations include a list of 11 community development activities, six of which are “place-based activities.”¹⁶ In short, place-based activities are those that “benefit or serve” residents, including LMI individuals, in targeted geographic areas.¹⁷ The 11 categories revise definitions and add new categories to the previous four community development categories of affordable housing, community services, economic development, and revitalization and stabilization. Figure 1 outlines the new place-based CD activities.

Disaster Recovery

The new regulation elevates disaster recovery from a subset of revitalization and stabilization to its own CD activity category, “recovery of designated disaster areas,” and it drops the previous language outlined in the Q&As that required disaster recovery activities to be designed to attract or retain residents. For the disaster recovery areas place-based category, the target geography remains counties with federal Major

13 OCC, FRS, and FDIC, *Community Reinvestment Act*, Id., § __.12, p. 59.

14 Id., § __.13, p. 122.

15 Id., § __.14, p. 290.

16 Id., § __.13, p. 122.

17 Id. § __.13(e), (f), (g), (h), (i), and (j), p. 215-219.

Figure 1. List of New Place-Based Community Development Activities

CATEGORY	REGULATORY CITATION
REVITALIZATION OR STABILIZATION	§ __.13(e)
ESSENTIAL COMMUNITY FACILITIES	§ __.13(f)
ESSENTIAL COMMUNITY INFRASTRUCTURE	§ __.13(g)
RECOVERY OF DESIGNATED DISASTER AREAS	§ __.13(h)
DISASTER PREPAREDNESS AND WEATHER RESILIENCY	§ __.13(i)
QUALIFYING ACTIVITIES IN NATIVE LAND AREAS	§ __.13(k)

Disaster Declaration.¹⁸ The timeframe for post-disaster CRA consideration remains 36 months after the declaration, unless the Agencies extend the timeframe, and includes activities that are initiated within the timeframe but may continue beyond it.¹⁹ Most importantly, the CD activities must be “undertaken in conjunction with a disaster plan, program, or initiative of a Federal, State, local, or tribal government or a mission-driven nonprofit organization ... that includes a focus on benefiting or serving the designated disaster area.”²⁰

Disaster Preparedness and Weather Resiliency

As noted above, the new CRA regulations include a new place-based CD activity category for disaster preparedness and weather resiliency, or DP&WR. The final rule defines DP&WR activities as those that “assist individuals and communities to prepare for, adapt to, and withstand natural disasters or weather-related risks or disasters.”²¹ The Agencies noted the many factors discussed in the introduction to this chapter that make natural disasters and extreme weather particularly harmful for LMI communities in their discussion of the Resiliency Category.²²

18 Id., § __.13(h)(1), p. 251-252.

19 Id., § __.13(h)(2), p. 253.

20 Id., § __.13(h)(i), p. 249-254.

21 Id., § __.13(i), p. 1083.

22 Id., p. 258-259.

The Resiliency Category follows the three requirements specific to place-based categories (outlined in Figure 1). Activities must (i) benefit or serve individuals in the targeted geographic areas, including LMI individuals; (ii) not “directly result in forced or involuntary relocation” of residents; and, (iii) be conducted in conjunction with a “plan, program, or initiative of a Federal, State, local, tribal government or mission-driven nonprofit organization that focuses on benefitting or serving targeted census tracts.”²³

Targeted census tracts for the Resiliency Category include LMI census tracts in metropolitan statistical areas (MSAs) or distressed/underserved middle-income nonmetropolitan census tracts, a list of which is published annually by the Federal Financial Institutions Examination Council (FFIEC).²⁴ It should be noted that the new place-based CD category for activities on Native Land Areas encompasses DP&WR activities in that geography, as well. Furthermore, the new (non-place-based) CD category for activities with a minority/women’s depository institution (MDI/WDI), low-income credit union (LICU), or community development financial institution (CDFI) could encompass DP&WR activities.

Disaster Preparedness and Weather Resiliency Activities

As outlined in Figure 2, the Agencies provide a non-exhaustive example list of DP&WR activities in the Supplementary Information.²⁵ They note that energy-efficiency activities are included in the Resiliency Category, but that they could also be part of other categories. For example, weatherization to promote energy efficiency could be part of the CD categories for affordable housing or essential community facilities, but such an activity may not be counted more than once for consideration for CRA credit. The Agencies also note that utility scale projects are not included in the Resiliency Category, but this does not preclude projects that may involve utilities, such as community solar and microgrid projects, which are included in the list of examples outlined in Figure 2.

The Agencies also declined to specifically incorporate investments associated with transitioning to clean energy generally. In the case of both utility scale projects and clean energy, the Agencies expressed concern as to the

²³ Id., § __.13(i), p. 252, 263.

²⁴ Id., § __.13(i), p. 217.

²⁵ Id., § __.13(h), p. 257.

Figure 2. Illustrative Non-Exhaustive List of Disaster Preparedness and Weather Resiliency Activities

EXAMPLE FINANCING & DEVELOPING ACTIVITIES	EXAMPLE BENEFICIARIES
FLOOD CONTROL SYSTEMS	Flood prone LMI, underserved or distressed nonmetropolitan middle-income census tracts.
MULTIFAMILY HOUSING WEATHERIZATION	Residents of housing at-risk to future disasters and weather-related events.
GREENSPACE AND HEAT MITIGATING LANDSCAPES	Urban area residents at-risk to urban heat island.
COMMUNITY SOLAR PROJECTS	Utility cost-burdened households.
MICROGRID AND BATTERY PROJECTS	Utility cost-burdened households and households at-risk to power disruptions from weather-related events.
COMMUNITY CENTERS FOR HEATING AND COOLING	Residents at-risk to future disasters and weather-related events.
ASSISTANCE TO SMALL FARMS FOR DROUGHT ADAPTATION	Farmers and farming communities at-risk or currently undergoing extreme drought conditions.

proximate and direct benefits that would arise in the subject geographies from such investments.²⁶ However, the Agencies did not argue that projects with co-benefits that may arise from climate mitigation and adaptation investments that would otherwise fall under a DP&WR categorical investment would be excluded. To the contrary, a number of the examples in Figure 2 offer these co-benefits. With all prospective DP&WR investments, loans, and services, the new rule places the focus on benefiting or serving residents of targeted geographic areas, including LMI individuals.

EXISTING CDFI DISASTER AND RESILIENCE ACTIVITIES

In the new CRA rule, the Agencies contemplate the future publication of further guidance on prospective DP&WR activities and investments. The Supplementary Information to these regulations appears to open the door to a variety of pathways for qualifying activities, including grants, non-financial resource support, loans, and other financing

²⁶ Id., § __.13(i), p. 261.

instruments. Likewise, there is likely to be a diverse range of participating stakeholders from consumers to project developers. Indeed, the requirement that DP&WR activities be directed in conjunction with a government or mission-driven nonprofit organization plan, program, or initiative is likely to catalyze a variety of allied planning activities that can engage public, private, and civic stakeholders. Existing and proposed examples of activities that could align with the Resiliency Category include a county post-disaster plan with resilience hubs,²⁷ a public-private partnership to install energy-efficient heating and cooling in LMI homes in conjunction with a city climate action plan, a utility on-bill repayment program for energy-efficient appliances for LMI households in conjunction with a state program, and CDFI solar lending in conjunction with a nonprofit solar initiative.²⁸

Among CDFIs, there is emerging interest in incorporating climate and weather-related issues into the existing missions of the community development field. In a 2019 survey of CDFIs (n=259) conducted by the Federal Reserve System,²⁹ nearly a quarter of respondents (22 percent) reported having engaged in activities related to natural disaster relief or climate resilience.³⁰ Among these respondents, 14 percent report having engaged in a natural disaster initiative; 5 percent engaged in a climate resilience initiative; and 9 percent engaged in both types of initiatives. CDFI respondents describe myriad strategies that include financial products, outreach, and education, as well as technical assistance to individuals, nonprofits, and small businesses.

27 E. Mattiuzzi and B. McElvain, “‘Bouncing Forward’ from Disasters on Hawaii’s Big Island: Lessons for Equitable Recovery and Future Resilience.” (San Francisco, CA: Federal Reserve Bank of San Francisco, 2022). Available at doi: 10.24148/cdrb2022-05.

28 E. Mattiuzzi and S. Simms, “Recent Innovations in Reducing Home Energy Costs and Improving Resilience for Low- and Moderate-Income Renters and Homeowners.” (San Francisco, CA): Federal Reserve Bank of San Francisco, 2023). Available at doi: 10.24148/cdrb2023-4.

29 E. W. Corcoran, “Community Development Financial Institutions (CDFIs) by the Numbers: Federal Reserve CDFI Survey Key Findings Chart Book.” (Richmond: Federal Reserve Bank of Richmond, 2019). Available at www.richmondfed.org/-/media/RichmondFedOrg/community_development/resource_centers/cdfi/pdf/CDFI_report_2019.pdf.

30 E. W. Corcoran, “CDFIs by the Numbers,” unpublished survey results.

Drawing from the frameworks found in the resilience and disaster risk management literatures,³¹ the qualitative responses to the survey question (“[b]riefly describe the climate resilience and/or natural disaster relief initiative(s) that your CDFI has funded”) were coded and initiatives were identified within four core areas: (i) short-term response; (ii) long-term recovery; (iii) preparedness; and (iv) community resilience. Abbreviated definitions and examples from the survey are summarized in Figure 3, followed by a descriptive account of CDFI activities related to DP&WR.

Investment in Short-Term Disaster Response

The short-term response phase typically lasts from the immediate aftermath of a disaster to the point where basic needs are met, essential services are restored, and the initial stabilization of the situation is achieved. This phase typically ranges from a few days to several weeks. Efforts promoting resilience in communities have primarily been focused within a post-disaster context. CDFIs report responding to a variety of weather-related shocks and stressors, with hurricane recovery being the most mentioned type of disaster relief initiative, followed by flooding, wildfires, earthquakes, drought, volcanic eruption, and mudslides.³² In the immediate aftermath of disasters, CDFIs have offered emergency relief loans to help individuals and businesses cover essential expenses and address urgent needs. For example, following a major mudslide in 2010, one CDFI responded that “after discovering no other assistance available for small businesses” they offered up to \$15,000 per borrower to help business owners get through the several months it took to rebuild a damaged roadway.³³ Additionally, one CDFI established an emergency relief fund to support businesses in the North Carolina region after a tornado “ravaged the city’s most impoverished community” in 2018.

31 U.S. Department of Homeland Security, “National Disaster Recovery Framework. 2nd Edition.” (Washington, DC: U.S. Department of Homeland Security, 2016). Available at www.fema.gov/sites/default/files/2020-06/national_disaster_recovery_framework_2nd.pdf; J. M. Keenan, *Climate Adaptation Finance and Investment in California* (London, U.K.: Routledge, 2018.); M. E. Huq et al., “Climate vulnerability and resilience in the global south: human adaptations for sustainable futures.” In *Resilience for Disaster Management: Opportunities and Challenges*, edited by G.M.M Alam et al., (Cham, CH: Springer, 2021), 425-442; A. R. Crimmins et al., “Fifth National Climate Assessment: Glossary” (Washington, DC: U.S. Global Change Research Program, 2023). Available at doi: 10.7930/NCA5.2023.

32 E. W. Corcoran, “CDFIs by the Numbers,” unpublished survey results.

33 Ibid., unpublished survey results.

Figure 3. Distinguishing Recovery, Preparedness, and Community Resilience Activities: Examples from the Fed System CDFI Survey

PHASE	DESCRIPTION	EXAMPLES
SHORT-TERM RESPONSE	The immediate response to a disaster, focused on saving lives, meeting essential humanitarian needs, and stabilizing the situation.	Emergency relief loans to individuals and businesses. Financial support for disaster relief organizations. Housing Reconstruction Efforts.
LONG-TERM RECOVERY	The period following a disaster, focused on restoring infrastructure, rebuilding communities, promoting economic recovery, and enhancing resilience.	Disaster recovery loans to businesses. Financial Assistance for Homeowners. Community-based initiatives for reconstruction and revitalization.
PREPAREDNESS	Ongoing efforts to anticipate, prepare for, and respond to future disasters.	Disaster education and training. Engineering resilience measures for buildings and infrastructure.
COMMUNITY RESILIENCE	The ability of communities to withstand and recover and learn from past cumulative or compounding disasters to strengthen future response and recovery efforts. This can include, but is not limited to, physical and psychological health of the population, social and economic equity and well-being of the community, effective risk communication, integration of organizations (governmental and nongovernmental) in planning, response, and recovery.	Financing renewable energy and promoting energy efficiency. Addressing drought conditions. Loans for hazard mitigation. Tornado shelter construction. Disasters education and training.

Sources: Corcoran (2019); DHS (2016); Keenan (2018); Huq et al. (2021); USGCRP (2023)

Bridge loans have also been instrumental in assisting businesses awaiting assistance from the Federal Emergency Management Agency (FEMA) or insurance claims. These loans provide liquidity to businesses, preventing prolonged closures, and enabling them to resume operations quickly. For example, CDFIs provided bridge loans to small businesses affected by hurricanes, helping them endure the financial strain of protracted downtime. After Hurricane Sandy, one CDFI serving the New York region provided bridge loans to Long Island residents—a region estimated to have more than 100,000 damaged homes.³⁴ For homeowners facing

³⁴ Ibid., unpublished survey results.

disaster-related damage, CDFIs offered home repair and rehabilitation loans to restore their homes to a habitable condition. After Hurricanes Irma and Maria in 2017, one CDFI provided emergency loans to nonprofit housing organizations across the Gulf states to support housing recovery and stability. Among financial-related initiatives, respondents also mention providing grant support to organizations engaged in disaster relief activities, such as distributing food, collecting debris, and facilitating reconstruction.

Investment in Long-Term Disaster Recovery

The long-term recovery phase refers to the period from the initial stabilization of the situation to the full restoration of pre-disaster conditions and/or improving resilience beyond the pre-disaster state.³⁵ In other words, the recovery phase includes actions that assist in restoring or improving community functions and services after a disaster. This phase focuses on repairing infrastructure rebuilding communities, and promoting economic recovery, and can extend for months, years, or even decades, depending on the complexity of the disaster and the extent of damage. One of the primary focuses of CDFIs in long-term recovery is on economic revitalization through the mobilization of financial resources. They may provide disaster recovery loans to small businesses, enabling them to replace lost inventory, equipment, and infrastructure and resume operations. These loans play a vital role in preventing business closures and job losses, which often contribute to the overall economic recovery of the affected area. Furthermore, many small businesses lack insurance coverage to cover physical losses or business interruption, which researchers have suggested could be bundled with other CDFI loan products.³⁶

Investment in Disaster Preparedness and Community Resilience

In the context of DP&WR, one key existing area of focus among CDFIs and other mission-driven financial institutions is the financing of renewable energy production and energy-efficiency investments for residential

35 E. Mattiuzzi and B. McElvain, “Bouncing Forward.”

36 J. Battisto et al., “2017 Small Business Credit Survey: Report on Disaster-Affected Firms.” (Dallas, New York, Richmond, San Francisco: Federal Reserve Banks of Dallas, New York, Richmond, and San Francisco, 2018). Available at <https://www.newyorkfed.org/medialibrary/media/smallbusiness/2017/SBCS-Report-on-Disaster-Affected-Firms.pdf>; X. You et al. “Linking Inclusive Finance with Inclusive Insurance in the United States Through Community Development Financial Institutions.” (New York, NY: Environmental Defense Fund, 2022). Available at https://www.edf.org/sites/default/files/documents/EDF_CDFI_Report_2022.pdf.

and commercial retrofits and new construction.³⁷ These investments not only reduce operating costs but also support resilience through the provision of backup power and passive survivability of structures in a disaster.³⁸ For instance, backup power can prevent the loss of food contents in a refrigerator after a power outage, which could otherwise lead to food insecurity for many households.³⁹ By the same token, energy efficiency can help a building maintain a safe indoor temperature, which is particularly important for the life safety of elderly residents.⁴⁰ CDFIs also provided financial support for tornado shelter construction and disaster education and training to empower communities to better anticipate and manage risks in the built environment.⁴¹

These investments represent both a proactive and reactive approach to addressing resilience challenges, but they also offer reciprocal co-benefits for minimizing utility cost-burden and housing instability for households.⁴² An “energy burden” is defined as the percentage of household income spent on energy costs, including electricity, natural gas, and other home heating fuels.⁴³ It is a measure of a household’s financial strain from energy expenses. According to the U.S. Department of Energy, the national average energy burden for low-income households is 8.6 percent, which is three times higher than for non-low-income households.⁴⁴ Lower income energy-burdened households may face challenges to housing affordability and stability, as the frequency of higher temperature days

37 E.K. Chu et al., “Ch. 12. Built environment, urban systems, and cities.” In *Fifth National Climate Assessment*, edited by A.R. Crimmins et al., (Washington, DC: U.S. Global Change Research Program, 2023). Available at <https://doi.org/10.7930/NCA5.2023.CH12>; E. Mattiuzzi and S. Simms, “Recent Innovations.”

38 H. W. Samuelson, A. Baniassadi, and P. I. Gonzalez, “Beyond energy savings: Investigating the co-benefits of heat resilient architecture,” *Energy* 204 (2020): 117886; K. Sun et al., “Passive cooling designs to improve heat resilience of homes in underserved and vulnerable communities,” *Energy and Buildings* 252 (2021): 111383.

39 A. A Hecht et al., “Urban food supply chain resilience for crises threatening food security: a qualitative study,” *Journal of the Academy of Nutrition and Dietetics* 119 (2) (2019): 211-224.

40 A. Baniassadi et al., “Passive survivability of buildings under changing urban climates across eight US cities,” *Environmental Research Letters* 14 (7) (2019): 074028.

41 E. W. Corcoran, “CDFIs by the Numbers,” unpublished survey results.

42 C. E. Kontokosta, V. J. Reina, and B. Bonczak, “Energy cost burdens for low-income and minority households: Evidence from energy benchmarking and audit data in five US cities,” *Journal of the American Planning Association* 86 (1) (2020): 89-105.

43 US Department of Energy, Office of State and Community Energy Programs, *Low-Income Community Energy Solution*, available at www.energy.gov/scep/slsc/low-income-community-energy-solutions.

44 Ibid.

increases, with potential consequences including displacement or property abandonment.⁴⁵

Several CDFI respondents described efforts to address long-term drought conditions that impact water quality and access for residents. One respondent servicing California highlighted a partnership focused on drilling wells in drought-stricken areas. Similarly, another respondent shared loan resources for businesses building ground wells to support water desalination. High water salinity, also known as saltwater intrusion, is the gradual infiltration of saltwater into freshwater bodies, such as rivers, lakes, and groundwater.⁴⁶ This phenomenon can have a significant impact on residents and communities, including compromising drinking water quality, corroding infrastructure (including pipes), and affecting agricultural irrigation. All these water-related impacts exacerbate existing challenges related to community displacement.⁴⁷

By providing financial assistance, technical expertise, and community outreach, CDFIs are helping individuals, businesses, and nonprofits to rebuild their lives and livelihoods in the aftermath of disaster. By supporting their communities in managing the risks associated with weather-related disasters and stresses, some CDFIs are proactively providing assistance through diverse DP&WR initiatives. For many CDFIs, this is an emerging role that creates opportunities for new training and partnerships that expand their capacity to incorporate resilience into their lending.⁴⁸ While CDFIs are not the only conduit for DP&WR investments, they represent a rich field of study for existing investments that may be scaled by a variety of stakeholders.

45 M. Graff et al., “Which households are energy insecure? An empirical analysis of race, housing conditions, and energy burdens in the United States,” *Energy Research & Social Science* 79 (2021): 102144.

46 J. Panthi et al., “Saltwater intrusion into coastal aquifers in the contiguous United States—a systematic review of investigation approaches and monitoring networks,” *Science of the Total Environment* 836 (2022): 155641.

47 J. Stoler et al., “The role of water in environmental migration,” *Wiley Interdisciplinary Reviews: Water* 9 (3) (2022): e1584.

48 E. Mattiuzzi and S. Simms, “Recent Innovations.”

PARTNERSHIPS TO CONNECT INVESTMENTS TO RESILIENCE

The CRA's DP&WR category reflects the emergence of practices among community development stakeholders to address the shocks and stresses of disasters and extreme weather. Out of necessity, CDFIs and others have found themselves not only supporting disaster recovery but also looking for areas of investment that support preparedness for when the next disaster arises. By expanding from post-disaster recovery to pre-disaster preparedness, the new CRA rule has opened the door to a wide variety of partnerships and activities that support community resilience over the long-term.

As highlighted in Figures 2 and 3, there are a range of potential loans, investments, grants, and services that might support DP&WR activities under the new CRA rule. However, these are just where the conversation starts. There is an opportunity for communities and stakeholders to learn from each other in terms of what's possible. For example, a Memphis-based program on block wellness supports the removal of dead trees that are at-risk of being blown down in a storm.⁴⁹ This not only mitigates a risk to life safety and property damage, it also significantly reduces the insurance costs of LMI households, which often lack sufficient financial resources to pay for tree removal and disposal. But this isn't the end of the story. Through the lens of community resilience, there is an opportunity to replace the dead trees with tree species that are wind resistant and that provide an urban canopy, which can help reduce the effects of extreme heat and alleviate urban heat islands. Here, one investment offers the co-benefits of reducing housing costs and improving public health.

This example highlights how the updates to the CRA regulations may provide the foundation for similar innovations that turn a risk into an opportunity to advance community resilience. Going forward, communities can plan for DP&WR activities and work with a variety of stakeholders to invest in solutions. Future innovations offer great promise for bridging community investment and resilience to help communities prepare for and adapt to the uncertainties of a changing climate.

49 Memphis Community Redevelopment Agency, *Block Wellness*, available at <https://cramemphis.org/block-wellness/>.

Disclaimer: The views expressed in this chapter do not necessarily represent the views of the Federal Reserve Bank of San Francisco, the Federal Reserve Bank of Atlanta, the Federal Reserve System, or the Board of Governors of the Federal Reserve. This chapter should not be considered guidance on the Community Reinvestment Act (CRA). As of the publication of this chapter, relevant official guidance on the new rule is forthcoming.

JESSE M. KEENAN is the Favrot II Associate Professor of Sustainable Real Estate and Urban Planning within the faculty of the School of Architecture at Tulane University. Jesse's research focuses on the intersection of climate change adaptation and the built environment, including aspects of design, engineering, regulation, planning, and financing.

ELIZABETH MATTIUZZI is a senior researcher in the community development department at the Federal Reserve Bank of San Francisco.

DONTÁ COUNCIL is an adviser on stressors and shocks to low-to-moderate-income communities on the Community and Economic Development (CED) team at the Federal Reserve Bank of Atlanta.

INCREASING ACCESS TO DISASTER INSURANCE IN THE FACE OF GROWING CLIMATE RISKS

Carolyn Kousky and Karina French, *Environmental Defense Fund*

“The U.S. was hit with more billion-dollar disasters in 2023 than any other year on record, highlighting the increasing risks from our changing climate,” said National Oceanic and Atmospheric Administration Director Deke Arndt.¹

Climate change is increasing the frequency and severity of natural hazards. Recovering from these events can be incredibly costly for households. In addition to direct damage to homes, vehicles, and other property, households face a range of unexpected costs, such as evacuation, temporary housing, or cleaning up of debris. Households may also simultaneously face a loss of income if their job is interrupted. Most families do not have the resources to fully recover from the costs of natural hazards on their own. Insurance is designed to fill that gap by smoothing costs over time and pooling risks across households. But as climate change increases the risk of natural hazards, making

1 National Oceanic and Atmospheric Administration, “U.S. struck with historic number of billion-dollar disasters in 2023: Last year was the nation’s 5th-warmest year on record.” Available at: <https://www.noaa.gov/news/us-struck-with-historic-number-of-billion-dollar-disasters-in-2023> [noaa.gov].

insurance protection more important than ever, insurance is failing those who need protection the most.

The negative financial impact of disasters caused by natural hazards disproportionately harms people with lower incomes.² These households are less likely to have liquid savings and have a more difficult time accessing post-disaster credit. Federal aid is uncertain, insufficient, and delayed. Lower-income households also typically cannot afford insurance. Their lack of recovery resources can lead to a cascade of financial consequences, including declining credit scores and mortgage performance and debt servicing.³ Further, lack of insurance can widen inequality post-disaster, since without insurance, households struggle with recovery and fall farther behind.⁴

We know, however, that having insurance greatly improves a family's financial recovery from disaster. Insurance provides greater sums than aid or charity: from 2002 to 2022, the Federal Emergency Management Agency (FEMA) disbursed disaster assistance in amounts averaging just \$4,270, while the average flood insurance claim was over \$41,000 (in 2022 USD).⁵ Perhaps unsurprisingly, then, insured households are more likely to rebuild, and experience fewer financial burdens and unmet needs.⁶ Being insured protects them from having to take on additional debt or deplete savings to cover disaster-related expenses. Finally, communities with higher disaster insurance take-up enjoy positive economic spillovers in the local economy.⁷

While rising climate risks make disaster insurance vital to households' financial resiliency, these risks are also straining the ability of insurers

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- 2 Stephane Hallegatte et al., "From Poverty to Disaster and Back: A Review of the Literature," *Economics of Disasters and Climate Change* 4 (1) (2020): 223–247.
 - 3 Caroline Ratcliffe et al., "From Bad to Worse: Natural Disasters and Financial Health," *Journal of Housing Research*, 29 (sup1) (2020): S25–S53.
 - 4 Anna Rhodes and Max Besbris, *Soaking the Middle Class: Suburban Inequality and Recovery from Disaster* (New York: Russell Sage Foundation, 2022).
 - 5 Calculated by authors from OpenFEMA data.
 - 6 Jennifer Turnham et al., "Housing Recovery on the Gulf Coast, Phase II: Results of Property Owner Survey in Louisiana, Mississippi, and Texas." (U.S. Department of Housing and Urban Development, Office of Policy Development and Research, August 2011); Xuesong You and Carolyn Kousky, "Improving Household and Community Disaster Recovery: Evidence on the Role of Insurance." (SSRN, February 17, 2023).
 - 7 You and Kousky, "Improving Household and Community Disaster Recovery."

to provide protection. Due to challenges insuring disasters, which could bankrupt an insurance firm that does not have adequate capacity to pay claims, disaster insurance is more expensive than non-disaster insurance, and insurers may be forced to limit such coverage altogether.⁸ Public-sector disaster insurance programs, often created to help provide greater access to disaster coverage at affordable prices, have themselves struggled to balance affordability and fiscal soundness.

Amid the growing risks, how can we ensure all households have the disaster insurance they need at a price they can afford? That is the question we explore in this chapter. We first provide background on disaster insurance in the United States. We then turn to discussing climate stress and other dynamics in insurance markets that can make disaster coverage inaccessible or unaffordable for certain residents. Finally, we propose policy reforms to help ensure wider access to financial protection against climate extremes.

BACKGROUND: THE CHALLENGE OF INSURING AGAINST DISASTERS

Unfortunately for consumers, there is no single insurance policy they can purchase to cover the financial costs of all natural hazards. The vast majority of homeowners have standard homeowners insurance, which is required by lenders for a mortgage. Homeowners policies cover costs to repair or replace homes and possessions lost or damaged from a wide range of possible incidents, including burglary, hail, fire, strong winds, and tornadoes. For climate-related extremes, though, coverage may be limited.

Homeowners policies exclude certain types of perils all together, such as flooding. And they may cover certain damages, for example from sewer backups or mold, only if policyholders pay more to add coverage. Homeowners policies will have a deductible (the share of losses the policyholder must first pay before insurance will pay), but it can be much higher for natural catastrophes. For example, in the Southeast, hurricane deductibles are typically much higher than the standard deductible and

8 Carolyn Kousky, *Understanding Disaster Insurance: New Tools for a More Resilient Future* (Washington, DC: Island Press, 2022).

apply to any damage caused by a named storm. Policies may also include “sub-limits” that limit payout for certain types of losses, for example, from burst pipes or hail damage to a roof. Often buried in the fine print, these restrictions on coverage can surprise consumers who find they have insufficient funds when they go to rebuild post-disaster.

Why do policies have all these restrictions on payouts? That has to do with the challenges of insuring against disasters.⁹ The benefits of insurance in general derive from pooling independent risks—risks where, when one person experiences a loss, it doesn’t make it more likely others will as well. This is not the case with disasters: in a hurricane or wildfire, many homes are affected at the same time, often with very high levels of damage. To prepare for the enormous payouts that might be required in a disaster, insurers must hold reserves, purchase their own type of insurance (reinsurance), and make use of other risk-transfer tools, all of which raise their costs. In turn, insurers pass on these higher costs to policyholders, raising premiums.

When the risk of disaster losses is too high for insurers to comfortably manage at a price consumers can pay, they will start to restrict the coverage they provide and, in the extreme, exit markets. This happened more than 50 years ago when the private sector, concerned about correlated and catastrophic losses, stopped offering flood insurance as well as adverse selection (wherein only the riskiest property owners choose to insure). In response, the federal government has been providing flood insurance to participating communities through the National Flood Insurance Program (NFIP). While the NFIP has made flood insurance widely available, it has struggled to ensure it is also widely affordable.¹⁰ Public insurance programs have also been established in every hurricane-prone state to help provide homeowners insurance or wind-only policies to households that cannot find (or cannot afford) coverage in the private market. California and Colorado have state programs that are providing increasing amounts of wildfire coverage.

9 Ibid

10 Early in the NFIP’s history, Congress made purchase of a flood insurance policy mandatory for those with a loan from a federally backed or regulated lender and living in areas FEMA mapped as having a 1 percent annual chance of flooding, or about 25 percent chance of flooding over the course of a 30-year mortgage.

CLIMATE STRESS IN DISASTER INSURANCE MARKETS

Several regions that face escalating damages from climate extremes are now experiencing increased stress in property insurance markets. In Florida and Louisiana, for example, recent storms have pushed dozens of insurers into bankruptcy. These states and California have also seen insurers exit the market or restrict coverage. And many places, including not just these states but also Arizona, Texas, and Colorado, are seeing rising premiums. These climate-related trends have been exacerbated by inflation-driven hikes in the cost of rebuilding, supply chain disruptions, higher borrowing costs, and legal challenges that are raising costs in certain states, notably Florida. Reinsurance is also becoming less available as reinsurance companies retreat from high-risk locations or raise prices. For example, in the spring of 2022, several global reinsurers all reduced the amount of capacity they provide to Florida.¹¹

As insurers pull back from certain markets due to increased climate risks, more households are turning to state-level public insurance programs.¹² For example, several insurers began to non-renew policies in California following devastating wildfires in 2017 and 2018; the trend continues, with Allstate and State Farm discontinuing issuance of new policies in California in 2022 and 2023 due to growing wildfire risk and inflation of construction costs. The state's public program, the Fair Access to Insurance Requirements (FAIR) plan, created decades ago to provide coverage in urban neighborhoods with few options, is now writing an increasing amount of wildfire insurance, having more than doubled its policyholders since 2018. In Florida, so many private insurers have left that the state wind insurance pool—Florida Citizens—is the largest property insurer in the state. As greater numbers of policyholders move to these programs, they, too, must grapple with the difficult economics of insuring against catastrophic risk that is only getting worse.

Disaster insurance trends are beginning to impact communities and local housing markets. Recent news reporting has highlighted that residents are considering relocating due to the challenges with insurance or are

11 Jason Woleben, "Florida property insurers wrestle with lower capacity, higher reinsurance costs," *S&P Global Market Intelligence*, May 26, 2022.

12 Carolyn Kousky, "Managing the Risk of Natural Catastrophes: The Role and Functioning of State Insurance Programs," *Review of Environmental Economics and Policy* 5 (1) (2011): 153–171.

concerned about impacts on their property values. With fewer resources to invest in risk reduction and to cover rising insurance costs, along with a history of underinvestment, lower-income communities will likely suffer disproportionately.

EXCLUSIONS AND INEQUITIES IN DISASTER INSURANCE MARKETS

Despite economic theory suggesting that less affluent households would buy more property insurance because they are less likely to be able to cover the full costs of damages, empirical investigations suggest the opposite: wealthier households buy more insurance.¹³ This finding is not surprising to disaster recovery advocates, who have long stressed that lack of available income, an opaque and complex insurance system, and lack of trust in insurers drive lower-income households away from purchasing insurance.

Insurance pricing reflects the combination of many drivers of the risk of claims payments, some of which are correlated with sociodemographic characteristics. Lower housing quality and lack of investments in building safety, for example, can be key drivers of loss, leading to higher insurance prices, but these can be more likely to affect low-income, Black, and Latino households, as they are more likely to live in unsafe or inadequate housing.¹⁴ Further, insurers can and do use factors such as credit scores to price insurance; research has shown that while this does predict the risk of claims filings, it also directly leads to higher insurance prices for Black, Latino, and low-income policyholders.¹⁵

The insurance market is also rife with procedural barriers that, in effect, curtail access. The lack of transparency and standardization of insurance contracts means some families may struggle to compare coverage offered

13 Michael J. Gropper and Camelia M. Kuhn, *Wealth and Insurance Choices: Evidence from US Households: NBER Working Paper 29069* (2011).

14 David E. Jacobs et al., “The Relationship of Housing and Population Health: A 30-Year Retrospective Analysis,” *Environmental Health Perspectives* 117 (4) (2009): 597–604; Jamie Raymond et al., “Inadequate and Unhealthy Housing, 2007 and 2009,” *CDC Health Disparities and Inequalities Report—United States*, 60 (2011): 21.

15 Federal Trade Commission, “Credit-Based Insurance Scores: Impacts on Consumers of Automobile Insurance.” (FTC, Bureau of Consumer Protection, 2007); Brent Kabler, “Insurance-based credit scores: Impact on minority and low income populations in Missouri,” *Journal of Insurance Regulation* 22 (3) (2004): 77–90.

by different policies and often miss restrictions and carve-outs.¹⁶ Since insurers have a financial incentive to limit payouts, getting claims fairly reviewed and paid may depend on lengthy and expensive negotiations or even litigation, a hardship particularly for under-resourced households.¹⁷ This may also explain observed racial differences in earthquake insurance payouts, for example.¹⁸

All this leads to a disaster insurance market that is more expensive and exclusionary, despite the increasingly important role it can play in managing financial shocks from climate change.

POLICY PROPOSALS FOR INCLUSIVE INSURANCE IN A DISASTER-PRONE WORLD

“Inclusive insurance” refers to the policies, programs, and products—across both the public and private sectors—that make appropriate, affordable insurance available to those who are unserved or underserved by the market.¹⁹ Current trends present a clear and pressing need to expand inclusivity, while also stabilizing climate-stressed insurance markets. We suggest policy reforms for the near term, medium term, and longer term.

Near-Term Policy Reform

Offering means-tested assistance for disaster insurance: The challenge that some households—often those most in need of insurance—cannot afford coverage has long been recognized when it comes to flood insurance. In response, a range of stakeholders have coalesced around the policy solution of a public program of means-tested assistance. FEMA and the National Academy of Sciences, for example, have explored designs for such a federal program.²⁰ It would provide premium support on a sliding

16 Daniel Schwarcz, “Transparently Opaque: Understanding the Lack of Transparency in Insurance Consumer Protection,” *UCLA Law Review* 61 (2014): 394.

17 Daniel Schwarcz, “Redesigning Consumer Dispute Resolution: A Case Study of the British and American Approaches to Insurance Claims Conflict,” *Tulane Law Review* 83 (2009): 735.

18 Xiao Lin, Mark J. Browne, and Annette Hofmann, “Race discrimination in the adjudication of claims: Evidence from earthquake insurance,” *Journal of Risk and Insurance* 89 (3) (2022): 553-580.

19 Carolyn Kousky and Karina French, “Inclusive Insurance for Climate-Related Disasters: A Roadmap for the United States” (Boston: Ceres, 2022).

20 FEMA, “An Affordability Framework for the National Flood Insurance Program.” (Department of Homeland Security, Federal Emergency Management Agency, April 17, 2018); National Research Council, “Affordability of National Flood Insurance Premiums: Report 1.” (Washington, DC: The National Academies Press, 2015).

scale based on household income, phasing out as income increases. Unlike prior discounts in the NFIP, which have been tied to the property, these would be tied to the individual. The program should be funded with taxpayer dollars, not cross-subsidies within the program. Analysts have already explored implementation details, including how to improve cost effectiveness and ease the process of qualifying households. Legislative language has been proposed many times in Congress. A federal NFIP affordability program should provide support to anyone qualifying who desires flood coverage, and, to improve communication of flood risk, require FEMA to inform consumers of the full risk-based cost, as well as the amount of their income-based discount.

While policy discussion in this area has focused on the NFIP, means-tested assistance could also be applied to other climate extremes at the state level. States could fund subsidies with general revenues or through an explicit tax on property and casualty policies, with the amount of the tax decreasing as income declines.²¹ For the lowest-income policyholders, the tax would not just decline to zero but become a rebate, reimbursing households to help them afford the premium. Designed this way, higher-income individuals would pay a bit more and those funds would be used to lower the cost of disaster insurance for lower-income households. More research would be needed to design a program that is cost effective and easy to navigate; design may also need to be adapted for renter and multi-family insurance policies.

Improving consumer protections: Despite perceptions to the contrary, the structure of “standard” homeowners insurance policies are increasingly heterogenous.²² Homeowners insurance policies do not all provide the same coverage, and far too often, consumers do not understand their policy’s coverage limitations, buried in small print, until they find themselves unable to meet the costs of rebuilding. Regulators could make this market more transparent by requiring minimum coverage standards in all homeowners insurance policies. This would allow consumers to more easily

21 Daniel Schreiber, “AI Doesn’t Do Solidarity,” *Medium*, March 15, 2021. Available at <https://dschreiber.medium.com/ai-doesnt-do-solidarity-ec1c80b839d>.

22 Daniel Schwarcz, “Reevaluating Standardized Insurance Policies,” *University of Chicago Law Review* 3 (4) (2011): 1263-87.

shop for policies, guaranteeing a baseline level of insurance while also maintaining the option for companies to offer more expansive products.

The claims process can also introduce procedural inequities when fair claims payout relies on time-consuming negotiations with the insurer, an adjuster prone to bias, or appeals that are required to receive supplemental payouts. Some of these challenges could be mitigated by making consumer claim advocacy resources widely and publicly available. One option, inspired by the Financial Ombudsman Service in the United Kingdom, is for states to create an independent, government office to assist with consumer complaints and resolution of consumer disputes with their insurers.²³

Medium-Term Policy Reform

Linking risk reduction and risk transfer: Insurance prices (unless distorted by government policy) are related to risk level: the higher the risk of a claim payout, the higher the premium. One of the most robust approaches to lowering insurance costs, then, is to lower the underlying risk of losses through household and community-level investment, such as home hardening or green infrastructure.

But it is not always clear how or whether insurers account for such mitigation measures and pass on the loss-reduction savings to policyholders in the form of lower premiums. States can encourage this through regulation. For example, California recently adopted a “Safer from Wildfires” framework that requires insurers to provide transparent discounts to homeowners who invest in a list of proven state-defined wildfire mitigation measures. In the past, however, such programs in other states have struggled to succeed when the discounts were not truly reflective of the risk for insurers.

While promising, the viability of reducing insurance costs and incentivizing risk reduction relies on insurers having catastrophe modeling that considers individual and community scale adaptation measures. Due to the proprietary nature of insurer’s models, it is unclear how and how much community or household investments are included, especially for nature-based solutions. Modelers should be encouraged to explicitly

²³ Schwarcz, “Redesigning Consumer Dispute Resolution.”

account for risk-reduction investments and be transparent about how they influence estimated losses. Until that is the case, however, it may be much easier to establish risk-reduction price incentives within public insurance programs.

Using innovative insurance products to fill recovery gaps: The standard model of insurance familiar to most consumers in the U.S. is an “indemnity” policy, which compensates policyholders exactly for losses sustained (subject to limits and deductibles). Other structures of insurance, however, are being explored around the globe to help fill certain gaps in recovery from climate extremes.

One example is parametric microinsurance policies. Microinsurance refers to lower-cost, lower-coverage policies often designed for low-income populations who lack any other type of coverage. These policies are typically structured as parametric, meaning they pay based on an explicitly defined measure of the hazard, such as wind speeds, not on assessed damage; they do not rely on a human adjuster. These policies pay fast, the dollars can be used flexibly, and the transparent payment trigger may be more trusted by populations who have historically felt unserved by standard disaster insurance claims processes. Though not a replacement for a full homeowners policy, parametric microinsurance policies could be used to provide a minimum level of payout to those otherwise uninsured or to groups whose needs are not well met by current products, such as renters.²⁴

Another innovative approach that has been piloted around the world is group insurance. In these models, an intermediary organization sits between the individual or household and the insurance firm, helping secure coverage. This may involve, for example, a financial institution coupling a microinsurance product to a loan, an employer securing disaster coverage for employees, or a community organization facilitating coverage for a group of residents. Many different organizations could play this role, and they may undertake diverse activities in the chain of insurance. They may facilitate insurance coverage for a certain group, organize premium collection, or even manage claims. Group insurance models can help expand coverage by essentially force-placing insurance, and intermediary organizations are often closer to impacted populations and so can help design insurance policies better tailored to their needs.

24 Carolyn Kousky, Helen Wiley, and Len Shabman, “Can Parametric Microinsurance Improve the Financial Resilience of Low-Income Households in the United States?” *Economics of Disasters and Climate Change* 5 (2021): 301–327.

Longer-Term Policy Reform

Exploring a universal public model: Several countries around the world manage disaster insurance coverage using the so-called “solidarity model.” all households are charged one flat fee for disaster coverage that is universal and compulsory. This creates cross-subsidies across risk groups and a large policy base over which to spread administrative costs. To protect insurers, with this fee, the federal government provides low-cost reinsurance or a backstop to insurers for catastrophic events.

For example, in Spain, insurers are required to include coverage for disaster risks in all life, fire, property, and motor vehicle policies. They could fully cover these risks themselves, but most elect to add a surcharge to premiums and then transfer the risk to the Consorcio de Compensación de Seguros, a public insurance program. France also mandates coverage for natural disasters. A uniform surcharge is assessed on all property and auto policyholders for natural catastrophe coverage. A public reinsurance program, Caisse Centrale de Réassurance, with a state guarantee, protects the solvency of insurers.

Such an approach would be a substantial departure from the current model in the United States. It would not align easily with our state-based system of insurance regulation, and the model currently applied in other countries, a flat fee for disaster coverage, would face opposition from those who hope insurance prices can be used as a signal about risk levels for developers, communities, and housing and mortgage markets. However, modifications could be made for the U.S. context. Individual states could choose to set up such a program of mandated catastrophe coverage with state backing, or the federal government could establish an opt-in system for states, since a backstop or low-cost reinsurance would be easier to provide at a federal level. The fee for coverage could also be a sliding scale based on risk, to preserve some level of risk signal in pricing.

CONCLUSION

Today, climate change is exacerbating an already challenging insurance market for catastrophic disasters in the U.S. Property insurance markets are contracting in high-risk locations, with coverage becoming less available, more restricted, and more expensive. Low-income and communities

of color are most often bearing the brunt of insurance price increases and underlying barriers to insurance.

There are, however, policies that can increase access, affordability, and transparency in disaster insurance markets. In the short term, programs and regulations can be put in place to strengthen consumer protections and support those who need insurance the most. In the longer term, in response to changing risks, local and federal leaders must not only tackle significant changes to land-use, zoning, and building practices in high-risk locations, but also consider more ambitious, new models of disaster insurance.

CAROLYN KOUSKY is Associate Vice President for Economics and Policy at Environmental Defense Fund and author of the book Understanding Disaster Insurance: New Tools for a More Resilient Future. She serves on the Federal Advisory Committee on Insurance at the U.S. Department of the Treasury and is vice chair of the California Climate Insurance Working Group.

KARINA FRENCH is the Manager of Climate Resilience Research on the Economics team at Environmental Defense Fund (EDF). At EDF, she works on applied research projects about climate risk and resilience in the U.S. Her work focuses on economic resilience and disaster recovery policy, particularly around insurance and housing access.

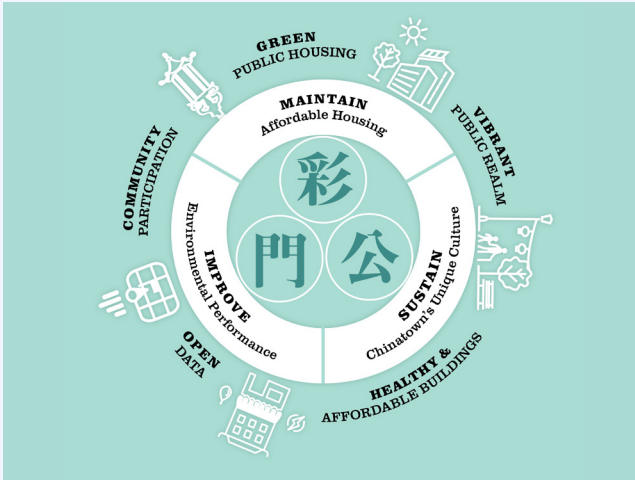
SUSTAINABLE CHINATOWN

Geeta Rao, *Enterprise Community Partners*

San Francisco's Chinatown community is close-knit and one of the last affordable neighborhoods in an increasingly expensive city threatened by mounting environmental, displacement, and gentrification challenges. To help preserve and increase the community's affordability, sustainability, and resilience, a group of local organizations formed Sustainable Chinatown in 2014. The initiative emerged as a cross-sector partnership between public agencies (the San Francisco Department of the Environment and San Francisco Planning Department), philanthropy and intermediary supporters (The San Francisco Foundation and Enterprise), and the Chinatown Community Development Center (CCDC)—a highly-respected and long-standing community development organization.



As an anchor institution, Chinatown Community Development Center helps to ensure Chinatown's small business and community institutions thrive and serve long-time and new immigrant residents shown in this picture. (Image courtesy of www.sustainablechinatown.org).



Strategies for a Sustainable Chinatown. (Image courtesy of Gary Chen, San Francisco Planning).

Taking into account the neighborhood’s aging buildings and infrastructure, a vulnerable, low-income population, and the climate and displacement pressures mentioned above, Sustainable Chinatown identified six areas of work to help meet these challenges.

- 1 Make public housing green
- 2 Upgrade and preserve naturally occurring, privately-owned affordable housing
- 3 Improve shared public spaces to better serve residents and the environment
- 4 Explore district water, energy, and green infrastructure
- 5 Use open data to drive and monitor success
- 6 Engage community stakeholders

At its core, this work aims to redefine what sustainability means for a community where so many residents and businesses are already “green by necessity,” consuming fewer resources, living in dense housing, and walking or taking public transit. For Sustainable Chinatown, “sustainability” is not only about environmental performance, but also about the long-term resilience of Chinatown’s culture in the face of large and looming threats, chief among them the climate crisis and displacement.

6

REFLECTIONS, GOALS & LIVING OUR VALUES



BEYOND DEMONSTRATION PROJECTS: PRINCIPLES FOR TRANSFORMATION AT SCALE

Krista Egger, *Enterprise Community Partners*

Residents beaming with joy, a baby grand piano in the foyer, colorful gathering spaces—stepping into Cadence was rejuvenating. I visited Cadence last year to honor Volunteers of America (VOA) for achieving the country’s first certification of Enterprise Green Communities Plus, a new, more aggressive tier of our long-running green building certification available for affordable housing. As part of Green Communities Plus, Cadence also achieved certifications from the International WELL Building Institute and from the Department of Energy’s Zero Energy Ready Home program.¹ The property was designed, built, and verified to be very energy efficient, cutting residents’ monthly expenses.² The property is also solar-ready, constructed with healthy building materials, has EV charging stations, and includes a sophisticated ventilation system designed to optimize air quality in the event of nearby wildfires.

1 Nicole Gudzensky, “A Step Above: Colorado Housing Earns First-Ever Green Communities Plus Certification,” *Enterprise*, July 10, 2023. Available at www.enterprisecommunity.org/blog/step-above-colorado-housing-earns-first-ever-green-communities-plus-certification.

2 Ibid.

Located near walking paths, grocery stores, and other amenities and conveniences, Cadence offers what many of us desire: an affordable place to live and remain active and connected to community as we grow older. Less apparent to a visitor here are the hours of integrative and healing-centered design planning that have instilled peace and a sense of well-being throughout Cadence: décor that mirrors natural elements, open spaces with clear sight lines, and abundant natural light. VOA relied on industry staples to finance the development—Low-Income Housing Tax Credit equity, gap funding from the city’s affordable housing funding pool, and its Community Development Block Grant.³

High-quality and climate responsive, Cadence is an exceptional asset to Fort Collins. As a property, Cadence offers a roadmap for the housing future we envision. We need more developments like Cadence to ensure that as our climate continues to change, communities that have traditionally been under-invested and burdened by worsening inequities in health and wealth are equipped to thrive.

Transforming traditional community development practices calls on us to catalyze change at scale rather than only produce demonstration projects. How can we achieve this and ensure that living in a healthy, climate-resilient home is not a function of a person’s income? The task ahead is significant, but not insurmountable. It begins with building a new movement for this pivotal moment. We must advance community-first solutions. Leverage public policy and resources. Promote non-traditional partnerships. And identify financing innovations to strengthen climate resilience and support disaster recovery.

We’ve experienced transformational change in community development before. Over the past nearly twenty years, Enterprise Green Communities has evolved from a concept to pilot to widely adopted practice across the country.⁴ In the 2000’s I was often asked, “Why *green* affordable housing?” The thinking was that sustainability was a luxury. Enterprise

3 Ibid.; Pat Ferrier, “Cadence apartments seek to meet rising need for age, income-restricted housing in Fort Collins,” *Coloradoan*, August 31, 2022. Available at www.coloradoan.com/story/money/business/2022/08/30/fort-collins-cadence-senior-living-housing-lower-income-residents/65413523007/.

4 Jeff Hurley and Gabby Davis, “Building a Better Affordable Housing Future: How States Can Integrate Health, Energy Efficiency, Working Conditions, and Racial Equity in Their Qualified Allocation Plans.” (Bluegreen Alliance Foundation). Available at <https://buildingclean.org/sites/default/files/2023-09/%20Building%20a%20Better%20Affordable%20Housing%20Future.pdf>.

launched Green Communities to test the hypothesis that affordable housing *could* be green (built with healthy materials and features; water- and energy-efficient; located in proximity to services and with a light environmental impact). Targeted to affordable housing developments financed with the Low-Income Housing Tax Credit (Housing Credit), the Enterprise Green Communities Criteria offer a definition and “how-to” for designing and building homes with green features. As required under the federal legislation and regulations that govern it, properties that are financed by the Housing Credit must include energy efficiency to some extent.⁵ But each jurisdiction interprets that provision differently.⁶ Properties certified to Green Communities, on the other hand, are all ensured to be efficient, healthy, and environmentally-responsible. Today, more than 200,000 affordable homes are certified to the Enterprise Green Communities Criteria across urban, rural, and tribal communities. Nearly two decades later, a previously incompatible phrase (“green affordable housing”) is now fairly commonplace. The concept is well-known, understood, and implemented.⁷

Our program is not the only lever driving climate-smart affordable housing—we’re part of a field of innovative, mission-driven practitioners striving to evolve. Owners of affordable housing portfolios large and small have made significant commitments to reduce their emissions.⁸ The success of Green Communities reflects our ability to solve for barriers that prevent typical affordable housing from being climate-responsive, from educational to capacity and financing hurdles. Our approach to addressing these barriers continues to evolve as we work with and for practitioners to make sustainability techniques standard practice, toward creating change at scale. We center community aspirations, strive to reduce greenhouse gases associated with housing, and ensure homes incorporate strategies to improve health and adapt to our rapidly changing climate.

5 Legal Information Institute, 26 U.S. Code § 42 - Low-income housing credit, available at www.law.cornell.edu/uscode/text/26/42.

6 Global Green, *QAP Reports*, available at <https://globalgreen.org/reports/qap-reports/>.

7 Dana Bourland, *Gray to Green Communities: A Call to Action on the Housing and Climate Crises* (Washington, DC: Island Press, 2021).

8 Better Building U.S. Department of Energy, *Better Climate Challenge*, available at <https://betterbuildingssolutioncenter.energy.gov/climate-challenge>.

Similarly, the authors in this volume identify approaches that bolster community and climate resilience while driving excellence in community development. With more widely accessible analysis and public awareness of the climate crisis over the past few years⁹ and unprecedented federal support to implement solutions,¹⁰ the present day seems better poised for positive climate action than ever before. Ingenious solutions exist, can be scaled, and—I am confident—will spur many more housing and community innovations to meet the scale and urgency of our housing and climate crises.

The challenge, as essays throughout this volume well highlight, is how to ensure that solutions implemented in the name of climate progress do not exacerbate social, health, and wealth inequalities. A clean energy transition may be inevitable, but an equitable one is not without intention and care. While not an exhaustive summary of themes captured within *What's Possible*, the following principles shine a light on perspectives and approaches we can adopt to face our housing, climate, and racial equity crises directly:

Community-First Solutions

Several of the case studies highlighted in this book demonstrate the challenges and opportunities of community-first approaches and their critical role in developing effective remedies to some of our more dire concerns.

- In Sampath-Kumar and Lewis' chapter, **Mitigating the Financial Impact of Energy on Family Budgets on the Path to a Clean Energy Future**, the authors recommend developing strategies to secure a transition to clean energy that is intentionally affordable and attainable for all households, not just families able to afford the upfront costs. Solutions include addressing housing quality and providing financial support for pre-electrification measures, mitigating higher energy bills induced by electrification, and reducing financial burdens of utility costs.

9 Yale Program on Climate Change Communication, *Climate Change in the American Mind*, available at <https://climatecommunication.yale.edu/about/projects/climate-change-in-the-american-mind/>.

10 Energy Innovation: Policy and Technology and Michelle Solomon, "Inflation Reduction Act Benefits: Billions In Just Transition Funding For Coal Communities," *Forbes*, August 24, 2022. Available at www.forbes.com/sites/energyinnovation/2022/08/24/inflation-reduction-act-benefits-billions-in-just-transition-funding-for-coal-communities/?sh=2dfbb3ed6ebd.

- Similarly, Cohen and Lusson’s chapter, **Ensuring Consumer Protections in the Delivery of Energy-Efficiency Financing and Renewable-Energy Programs**, lays out recommendations for designing programs that balance access to financing with consumer protections. They share how affordability, transparency, accountability, and data-informed program design may significantly reduce the risk to low-income households of losing essential utility service. Their recommendations include creating a reserve fund within financing programs to compensate customers when projected energy savings don’t materialize.
- Finally, in Hellman and Shandas’ essay, **Housing, Heat, and Health: Community-Informed Adaptations for Climate Safety**, the authors use research from the Pacific Northwest to suggest that governments would be well served to shape programs and policies in collaboration with the communities those programs and policies impact, “especially when encountering novel or unexpected conditions [such as heat waves] that threaten communities.”

Leveraging Public Policy and Resources

These essential essays highlight how public policies have the potential to increase investment, speed disaster recovery, engage stakeholders, and increase climate resilience.

- In **Community Led, Government Funded: Federal, State, and Local Policies for Resilience**, McFadden and Kyes share how “the magnitude of impacts from a changing climate demand coordination across all levels of government,” with an imperative for and examples of how federal, state, local, Tribal, territorial, and private-sector commitments are yielding more resilient communities in the face of climate disaster. Examples include mechanisms for funding state and local climate resilience programs, local land-use policies, and regional/cross-state initiatives.
- Whetten’s essay, **Bridging the Gap: A Financing Strategy to Speed Disaster Recovery for Low-Income Communities**, details the disproportionate harm that delays in public recovery funding can cause residents, using the example of Louisiana when struck by back-to-back major hurricanes in 2020. She proposes a combination of strategies to reduce similar future delays, including congressional action through

the permanent authorization of the Community Development Block Grant Disaster Recovery (CDBG-DR) program, leveraging private-sector capital to bridge CDBG-DR dollars, and regulatory waivers to reaffirm and encourage public-private partnerships in long-term disaster recovery.

Building a Movement Through Non-Traditional Partnerships

Chapters in this book highlight examples of how public, private, philanthropic, and community-based groups have co-developed and implemented solutions that can be replicated widely.

- In **Climate and Health: Global Challenges and Local Solutions**, Super Church explicitly links health and climate resilience. She describes several recent decarbonization initiatives, each involving multiple organizations partnering to tackle the multi-faceted and complex problems plaguing their communities. And she calls us to action: “There is no single sector, agency, or funder responsible for connecting investments in climate and health. To make progress at the speed and scale required, we need all-hands-on-deck: government, community-based organizations, private investors, utilities, philanthropy, technical assistance providers, insurers, health care providers, educators, labor leaders, and more.”
- In Mixer and Smukowski’s essay, **Climate + Community Development: Emerging Investment Frameworks Fuel Transformative Impact**, they tie together the trajectories of modern environmentalism and community development, lifting up methods and principles to drive capital into communities and support climate resilience. The authors advocate for a common language between the sectors, standardized impact measurement tools, and accessible technology to drive widespread adoption. They advocate for climate-conscious investment strategies in community development finance, and stress community engagement and the concept of a “Just Transition” in climate finance.
- Baird and Johnson in **Untapped Potential: Scaling Workforce Development for a Green Economy** share how they have paired innovations from technology, finance, labor, and economic development. Highlighting their organization’s collaborations with industry giants like Google and Goodwill, the essay underscores the significance of public-private partnerships in establishing scalable and effective workforce development models. The authors highlight three elements necessary

to develop and maintain key partnerships in this effort: a regional focus tailored to local needs, corporate involvement, and alignment of corporate climate goals with municipal plans. Ultimately, the piece advocates for unlocking human potential in marginalized communities, emphasizing the link between workforce development and combating the climate crisis.

New Implications for Safety Nets to Match the Needs of Front Line Communities

The financial realities of living with extreme weather events have implications for the efficacy and reach of traditional forms of relief.

- Phillips' essay, **Climate Constraints on the Finances of Low- and Middle-Income Households and the Tools to Ease Them**, reveals how climate change is insidiously altering day-to-day financial decisions and long-term financial health goals of households across America. The essay recommends fundamental changes to how we consider and ensure financial preparedness and modernize our social safety net. "Preparation doesn't just involve planning for or responding to severe weather events," she writes. "It can also involve building savings for potential lost hours at work or creating backup transportation options for when the weather shifts unexpectedly."
- Kousky and French, in **Increasing Access to Disaster Insurance in the Face of Growing Climate Risks**, explain how certain assumptions underpinning property insurance protections are failing amid the growing risk of natural hazards due to climate change and offer new potential paradigms and solutions to strengthen consumer protection. Insurers have responded to the increased costs of weather events by raising premiums, limiting coverage, or exiting markets entirely. All three curtail access, especially for Black, Latino, and low-income households. To address these issues, the authors offer potential state and federal policy reforms, including offering means-tested assistance for disaster insurance, explicitly linking risk reduction to lower premiums, and using parametric microinsurance policies to provide minimum levels of protection that quickly pay based on specific triggers.
- Taken together, these two chapters recognize the limitations of existing safety net programs, the implications of current market shifts, and

the importance of new public investments coming to fruition, while reminding us to lead with equity. In practice, that means scrutinizing and revising programs and proposals to ensure benefits are broadly accessible.

While our collective ability to solve our climate crisis in the built environment will continue to evolve in the years to come, these solutions and perspectives allow us to accelerate impactful and positive change now, and at scale. We don't have a moment to waste.

KRISTA EGGER is vice president of national programs at Enterprise. With nearly 20 years of experience leading green building, resilience, and healthy housing initiatives with affordable housing stakeholders, Krista manages the organization's national climate sustainability efforts, spanning programs and policy.

MEANINGFUL ENGAGEMENT: A KEY TO EQUITABLE CLIMATE ACTION IN COMMUNITY DEVELOPMENT

Madeline Fraser Cook, *Local Initiatives Support Corporation (LISC)*

What do you want? What do you need?

In the world of community development, these two questions jumpstart an equitable approach to resident engagement. At least, that's what they're intended to do. But increasingly, they've become "check the box" questions, almost rote for any organization working with communities. They frame a conversation not about community members as empowered, but about powerless people asking for help. These questions, it turns out, rarely create opportunities for full partnership in decision-making and—if not paired with tangible outcomes—can actually be exploitive.

Sometimes the answers that "what do you want" and "what do you need" elicit don't align with the purpose of the engagement, essentially saying: "*We know you want to improve business facades and clean up the neighborhood, but we're talking about green infrastructure and complete streets in this charrette.*" As a result, community responses don't get acted on and don't reach the people and organizations that need to hear them.

These questions have a long pedigree in community-engagement efforts, yet the examples of *effective* engagement in this book show that we need to do more. Funders frequently require community engagement, but the process often proves anemic or memorializes results in planning documents that either sit on a shelf or get duplicated mindlessly in subsequent reports without true implementation. In addition, the plans frequently don't deliver the resources necessary for implementing the projects and services that community members have said they want or need. Many well-meaning conveners of engagement processes for new plans have no access to or information about plans that came before, perpetuating a cycle of recreating plans. Trust breaks down, planning fatigue thins the ranks of participants, and the possibility that community members can actually shape the future meaningfully grows increasingly remote.

HIGHLIGHTING OLD INEQUITIES IN LIGHT OF NEW URGENCY

Theories of successful community development and equitable outcomes through resident input have always described the two as inextricably linked. In practice, the community-development sector has a long way to go to meet this ideal. Adding complexity to this interplay, the impact of natural disasters has emerged as a critical consideration in planning and implementing equitable community development projects. Its impacts disproportionately burden the most vulnerable communities, magnifying the urgency of uniting environmental concerns with equitable development.

The environmental movement's more recent focus on environmental justice (EJ) and climate justice comes in response to the urgency of responding to increasingly intense natural hazards. Despite some progress, significant work remains to meaningfully include historically underrepresented people in this movement and center EJ and climate justice in environmentalism. Historically, environmental justice has been pursued with a focus on opposing unwanted developments. Recent years, however, have produced an increasing recognition that EJ actions must mobilize around not just saying "no" to undesirable projects but also actively seeking projects and economic opportunities that, based on community input, can earn a "yes" from residents. This will require inviting community

members to help chart roadmaps for healthier, more economically viable communities—in other words, to unify community development, community organizing, and environmentalism.

EMBRACING A BROADER ROLE AND BRINGING IT ALL TOGETHER

Thankfully, we have examples of how to do this. In Duluth, MN, Ecolibrium3 (also called Eco3) demonstrates the pivotal role community input plays in fostering sustainable and equitable outcomes. Duluth's Lincoln Park neighborhood represents an archetypal rust-belt community facing many of the challenges and opportunities a clean-energy transition presents—in particular, the problem of legacy infrastructure. The neighborhood hosts port operations, light and heavy manufacturing, a regional sewage-treatment plant, a disinvested main street district, and heavy highway infrastructure. Housing stock—aging and in disrepair—mostly dates to the early twentieth century. Residents endure disproportionately high levels of asthma and exposure to lead paint.¹ Twenty-six percent of residents live in households with incomes at or below the federal poverty level. On average, Lincoln Park residents' life expectancy is more than nine years shorter than that of the typical resident of Duluth.²

Low-cost and mostly rental, the neighborhood has historically had a transient character and little social cohesion. That has undercut local advocacy for resources that could improve human and environmental conditions. The situation began to shift in 2011, when a grassroots environmental organization began to engage the community to envision the possibilities for Lincoln Park. Over the last decade, Eco3 has upended the common narrative of environmental organizations prioritizing the planet over people.

Eco3's efforts started small, when resources were scarce and community voice and capacity remained nascent. The team worked to understand the challenges facing residents and small businesses. Yes, they asked *What*

1 "Climate and Economic Justice Screening Tool." (Washington, DC: Council on Environmental Quality, 2022), 1; 60. Available at <https://screeningtool.geoplatform.gov/en/#12.69/46.75983/-92.1245>.

2 Bridging Health Duluth, "Working Together For A Healthy Duluth: 2020–2022 Community Health Needs Assessment." Available at www.essentiahealth.org/app/files/public/e40ecfeb-23b6-4a37-a436-f6fe8e5625e4/duluth-chna-2020-2022.pdf.

do you want? and *What do you need?* But they also probed more deeply with a range of other questions. They learned about unreliable public transportation and limited access to fresh food. They pursued low-cost, easy-to-execute opportunities to connect businesses to the community and improve the physical environment. Over more than a decade the organization earned trust by listening and *responding*, all while working to elevate a shared vision of an equitable, sustainable, and resilient future for residents.

Ecolibrium3 has pursued projects as diverse as the community's needs and opportunities. Projects include an urban farm that produces local, culturally appropriate food using regenerative practices; a home-rehabilitation program that reduces emissions and energy costs; a community solar program that provides emissions-free electricity and other benefits to families struggling to pay utility bills; a grocery store; and, most importantly, the planning and deep engagement needed to ensure that these initiatives reflect the community's vision. Ecolibrium3 shows up reliably, remains present, listens, and puts plans into action.

The current federal funding environment offers transformative potential for Lincoln Park. As unprecedented resources flow to EJ communities, Ecolibrium3 has the capacity and relationships needed to pitch programs and projects that produce substantial, direct benefits for both the community and the climate. The outlook for meaningful new financial resources looks promising. In the past two years, the community has secured more than \$30 million in federal funds. A partnership of the City of Duluth, Ever-Green Energy, and Ecolibrium3 won a \$700,000 planning grant from the U.S. Department of Energy to explore design and construction of a geothermal district-heating system.³ This project would harness warm effluent, currently discharged from the wastewater plant into Lake Superior, to heat the community. It would turn a long-term environmental burden into benefit. The team plans to request funds to deploy the project in concert with a Department of Transportation-funded main street

3 Ecolibrium3, “\$700,000 Investment in Community Geothermal Planning,” *Eco3*, May 15, 2023. Available at www.ecolibrium3.org/geothermal-planning-grant/.

redesign intended to resolve flooding and lighting issues.⁴ The efficiency of building the projects together could cut the cost of the geothermal system by 40 percent.

This book highlights other examples of successfully melding community development, community organizing, and environmentalism. The **Dudley Street Neighborhood Initiative** demonstrates how community leadership and ownership produce sustainable improvements in residents' quality of life. **Pacoima Beautiful** shows how incorporating residents' expertise and wisdom into planning and advocacy, backed by significant resources for developing tangible projects, can make a vital difference in people's day-to-day lives. **Bridges to Green Jobs** shows how opening a job-training-to-work pipeline in expanding fields in the clean economy can transform underrepresented workers' financial futures. **RAIL CDC's Resilience Hubs** acknowledge that the experiences of residents and families matter when planning resilient climate responses.

WORKING AT THE SPEED OF TRUST

Transforming communities requires navigating complex development processes that often play out over long timelines and need significant capital investment to succeed. In addition, development projects rarely sail through community-approval processes—especially when no one consults the people directly affected by a project's impacts, positive or negative. We can mitigate these risks, however, by 1) actively listening to community members and looking beyond basic questions of want and need; 2) respecting planning and input already completed; 3) remaining accountable to the community by transforming input into action; and 4) committing to showing up for the long haul. Without these basic elements of meaningful *involvement*, not just engagement, developers, financiers, policy makers, and other stakeholders face a more circuitous road to community transformation. Community development, equitable engagement, and climate action represent essential ingredients for successful, sustained projects. Integrating them effectively takes trust, and trust takes time to build.

4 Department of Transportation, "Biden-Harris Administration Announces \$99.4 Million in Funding for Six Projects in Minnesota to Modernize Transportation and Make it More Affordable, Increase Safety and Strengthen Supply Chains." Press release (August 11, 2022), available at www.transportation.gov/sites/dot.gov/files/2022-08/RAISE-Minnesota-2022.pdf.

Decades of experience have shown that community developers will falter when residents don't trust that project implementers work in the community's best interests. Trust doesn't grow out of two or three nighttime public meetings. A team has to earn it by demonstrating the willingness and wherewithal to put plans into action—creating tangible bricks and mortar, grass and trees, playgrounds and bike lanes that people can see, touch, and benefit from. Repeatedly asking the same questions and producing results that don't reflect the time and energy community members invested in the process represents a recipe for distrust. Community members won't feel ownership of their community; they won't feel that their voices matter; and they won't bestow the trust needed to move projects forward.

This represents a critical issue for addressing large-scale infrastructure and redevelopment plans with long timelines in which community engagement becomes a multi-generational affair. We can address trust-building head on, as the Dudley Street Neighborhood Initiative and Pacoima Beautiful have done. They put in time and energy because they understood the need for long-term commitment. Not only did they work to weave their organizations into the fabric of the community, but they also committed to devising solutions based on the community's voice; to involving residents actively in developing roadmaps for change; and to holding funders, policymakers, and the community-development sector itself accountable for results.

Trust building also applies to organizations. To work effectively together, climate advocates, community developers, and community organizers need to understand each other's motivations and implement initiatives that address each other's needs. This should include positive short- and long-term climate, environmental, and equity outcomes. Successes on smaller projects show that incremental steps toward larger goals keep people engaged and demonstrate that their voices have been heard and acted on. Trust building at both individual and organizational levels creates neighborhood-engagement systems that can accommodate the wants, needs, goals, and aspirations of everyone with a stake in community change.

MODELS FOR DEEPER COMMUNITY PARTICIPATION

No matter what community—from rural to urban and all in-between—people don't attend community engagement meetings because they want to give opinions that never make a difference. If we want meaningful engagement, useful input, and community support, we need to create realistic opportunities for people with time and resource constraints to participate. And we need to commit to translating their input into action. Without action and community ownership of solutions and outcomes, community engagement becomes extractive. Any respectful merging of community development, climate action, and equity goals demands shared decision-making among residents, community representatives, and organizations.

Fortunately, we have models for building resident-driven governance and authentic participation. One example comes from a framework created by Rosa Gonzalez at the Movement Strategy Center in Oakland, CA. The *Spectrum of Community Engagement to Ownership* posits a continuum of engagement—from ignoring the community to deferring to it—and impacts, which can range from marginalization to community ownership.⁵ The framework categorizes the different messages that various levels of engagement send to communities, from *Your voice will have minimal impact on the outcomes* to *You can be a part of transformative solutions*. The framework's usefulness lies in its exploration of different actors' roles in meaningful engagement. It requires introspection about roles and decision-making power and provides guiding questions to gauge where the community stands in developing a stronger community-engagement paradigm. It highlights the drawbacks of traditional extractive approaches and advocates a more inclusive and respectful strategy that ensures the relevance and ownership of community plans.

As communities and advocates collaborate, traveling these interconnected pathways together can lead to resilience, inclusivity, and sustainability. The imperative of climate change demands that projects have equitable results—and that will only happen through meaningful community

5 Facilitating Power, "The Spectrum of Community Engagement to Ownership." (2020). Available at <https://movementstrategy.org/wp-content/uploads/2021/08/The-Spectrum-of-Community-Engagement-to-Ownership.pdf>.

engagement built on trust and action. The more we prepare the ground for that, the stronger our chances of nurturing the future everyone deserves.

MADLINE DEL CARMEN FRASER COOK *is the Senior Vice President of Community Building and Resilient Solutions at the Local Initiatives Support Corporation (LISC). She is a recognized leader in green development and planning and has worked extensively with low-income Latino communities in both the mainland U.S. and Puerto Rico. She is a LEED accredited professional with over 20 years of experience in direct technical assistance to green projects.*

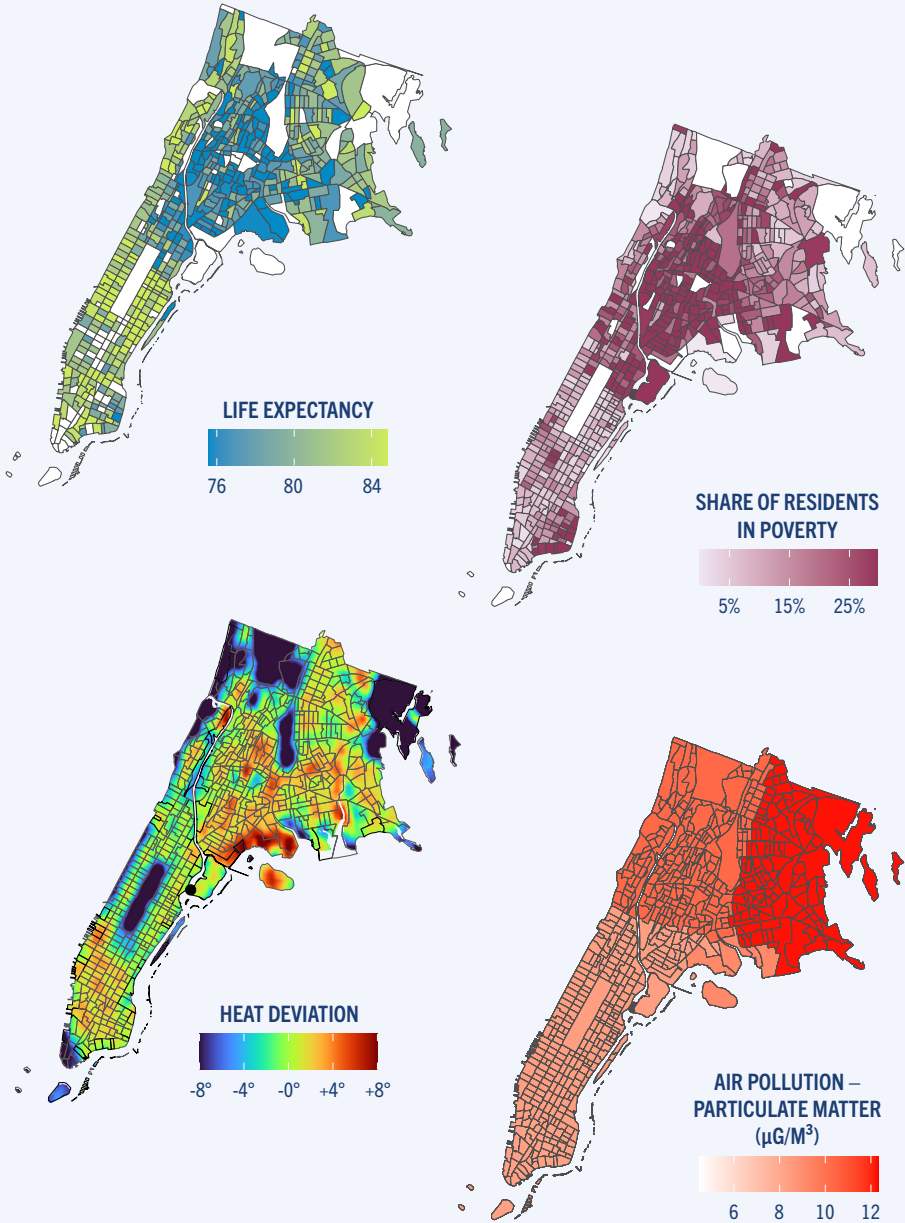
LINKING EFFORTS TO IMPROVE CLIMATE RESILIENCE, HEALTH, AND ECONOMIC OPPORTUNITY TO ACHIEVE SUCCESS IN ALL THREE

David J. Erickson, *Federal Reserve Bank of New York*

While this book is chock-full of complex strategies and technical language—from finance, policy, earth sciences, etc.—it is dedicated to a simple idea: we can use new resources from climate finance to invest in neighborhoods to make them resilient to the impacts of climate change and also healthier and more opportunity-rich. The communities that experience the most extreme weather events are often the same ones that struggle with weaker local economies and have lower-income residents. On top of that, these neighborhoods tend to suffer the worst health outcomes and are those with the longest histories of marginalization. Looking at all three issues simultaneously, you start to see a pattern that is all too familiar: climate, health, and economic vulnerability happen in the same places. Consider the heat maps on the facing page that highlight neighborhoods of concern in Manhattan and the Bronx for reduced life expectancy, concentrated poverty, and vulnerability to high temperatures and elevated air pollution.

While these overlapping problems might seem intractable, the fact that they concentrate in neighborhoods presents an opportunity. By combining resources and ideas from those working on solutions in all three sectors,

Figure 1. The Geography of Climate, Health, and Economic Vulnerability



City Health Dashboard, 2021 5-year American Community Survey, New York City.
Council Data Team. Analysis by Jacob Scott.

we can join forces to help communities overcome all three problems at once. And while this may sound expensive and complicated, the reality is that we will save money in the process and unleash potential in under-invested places. This strategy is more just, healthier, more cost-effective, more efficient, and better for the environment.

GETTING TO THE ROOT OF THE PROBLEM

A key to understanding how these seemingly disconnected sectors can work in concert is the insight that phenomena that look different are often caused by the same underlying issue. Consider the way doctors are trained to diagnose disease versus how epidemiologists assess disease at a population level. Doctors are trained in something called differential diagnosis, assessing symptoms that look the same but can be the result of different underlying causes. A fever, for instance, could be caused by a virus, bacteria, fungus, or autoimmune response. Epidemiologists, by contrast, analyze conditions that look different but result from one underlying cause. As noted above, the heat maps of Manhattan and the Bronx show communities that are simultaneously at high risk for climate change, poor health, and limited economic opportunity. I could add additional maps highlighting other areas of concern: crime, poor academic outcomes, food and banking deserts, and many other challenges. These maps would look similar. That's because those neighborhoods have one underlying similarity—fewer resources thanks to decades of disinvestment and neglect. And it will come as no surprise that these neighborhoods and communities tend to be majority people of color or rural. The underlying issue, in this case, is lack of opportunity. But now we have the resources from three different sectors to tackle that fundamental cause at its root.

MONEY IS NOT THE PROBLEM

It's no secret that the climate, community development and anti-poverty, and healthcare sectors have significant resources at their disposal. Those who consider themselves environmental or green investors have been growing—in numbers and dollars invested—for decades. By one broad measure, the environmental or green finance sector invested a staggering

\$4.2 trillion in 2022.¹ But this sector was also supercharged by a series of recent laws (the Inflation Reduction Act, the Bipartisan Infrastructure Law, and the Build Back Better Regional Challenge) that have brought an estimated additional \$500 billion to invest in infrastructure and new factories as a strategy to improve productivity and increase the number of well-paying jobs, especially in the green energy sector.² Shaun Donovan, CEO of Enterprise Community Partners, refers to this once-in-a-generation policy moment as the “New New Deal.” And this effort differs from prior eras’ efforts to grow the economy in the sense that it is explicitly focused on investing in areas that have been neglected in the past.

The strategy across all these new federal spending programs is known as “Justice40.” Which requires that “40 percent of the overall benefits of certain Federal investments flow to disadvantaged communities that are marginalized, underserved, and overburdened by pollution.” While this goal is noble, there is not an adequate financial infrastructure to drive those significant resources into the neediest neighborhoods, nor in many cases is there sufficient capacity at the local level to absorb and manage those resources. This is where a partnership with community development finance could be the key to success.

In addition to being an effective conduit of climate dollars, the community development finance and anti-poverty sectors have considerable resources of their own. Investments supporting low-income communities and individuals are a little hard to measure precisely because they come from so many varied sources, including all levels of government, philanthropies, and other donors. But just looking at a few sources is enough to register an eye-popping number. An assessment by Poverty Solutions at the University of Michigan of annual anti-poverty spending (excluding medical care paid by Medicaid) put the annual appropriation at roughly

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- 1 “Sustainable Finance Market Size-By Investment Type (Equity, Fixed Income, Mixed Allocation), By Transaction Type (Green Bond, Social Bond, Mixed-Sustainability Bond, ESG Funds), By Investor Type (Institutional, Retail), Investor Type & Forecast, 2023–2032.” (Selbyville, DE: Global Market Insights, July 2023). Available at www.gminsights.com/industry-analysis/sustainable-finance-market.
 - 2 The White House, “Fact Sheet: One Year In, President Biden’s Inflation Reduction Act is Driving Historic Climate Action and Investing in America to Create Good Paying Jobs and Reduce Costs,,” August 16, 2023. Available at: <https://www.whitehouse.gov/briefing-room/statements-releases/2023/08/16/fact-sheet-one-year-in-president-bidens-inflation-reduction-act-is-driving-historic-climate-action-and-investing-in-america-to-create-good-paying-jobs-and-reduce-costs/>.

\$400 billion in 2018.³ Banks are also big investors into low-income neighborhoods. An analysis from the Urban Institute estimated that over \$400 billion in bank lending and investing “counted” toward banks’ Community Reinvestment Act obligations in 2016.⁴

Another source of investment comes from nonprofit lenders, collectively referred to as Community Development Financial Institutions (CDFIs); this sector had at least \$452 billion in total assets as of 2023, according to research by the Federal Reserve Bank of New York.⁵ These significant resources could be paired with climate investments to build zero-emission affordable housing, clinics, schools, grocery stores, and other community amenities (for an example in this book, see Capital Link’s description of how it pairs investments for Federally Qualified Health Centers). New resources could also help at the household level, as Leigh Phillips describes in her *What’s Possible* chapter on how to stabilize household finances as a strategy to help families weatherize their homes and better withstand extreme weather events (or avoid them, when necessary, by having the resources to evacuate). By joining forces, the community development and climate sectors would create more well-paying jobs in the green energy sector, as described by Donnel Baird of BlocPower in his contribution to this volume. And, of course, cleaner air and a strong local economy yield better health outcomes for residents, as Maggie Super Church explains in an earlier chapter of this book.

The third leg of the community-viability stool is the healthcare sector; in 2022 spending in that sector grew to \$4.5 trillion, or \$13,493 per person.⁶ A subset of that spending is through federal and state Medicaid funding that pays for the medical care of those who are very low-income

3 H. Luke Shaefer, Kate Naranjo, and David Harris, “Spending On Government Anti-Poverty Efforts: Healthcare Expenditures Vastly Outstrip Income Transfers.” (Poverty Solutions University of Michigan, September 2019). Available at <https://poverty.umich.edu/files/2019/10/PovertySolutions-AntiPovertySpending-PolicyBrief-r6-1.pdf>.

4 Laurie Goodman et al., “The Community Reinvestment Act: What Do We Know, and What Do We Need to Know?” (Washington, DC: Urban Institute, August 2019). Available at www.urban.org/research/publication/community-reinvestment-act-what-do-we-know-and-what-do-we-need-know.

5 Jacob Scott, Maria Carmelita Recto, and Jonathan Kivell, “Sizing the CDFI Market: Understanding Industry Growth,” *Federal Reserve Bank of New York*, August 2023. Available at www.newyorkfed.org/medialibrary/media/newsevents/news/regional_outreach/2023/sizing-the-cdfi-market-understanding-industry-growth.

6 Centers for Medicare and Medicaid Services National Health Expenditure Accounts (NHEA), “National Health Expenditures 2022, Highlights.” Available at <https://www.cms.gov/files/document/highlights.pdf>.

or disabled.⁷ Total Medicaid spending in 2022 was \$806 billion.⁸ Remarkably, nearly all medical care dollars in the U.S. (an estimated 90 percent) are spent addressing chronic and mental health conditions, a substantial portion of which are preventable and that are often the consequence of living in poverty, adverse social and environmental conditions, and other trauma.^{9,10} Health researcher Elizabeth Bradley and her colleagues summarize the staggering toll driven by negative social determinants of health.

Poor environmental conditions, low incomes, and inadequate education have consistently been associated with poorer health in a diverse set of populations. Taken together, social, behavioral, and environmental factors are estimated to contribute to more than 70 percent of some types of cancer cases, 80 percent of cases of heart disease, and 90 percent of cases of stroke.¹¹

Even if a small sliver of this spending on medical care were directed to improving those upstream social determinants (through investments into low-income neighborhoods), we could save hundreds of billions of dollars in downstream medical care costs. By combining funding streams from health, climate, and community development, there are literally trillions of dollars available to tackle the root causes of lack of opportunity. We might, for the first time, have the resources that are commensurate with the scale of the challenge.

7 U.S. Department of Health and Human Services, *What is the Medicaid program?* available at www.hhs.gov/answers/medicare-and-medicaid/what-is-the-medicaid-program/index.html.

8 Centers for Medicare and Medicaid Services, “National Health Expenditures 2022.”

9 Christine Buttorff, Teague Ruder, and Melissa Bauman, “Multiple Chronic Conditions in the United States.” (Santa Monica, CA: Rand Corp., 2017).

10 Center for Medicare & Medicaid Services, *National Health Expenditure Data: Historical*, available at www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical.

11 Elizabeth H. Bradley et al., “Variation In Health Outcomes: The Role of Spending On Social Services, Public Health, And Health Care, 2000–09,” *Health Affairs* 35 (5) (2016): 760-768.

MANY OF THE PROBLEMS AND SOLUTIONS PLAY OUT AT THE LOCAL LEVEL

Using this new wave of funding to build a stronger economy could have powerful ripple effects. Many communities fared poorly in the wake of the Third Way policies of the 1990s, losing manufacturing and middle-wage jobs to lower-wage countries; they also experienced much worse physical and mental health outcomes. An assessment from the Robert Wood Johnson Foundation states that “a large body of research has uncovered associations between job loss or unemployment rates and mental health, substance use, and suicide.”¹² And the resulting “deaths of despair” are particularly concentrated in communities with high unemployment in the Southeast, and rural places across the country.¹³ The statistics are staggering: nearly 160,000 people died by suicide, liver disease (the result of alcohol abuse), or drug overdoses in 2018 alone, according to research by the economists Anne Case and Angus Deaton.¹⁴

And as Maggie Super Church explains earlier in this book, poor air quality is a killer, and many of the levers to improve air quality are local. Fossil fuel pollution is responsible for approximately 350,000 deaths per year in the U.S., “more than all deaths from drug overdoses, guns, and motor vehicle crashes combined,” according to Super Church.¹⁵ Transportation and buildings are big emitters of this pollution. For example, in the U.S., almost 30 percent of greenhouse gases are generated by commercial and residential buildings.¹⁶ But to make a dent in those emissions, we must ensure that this work doesn’t take place only in better-off communities; we must ensure that less well-resourced communities—and the apartment

12 Rajeev Ramchand, Lynsay Ayer, and Stephen O’Connor, “Unemployment, Behavioral Health, and Suicide,” *Health Affairs Brief*, March 1, 2022. Available at <https://www.rwjf.org/en/insights/our-research/2022/04/unemployment-behavioral-health-and-suicide.html>.

13 Irma T. Elo et al., “Trends in Non-Hispanic White Mortality in the United States by Metropolitan-Nonmetropolitan Status and Region, 1990–2016,” *Population and Development Review* 45 (3) (2019). Available at <https://onlinelibrary.wiley.com/doi/full/10.1111/padr.12249>.

14 Anne Case and Angus Deaton, “American capitalism is failing Trump’s base as white working-class ‘deaths of despair’ rise,” *NBC News*, April 14, 2020. Available at www.nbcnews.com/think/opinion/american-capitalism-failing-trump-s-base-white-working-class-deaths-ncna1181456.

15 “Fossil fuel air pollution responsible for 1 in 5 deaths worldwide,” *Harvard T. H. Chan School of Public Health*, February 9, 2021. Available at www.hsph.harvard.edu/c-change/news/fossil-fuel-air-pollution-responsible-for-1-in-5-deaths-worldwide/.

16 U.S. EPA, “Sources of Greenhouse Gas Emissions,” from the annual *Inventory of U.S. Greenhouse Gas Emissions and Sinks*. Available at www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions.

buildings and single-family homes rented and owned by low-income people—are similarly retrofitted. Other local efforts outlined in this book are trying to improve local air quality with better connections to mass transit and a boost in electric vehicle usage through investments by community development corporations (CDCs) like Pacoima Beautiful in Los Angeles.

The more we proactively engage with low- and moderate-income communities to assist them in becoming more resilient, the more we will save in disaster response, since we know that these communities are often on the front lines of extreme weather events. Low-income neighborhoods are often hotter than surrounding areas, the first to flood, and in harm's way from hurricanes and tornadoes.¹⁷ They are least prepared to survive these events, whether because of substandard construction, aging infrastructure, or lack of the financial resources that would allow them to purchase insurance, own and run air conditioners, or have sufficient means to evacuate ahead of pending disasters.

This reality is playing out over and over across the country. Consider this example, described in a *New York Times* piece, from a severe winter storm in Texas:

Glenn Yost, 73, had planned to retire three years ago, but recovering from the Texas winter storm of 2021 has made that impossible. Mr. Yost received only a small sum from his insurance company, to help install a new floor after the existing one was damaged by flooding, but not to fix the leaks in the walls and the water heater that blew up from the freeze. He ended up in the hospital. “I thought I was having a heart attack,” he told me. “It was all from stress.”¹⁸

17 Carmin Chappell, “Climate change in the US will hurt poor people the most, according to a bombshell federal report,” *CNBC*, November 26, 2018. Available at www.cnn.com/2018/11/26/climate-change-will-hurt-poor-people-the-most-federal-report.html. See also, Joyce Klein Rosenthal, Patrick L. Kinney, and Kristina B. Metzger, “Intra-urban vulnerability to heat-related mortality in New York City, 1997–2006,” *Health & Place* 30 (2014): 45-60. Available at www.sciencedirect.com/science/article/pii/S1353829214001087.

18 Samantha Montano, “America’s Disaster Recovery System Is a Disaster,” *New York Times*, October 28, 2023.

In Mr. Yost's case, extreme weather harmed his home, his finances, and his health. Examples like this demonstrate why changes to the Community Reinvestment Act (CRA) would encourage bank investments to make communities more resilient to natural disasters and the economic and health aftershocks they often bring (see more on the CRA and extreme weather in Jesse M. Keenan, Elizabeth Mattiuzzi, and Dontá T. Council's chapter in this book).

As we experiment with how all three sectors can improve their collective abilities to make communities more viable, we will see many new innovations. More well-paying jobs will help. Having steady work at a living wage is one of the most important social determinants of health. Investments in manufacturing and other businesses in vulnerable places will start showing benefits immediately. But you could imagine other innovations. Many rural places don't have the CDCs and CDFIs that larger communities have; their ability to absorb this new investment is limited. Perhaps hospitals, the largest employers in most rural communities, could take on the role of resilience partner and become a home base for these interventions—an incubator for new small businesses, acting as the fiscal agent for Justice40 dollars, and using their procurement and hiring to support local small businesses and boost local hiring. And while not every county has a hospital, every county has a school district; perhaps local school systems could be more tightly aligned with these new interventions.

BUILDING A STRONGER ECONOMY AND BETTER HEALTH, ONE CLIMATE-RESILIENT AND OPPORTUNITY-RICH NEIGHBORHOOD AT A TIME

The three sectors—climate, community development, and health—need to work together to create neighborhoods and communities that have more opportunities and that are healthier and more resilient. If these sectors successfully support communities, communities in turn will be able to harness the new policy landscape and new resources—trillions of dollars to create new businesses, better jobs, and climate resilience in the places that need them most. In other words, the bottom-up approach can light a fire, making communities stronger on multiple levels, and the top-down investment can add fuel to that fire.

These coordinated interventions could operate at multiple scales. The scientific concept of fractals is helpful here; the same principles that govern how water swirls in the drain of your tub also govern how the arms of a hurricane swirl in the Gulf and how the arms of the galaxy turn in the Milky Way. At the very large scale, Industrial Policy improves the national economy by increasing the number of middle-class jobs through strategic investments in manufacturing and green technology and avoids over-dependence on the supply chains of other potentially hostile nations. It also reduces risks associated with climate change with strategic investment in green technology. At smaller scales, it seeks to create new manufacturing clusters, connecting education and job training efforts to new jobs, and connecting individuals and households to more opportunities



The PACT community is changing the Near East Side's economic trajectory with an economic revitalization initiative called Delivering Black Dreams. The Near East Side of Columbus, OH is one of nine neighborhoods across the country to which Fifth Third is delivering capital, expertise, and collaboration to bolster economic mobility. Enterprise is leading the Fifth Third Empowering Black Futures Neighborhood Program, created to promote economic mobility in these nine neighborhoods that have historically experienced disinvestment and whose residents are predominantly Black. Located in Columbus, PACT is a partnership between the City of Columbus, The Ohio State University, the Columbus Metropolitan Housing Authority, and Near East Side stakeholders.

with big investments in internet broadband connectivity. To see how the bottom-up strategies that help a neighborhood or community become more climate resilient, healthier, and economically stronger connect to the top-down investments from Industrial Policy in a place, consider the example of the Near East Side of Columbus, OH.

CASE STUDY: NEAR EAST SIDE

Columbus's Near East Side neighborhood was a thriving community of mixed-income Black residents; it experienced significant decline in the 1950s and 1960s, however, when a freeway separated it from downtown. A downward trend was made worse by bank lending practices, such as racially motivated redlining, which was legal until the Fair Housing Act of 1968. "Today, multiple barriers disproportionately and negatively impact Black residents," according to Ohio-based Fifth Third Bank's Empowering Black Futures Neighborhood Program (a \$180 million initiative designed to support and revitalize majority-Black communities that have experienced disinvestment). "Wage and household income disparities remain entrenched. The neighborhood's housing gap offers limited options for people with low to middle incomes. State test scores are the lowest among the city's public high schools. The neighborhood has no grocery and just one pharmacy."¹⁹

Fifth Third Bank is supporting a locally-based nonprofit, Partners Achieving Community Transformation (PACT), with a \$20 million investment. The funds will be disbursed as grants and loans by Enterprise Community Partners (a national CDFI and co-publisher of this book). This team is using tried and tested community development strategies to build up the local economy of the Near East Side, including developing a Black-owned bank and grocery store, home-buying assistance, expanded medical and dental services, and public art to reinforce a sense of community and place.²⁰

PACT is also a network member of Purpose Built Communities, a national nonprofit organization that uses a cross-sector/place-based approach to

¹⁹ Fifth Third Empowering Black Futures Neighborhood Program, *The PACT community is changing the Near East Side's economic trajectory with an economic revitalization initiative called Delivering Black Dreams*, available at <https://53neighborhoodinvest.org/neighborhood/near-east-side-columbus>.

²⁰ Ibid.

creating stronger neighborhood economies and thriving communities. According to its CEO, Carol Naughton, Purpose Built works nationally with community leaders, like PACT, to tackle four aspects of neighborhood prosperity simultaneously: expanding local housing stock to meet the needs of residents across incomes and at different points in their lives; improving educational outcomes for every child in the neighborhood; developing neighborhood amenities and programs that support health outside the doctor's office; and bringing neighborhood-level economics to the community so that residents' needs are met and to create more opportunities for jobs and entrepreneurship.²¹

I try to summarize the strategies that organizations like Enterprise and Purpose Built use to help neighborhoods and individuals thrive in a book I wrote called *The Fifth Freedom: Guaranteeing an Opportunity-Rich Childhood for All*. In it, I argue that all communities deserve to have the place-based advantages that help create opportunity—affordable housing, good schools, transportation, and living-wage jobs. I call these things “guardrails.” But guardrails are not enough. As any of us know, literally a thousand things must go right in any individual's life to get them into adulthood with the skills they need to thrive. Here we often need a nudge, a helping hand. I refer to these interventions—tutoring when your grades drop, counseling when you're depressed, drug rehab after an overdose—as “social airbags.”²² Working together, guardrails and airbags help guarantee a freedom to an open future where every child can develop to their fullest capabilities.

²¹ Email with Carol Naughton, Nov. 20, 2023.

²² This idea was first articulated by Harvard professor, Robert Putnam, in his book *Our Kids*. Robert D. Putnam, *Our kids: The American dream in crisis* (New York: Simon & Schuster, 2015).

And a local community, like the Near East Side—fortified with guardrails and airbags—is better positioned to take advantage of a significant new Industrial Policy investment nearby. Intel is investing (with federal aid) \$20 billion to build two factories not far from the Near East Side, and Columbus might also become one of two semiconductor manufacturing clusters financed by the CHIPS Act, according to U.S. Commerce Department officials.²³ What makes Columbus such a strong competitor for these investments is the cooperation of overlapping regional institutions, especially in education. The Ohio State University (a cofounder of PACT), the community college system, and the K-12 school system are working together to make sure these new plants have a trained workforce.

Kristi Clouse, from the nonprofit JobsOhio, reminds us that for this historic investment to be truly successful, it must bring prosperity to groups that have been overlooked in the past. “One of the big components we talked about today with all our partners including the institutions sitting at the table is truly thinking differently about populations that have been underrepresented or not considered,” Clouse told the *Columbus Dispatch* in October 2023.²⁴

But if the Near East Side is going to benefit from this historic investment, it must do more than participate in preparing a pipeline of qualified workers for Intel—as important as that is. When these interventions are working right, they allow neighborhoods to capture value at multiple levels—at the household level through homeownership and wealth building via employment at strong local businesses, and at the community level through ownership using tools such as land trusts and neighborhood real estate investment trusts. And the region will prosper by attracting big investments like Intel’s. In the final analysis, the Near East Side is an example of opportunity interventions working at all scales—household, neighborhood, region, state, and nation.

23 Mark Williams, “With \$20 billion from Intel, Ohio in mix to become US semiconductor manufacturing cluster,” *Columbus Dispatch*, October 30, 2023. Available at www.dispatch.com/story/business/manufacturing/2023/10/30/ohio/71321890007/.

24 Ibid.

MAKE THE PROBLEM BIGGER

If a bottom-up/top-down multi-sector approach seems too complicated, I suggest leaning into President Eisenhower’s famous strategy to make the problem bigger. He is credited with saying:

“Whenever I run into a problem I can’t solve, I always make it bigger. I can never solve it by trying to make it smaller, but if I make it big enough, I can begin to see the outlines of a solution.”²⁵

Our single-program interventions of the past have not worked. Neighborhoods are complex, adaptive systems. They require hundreds of coordinated interventions across sectors—not just single solutions—to turn them back into places that generate opportunities for residents. Disadvantaged neighborhoods share a similar root cause for poor outcomes across multiple sectors—disinvestment. But the solutions need to come from multiple sectors and be coordinated. When climate interventions are coordinated alongside health and economic interventions, we will finally have the new business models and resources to make significant investments in those places. And as we know, improvements in some sectors start spilling into other sectors as well. We can go from a vicious cycle to a virtuous one for neighborhoods like the Near East Side and thousands more across the country.

²⁵ Joseph Lucco, “The Eisenhower Principle Applied to Business Strategy Management,” *Clearpoint Strategies*, March 1, 2023. Available at www.clearpointstrategy.com/blog/eisenhower-principle-and-business-strategy-management.

DAVID J. ERICKSON heads the community development team at the Federal Reserve Bank in New York. He has been a leader in the collaboration between the Federal Reserve and the Robert Wood Johnson Foundation in bringing the health sector together with community development. He co-created and co-edited the *What Works* book series and is the author of *The Fifth Freedom: Guaranteeing an Opportunity-Rich Childhood for All* and *The Housing Policy Revolution: Networks and Neighborhoods*. David has a doctor of philosophy in history from the University of California, Berkeley, and an undergraduate degree from Dartmouth College.