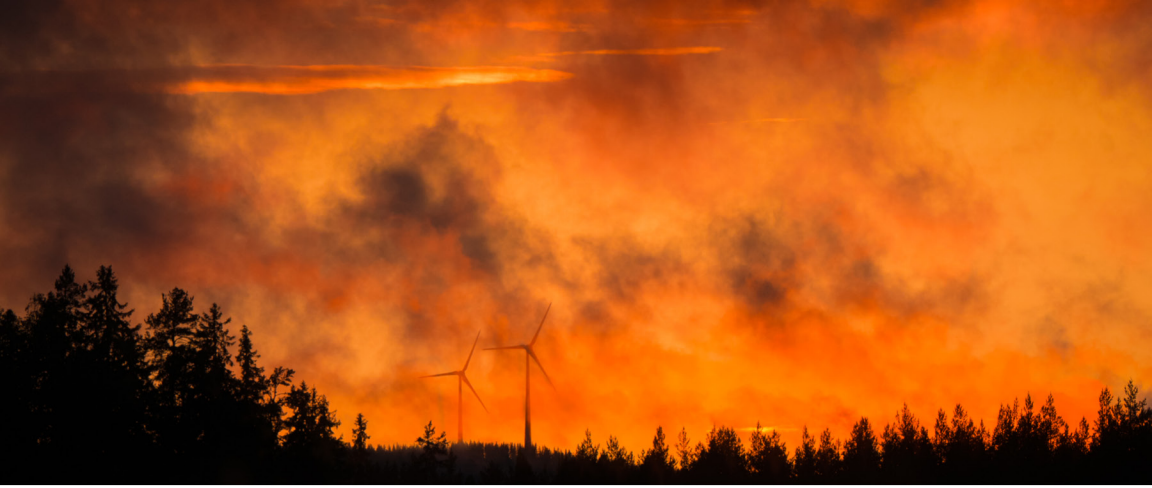
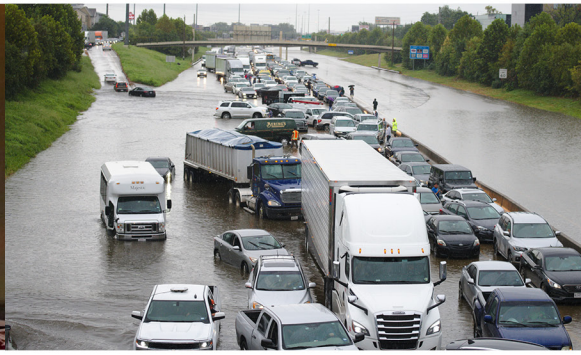


Resilience Matters

Action in an Age of Uncertainty



Edited by

Laurie Mazur

About the Urban Resilience Project

Over the last three decades, Island Press has published seminal works on resilience, ecosystems, and sustainable urban design. As our cities confront turbulent times, much depends on how resilience is defined and implemented. Seeing an opportunity to shape that outcome, Island Press launched the Urban Resilience Project in 2013, with the support of The JPB Foundation and The Kresge Foundation.

The project's goal is to advance a holistic, transformative approach to thinking and action on urban resilience in the era of climate change, an approach grounded in a commitment to sustainability and equity. We bring together leading thinkers with a broad range of expertise to generate and cross pollinate ideas. And we share those ideas in a variety of media—books, articles, interviews, webinars, podcasts, educational courses, and our annual compilation journal *Resilience Matters*.

For more information, and to find out how you can get involved, visit www.islandpress.org/URP

About the JPB Foundation

and its environment program

The JPB Foundation's mission is to enhance the quality of life in the United States through transformational initiatives that promote the health of our communities by creating opportunities for those in poverty, promoting pioneering medical research, and enriching and sustaining our environment.

The JPB Environment Program's goal is to enable healthy and resilient communities by enriching and supporting the environment because JPB believes it measurably impacts the well being of our human and natural systems. A theme across all program areas is the intent to protect, enhance, and advance the human and civil rights of individuals.

About the Kresge Foundation

and its environment program

The Kresge Foundation is a $3.5 billion private, national foundation that works to expand opportunities in America's cities through grant making and investing in arts and culture, education, environment, health, human services, and community development in Detroit. Its Environment Program helps cities implement comprehensive climate-resilience approaches grounded in equity.

For Kresge, resilience is more than just withstanding shocks and stresses—it also includes the capacity to prosper under a wide range of climate-influenced circumstances. In the long term, resilience is possible only if society reduces greenhouse gas emissions and avoids the worst impacts of climate change. So, strengthening a community's resilience requires efforts to:

- Reduce the greenhouse gas emissions that contribute to climate change;
- Plan for the changes that already are under way or anticipated;
- Foster social cohesion and inclusion.

As a foundation committed to creating opportunity for low-income people and communities, Kresge is particularly concerned with the effect climate change has on people with limited economic resources. It works to engage people from historically underrepresented groups in efforts to build resilient communities and address climate change.

About Island Press

Since 1984, the nonprofit organization Island Press has been stimulating, shaping, and communicating ideas that are essential for solving environmental problems worldwide. With more than 1,000 titles in print and some 30 new releases each year, we are the nation's leading publisher on environmental issues. We identify innovative thinkers and emerging trends in the environmental field. We work with world-renowned experts and authors to develop cross-disciplinary solutions to environmental challenges.

Island Press designs and executes educational campaigns in conjunction with our authors to communicate their critical messages in print, in person, and online using the latest technologies, innovative programs, and the media. Our goal is to reach targeted audiences—scientists, policymakers, environmental advocates, urban planners, the media, and concerned citizens—with information that can be used to create the framework for long-term ecological health and human well-being.

Island Press gratefully acknowledges the support of The JPB Foundation and The Kresge Foundation, without whose partnership this journal would not be possible.

Resilience Matters

Action in an Age of Uncertainty

Edited by

Laurie Mazur

ISLANDPRESS | Washington | Covelo | London

Keywords: resilience, sustainability, economic justice, social justice, environmental justice, equality, urban resilience, climate change, environment, urban design, urban development, sustainable development, city planning, urban planning, infrastructure, nature, cities, agriculture, energy, climate science, environmental science, community development, food systems, Donald Trump, Hurricane Harvey, Superstorm Sandy, Hurricane Matthew, Hurricane Dorian, Hurricane Irma, Hurricane Maria, bike lanes, automobiles, cars, street planning, racial justice, conservation, solar power, green infrastructure, stormwater infrastructure, flooding, hurricanes, wildfires, Clean Water Rule, urban agriculture, water systems, public health, labor, urban parks, transportation, ecological resilience, anti-racism, just transition, climate justice, alternative energy, renewable energy, energy democracy, clean energy, solar energy, climate resilience, climate adaptation, water cycle, wastewater, social design, transit, fill and build, retail apocalypse, historic preservation, tactical urbanism, Green New Deal, redlining, food desert, food access, Supplemental Nutrition Assistance Program (SNAP), procurement, opportunity zones

Designed by Kyler Geoffroy using Adobe® InDesign.®

Cover design by Maureen Gately
Highway image credit: Sean Hannon acritelyphoto / Shutterstock.com
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ISBN: 978-1-64283-169-6

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Introduction

The Year When Climate Change Got Real

Laurie Mazur

The year 2019 may be remembered as the year when climate change got real.

It was a year that saw the hottest month in human history (July), and one that capped the warmest decade on record. There was unprecedented heat in Europe, and dozens died in India as temperatures soared to 123 degrees Fahrenheit. At year's end, heat and drought fueled apocalyptic bushfires across Australia.

Records were obliterated in the U.S. as well, as the mercury hit 90 degrees in Alaska. By mid-year, the nation had seen its wettest 12-month period in history. Epic floods inundated the Midwest, delaying planting season and compounding farmers' economic misery.

Meanwhile, the UN reiterated its warning that we have just over a decade to bend the curve of carbon emissions to prevent catastrophic climate change. Yet global emissions continued to rise, as atmospheric CO2 reached its highest level in three million years.

But, if climate change got real in 2019, climate resilience got realer. The Trump Administration may have abdicated its responsibility to head off climate chaos, but so many others—mayors, activists, scientists, ordinary people—stepped into the breach. At the Island Press Urban Resilience Project, we have the great privilege of helping those climate leaders tell their stories, many of which are collected in this volume.

Here, you can read about Susan Liley, a grandmother in DeSoto, Missouri who felt called to activism after her hometown flooded four times in three years (page 6). She's not alone: across the U.S., flood

survivors like Liley are getting organized, asking hard questions and demanding change.

And you can learn from Zach Brown, a Montana state legislator who helped convene farmers, ranchers and scientists to plan for a warming world (page 55). "They may not agree on whom to vote for, or which TV news channel to watch," Brown writes, "But they do agree that the climate is changing, and that agriculture can and must adapt."

Many of the inspiring stories collected here feature cities at the forefront of climate leadership. On page 91, you'll see which metropolitan areas are working to promote energy efficiency and scale up renewable energy sources like solar and wind—while making sure the benefits of green energy are shared equitably. And, you can find out how the humblest tool of government bureaucracy—procurement processes—can be leveraged to create the resilient cities of the future (page 186).

Climate-smart cities are actively planning for a future that looks very different from the past. For example, the city of Charlotte, North Carolina chose not to consult outdated FEMA maps when calculating flood risk. Instead, "we look ahead," says Tim Trautman, program manager for Charlotte-Mecklenburg Storm Water Services, "and base flood plain maps on future conditions" that account for wetter, wilder weather (page 29). Same in Missoula, Montana, a city that is coping with its first-ever serious heat waves. There, government staff are teaming up with scientists to map heat patterns and protect the most vulnerable residents (page 37).

Encouragingly, we are seeing new cross-sector partnerships—like the Just Growth Circle, in Atlanta—that fuse climate concerns with long-standing struggles for racial and social equity (page 115).

Such partnerships are producing a new approach to climate adaptation, focused on building economic and environmental resilience in low-income communities and communities of color. In Washington, DC, for example, a nonprofit housing group joined with a solar-energy company to provide solar power and a "resilience center" in an affordable apartment building (page 112). The solar panels save residents money on electricity, while the resilience center provides respite during storms and power outages.

These efforts take a clear-eyed view of the challenges ahead, and reduce impacts on the most vulnerable. But resilience isn't just about preparing for the worst. Increasingly, it's about envisioning a greener, fairer future.

For example, Denise Fairchild and Anthony Giancatarino envision a transition from our top-down, fossil-fueled energy system to community-owned green power (page 148). That transition could "put power, quite literally, in the hands of the people," they write, by bringing "needed jobs and investment to . . . the scarred mountain towns of Appalachia, the low-income neighborhoods shadowed by power plants and refineries, and communities being displaced by sea-level rise." And, as Fairchild and Giancatarino report, that transition has begun, in communities from Richmond, California to Philadelphia, Pennsylvania.

Climate change is real, and the stories in this volume do not sugar-coat the challenges before us. But here you will also find stories of real resistance and resilience. In the face of an uncertain and frankly terrifying future, people are waking up, getting organized, building new partnerships and envisioning a better world. As Arundhati Roy once said, "Another world is not only possible, she is on her way."

SECTION I

Climate Adaptation, Climate Justice

Across the U.S., Flood Survivors Are Growing in Number—and They Aren't Just Seeking Restitution, but Answers

Laurie Mazur

Originally published April 23, 2019 in Ensia

Susan Liley didn't set out to become an activist. "A grandma, that's all I am," she says. But when her hometown of De Soto, Missouri, flooded four times in three years, Liley felt called to act.

After the first couple of floods, Liley did what she could do to help her neighbors: She dragged waterlogged furniture from a friend's home and delivered eggs from her chickens to those without electricity. But the third time around, Liley says, "I got mad."

Across the U.S., flood survivors are growing in number and—like Liley—they're getting mad and fighting back. From city streets to subdivisions and trailer parks, they are comparing notes with neighbors and asking hard questions about the rising tide. They are messaging each other on Facebook, packing meeting halls and lawyering up. And, increasingly, they are seeking not just restitution, but *answers*. Flood survivors are identifying the root causes of repeated flooding and working toward solutions.

Most recently, their ranks were swelled by a March "bomb cyclone" in the Upper Midwest, which unleashed catastrophic flooding that was visible from space. According to the 2018 National Climate Assessment, climate change is driving more severe floods in many parts of the country.

Sea-level rise is inundating coastal cities, where "sunny-day flooding" is now a thing. Rising seas contribute to high-tide flooding, which has grown by a factor of five to 10 since the 1960s in many U.S. coastal communities—and that trend that is expected to accelerate in the future. Farther inland, increased rainfall is a major culprit. Because a warmer

atmosphere holds more water vapor, the past few decades have seen many more "heavy precipitation events," especially in the Northeast, Midwest and upper Great Plains. In the Northeast, for example, heavy rains pack 50 percent more water than they did before 1991. Not surprisingly, those deluges have led to more flooding from Albany, New York, to Duluth, Minnesota.

Not Just the Climate

But climate isn't the only reason we are seeing more floods. Ill-conceived development, especially in flood-prone areas, replaces water-absorbing forests and wetlands with impermeable surfaces—so there is simply nowhere for all that water to go. While the risks of building in a floodplain may seem obvious, such construction continues nonetheless—in part because waterfront properties are in high demand, commanding premium prices that boost real estate tax income for local governments.

In De Soto, both factors are at play. There is more precipitation, according to Liley: "It used to be 3 or 4 inches of rain, and now we get 7 to 10." But the town also hugs the banks of flood-prone Joachim Creek. Over the years, construction of new homes and roads has thwarted the creek's natural drainage and put more people in harm's way.

Liley remembers tragedy striking in 2003, when a flash flood in Joachim Creek led to one death. "We didn't realize it was a preview of things to come," Liley says. In 2013, another flash flood killed two people: an elderly woman who was washed away by the torrent, and another who died while being evacuated. When De Soto flooded again in 2015, Liley reached her limit. "Three of us ladies were talking on Facebook and said we have to do something. So we met the next morning, and organized the Citizen's Committee for Flood Relief."

The committee's first priority was to figure out some kind of early warning system. While coastal and riverine floods can be (imperfectly) predicted in advance, flash floods by definition arrive unannounced. Second, they sought to understand the root causes of repeated flooding and address them.

Higher Ground

Liley's group got a powerful assist from an organization called Higher Ground (formerly Flood Forum USA). A project of the nonprofit

Anthropocene Alliance, Higher Ground is the largest national flood survivor network in the U.S. It currently links 43 flood survivor groups in 20 U.S. states—inland and coastal, urban and rural, representing a wide range of demographics and political affiliations. Higher Ground was founded by Harriet Festing, a former British civil servant and goat farmer who came to the U.S. in 2011 when a Conservative government eliminated the climate and energy department for which she worked. Festing took a job with the Center for Neighborhood Technology in Chicago. There she met a woman named Helen Lekavich, a hairstylist-turned-organizer who demonstrated what a passionate group of flood survivors could accomplish.

After enduring repeated floods in her town of Midlothian, Lekavich and her neighbors organized a group called Floodlothian Midlothian, which eventually won a US$7.6 million flood control project from the Metropolitan Water Reclamation District. With 41 million people estimated to be living in flood zones, Festing says, "imagine if we could find Helen Lekaviches across the country and create a unified voice! So that's what we set out to do." She reached out to survivors' groups—finding them on Facebook, in local media and through word of mouth—and Higher Ground was born.

"The leadership to address flooding and other climate impacts needs to come directly from the people and communities that are most affected," says Festing. But these issues are complex, requiring expertise beyond the understanding (and pocketbooks) of survivor groups. So, in partnership with the American Geophysical Union's Thriving Earth Exchange and three other partners, Higher Ground matches flood survivors with experts in hydrology, floodplain management, citizen weather monitoring, insurance, law, case management, planning, and architecture.

And Higher Ground links survivors' groups with one another, so they can trade notes and strategies—for example, by holding a monthly videoconference and leadership forum.

In De Soto, Higher Ground matched Liley's group with scientists from Saint Louis University and the U.S. Geological Survey who helped create a simple but effective flood warning system. Sensors in Joachim Creek now send messages to a phone app that pings residents when the creek rises over a certain level. "When it's 8 feet over, we're in trouble," says

Liley. "But when it's 10 feet over, you better be out of there because it's going to be in homes."

Higher Ground helped Liley's group petition their senators and members of Congress to commission a US$200,000 watershed study for the city of De Soto. Conducted by the U.S. Army Corps of Engineers and its state-level Silver Jackets team, Liley says the study will show how green infrastructure, such as restored wetlands and parks, can minimize flood risk along Joachim Creek. The study's completion was delayed by the recent federal government shutdown. And other hurdles remain—namely money. "All this work that the Corps of Engineers has done, without funding for implementation, we will get nowhere," Liley says. Still, identifying the problem is a crucial first step.

A Flooding Whodunit

Sometimes, identifying the problem has all the drama of a whodunit. That's how it played out in Richwood, Texas, where residents rode out Hurricane Harvey without any notable flooding.

Then, "four days after Harvey vamoosed on out of here, water started backing up into our neighborhood," remembers Kevin McKinney, a self-employed transportation safety consultant.

McKinney had 3 feet of water in his home for nine days. "I lost everything I had," he says. Yet, despite Harvey's historic rainfall totals, something did not sit right for McKinney and his neighbors. "There are people who have lived here for 45 to 50 years, and never, ever flooded," McKinney says. "Why now?"

Richwood residents did some investigating; one even deployed a camera-equipped drone to get a bird's eye view. They claim to have discovered that the City of Lake Jackson used pumps and sandbags to divert floodwater to Richwood's Bastrop Reservoir, which overflowed into Richwood residents' homes. "They had three pumps going at 6,800 gallons a minute, running for 10 days," says McKinney. "The water was actually flowing uphill." The City of Lake Jackson denies the charges.

The people of Richwood organized. They formed a Facebook group called Flood Victims of Richwood and called meetings that packed a local church. And they joined up with Higher Ground, which matched them

to a hydrologist who is using lidar data to analyze the post-Harvey flood. Now more than 400 homeowners are suing the City of Lake Jackson for US$45 million, according to Matias Adrogue, the lawyer representing the citizens of Richwood who brought the lawsuit.

McKinney says the goal of the lawsuit is to find out what happened and make sure it doesn't happen again. And he wants to see the survivors compensated for their losses. But there is a deeper principle of fairness he wants to address: "We need to find a solution together," McKinney says. "You just don't flood your neighbors."

The Rich Get Richer

Questions of fairness are increasingly on flood survivors' minds. Floods are sometimes seen as equal-opportunity disasters that affect rich and poor alike. But a substantial body of research (highlighted in a recent exposé by NPR) shows that federal aid actually leaves wealthy, white communities better off after natural disasters—while the reverse is true for low-income communities of color.

Constance C. Luo, a community organizer for the Texas Organizing Project in Houston, has seen this play out in the recovery from Hurricane Harvey. "Harvey did not discriminate," she says. "People in richer areas did severely flood, and it was terrible. But whether you got assistance depended on things like the flexibility of your employer or whether you had flood insurance. So many wealthy families found themselves to be prosperous after Harvey, while other families go bankrupt."

The people who went bankrupt, Luo says, are those who work low-wage jobs and cannot take time off work to navigate the complex bureaucracy of disaster assistance. A disproportionate number come from the low-income African-American and Latino neighborhoods of Northeast Houston, where a lack of investment in infrastructure and poor drainage led to a high number of flooded homes.

Given that disparity, the Texas Organizing Project fought for—and won—a county program that prioritizes investment in low-income neighborhoods for flood recovery and prevention. But that plan has drawn fierce opposition from affluent Houstonians who say bond funds should be evenly dispersed throughout the city. "The question," says Luo, "is whether the bond projects should be equal to everyone, or *equitable*—weighted

toward neighborhoods that traditionally have had very little attention to their flood infrastructure. We stand on the side of equity."

To bolster its case for equitable flood recovery, the Texas Organizing Project joined up with Higher Ground in 2018. The group was matched with geologist Edith Newton Wilson, owner of Rock Whisperer LLC in Tulsa, Oklahoma, who is mapping flood risks in Northeast Houston. The maps show high and low ground, bayous, drainage infrastructure and other factors that shape risk and resilience.

For Luo and other community residents, the maps are revelatory. "There's real power to being able to identify your place on a map, and say 'Oh! People on the other blocks near me suffer from this, too! Oh! We're all in the floodplain! That's why our insurance is so high.'" In this way, the mapping project is educating Northeast Houstonians about flood risk management—and providing vital data for advocacy. "I strongly believe that community, fighting hand in hand with science, is an unbeatable force," says Luo.

The Future of Flooding

That unbeatable force will have much to contend with in the decades to come, as climate change and development raise flood risks across the U.S. In some places, those risks pose an almost existential challenge; the future of the community hinges on finding better ways to channel, divert and live with water.

Charleston, South Carolina, is one such place. Thanks to sea-level rise, land subsidence and development in low-lying areas, Charleston is on track to experience sunny-day flooding more than half the year—187 days—by 2045.

"What does that mean?" asks Eileen Dougherty, who runs a commercial fishing business in Charleston. "That's going to massively change the way that we live. That affects our basic safety services, our firefighters. Can the ambulance get to your house? Can children get to school? So, we have a lot of things to look at here in Charleston."

Dougherty—like Liley and McKinney—became an unwitting activist on this issue when her land began to flood. The culprit, she believed, was the new 294-unit apartment building next door, which had altered

the soil and the flow of water through the neighborhood. She reached out for help from the local municipalities, to no avail. Dougherty now believes that development in Charleston takes what she calls a "whack-a-mole approach,"where large developments are popping up at an alarming rate without adequate drainage solutions and are flooding surrounding properties.

So Dougherty got involved with a group called Fix Flooding First—another Higher Ground affiliate—because she wants to see a more comprehensive approach. "We need to have all the municipalities, the governing agencies, on the same page with building and zoning in a way that incorporates best practices," she says. "We need to build in a way that preserves our natural environment, preserves our culture and preserves our ability to have that tourism revenue. And I think we can do all that."

While each community's challenges are unique, common themes and challenges call out for action at the state or federal level—and even in the most vulnerable places, there is much that can be done to reduce the toll of flooding. For example, across the nation, developers continue to build in floodplains, finding workarounds to ordinances and federal regulations—and, according to Festing, they sometimes adopt dubious tactics to do so. Higher Ground members are alerting one another to these tactics and reporting them to the appropriate authorities, Festing says. In this way, they hope to spark change at a national scale.

There is no way to sugarcoat the challenges ahead. But as the waters rise, so do awareness and determination. Flood survivors are no longer simply victims; they are an ever-growing constituency for change. They are asking vitally important questions. They are challenging longstanding development practices and demanding a more equitable distribution of risks and rewards. They are grappling with the changing climate and its implications for the places we call home.

And they are joining forces. "The big resonating thing that runs through my mind is unity," says Dougherty. "If you can create a united voice, a united front, that is very powerful."

Climate Change Is a Health Emergency. Let's Act Like It

Linda Rudolph and Will Barrett

Originally published February 10, 2019 in The Sacramento Bee

Health professionals are cheering California Gov. Gavin Newsom's "California for All" vision.

Newsom's early actions to expand health care access and prioritize housing, jobs and income security and early childhood education—the "social determinants of health"—are vital strategies to reduce persistent and unacceptable health inequities across the state.

But climate change threatens to undermine even the best efforts to achieve health for all. Climate change is a health emergency. It's impacting our health now and acts as a threat multiplier to exacerbate the state's many social and health equity challenges.

Thousands of Californians have died from heat-related illness, lost homes due to wildfires and landslides, and lost their jobs or their drinking water due to drought. Tens of thousands of people experience worsening asthma and heart disease as a result of wildfire smoke or heat-driven increases in air pollution.

In addition, many California communities already suffer the highest air pollution burden in the nation. Low-income communities and people of color are the most impacted.

These challenges require urgent attention, but our health systems are poorly equipped to address this existential threat to our health and well-being.

The good news is that climate action offers exceptional opportunities to advance health, protect Californians from the catastrophic impacts of

climate change and redress health inequities. That's why dozens of California's leading public health, health care, and community-based health organizations have released a "California Call for Action on Climate, Health, and Equity."

In a public letter delivered to Gov. Newsom, we're calling for climate action to protect public health.

What is climate action for health?

It includes supporting zero-emission vehicle technologies for transit and school buses, delivery trucks, and other vehicles to reduce air pollution and greenhouse gases. It is reducing fossil fuel extraction in California—and protecting frontline communities from the current impacts of extraction—to prevent greater harms to our children.

It's better alignment of transportation investments with climate and health goals to significantly reduce many of the chronic illnesses that now drive health care costs. It's helping children learn to enjoy plant-based diets by offering meat-free options in school lunches.

We also need health action for climate. This means a coordinated public campaign to provide Californians with the information they need to protect against climate health harms. Health care facilities need guidance and support to implement practices that reduce climate pollution and ensure the ability to function during climate-related disasters. And local health departments need increased workforce capacity and resources to protect public health in the era of climate change.

Climate and health action will be most effective when those most impacted have the voice, power and capacity to be full partners in building a healthy and climate-resilient future, with meaningful roles and power in decision-making processes.

All Californians—including those in future generations—have the right to the environmental, economic and social resources needed to live healthy and productive lives. This will require the governor and Legislature to assure that California's investments and policies are carefully constructed to simultaneously tackle climate change, health and equity.

Climate change is a health emergency. It must be treated as such to assure that California has an opportunity to achieve "healthy people in healthy places on a healthy planet."

Our Food System's Reckoning With Nature is Coming

Kevin Walker

Originally published June 5, 2019 in Environmental Health News

On a pleasant spring afternoon nearly five decades ago, I accompanied my father as he walked through our peach and cherry orchards near the Wasatch mountains of Utah.

The bright colors of pastel blossoms in full display did little to ease the anxiety in his face. The cold and snow of winter had given way to warming temperatures announcing an early spring. As swelling tree buds transformed into blossoms, they became vulnerable to freezing temperatures when colder weather returned.

The recent hard spring frost worried him. The reckoning about to happen was unavoidable.

As we walked between rows of trees, he plucked random blossoms for further inspection. Peeling back the petals he looked for the tiny ovary nestled at the flower's base. A still green color brought a sigh of relief. A brown or black color foretold the loss of fruit.

Experiences like these taught me no matter how hard we worked as farmers, food availability always comes down to nature and the environment.

Reckoning with warming

Such memories are never far from the surface when I see images of farmland and farm equipment submerged under water, stranded cattle with no place to go and nothing to eat, or fires raining destruction across vast landscapes.

Farmers today are having to reckon with the unwanted consequences of a warming planet.

From global records first kept in 1850, 17 of the 18 hottest years happened after 2000. In the U.S. alone, since 1980, there have been 241 extreme climatic events, each exceeding $1 billion in losses. In the past three years, the average number of billion-dollar losses has more than doubled the long-term trend.

Severe flooding in the Midwest, where much of the nation's grains and meat animals are raised; intense drought followed by fires then torrential rains in California, the country's number one agricultural state; a record-challenging tornado season—all serve notice that the new normal is anything but normal.

After each event, the reckoning always follows.

Lost connections

Having to reconcile availability of food with nature and the environment is as old as farming itself. No longer content to roam and live from what they could hunt and gather, our ancestors devised ways to stay in one place, alter their surroundings, and boost the supply of food.

By 1804, more than two million years since humans first arrived on the scene, the one billion population threshold was crossed. A mere 123 years later, the population doubled, then doubled again within half a century. Adding the latest one billion people took less than 13 years.

Behind the meteoric rise in population growth and prosperity was human ingenuity that ratcheted up levels of food. Yet the unprecedented abundance of food—which Americans now take for granted—never came with guarantees as to how long it would continue.

In a presentation to health promoters and nutritionists last month, I asked: "Where does food really come from?"

Their choices were: (a) supermarkets and restaurants; (b) 'free' markets; (c) farmers; (d) all of the above; or (e) none of the above. More than eight in 10 selected an answer between options (a) through (d).

Their answers, which reflect the domination of the modern food system in the way we live and relate to food, were not unexpected. America's latest connection to food had taken hold in less than two full-lifetimes.

Today, all we need to know about food is the location of the nearest supermarket or restaurant. All we need to do is bring money.

Want more food? Bring more money.

Societal confidence in our ability to pump out food nonstop has made it easy to avoid reconciling our self-made food system with nature and the environment.

Patenting processes of nature, limiting the diversity of other species, or saturating the environment with chemicals and concentrated animal waste are examples of outcomes we haven't accounted for.

Why?

From increasing food to controlling it

In a matter of decades, innovation from science driving the latest technologies promised to solve any unforeseen consequences. Our ability to increase the supply of food had morphed into presumed *control* over the availability of food.

And the need to consider that somehow our actions and mindsets might one day lessen food availability was easily ignored.

From ancestors whose lives were subservient to food, food had become subservient to us. An understanding of where food comes from had faded fast.

Back on the farm, peeling back a blossom to reveal a darkened ovary meant one thing—the absence of life that a day earlier was alive and doing well. We could buy more tree seedlings, prepare more soil, plant more trees, and prune more branches. We could inject more energy and effort through machinery, petroleum, and labor.

But what we couldn't replace was nature and the environment.

Each tiny ovary was proof that food comes from life. Such life is only possible when the diversity of nature, with its estimated 8.7 million species, combines with an environment attuned to sustain life, while drawing from the finite resources of our planet.

Growing up, I watched as nature and the environment bestowed life and took life away. Some years our orchards were barren, notwithstanding our best efforts. Other years, young peaches came in so thick they had to be thinned to keep tree branches from breaking and provide room for remaining fruit to mature.

Our food does not come from supermarkets and restaurants, 'free' markets, farmers, or the food system. The magic behind food, in all its wondrous forms, is nature and the environment. With good reason, there are no monoculture fields of corn in Death Valley, or banana plantations in Alaska.

The answer to the question I posed was (e), none of the above.

Our biggest threat? Indifference

We have it backwards when we build and never question a food system that puts ourselves at the center. Believing that food is beholden to us and under our control is reminiscent of medieval times when popular beliefs had the Sun revolving around the Earth.

More recently, farmers blamed the Dust Bowl of the 1930s on drought and wind, when farming practices and market incentives were the real forces. In the end, they were paid to change the way they farmed without having to change the way they thought.

Today's relationship to food banishes nature and the environment to the periphery of how we live, instead of at the center. The biggest threat we face is not external but comes from within—it's apathy.

Evidence of widespread indifference is on display when we do not question our approach to food despite rising temperatures, extreme flooding, extended fire seasons, or prolonged droughts—all manifestations of a warming planet.

Carbon dioxide's capacity to retain heat in the atmosphere was known 150 years ago. And we have long known that humans are driving countless species to extinction: a recent United Nations report, years in the making by more than 300 authors in 50 countries, warns that one million species are now in danger of vanishing.

What is happening around us encompasses more than food; yet it's worth asking ourselves: if food was scarce, would we have more respect for the laws of nature and realities of a finite planet?

Our dependence on the wellbeing of other species is absolute. The laws of nature apply universally. The realities of a finite planet never change.

It's worth reflecting on what we forfeit when we minimize our relationship with nature and the environment. We lose an appreciation for how millions of living species grant us life; admiration for the only planet known to support life in a galaxy of lifeless planets; gratitude to be alive at a time when we are not bound by what was once an everyday struggle to overcome food scarcity; and availability of more than 300,000 edible plants, even though our food system diet relies on just a handful.

We also lose the acknowledgment of what food brings to our lives beyond nourishment: cooperation, communities guided by shared norms, pursuing common interests, powers of observation that led to science, grounding our mindsets in reality.

The challenge ahead is to value food enough to know that a reckoning is long overdue. Reconciling our mindset and actions with nature and the environment will always be essential for our survival.

How Terrorists Leverage Climate Change

Scott Somers

Originally published September 9, 2019 in New Security Beat

Policymakers and emergency managers tend to build a conceptual wall between natural hazards and terrorism. The causes of—and remedies for—these two kinds of disasters are seen as separate and distinct. But, in the era of climate change, the wall between the two is crumbling.

As climate and weather patterns shift, the resulting environmental crisis is being leveraged as a tool for terror and political violence. Around the world, environmental stress due to unpredictable weather catalyzes political violence, further undermining weak governments. And in the United States, the environmental crisis is a "threat multiplier" that could enable terrorism, overwhelm response capabilities, and threaten populations and critical infrastructure.

The emerging threat is not about eco-terrorism—a term used to describe acts of violence in support of ecological or environmental causes. Rather, there is a growing potential for vulnerable ecosystems to be exploited or destroyed as a means to intimidate or provoke a state of terror in the general public for a political, ideological, or philosophical agenda.

Militant organizations including ISIS, Hezbollah, and Al Qaeda have openly promulgated a strategy of ecological jihad. In contrast to other methods employed by extremists, environmental tactics, such as contaminating water supplies or starting fires, can be quickly planned, require little technical expertise to execute, and are harder to detect. Water shortages due to shifting weather patterns increase vulnerability to these methods with significant consequences for people, infrastructure, and the economy.

Weaponized Fire and Water

Severe drought as a result of climatic weather shifts raises vulnerability of water systems as reservoirs continue to dry up. As global fresh water supplies become increasingly scarce, extremist groups are stepping up attacks and manipulating supply as a strategic tactic of coercion.

Most analysts suggest that, since water itself would dilute any toxin or pathogen, the quantity of material needed to sufficiently contaminate the supply makes such an attack technically difficult. But, as the level of water in reservoirs continues to fall due to drought, this tactic becomes increasingly feasible. Extremist groups, including Al Qaeda, have expressed interest in contaminating drinking water in the United States. A report by the New Jersey Office of Homeland Security and Preparedness identified 26 specific threats of water contamination in the United States between 1968 and 2008.

Drought also creates tinderbox conditions, increasing the potential for intentionally set fires near populated areas and critical infrastructure. Fire as a tool of warfare is well documented. The Lebanese militant group, Hezbollah, used wildfire as a part of its military strategy, as well as an economic and psychological attack, during its 2006 conflict with Israel. In 2012, an issue of the online magazine *Inspire* surfaced on jihadi Internet forums detailing how to construct an "ember bomb" to target forested areas of the United States.

The exposure of U.S. communities to wildfire makes wildfire a potentially potent weapon for economic warfare and mass destruction. One military officer wrote in his 2005 thesis: "An opportunistic terrorist can unleash multiple fires creating a conflagration potentially equal to a multi-megaton nuclear weapon." Wildfires can have a profoundly negative effect on a region's economy: the damage from California's 2018 conflagrations is estimated at $400 billion. And wildfires pose a threat to critical infrastructure, especially the electric grid, creating widespread outages and cascading effects.

Reducing Vulnerability and Building Community Resilience

Current policies to protect critical infrastructure and key resources focus on hardening and monitoring. In addition, sustainability practices and ecosystem management must become part of a cohesive strategy for national infrastructure protection.

First, we need to acknowledge the connection between the natural environment and vulnerability to terrorism by integrating sustainability principles and practices into the National Homeland Security Strategy. The U.S. military recognizes that global competition for finite natural resources is a national security concern and has embraced sustainability as a vital strategic security element and mission enabler.

Second, governments and utilities must fund investments in smaller scale, distributed infrastructure systems. Centralized utilities with large, complex distribution systems are more vulnerable to targeted disruptions with consequences of failure spread across a larger population. Distributed power systems, such as on-site photovoltaics or micro-grid generation, reduce the risk of widespread power failures as well as the cascading effects and economic damage that result.

Decentralizing is important in the water sector as well. New sustainable water technologies are emerging that integrate decentralized systems with traditional, centralized conveyance and treatment networks. Integrating principles and technologies of distributed infrastructure might also enhance the EPA Water Security Initiative.

Finally, we must restore and rebalance ecosystems to mitigate the terrorism threat. Foresters and fire protection experts are increasingly realizing that a century of aggressive federal fire suppression policy has led to uncharacteristically dense forests. Such conditions generate more intense conflagrations, prevent more water from reaching underground aquifers, and reduce the health of the forests.

As part of its mission, the Department of Homeland Security should support efforts by the National Forest Service to develop, test, and demonstrate approaches to ecosystem restoration that are environmentally sound, economically sustainable, and socially acceptable.

In a changing climate, the wall between natural disasters and terrorism is breaking down, creating new vulnerabilities. But a holistic approach offers opportunities to address both problems at once. By integrating sustainable principles and practices into the national homeland security strategy, we can protect valuable natural resources and reduce the potential for the environment to be exploited as a tool of terror.

Storms and Rising Seas Threaten Coastal Ecosystems—Here's What We Can Do

Jeff Peterson

Originally published November 6, 2019 in The Revelator

A century from now, the U.S. coastline will look very different from how it looks today. In the coming decades our beaches, wetlands and estuaries along the shore will be lost or degraded by a one-two punch of more severe storms and rising seas. This combination will drive communities inland and force the relocation of critical infrastructure. The consequences for fish, wildlife and ecosystems could also be devastating.

We're already getting a glimpse of how bad things can get.

The three major storms of 2017—Hurricanes Harvey, Irma and Maria—caused more than 3,000 deaths and some $275 billion in damages. The longer-term ecosystem impacts of major storms like these are harder to quantify, but no less important. These include shifting of beaches and dunes, saltwater intrusion to freshwater systems, ecosystems contaminated by polluted floodwaters, and damage to habitat, oyster beds and coral. Rising sea levels are steadily pushing storm damage farther inland.

The country has done surprisingly little to meet this daunting challenge. As I wrote in my book A *New Coast: Strategies for Responding to Devastating Storms and Rising Seas*, there are steps that need to be taken now to help protect coastal ecosystems and the communities that depend on them.

Measuring Loss

A first step toward better protecting beaches and coastal wetlands is to understand the risks they face from storms and rising seas.

Scientists predict that as the climate warms, coastal storms will become more intense and melting glaciers and ice sheets could push global sea level up four feet by 2100. Along the U.S. coast, the rise in sea level could be 15 to 25 percent higher due to land subsidence and ocean dynamics.

What will this mean for ecosystems? It's hard to know exactly.

There is currently no national assessment of how ecosystems along the U.S. coast will change. What little we do know points to serious decline in the health of these resources.

For example, a study of the Gulf of Mexico region predicted these losses of coastal wetlands by 2060: 37 percent in Texas, 32 percent in Florida, and 26 percent in Alabama and Mississippi. A 2017 study by the U.S. Geological Survey found that up to 31 percent of California beaches would be lost in the event of 3 feet of sea-level rise and 67 percent in the event of 6 feet.

As beaches and wetlands are inundated or migrate inland, some of the ecosystem services they provide will be lost. We are likely to see diminished abundance and diversity of fish and wildlife. Other benefits of coastal ecosystems that are at risk include protection from the impacts of storm surges, protection of water quality, mitigation of coastal erosion, and sequestration of carbon.

The effects of more severe storms and rising oceans on fish and wildlife are not well studied, but the Center for Biological Diversity (publisher of *The Revelator*) reported that 233 threatened and endangered species in 23 coastal states—roughly 1 out of 6 of the country's protected species—are at risk from sea-level rise.

Manmade Threats

In addition to suffering damages from storms and gradual inundation by rising seas, coastal ecosystems may fall victim to human efforts to protect communities and infrastructure from these risks.

Built structures such as seawalls, damage beach systems and can prevent healthy functioning of marshes and wetlands. Living shorelines, which use natural materials such as plants, sand, or rock to stabilize

the shoreline, are an improvement over conventional concrete seawalls but can have some of the same damaging impacts. Beach restoration projects can also harm the ecosystem of the beach as well as the sites from which sand is taken.

Still another manmade threat is the failure to provide space for coastal ecosystems to migrate landward as seas rise. As the inevitability of stepping back from the current coastline is better recognized, land areas that are safe from storms and rising seas will be committed to meet human needs. Ecosystems could lose out on this valuable space.

Strengthening Protections

So what do we do?

The good news is, we already have a lot of the tools and programs we need to make sure that coastal ecosystems are protected as the climate warms. For example, the Coastal Zone Management Program supports state planning for coastal protection. But existing programs need to be strengthened and expanded.

A key first step should be a careful mapping of existing coastal ecosystems and of the potential for successful landward shift of these resources. With such an atlas in hand, governments and nonprofit organizations can identify upland areas that can become coastal ecosystems over time. Special attention needs to be given to mapping fish and wildlife and assessing ecosystem services, so that gains or losses can be tracked and migration corridors protected as these ecosystems shift geographically.

Some coastal mapping initiatives are moving in this direction. For example, the National Fish and Wildlife Foundation has developed a Regional Coastal Resilience Assessment that identifies "resilience hubs" and other information to guide local conservation planning. Likewise, the Southeast Conservation Adaptation Strategy includes a "blueprint" that identifies places for conservation and restoration.

When it comes to diminishing manmade threats, some states have restricted the use of seawalls and similar hard protection structures. Development on some coastal wetlands is limited by the permit program under section 404 of the Clean Water Act. Nonprofit organizations like the

Nature Conservancy are working to protect these resources though acquisition or purchase of easements.

But that won't be enough.

Protecting both existing ecosystems, and the areas these ecosystems will migrate to, will require major new investment in planning and significant new funding to implement plans.

Federal agencies will need to work with state and local governments and nonprofit organizations to successfully manage a long-term landward migration of coastal ecosystems. This will require creating a planning process able to make hard decisions to find space to allow ecosystems to migrate inland.

States and localities also need to consider alternatives to seawalls and other coastal protection structures that pose barriers to inland migration of coastal ecosystems. Can flood waters from coastal storms be accommodated by elevating buildings or critical infrastructure? Is the permanent inundation that comes with rising seas better managed in the long-run by stepping back from the shoreline to safer ground? The federal government needs to provide the science, policy guidance, and funding that state and local governments need to cope with these questions.

Any effort to protect coastal ecosystems from more severe storms and rising seas has a better chance of success if it occurs in the context of a larger effort to protect communities and infrastructure from these risks. For example, existing federal policies related to flood insurance and disaster relief need to be updated to reduce incentives to locate in risky coastal places. This will reduce future demand for structural protection that harms ecosystems. New national policies to require disclosure of flood and sea-level rise risks to a property at time of sale would also help steer investment away from risky areas.

Finally, the federal government should help coastal homeowners avoid devastating financial losses as growing flood risks drive down property values. For example, the government could buy risky property well ahead of rising sea levels and allow current owners to stay—paying rent but not flood insurance premiums—until the property becomes unsafe. Such

a program would give these homeowners financial freedom to move to safer ground, reduce the chance of widespread structural protection projects, and expand options for landward migration of ecosystems as well as communities.

To increase the odds that healthy coastal ecosystems will line the U.S. coast 100 years from now, governments and nonprofit organizations need to act fast to ramp up existing protection efforts and be effective advocates for these threatened resources.

Fill, Build and Flood: Dangerous Development in Flood-Prone Areas

Laurie Mazur

Originally published October 8, 2019 in U.S. News & World Report

When Terri Straka bought her home on the outskirts of Myrtle Beach, South Carolina, in 1991, flooding was never a problem. Back then, her development was surrounded by coastal wetlands—the lowland forests and blackwater creeks that soak up rainfall and storm surges.

Fast forward to 2016, when Hurricane Matthew roared ashore. By that time, Straka's home was hemmed in by newer developments, constructed on fill dirt to raise their elevation. The newer developments left Straka and her neighbors in a low-lying bowl. Matthew flooded her home, "destroying everything I own," Straka says. She had just rebuilt in 2018 when Hurricane Florence slammed the coast, filling her home with 4 feet of floodwater.

Some call it "fill and build"—the practice of piling fill dirt on flood-prone land, then constructing housing or other developments on top. As Straka and her neighbors have discovered, "fill, build and flood" might be more apt.

You might ask: Why build on flood-prone land at all? The answer is money. Developers can charge a premium for homes near the water. And unbuilt land in the flood plain is cheaper—and more abundant—than land on higher ground. These economic realities are driving a vast expansion of development in flood-prone areas. In fact, between 2000 and 2016, the U.S. saw more population growth in flood plains than outside of them.

State and federal laws typically allow construction in flood plains, as long as buildings are lifted above the expected high-water level. The least

expensive way to do that is by trucking in fill dirt and spreading it on the land. Voila! Higher ground.

But there are several problems with this picture. First, there's the loss of the flood plain itself. When water-absorbing lowlands are paved and developed, there's simply nowhere for excess water to go—so flooding is the inevitable result. It's a problem that is getting worse as the planet warms, bringing supercharged storms, rising seas and increasingly devastating floods.

Fill-and-build also creates islands of higher elevation, creating runoff that may inundate older, lower developments. "You don't need to be a rocket scientist to know how water behaves; it flows to the lowest point," says Ed Browne, a Houston electrical engineer who opposes fill-and-build. Often, those lower elevations are home to low-income people and people of color, communities that fare worse after disasters of all kinds.

Yet the building continues, in part thanks to incentives for local officials. Larry Larson, director emeritus of the Association of State Floodplain Managers, says development of flood-prone areas means that "local officials get a bigger tax base."

"And if it floods, well, federal taxpayers will bail them out," he says. "So they get all of the benefits and none of the harms."

Such incentives have spawned a cavalier attitude toward flooding by local officials and developers. In Southeast Texas—which is now recovering from what was at least its fourth "500-year" rain event in five years—the Harris County Flood Control District routinely uses legal strategies to remove properties from the flood plain, converting them to developable properties, Browne says.

"They are doing this even in the same watersheds where (the Federal Emergency Management Agency) previously bought out flooded properties," he says.

Nonetheless, as floods increase and development accelerates, residents are fighting back. Browne helped start a group called Residents Against Flooding a decade ago; the group has challenged fill-and-build development in the flood plain with lawsuits, and is now pursuing a fraud complaint.

Groups like Residents Against Flooding are taking action elsewhere as well. Harriet Festing leads Higher Ground, the largest flood survivor network in the country. The network represents 50 flood survivor groups from 22 U.S. states. Festing says that fill-and-build is a particular concern of the network, along with reforming flood insurance laws and reducing human-caused global warming.

"The stakes are incredibly high," Festing says. "You have unchecked development in the flood plain, combined with unprecedented storms and flooding. Too many people are one storm away from catastrophe."

But cities can break the cycle of fill, build and flood. For example, Charlotte, North Carolina, enforces strict regulations on fill-and-build development—protecting natural areas around creeks and limiting construction to the fringes of flood plains. Homeowners pay a fee, based on the amount of impermeable surface on their property, that provides a dedicated source of funding for stormwater management.

Importantly, Charlotte does not rely on outdated FEMA maps that calculate future risk by looking at the past. "We look ahead," says Tim Trautman, program manager for Charlotte-Mecklenburg Storm Water Services, "and base flood plain maps on future conditions" that account for increased development and wilder weather.

In addition to limiting future construction, "We 'un-develop' areas by buying out properties that are likely to flood," Trautman says. Those undeveloped areas become greenways and parks that benefit the community and boost adjacent home values. In fact, rising home values offset losses to the tax base from the removed properties, Trautman says.

As Straka and too many others have learned, Charlotte's forward-thinking approach remains the exception, not the rule. And the federal government is heading in the wrong direction on this issue: Last month, President Donald Trump's Environmental Protection Agency repealed the Clean Water Rule, making it easier to build in wetlands.

But that can change. "It all boils down to enlightened local leadership," says Larson of the Association of State Floodplain Managers. "All you need are leaders who look at the problem and decide to do the right thing."

Forgotten First Responders: Caregivers for Sick and Elderly

Denise Fairchild and Monica Russo

Originally published September 23, 2019 in the South Florida Sun-Sentinel

This time, it was a drill.

After decimating the Bahamas, Hurricane Dorian stayed mostly offshore as it churned up the East Coast, avoiding a direct hit to Florida's coastal communities. But in the uncertain days before the storm, thousands of elderly residents were evacuated from the state's nursing homes, in an effort to prevent tragedies like those that struck after Hurricanes Katrina and Irma.

The unsung heroes of that effort are the nursing home staff and other caregivers who packed up and transported their patients. Increasingly, caregivers serve as first responders when disasters threaten the elderly and infirm. Our research shows that these caregivers are nearly as vulnerable as their charges. But with proper recognition and support, caregivers could be a linchpin of successful disaster response, as well as mitigation and recovery.

Low-income and minority communities are hit hardest by hurricanes and other extreme weather. So caregivers—predominantly women of color earning less than $15 an hour—are often personally at risk when disasters strike. They live in flood-prone neighborhoods often with substandard community housing and infrastructure. And many lack the resources, such as savings accounts and reliable transportation, needed to escape or recover from disaster.

Still, caregivers show up for the most vulnerable among us: the elderly, sick, and the physically and developmentally impaired. They may be charged with managing evacuations or helping patients shelter in place, often in facilities that are ill-prepared for climate and other disasters. As

one caregiver remarked in a recent focus group, "We do it all and are trained in nothing." In this role, caregivers' knowledge of patients' needs—daily routines, medical regimens—can mean the difference between trauma and comfort, life and death. Yet, they are rarely included in climate resilience planning and are inadequately supported in disaster events.

Caregivers are underappreciated and underutilized partners in disaster preparedness, response and recovery. They represent a large—and growing—force: SEIU alone represents 1.1 million organized caregivers, serving some 60 million patients across 29 states. Given their critical role in disasters and the vulnerabilities of this population, we must ensure that caregivers get the professional recognition, pay, training, and resources to do this important job well.

First, we can position caregivers as first responders, ensuring their participation in climate resilience planning within affected communities, nursing facilities, FEMA and the larger emergency management ecosystem. We need to professionalize their roles and pay them adequately for their work in climate resilience, providing education on climate change and health, disaster preparedness and post-disaster recovery. We can elevate their roles in climate mitigation by training home health care workers, for example, to conduct home audits, disaster assessments and emergency preparedness.

Wages should rise along with responsibility and skill. In fact, wages should rise, period. Paying caregivers a living wage would recognize the essential work they perform for the elderly and infirm—a category that will eventually include all of us. Those who comfort, bathe, diaper and protect our vulnerable family members should not have to live on the margins, one paycheck away from disaster themselves. Raising wages would boost the resilience of caregivers and, by extension, those who depend on their services.

The need to boost our collective resilience has never been more urgent. In a little more than a decade, one in five Americans will be over the age of 65; by 2035, the elderly will outnumber those aged 18 and under. Moreover, the patient population is expected to triple over the next decade—not just from the aging of Baby Boomers, but also the unrecognized growth of younger patients with ADHD, autism and similar disabilities. As the number of in-home and nursing home patients grows and the planet

warms, we face a rising toll from extreme weather and other disasters. Those converging trends foretell a humanitarian crisis in the making, unless we act now. There is much we can do to head off the worst impacts, including caring for—and empowering—our caregivers.

This time, it was a drill—at least for the elderly Floridians who evacuated ahead of Hurricane Dorian. Next time, we may not be so fortunate.

Fairness After the Flood

Chrishelle Palay

Originally published March 26, 2019 in The Progressive

As the floodwaters slowly recede, people throughout the upper Midwest are struggling to salvage their homes, their farms, and their lives. Some will readily bounce back. But others—including those who are the most vulnerable—may enter a downward spiral from which they can't recover.

Floods and other natural disasters are sometimes seen as great levelers, affecting rich and poor alike. The reality is different. New research published by the American Sociological Association shows that disasters—and the federal aid that follows—leave affluent, white communities better off, while their poor neighbors of color slip deeper into poverty. That has certainly been our experience in Houston, where—a year and a half after Hurricane Harvey—many of my low-income neighbors are still waiting for help.

In many low-income communities, what are called natural disasters are layered upon long-standing harms and inequities. Our communities are reeling from disinvestment, redlining, industrial decline and the lack of affordable housing. Floods and other disasters can exacerbate those problems—and inequities in federal disaster assistance can make matters worse.

In Miami-Dade County, Florida, Hurricane Irma damaged four times as many rental units as homeowner-occupied units. But this disparity was not reflected in federal disaster assistance; homeowners in one accounting received three times as much assistance as renters. Because communities of color are overrepresented among renters, this disparity worsens racial inequity in recovery.

In Puerto Rico, many low-income residents who lost their homes in Hurricanes Irma and Maria were denied assistance. Many live in homes that were built by hand and passed down through generations; nearly half lack clear titles to their properties. But FEMA required homeowners

to present formal titles to access emergency funds. So, of the 1.1 million households who requested help from FEMA, 58 percent were denied.

And, from New Orleans' Lower Ninth Ward to the Jersey Shore, low-income communities are displaced by disaster, while their wealthier counterparts are allowed to rebuild.

It doesn't have to be this way. After Harvey, my nonprofit group joined with our community and partners to develop a framework of four basic rights that are key to equitable recovery:

- The right to stay and return home to neighborhoods that have adequate storm protection and other essential public infrastructure—especially in neighborhoods that have experienced longstanding public and private disinvestment. Renters, including those in subsidized housing, must have a right to stay in safe and accessible housing.

- The right to choose whether and where they want to relocate. Survivors must be informed of all housing opportunities and options available to them.

- The right to equal treatment. Every neighborhood—regardless of the race, ethnicity, economic status, or disability of its residents—must be provided quality, equal levels of flood protection and equal access to essential public infrastructure.

- The right to have a say. We must ensure that people in forgotten communities are included and their feedback is seriously considered. Survivors must help design the recovery, know where they are in the process, and be empowered to speak and be heard, in their own language.

Our hearts go out to those in the Midwest who have joined the ever-growing ranks of disaster survivors. As they have learned, disasters aren't fair. But federal disaster assistance—paid for by our tax dollars—should be.

Heat is Deadly—Even in Montana. But the City of Missoula Is Doing Something About It

Laurie Mazur

Originally published August 29, 2019 in The Daily Climate

When you think of cities impacted by the urban heat island effect, you probably think of steamy Houston or the concrete jungle of New York. Missoula, Montana probably doesn't come to mind.

But, thanks to climate change, Missoula is getting hotter, with average temperatures expected to climb 2-5 degrees Fahrenheit over the next couple of decades.

In a city where extreme heat is new and air conditioning is rare, rising temperatures can be deadly—especially for the elderly and other vulnerable groups. Worse, the city sits in a valley that collects smoke from wildfires, which are expected to get worse in a warming world. So, when residents throw open their windows to cool off, they are often assaulted by unhealthy air.

Missoula is tackling this problem head-on. The city recently partnered with scientists affiliated with the Thriving Earth Exchange, a project of the American Geophysical Union, to map heat patterns and vulnerable populations. Armed with that data, the city and its nonprofit partners are devising strategies to keep Missoula cool.

Missoula was already ahead of the curve on climate adaptation. The city formalized a farsighted Conservation and Climate Action Plan in 2013, and appointed an Energy Conservation Coordinator, Chase Jones, whose job is to "lose sleep" over implementing the plan. (Jones likes to joke that he has increased his coffee intake as a result.)

And, since 2015, a nonprofit called Climate Smart Missoula has worked with the city to reduce the community's carbon footprint and increase its resilience.

While it is still in its earliest stages, the story of Missoula's work-in-progress suggests lessons for other cities and towns facing similar conditions.

Understand the threat

It's important to know that extreme heat is the deadliest climate impact, causing at least 1,100 deaths each year in the U.S.—more than any other weather-related hazard. Heat kills *directly*, by heat stroke (or hyperthermia); and *indirectly*, by exacerbating chronic conditions such as cardiovascular disease, respiratory disease, and diabetes.

Cities are hardest-hit, because their expanses of concrete and asphalt absorb and hold heat. That is why air temperatures in cities can be as much as 22°F higher than in the surrounding countryside. Higher temperatures drive increased energy use, which contributes to poor air quality.

Air pollution, in turn, exacerbates asthma and other respiratory conditions.

In Missoula and elsewhere, the urban heat island effect disproportionately affects the most vulnerable, including low-income households, children and the elderly.

And higher latitudes are no guarantee of safety: in fact, the CDC reports that some of the deadliest recent heat waves have taken place in Northern cities that are ill-prepared for extreme heat.

Build partnerships to map the problem

The city of Missoula and Climate Smart Missoula had already done the hard work of devising a plan to reduce carbon emissions. But adapting to excessive heat required different kinds of data and expertise. So, the city reached out to connect with the Thriving Earth Exchange (TEX).

TEX, which works to help solve environmental problems by matching communities with knowledgeable scientists and nonprofits was an instant, natural fit. "TEX really suited Missoula's situation," says Chase Jones, "because it recognizes that there is sometimes a gap in capacity

and skills and resources in local governments around energy and climate change issues."

TEX connected the city with an expert right in their backyard: Anna Klene, a professor of geography at the University of Montana. Klene was joined by climatologist Nick Silverman, and then recruited graduate student Julie Tompkins to create a detailed map of Missoula's heat problem.

Layer the data

As a first step, Silverman used satellite imagery to map the city's land surface temperature. But the city wanted to add a socioeconomic component to better identify neighborhoods most at risk. "We wanted to look on a neighborhood-by-neighborhood, block-by-block basis and see where the most sensitive populations in Missoula are impacted by heat," says Julie Tompkins.

So Tompkins delved into block-level data from the Census Bureau's American Community Survey, focusing on factors—including age, income level and type of housing—that help determine susceptibility to heat impacts. Those data were layered with the heat map, showing literal hot spots and vulnerable populations.

Then, using the layered data, "I could go to those neighborhoods and see, 'There is low-income housing here. There is a mobile home court here. There is senior housing here.'" Tompkins says.

Get information to those who can put it to use

The next step was to get the mapping data "in the heads and in the work plans of those who could apply it," says Chase Jones. To that end, the team shares its findings with health officials, the City's Energy and Climate Team, planners and others.

The goal is to show how warming impacts the people of Missoula, and build that into city services and plans. For example, parks officials can use this map, together with additional research and mapping efforts, to prioritize neighborhoods for tree-planting and pocket parks, and build shade structures on exposed trails.

Health and social service agencies can initiate efforts to educate, look after, and provide resources for vulnerable residents. Planners can find ways to slow the march of concrete and asphalt.

Development agreements can incentivize cooling strategies such as light-colored roofs and shade features, while preserving the urban forest and integrating green infrastructure.

Much of that work is already under way in Missoula, says Jones. But the new data "emboldens them to do even more of the good work they're doing," he says, "so that we break up that concrete; we have cool, shady places; and everyone can access it no matter what their income level or health situation."

The heat data are also advancing a conversation about the mental health impacts of climate change, says Amy Cilimburg, Director of Climate Smart Missoula.

For example, rising temperatures are linked to an increase in domestic violence. "That means that police and first responders need to find ways to cool down the temperature as well as the situation," says Cilimburg, "because people are not at their best when they are hot."

A holistic approach

The city of Missoula and its nonprofit partners are beginning to use multi-layered data to consider how rising temperatures connect to a broad range of problems, from asthma to violence. Linked problems require holistic solutions: "You can't look at heat impacts in isolation," says Cilimburg, "A cross-sector approach will get you farther as a community."

That approach is bearing fruit in Missoula, where extreme heat is becoming part of the conversation on public health, housing, development, parks and more. In this way, Missoula is "mainstreaming" climate adaptation.

"It's a way to build capacity, understanding and innovation that's better than building your own little silo around climate," says Jones. He adds that, "Intentional integration into existing agency, systems, planning and community is an approach that we hope results in broader change and more expansive impact."

There are practical benefits to this holistic approach. Because, just as the problems compound one another—as when extreme heat worsens air quality—the solutions can have positive synergistic effects. For example,

cooling the city with shade trees and light roofs will result in lower energy use and reduced greenhouse gas emissions—a win for mitigation.

Those efforts will also improve air quality and reduce health impacts.

And the biggest beneficiaries of those positive changes are the city's most vulnerable people: low-income families that can't afford air conditioning; people with chronic health conditions; children and the elderly.

That's a win for equity, says Jones. And for resilience, because "in the end, our city is only as strong as its most-vulnerable residents."

Despairing About the Climate Crisis? Read This

Laurie Mazur

Originally published July 22, 2019 in Earth Island Journal

Perhaps you are depressed about last year's IPCC report, which said we have about a decade to head off catastrophic climate change. Or you are reeling from the UN's recent warning that we may doom one million species to extinction. These days, the relentless tide of bad news can take a toll on our mental health—and on our motivation to stay in the fight. How can we find that sweet spot between denial and despair?

Susanne Moser has given it some thought.

In fact, Moser has been thinking about climate change since the mid-1980s, when—as a high school student in Germany—she read an article on the subject in one of her mother's magazines. She came to the US to complete a doctorate on climate-related issues, and her long resume includes stints at the Union of Concerned Scientists and the National Center for Atmospheric Research, as well as academic postings at Harvard and Stanford universities. Moser has always been ahead of the curve: she was writing about climate adaptation back in the early 1990s, before that was a thing. Today, in addition to advising governments, nonprofits, foundations and others on climate change adaptation and the transformational changes required to maintain the kind of conditions that allow for a functional society, much less one in which all people and nature can thrive, Moser spends a lot of time thinking about the psychological demands of this fraught moment.

In a conversation with *Earth Island Journal* and Island Press, Moser talks about communicating bad climate news, the benefits of "functional denial," the varied flavors of hope, and the better world we can build in the wreckage of life as we know it.

LM: So you've been trying to get people to pay attention to climate change for decades now. We always hear in the communications field that fear is not motivating, that scaring the bejesus out of people is not productive. But personally, I feel quite motivated by fear. And the science is fearful. Should we pull our punches on that?

SM: Well, there is no doubt that fear is motivational, or else we would not be here as a species. Right? If we were not afraid of the lions coming out of the grass, we'd be eaten by them. But if you only scare people without telling them what the hell they can do with their fear and how to translate that into protective or remedial action, then you lose them. There are two reactions we have to a threat: we either deal with the threat, or we deal with the *feeling* about the threat.

The first option actually reduces the threat. You reduce it, you run away from it, or you build a seawall against it. The other one is, I don't want to look this awful issue in the face because I don't know what to do. So I'm going to stick my head in the sand.

The same is true with shame, which can sometimes move some people. Guilt can, anger can, love can, but if you don't know how to translate them into anything, then even positive feelings won't do any good.

LM: Well, certainly, plenty of us are scared. These days, if you're not terrified, you're not paying attention. So, how can we recognize the trouble we're in and still get out of bed in the morning?

SM: Yeah, that's a really good question. Certainly, for me, one of the reasons to get out of bed is that we really haven't tried everything. Having done miserably at communication, having done miserably at policy, having done miserably at market responses to climate change gives us a ton of hope, because we could do so much better.

The other thing is we're short-sighted human beings on many counts, and yet our species has managed to build cathedrals

that took 300 years apiece. So it's not like we can't. The future isn't written yet. It is still open in terms of how it's going to be shaped.

Still, what we have to realize—and what's dawning on many people now—is that we have put a lot of CO2 in the atmosphere that won't just come out tomorrow. That's why we have to make space for grief, fear, and all the rest of it in public spaces and in our private lives.

We're dealing with a global system that's highly interconnected. We have set so many things in motion that if you tried to control it right now, you couldn't. We have sailed a ship, and the question is, are we going to keep blowing wind into its sails and sending it off into even more troubled waters, or are we going to do what we can to smooth out the waters, and make sure the opening to the harbor is wide enough for everyone?

There is a ton of space left in terms of what we can do. We can't just do anything we want, because of the things we have already set in motion, but we can stop making it worse, and there are so many options to deal with the challenges and to make life much less miserable for the vast majority of the world's people.

So I think it's a matter of priorities and values, and reckoning with what we have done. In the public sphere, it's called political work. In the private sphere, there is deeply personal transformational work that needs to be done.

LM: You've talked about something you call 'functional denial.' What does that look like?

SM: The denial part is what we all have. It is incredibly hard to look the realities we have created in the eye. The functional part is that we have to keep going regardless. On a daily basis, I have to get up in the morning, I have to pay my bills, I have to do my work. I function as if the world were just the regular old world in which everything stays the same and I don't have to

worry too much about anything. If you look at my daily life, it would look like that.

If you look more carefully, you might see changes or choices I've made to try to avoid adding to the problem. But by and large, I get out of bed, I drink my tea, I do my life as if nothing else was going on.

And at the same time, every single day, I face what we have created. If you ask me to stop for a minute and say, *How do you feel about that?* it can paralyze me. I have so much grief about it. I have such anger about it. It's all one big morass of emotions that I have about what we, humans, had the audacity to create out of blindness, and then out of greed and whatever.

So it's that simultaneity of being fully aware and conscious and not denying the gravity of what we're creating, and also having to get up in the morning and provide for my family and fulfill my obligations in my work.

For me, functional denial is actually a form of hope.

LM: Say more about that.

SM: I've come to the conclusion we have very little hope literacy in this country, and in the world, actually. There are many different flavors of hope.

One is sometimes called grounded hope, active hope, or authentic hope. That's where you are not at all convinced that there is a positive outcome at the end of your labors. It's not like you're working towards winning something grand. You don't know that you'll able to achieve that. But you *do* know that you cannot live with yourself if you do not do everything toward a positive outcome.

And then there's 'radical hope,' a term coined by a man named Jonathan Lear, an anthropologist. With radical hope, you don't know at all whether the outcome is positive or negative. Neither the means nor the ends are clear, and you have to reinvent

yourself completely to come to peace with whatever that new future is. Between grounded hope and radical hope, that's what we're going to need for climate change.

LM: It sounds like radical hope is useful in times of great uncertainty.

SM: Oh, absolutely. Lear came up with that term in the context of studying a Native American tribe that had lost everything: their land, their livelihoods, their culture, their freedom—they had to completely remake themselves in order to survive.

They had a great leader in helping them make that transformation. We don't currently have anyone in this country or in this world that I see who understands what radical cultural transformation requires in terms of leadership.

LM: It seems in fact that our leaders are doing precisely the opposite at this moment of uncertainty, and promising us a return to some ethereal status quo that we're clearly not going back to, even if that were desirable.

SM: What's interesting is that I've come to understand uncertainty as a necessary condition for hope. If you're perfectly certain that "It's going to be fine" or "It's going to be hell," you don't need hope, because you know exactly what's going to happen.

And what people like Trump and other radical right-wingers in particular promise is a kind of certainty: "America is going to be great again, it's going to be purely white, and we're going to have great economy and we're the best." That's all a form of certainty.

Whereas, "The future is going to look very different, and I can't tell you how, but we're going to have to go through that together and figure it out and create it—that's uncertainty, that requires work. It's very unpopular.

LM: We're so bad at handling uncertainty. It's very unsettling.

SM: Well, it's unsettling, and it's difficult work, we're bad at it, and that is the grounds for transformation. I have absolutely zero illusion about how hard this is going to be and that we have absolutely no guarantee we're going to make it to the other side. So, I'll tell you that up front.

But, because we're finally loosening from those set ways, there's actually opportunity. You cannot transform if you stay the same. It sounds trite, but if you hold on to the way it has been, you're going to stay the same. So you have to let go of the cliff, and you're going to look like a fool, you're going to make a lot of mistakes—my god, you're going to go scratching down the cliff. It's not going to look pretty, but it's the only way you have a chance of actually changing.

LM: We do seem to be going off a cliff, as a society, so it's helpful to see that as a necessary transformation.

SM: Yeah, and this is the kind of framing that we need, and the kind of leadership that we need, to help us understand that this is a process. It's a very archetypal process. Maybe we've never been at this much risk, as a species, but it's not like we have never had to go through anything similar.

Maybe migration is a good example. You have to let go of your homeland, and you set off on a ship in the ocean. You don't know whether the boat is going to hold up or whether the captain knows anything about where he's going. That's a metaphorically perfect illustration of what we're doing. We let go of something old in order to go through great uncertainty and come to a new place where we unfold in new ways.

Building new models is part of staying hopeful about our ability to control our own destiny and fight for alternatives to the things that are making people feel so vulnerable and undervalued and unable to meet their family's basic needs.

LM: There are people out there who are skipping the hope part, who believe that it's inevitable that climate change or something else will cause the collapse of civilization, and they're

getting ready for that. I'm thinking of the Dark Mountain Project, and various prepper communities on the political left and right. What do you think of that approach?

SM: What's interesting to me is that they skipped right from one certainty, "We're going to be fine, it's not going to be bad," to another certainty, "We're all screwed."

For example, Jem Bendell in the UK has put forward a deep adaptation agenda. On his Facebook page, on his LinkedIn group, he basically forbids a conversation about anything in-between, "We're going to be fine" on the one hand and "We're screwed, we're going to die out in the next five decades."

For Bendell, and also the Dark Mountain Project, they are finding community with each other and building social capital that is absolutely crucial to get through the tough spot that we're going through.

But the preppers—the people who just buy their generator and their guns and store food for three months—I'm worried about them. In America where there's so many guns, we're going to shoot each other, and it's very scary to me. It's a very individualistic, survivalist approach, whereas the Dark Mountain Project and Jem Bendell's deep adaptation are actually doing some of the deep psychological and social work required to get to a different place.

LM: So, community is a key ingredient of the transformational change that needs to happen if we're going to come out on the other side of this?

SM: There's no doubt that the harsh conditions we're currently creating will make us dependent on each other in ways we don't even know yet. We're so focused on, "Can I protect myself from this; can I survive on whatever?" Even, "Where can I move?" as if there is a place to hide from this global change. But to have any chance of surviving as a species, we need to share resources, to bring the weakest and most marginalized into the center of our communities, and yeah, we're going to get a lesson in

dependence and interdependence like you haven't seen. Well, none of us have seen. I say, *Stay put if you can and get to know your neighbors!*

LM: I could not agree more with that prescription, but I also can't help but notice that that doesn't seem to be the direction we're headed in as a society.

SM: It's not just the climate news but also the societal condition—the political inability to make anything happen across partisan lines—that feed into people's despair. Fostering social capital, wherever we are—in the workplace, at the neighborhood level, in the communities—is absolutely crucial.

Hope doesn't hinge on a rosy picture of the future. I really believe that the amount of suffering and the amount of cruelty that we're capable of is very large. But I also believe that people do have a heart and are desperate for something other than what this currently is.

There are millions of people who don't know how to engage with this in a constructive way and feel powerless, which is feeding their despair, but who are not on board with the viciousness and hatred and divisiveness that you can get on TV every minute of the day.

LM: It's really true. And the way we live now in this culture, which has caused climate change, is such a radical break from most of human history. Returning to a more cooperative way of living could be like coming home.

SM: Yeah. It is relearning something that we once knew, at least on a species level. We keep talking about the three Fs: fight, flight, or freeze, but there is a fourth one, and that's the one that actually helped us survive.

LM: What's that?

SM: The forming of bonds, or the be-friending. That's the piece that got to us to cooperate as a species and recognize that we have

greater advantage when we work together as opposed to everyone for themselves. This is biology. It is in the genetic history of our species. We are here because we cooperated. It's part of us.

LM: With the story of climate change, there's so much loss: loss of the familiar, of places we love, of the stable climate that gave us a huge boost as a species. Are there things to be gained as well from moving out of that certainty?

SM: I certainly think so. The loss is tremendous and heartbreaking on so many levels, both the human suffering and the wiping out of other species, the loss of places, seasons. And it strikes me that it seems so much easier to imagine these losses than to imagine that we could change ourselves and create a different form of living on the planet.

It is really crucial that we learn to imagine what we could gain. If we can't imagine it, it's more difficult to create. It'll make us dependent on accidents, serendipities.

When [atmospheric concentration of carbon passed] 415 parts per million, people were saying that we had never had these kinds of atmospheric conditions during the time that *homo sapiens* have been on this planet. And we're now moving to double that, and beyond.

So we're having to deal with completely new environmental conditions, and we will be changed by that. Can we imagine that? No. Can we try to imagine that we're not just clobbering each other over the head or blowing each other up? I can imagine something different.

LM: When you imagine it, what is the best thing about that new world?

SM: That we will be a nondominant species again. I'm not the first one to say that. But it's basically the idea of keeping the Anthropocene to a really thin layer in the geologic record and being one among many species that live on this planet within the confines of its resources, without damaging it, and in fact

making it part of our species' purpose to recreate and nourish the conditions for the continuity of life.

In my highest aspirations for the human species, that's what we will be: servants of life.

This interview has been edited for clarity and length.

How Young Graduates Are Helping Local Governments Build Climate Resilience

Laurie Mazur

Originally published August 19, 2019 in American City & County

It's a hopeful, if anxious, time for many recent college graduates. In addition to worries about jobs and loan payments, today's graduates face a challenge unknown to generations before them: the possibility of catastrophic climate change.

The forecasts are increasingly dire. A recent UN report says we have little more than a decade to head off the worst climate impacts. And the latest National Climate Assessment confirms that the long-dreaded consequences of a warmer planet—monster storms, wildfires, rising seas—have arrived.

But while recent graduates have much to fear in a warming world, they also have much to contribute. In California, a program called CivicSpark enables grads to put their idealism to work helping local governments build a climate-resilient future.

CivicSpark is run by an non-government organization—the Local Government Commission (LGC) in partnership with the California Governor's Office, supported by Federal AmeriCorps funding. CivicSpark AmeriCorps Fellows—mostly recent graduates—serve for 11 months, implementing climate-smart projects like water conservation, energy efficiency and preparations for sea-level rise.

It's a win-win for fellows and communities alike. New graduates gain valuable experience in the growing fields of sustainability and adaptation, while helping communities survive and thrive in a changing climate. Impressively, more than 85% of the Fellows go on to work

in the fields of sustainability and resilience, with 75% staying in the public sector.

The program has proven transformational for fellows like Angeline Foshay, who left a desk job and joined CivicSpark to work on a renewable energy project in Goleta, Calif. For millennials like Foshay, this kind of hands-on problem solving is a potent antidote to climate despair. It was "both the scariest and most rewarding leap of faith I've ever taken," Foshay says.

Others appreciate the opportunity to give back to their communities. Mairany Anaya left California's struggling Inland Empire to go to college in the east, but felt a responsibility "to work to improve the region that I grew up in," she says. Anaya adds that CivicSpark offered an opportunity to "learn about the prevalent issues within San Bernardino County while simultaneously trying to address them."

Local governments play an important role in shaping the CivicSpark program. The nonprofit Local Government Commission, which operates CivicSpark, is led by a board composed of elected officials from across California. The board identifies priorities and gaps that fellows can help fill.

"Our core function is to serve local government capacity building," says LGC climate change director Kif Scheuer, "so we're always thinking about and working to align with local government needs."

CivicSpark staff work in collaboration with a partner network that includes local governments, state agencies and nonprofits. Partners propose projects, which must win the endorsement of a local government to move forward. CivicSpark staff then match fellows with projects appropriate for their skills and interests.

Projects run the gamut of climate impacts and solutions. In Sacramento, for example, fellows are mapping the "urban heat-island effect," identifying areas at risk for extreme heat and engaging vulnerable communities in cooling solutions. In the Bay-area town of Albany, a fellow is helping residents meet an ambitious goal to cut greenhouse gas emissions 60 percent by 2035. And in Butte County, Calif.,, where the Camp Fire devastated the town of Paradise in 2018, another fellow is working to develop landscape-level fire safety plans.

There are other service programs that engage young people in climate solutions: AmeriCorps NCCC members work on sustainability and conservation projects; and the FEMA Corps tackle disaster preparedness, mitigation, response and recovery. But, at this writing, CivicSpark is the only state-level climate resilience fellowship run by local governments.

That may change. In a warming world, cash-strapped local governments must urgently build capacity to prepare for a hotter, wilder future. At the same time, new graduates seek meaningful employment and a chance to develop their skills. CivicSpark helps both governments and graduates meet their needs. It's a model worth emulating.

In Montana, Bridging Divides To Face a Changing Climate

Zach Brown

Originally published March 20, 2019 in Billings Gazette

These days, Americans are so divided—Republican vs. Democrat, urban vs. rural—that it is hard to agree on the problems we face, much less work together on solutions. But here in Montana, farmers, ranchers and scientists have come together to do just that. Some spend their days in a university lab, others behind the wheel of a tractor. They may not agree on whom to vote for, or which TV news channel to watch. But they do agree that the climate is changing, and that agriculture can and must adapt.

Those who make their living from the land are closely attuned to shifts in weather and climate. With razor-thin profit margins, a late planting or ill-timed breeding can have devastating consequences. And lately, those shifts are hard to miss. As Dr. Jeff Mosley, a range specialist with the Montana Extension Service observed recently, "I'm not a climatologist, but it seems like spring is coming three weeks earlier than it did 40 years ago. And winter comes about three weeks later than it did."

Adapting to such changes is an economic necessity for farmers and ranchers. To adapt, they need information they can trust, based on the best available science. At the same time, agricultural producers have much to contribute to our understanding of the changes now underway. Given their ethic of stewardship and history of adapting to whatever nature throws their way, farmers and ranchers can lead the way in adapting to a new climate reality.

What's needed is a two-way exchange of information between scientists and those on the front lines of a changing climate. But, a few years back, that simply wasn't happening in our state, thanks to the volatile politics around climate change.

So, in 2014, One Montana started bringing those groups together to build trust and mutual understanding. This was not our first rodeo: A nonprofit founded by prominent Montanans from both political parties, One Montana specializes in convening people across various divides to address common challenges. In a series of workshops, we deepened dialogue and collaboration among scientists, farmers and ranchers on climate adaptation.

For example, after the devastating "flash" drought of 2017, we worked with the Montana Extension Service and the Musselshell Watershed Coalition to hold workshops on ranch-level drought resilience. While research efforts tend to focus on what producers should or could do to improve drought resilience, our workshops document what producers are doing—such as employing flexible grazing and stocking strategies to adjust to changes in forage production.

These efforts have produced concrete gains. Our stakeholder convenings led to the first-ever Montana Climate Assessment, with chapters focused on agriculture, forestry and water. Because farmers and ranchers were involved from the start, the final assessment document was well received across our state—and has even been nationally recognized as a model for state-level climate assessments.

Our drought workshops led to follow-up sessions on soil health, where the conversation on climate adaptation has evolved to also include mitigation. Across Montana, producers are already implementing soil health strategies that help to slow the planet's warming by sequestering carbon, while also increasing water-storage capacity in soils.

Finally, farmers and ranchers gained so much from sharing strategies that One Montana is now working to create a program called MAKE (Montana Adaptation Knowledge Exchange), which will translate scientific data into actionable information for farmers and ranchers, and foster sharing of successful adaptation strategies.

In our increasingly divided nation, people with different views and perspectives rarely come together to make common cause. But in Montana, climate scientists are sitting down with people who breed livestock and till the soil. Together they are building Montana's resilience in the face of a new climate reality.

Stop Building in Floodplains

Harriet Festing

Originally published June 18, 2019 in The Progressive

In early June, Diane Mueller fled her flooded home near St. Louis, Missouri, for the second time in two years. She hopes it won't happen again.

When Mueller saw the water bubbling up through grates in the floor, she knew it was time to go. She and her husband, Stan, bundled the pets into the family truck and headed for dry land. Now they sit on the floor of an unfurnished rental house, contemplating next steps.

Floods have always been a fact of life in the nation's great river valleys, but the problem is getting worse—as evidenced by the record-breaking deluge that drove Mueller from her home. Today's floods are increasingly destructive, thanks to a changing climate that brings much heavier rains. And flooding is exacerbated by development in floodplains, often paid for with tax dollars.

When the Muellers bought their four-acre farm near the Missouri River thirty years ago, floods were relatively rare. Like most of their neighbors, they got hit by the great flood of 1993, but the land stayed dry enough for the couple to keep horses and chickens, cultivate a half-acre garden, and raise a family.

The Muellers' land got soggier in 2003, after a 1.2 million-square-foot mall was constructed on nearby farmland. The St. Louis Mills Mall was built with $18.5 million in tax increment financing (TIF), which allows developers to cash in on future revenues generated by "improvements" to the property. Cities usually obtain money for TIF projects by selling bonds, which are repaid over time with tax revenues.

But here's the catch: if those revenues fail to materialize, the city still has to repay the bonds. And taxpayers are left holding the bag.

That's what happened with St. Louis Mills (since renamed the St. Louis Outlet Mall), which entered a death spiral years ago. Today, the cavernous mall sits mostly empty, surrounded by waist-high weeds. Its remaining tenants received eviction notices in May.

But the damage that the mall helped cause to the Muellers' property remains. Now that the fields that once absorbed rainfall are covered with concrete, rainwater runs off onto neighboring land.

This spring, the Missouri state legislature considered a bill that would curb the use of TIFs to finance construction in floodplains, but developers helped kill it.

TIFs are only one of many tools used to build risky developments on the taxpayers' dime. Developers can also petition FEMA to change their maps so that properties in floodplains are—on paper, at least—no longer in floodplains. That's a boon for wealthy owners of waterfront property, who save up to 97 percent on National Flood Insurance Program (NFIP) premiums. But we still bail them out when they flood, and pick up the tab when the NFIP—now $20 billion in debt—runs out of money.

For the Muellers, enough is enough. They are ready to give up on the place they call home, unsure where they'll go next.

Such tragedies can be lessened. While rivers will continue to overflow their banks, we can limit the damage and suffering that results. We can use federal funds to elevate or buy out vulnerable homes. We can protect natural buffers like wetlands and forests. We can reduce global warming by ramping up clean, renewable energy.

And, starting now, we can stop paying developers to build in floodplains.

Duck Hill, Mississippi Is on the Rise

Elizabeth Russell

Originally published March 1, 2019 on the Southeast Sustainability Directors Network blog

When many people think of climate change-related flooding, they often think in terms of sea level rise in larger coastal areas. But inland small towns and rural areas are feeling the very real effects of stronger storms and intense rainfall. This includes the tiny town of Duck Hill, Mississippi, with a population of roughly 1,300.

In small rural towns like this one, streets and open ditches often serve as conduits for runoff during heavy rains. Storm drains are rarely installed, or are in very poor condition. As a result, an African-American neighborhood along Duck Hill's main street has regularly flooded, with water as high as 15 inches that stayed at that level for hours, if not days, seeping into homes and a former high school gym that now serves as a community center. The flooding has not only threatened buildings—it also has added regularly to the economic burden and a loss of hope that has plagued many of the town's low-income residents.

"Our church is right next door to the gym and when it rained it would be like a river," says lifelong resident Shernell Everett. "I remember several times in one month the water got so high, it was actually inside of my car. You could feel the water on the floor trying to creep through there. It was just so bad!"

But in 2017, Duck Hill residents and outside partners recognized an opportunity to not only stem the flood waters, but to revitalize the community. With encouragement from community organizer and consultant Romona Williams, the community began to explore the possibility of becoming more resilient and sustainable—environmentally, economically and socially. A local steering committee identified four areas of focus: flood water mitigation and creek restoration, community engagement and empowerment, youth conservationist training, and creative place

making. The group received $300,000 in funding from the Southeast Sustainable Communities Fund (SSCF), a project of the Southeastern Sustainability Director's Network (SSDN), The Kendeda Fund, and The Kresge Foundation.

To help address the flooding issue, Williams engaged her husband, Bobby, (known to community by his performance brand, Abba Goel), who has years of experience working in waterproofing, storm water drainage systems and green infrastructure in other parts of the country. They consulted with town engineer Joe Sutherland, Professor David Perkes of Mississippi State University College of Architecture, Art + Design, and SSDN technical assistant consultant, Suzanne Burnes, to design the best solution for fixing the drainage problems. Goel designed a training module and hired four local men who had been chronically unemployed and trained them in the storm water infrastructure aspects of green technology. Given the severity of the flooding, the team settled on a dual "grey" and "green" installation comprised of bioswales, perforated pipes, biodegradable fabric, rock and gravel, and rain gardens that could absorb and filter thousands of gallons of rainwater before syphoning it into one of the larger paved drainage ditches for a more controlled flow out of town.

Flood mitigation is what you see on the surface in Duck Hill, but the tides of change in the community began well before the physical work, and are continuing to swell.

In February 2018, the community launched Achieving Sustainability through Education and Economic Development Solutions (ASEEDS), to oversee efforts to improve green infrastructure, engage in adaptation and resiliency planning and training, and examine the feasibility of restoring the high school into a community center using creative place making principles and techniques. More than 100 people turned up for the ASEEDS launch. By some accounts, it was the first time that many of the white residents of Duck Hill had ventured into the black side of town since the high school closed, and the first time the two communities had intentionally worked together on anything in decades.

As former classmates at Binford High School in the 1970s, Shernell Everett and Melba Rogers recognized their shared bonds and affection for the historic high school building were feelings that others in town likely shared—and that the high school could be a focal point for community

unification and racial reconciliation. They began to focus on rallying the community, black and white, around the idea of sustainability, with the high school at the center. From there, the ideas and activities have grown. Landscape architects and engineers from Mississippi State University provide guidance for planning, training, developing green infrastructure and for creating rain gardens and community green spaces. EcoAdapt, a national climate change organization, created a preliminary "Climate Change 101" workshop and a toolkit about the different elements of climate change and adaptation, and is gathering data to create a climate adaptation and resiliency plan.

Community members are stepping up as well. Area Master Gardeners teach organic gardening classes. Pastors from across the region have joined in a strategic, ongoing dialogue about climate change. And a local teacher leads middle and high school youth in the Creek Rangers program, which teaches them how to monitor and protect healthy natural waterways that contribute to overall green infrastructure for Duck Hill.

SECTION II

Sustainable Cities for All

Social Design Offers a More Collaborative Vision of Urban Development

Cheryl Heller

Originally published March 13, 2019 in The City Fix

When we think of design in cities, it's typically physical environments and infrastructure that come to mind: glass, steel and stone, skylines and main streets, museums, traffic jams, playgrounds and construction sites. But the designs that determine the health and resilience of a city are invisible: they are the relationships between the people and institutions living there, the connections to each other and to services that sustain or overlook them. They are the human circulatory system of a city.

Now, they are the new frontier of design.

Traditional design rearranges physical or digital materials: cars, iPhones, couches, algorithms. Social design is the application of the design process to social infrastructure, to the relationships that keep us alive.

The Buffalo Niagara Medical Campus (BNMC) in Buffalo, New York, is one example of how social design is changing how we build and conceive of cities. BNMC is an "anchor institution": an organization, typically medical, educational or government, with permanent ties to a location and the capacity to contribute to it as an employer and an attraction for other businesses and workers. Cities build whole neighborhoods, business districts and transport plans around anchor institutions.

For the most part, the contributions of anchor institutions are measured in economic terms—for example, millions of dollars spent with local businesses. What makes BNMC unique is that instead of defining its objectives on the basis of its own institutional needs and what its operations can contribute, it has involved the community in creating its vision and goals.

Planning for Social Equity

Buffalo ranks third in the United States for the number of people living below the poverty line. For the residents of its poor neighborhoods, that means no jobs, high crime and very little access to healthy food. Like most American "rust belt" cities, the downtown had been abandoned by those who could afford to leave for the suburbs.

Since its creation in 2001 by a local consortium of medical institutions, BNMC has created more than 3,000 new jobs and built an innovation center that currently houses 75 start-up companies. So far, BNMC has attracted $1.4 billion in investments to Buffalo. Dozens of programs have also been co-created by BNMC and the community.

An example of the typical approach is to say, "We have 10 job openings; why don't we look for local people to fill them?" or "We spend hundreds of thousands of dollars on laundry; could we find a company in the city instead of contracting with a national firm?" Instead, BNMC invites neighbors into the conversation, asking them what's important to them and then incorporating that into the plan. The first approach shifts some processes and resources around but doesn't affect the social architecture. The second requires creativity and a willingness to restructure the organization and purpose in response to what the community asks for and cares about.

Collaboration has included ministers and national politicians; the mayor of Buffalo and the governor of New York; small start-up enterprises and a British multinational utility company; local activist groups and national foundations. These efforts have led to investments in new facilities that increase access to healthy food, clean energy, transportation, business innovation and education.

Residents in the Fruit Belt, a neighborhood across the street from the campus, have solar panels on their homes made possible through a special program developed for them by the global energy company National Grid. Local middle and high school students attend an "entrepreneurial boot camp" on campus. Mobile garden and market sites brought 10,000 pounds of produce to food deserts last year. Street lighting is better, school lunches are healthier, and more corner stores sell fresh produce instead of racks of processed food. Internships, new jobs, resume writing and mentoring are available. A green team of local residents have maintenance

and landscaping jobs on campus, and residents can win scholarships to a co-working space.

Creating Lasting Change

The orchestration of BNMC's day-to-day efforts are led by Matt Enstice, the organization's president and CEO since its founding. After college, Enstice worked on Lorne Michaels's production team for "Saturday Night Live." What he took away from his job there, in addition to the skills required to navigate enormous egos and still "get stuff done," was the way "really random bits" came together every week to make something much greater than its parts—the myriad details of costumes and sets, individual skits, punch lines and people.

The idea that, with the right vision, disconnected small parts have the potential for game-changing influence, taught him the importance of a clear and compelling purpose and the need for collaboration and co-creation. When everyone is seen as a potential participant, relationships become generative instead of transactional. This is a critical lesson for anyone who wants to create any kind of lasting change.

BNMC is now enlarging its circle of influence and impact. Partnerships have expanded to include Silicon Valley companies and international coding services in an effort to make Buffalo a center of technology again. That is the kind of innovation that comes from collaboration and paying attention to the power of relationships.

All of BNMC's activities are bundled into an approach that the consortium calls MutualCity. It amounts to a new vision for a city based on mutuality and benefit for all. But it's really just the social design process applied to a city—and it's available to any other place or organization willing to invest the time and commitment to make it happen.

Preparing Main Street for the So-Called 'Retail Apocalypse'

Larisa Ortiz

Originally published March 1, 2019 in Next City

It's been called the "retail apocalypse"—the growth of e-commerce at the expense of brick-and-mortar stores. The term is misleading: Overall, retail is doing just fine, with industry growth up 4.4% in 2018. But online sales grew by 12% last year, so the growth in e-commerce dwarfs that of the industry as a whole by a factor of 3:1

The way people spend their money is changing, and fast. While business owners are embracing change, cities are often less prepared for the decisions they must make to remain competitive. And over time, many cities will see brick-and-mortar businesses retract, while still others will become the beneficiaries of businesses looking for the best locations. It is already happening in mall environments: Class A malls are doing well while Class B and C malls struggle.

Cities that want to be on the winning side need to focus on two critical areas. First, they must update existing regulatory frameworks that are increasingly an impediment to innovative business concepts. By lowering the hurdle to entry in any given market, we create opportunities for smaller, less well-capitalized businesses—the "mom-and-pops" if you will. And second, just as a building must be constructed on a strong foundation, cities must address the fundamentals, including accessibility, walkability, and even the co-location of businesses that enable businesses to share customers and improve profit margins. More walkable communities will also better serve people of all ages. This will become critical as the Boomers continue to age. Ensuring their comfort will be necessary to capture their spending.

As a New York City Planning Commissioner and retail strategist working in mixed-use environments for more than two decades, I have realized

that changing shopping habits have the potential to upend our lives and affect communities of every size. From Cambridge, Massachusetts (population 100,000) where my firm recently completed a city-wide retail strategy, to New York City (population 8.5 million), challenges will pop up in unexpected ways—from conflicts over streets (how do delivery trucks steer clear of bike lanes on narrow streets?) to confusion over what defines a retail business (are maker spaces "industrial" uses that can now be allowed on retail corridors?).

Existing regulations are no match for the fast-changing retail landscape. In fact, many rules unintentionally hamper entrepreneurial activity, particularly among first-time business owners. For example, in many downtowns manufacturing uses are restricted, yet specialty food manufacturers and breweries are often a great fit for downtown environments. A small-batch ice cream maker in Cambridge, MA had to go through a costly and time-consuming discretionary special permit process to make ice cream in the rear of the store (considered a manufacturing use), all while paying rent on a storefront space. When we asked the owner about her experience with the permitting process, she was quick to share that other entrepreneurs in her circle had decided against opening a business in Cambridge altogether. Up until now, breweries were not even mentioned in Cambridge's Table of Uses. The closest categorization in the code was a "bottling facility," a heavy industrial use not allowed along traditional commercial streets. As a result, new breweries had to navigate expensive and costly discretionary approval processes.

The good news is that Cambridge is now revising its Table of Uses to prevent these issues from hampering other businesses. And Cambridge is not alone. Memphis passed zoning that allows for light manufacturing uses when they are accessory to retail. This has enabled Buff City Soap Company to manufacture soap from their downtown Memphis location. Watching staff remove tins of soap from ovens and cut them into bars right in front of you is part of the store experience; it certainly cannot be replicated online.

Another often overlooked factor is the physical environment in which our business districts reside. I often say the job of the public sector is to "stage" the shopper. This means creating a comfortable and safe environment for the visitor—one that encourages longer stays and enables businesses to leverage proximity and share customers.

Consider something as simple as crosswalks. In urban areas, long blocks mean customers cross in the middle of the street, playing a dangerous game of "Frogger" to get safely across. This effectively decreases the number of stores that a shopper can easily visit at any given time, which in turn reduces the length of stay and the amount of money a shopper might spend. Moreover, while able-bodied shoppers might be able to easily cross, that's not the case for seniors or families with small children. Little wonder that many might prefer to shop safely in the mall or at home.

To address this problem, the city of Corning, New York created mid-block crosswalks throughout its downtown shopping district. Corning boasts a vibrant downtown in the Finger Lakes Region of New York, where economic stagnation is more the rule than the exception. The mid-block crossings are part of a bevy of best practices that enable the district and its businesses to survive and thrive. This simple solution has been executed in many downtowns nationwide.

Another consideration? Signage. Signs are critical to catching the eyes of passersby, but overly restrictive signage rules can prevent businesses from raising their visibility. Signs should be like breadcrumbs, giving shoppers visual clues that something deserving of their attention lies but a short distance away.

In Pittsburgh, our firm recommended blade signs, also known as "shingle" or "banner" signs, for businesses along Shiloh Street in the Mount Washington neighborhood. Why? This community receives nearly two million visitors annually. Most take the Monongahela Incline to see the stunning views of downtown Pittsburgh. But visitors did not often patronize businesses beyond the block adjacent to the overlook. After businesses along the second block put up visible signs, they saw a 30 percent increase in foot traffic, which in turn resulted in increased sales.

In today's fast-changing retail environment, downtowns must fight for their share of shoppers' dollars. That means taking a hard look at rules and regulations to determine whether they are helping or hurting local businesses. And it means making key investments in a safe, accessible downtown environment. In this way, cities can create prosperous downtowns that meet the needs of businesses, shoppers and the residents they serve.

Fix It and They Will Come

Laurie Mazur

Originally published December 1, 2019 in The Progressive

Five years ago, the First Unitarian Universalist Church of Essex County, New Jersey, had serious problems. Chunks of plaster fell from the walls of its 126-year-old sanctuary. A raccoon had taken up residence in the box gutters that drained the roof, causing a bad leak. The rickety wooden ramp leading up to the front door was an accident (and a lawsuit) waiting to happen.

Worse, the congregation had dwindled to just thirty members, less than half of what it had been a decade earlier. Its part-time minister found himself preaching each Sunday morning to a small handful of congregants.

"We were discussing, should we go out of business?" says congregation member Mindy Fullilove, a professor of urban policy and health at the New School, about twenty miles away in New York City.

The church, she explains, entered "a complicated year of discernment" during which it partnered with others to embrace a new strategy for expanding the church's role as a center of community life. With help from a nonprofit crowdfunding platform called ioby (the acronym stands for "in our backyards"), First UU repaired its buildings and opened its doors to the people of its struggling neighborhood.

Today, the church, minus its minister, is a hive of activity—sewing classes, labor organizing, potlucks, a local music festival. As neighbors gather again under the church's (non-leaking) roof, they are spinning new webs of connection, strengthening the filaments of trust and fellowship that hold this community together.

First UU sits just off Main Street in Orange, New Jersey, a city of about 30,000 people near Newark. In many ways, Orange exemplifies the policies that have shaped America's post-industrial cities, with a devastating impact on working-class communities.

Orange emerged as an industrial powerhouse after the Civil War; by the turn of the twentieth century, its thirty-four hat-making factories earned it the nickname "Hat City." The city's residents built Victorian mansions, parks, and libraries, while enclaves of Italian, Irish, and African American factory workers thrived and grew.

The fruits of prosperity in Orange were always distributed unevenly. Even in its glory days, the city was rigidly segregated by race, ethnicity, and class, with inferior schools and services in the poorer parts of town. Then, starting in the 1930s, redlining steered investment away from African American and immigrant neighborhoods, spreading blight and deepening the wealth gap. And in the 1960s, construction of an interstate highway through the center of town sped the exodus of white residents—and capital—to the suburbs.

Today, nearly 90 percent of Orange residents are black or Latinx, including a large population of Caribbean immigrants. More than two-thirds of the city's households get by on less than $50,000 a year; one in four of its people live in poverty.

Mindy Fullilove grew up in Orange, the daughter of an African American labor and community organizer and a white legal secretary. Fullilove left at the age of sixteen and pursued a career as a psychiatrist and urbanist (*The New York Times* credited her with "put[ting] entire cities on the couch"). In books that include *Root Shock* and *Urban Alchemy*, Fullilove has explored the policies that disfigured cities like Orange, offering strategies to repair our frayed urban fabric.

Fullilove visited Orange in 2007 to celebrate the fiftieth anniversary of a successful campaign to desegregate the city's schools, and for the first time fell in love with her hometown. While the challenges were evident, she was struck by the vitality of the city's people and its built environment. So she moved back to the area and rejoined First UU, which she had attended as a child.

Much had changed in the thirty years that Fullilove had been away. Orange had lost some of its luster. Despite its segregation and pockets of poverty, the Orange of Fullilove's youth had been full of thriving institutions—houses of worship, unions, settlement houses, community centers, a hospital—which nurtured a dense web of social connections,

anchoring civic life. At the city's sesquicentennial in 1956, President Dwight Eisenhower was moved to remark, "Your public services and neighborly spirit are an example to the nation."

But one by one, the venerable institutions of Orange began closing their doors. Orange Memorial Hospital shut down in 2004; the YWCA of Essex and West Hudson declared bankruptcy in 2013. The First Presbyterian Church of Orange, founded *300 years ago*, gave it up in 2010.

What does it mean for a community to lose its anchor institutions? You could say the loss signals a growing void at the heart of our society—and democracy. When Alexis de Tocqueville visited the United States in the 1830s, he marveled at how "Americans of all ages, all stations in life . . . are forever forming associations." Those associations—"religious, moral, serious, futile, very general and very limited, immensely large and very minute"—form the connective tissue of a healthy democracy.

Two decades ago in his book *Bowling Alone*, Robert Putnam warned that the connections that held communities together are weakening. Americans are increasingly less likely to gather in churches, union halls, and, yes, bowling alleys. The reasons for the decline (including union-busting and longer work hours) are complex, but the cost is clear: Our stock of social capital—the networks of reciprocity and trust that turn "me" into "we"—is dangerously depleted.

Sadly, the trends Putnam identified have only worsened since then, though now, when the average American spends twenty-four hours a week online, we are more likely to be scrolling—or trolling—alone.

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By all indicators, First UU—with its dwindling membership and crumbling buildings—was set to be the next anchor institution in Orange to go under. Congregants and board members struggled with the agonizing decision to close.

Then a visiting Unitarian minister named John Gilmore (also known as Om Prakash) got them thinking. He noted that those crumbling buildings—a sanctuary, parish hall, and parish house—were assets, not liabilities. He urged First UU to make its space available to the

neighborhood for various uses, and take its place at the center of a revitalized community.

This approach is in keeping with "asset-based community development," the idea of building on what works, rather than focusing on what's broken. Even (or especially) in historically under-resourced neighborhoods, residents possess deep reserves of skill, talent, and human connection. The best solutions emerge where residents can readily put those assets to work.

"So what we did," Fullilove relates, "was take the money we had for a minister and use it to hire a managing director of our buildings, and to create what we call The HUUB." The name is not an acronym, but represents the hub of community activity HUUB aims to be, with the two "U"s of "Unitarian Universalism" at its core. According to the church's website, the mission of The HUUB is "to turn the buildings and land we own, the Church's most valuable assets, outward to be a welcoming resource for the people of Orange."

Charlie Wirene was hired to manage the buildings and The HUUB. As a former contractor and graduate of the Parsons Design and Urban Ecologies program at the New School, "Charlie has a really good sense of city making and a really good sense of how you care for buildings," says Fullilove. "That was a remarkable match because we had buildings and we wanted to build community."

Wirene began by recruiting a group of "listening fellows"—twenty-somethings from the neighborhood—to design projects and events that reflect community interests and concerns.

For example, Holly Barszcz started a monthly potluck dinner that draws a cross-section of neighbors to the parish hall. Khemani Gibson hosted an "immigrant dreams roundtable" to get recent arrivals more engaged in civic life. Ray Sykes put on a quarterly hip-hop concert series. Stephen Batiz launched an after-school art studio for kids.

The fellows also collaborate on group projects. After a recent spike in gang violence that left community members hurting and scared, the fellows co-led a workshop on collective recovery from trauma.

Some of the fellows' projects are ephemeral; others, including the potlucks and art studio, are ongoing. All provide a hotline from the community to the church. "It's a way of getting to know our neighbors, not coming in with answers from the outside," Wirene says.

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But there was still the problem of the raccoon, and the falling plaster, which would take money to fix. So the church turned to ioby, the nonprofit crowdfunding platform. In addition to providing an online platform for receiving tax-free donations, ioby coached the team at First UU on how to frame their message and craft a fundraising plan.

"Not having a lot of development or fundraising experience, it was great to have a framework and guide to build from," says Wirene, adding that the platform's intensive support helps demystify what can be an intimidating process. "Ioby gave us strategies and tools, which is super helpful when you're talking about money—kind of a taboo topic."

The crowdfunding campaign met its target: over a month in 2018, First UU raised $35,115 on ioby for The HUUB, mostly from church neighbors, congregants, and friends. Another ioby campaign in 2019 netted nearly $21,000. The online campaigns leveraged other donations, including matching grants from the Fund for Unitarian Universalist Social Responsibility and a gift from a major donor.

Altogether, Wirene says The HUUB's various fundraising efforts brought in more than $117,000 in two years, enough to fix the leaky roof, replaster and paint the walls, and banish the raccoon.

But the benefits of the fundraising campaign are not just financial. "Over time, you're building your story, you're building your supporter base, you're building enthusiasm," says Fullilove. "People don't just give money. They come to events, they take part."

Organizations from the neighborhood routinely use the HUUB space. There are diaper drives and concerts, sewing classes, theater rehearsals, and "Know Your Rights" trainings for immigrants. There are Bible-study groups and religious services led by local congregations that sublet from The HUUB. There are parties and weddings and post-funeral repasts.

The church rents out some of its refurbished space to groups that serve the community. The anchor tenant is the University of Orange, a "free people's university that builds collective capacity for people to create more equitable cities." The school, founded by Fullilove and Orange residents, organizes an annual Music City Festival that showcases local talent. Other tenants include the National Domestic Workers Alliance, the Laundry Workers Center, and the Lanbi Center for Humanities and Civics, which provides support and citizenship classes to Haitian immigrants.

And, in the midst of it all, First UU lives on—as a church. "We had to figure out what were we going to do without a minister," Fullilove says. "Some said, 'We're just a community outreach hub,' and I was like, 'No, we need to have some form of worship.' Our guiding principle, from St. James, is: Faith without works is dead, but also works without faith is dead."

In that spirit, the church developed a monthly lay-led service where invited speakers talk about their faith and works. Today, for the first time in years, First UU's membership is growing. Still, as a student of American cities, Fullilove understands the limits of this work.

"So much of our research has been watching how cities have trashed poor minority communities and how states have trashed poor minority cities, and the power of that trashing is so great that it's a larger system. For the people embedded within it, it's like a tsunami of disinvestment," she says. "So, you've got to look at assets, you've got to look at protective factors, but you've also got to stop the trashing."

But one virtue of asset-based community development is that it builds skills and capacities that can't be taken away. Fullilove likens it to the black community's work to promote literacy during Reconstruction. "People got educated as fast as they could," she says. "Then, even with the defeat of Reconstruction, you couldn't take away that knowledge."

The threats keep coming. The latest, Fullilove says, is a plan to demolish some of Orange's historic Main Street (a key community asset) and put market-rate housing in its place.

Still, First UU and The HUUB continue their patient, necessary work: nurturing the capacities of their neighbors, and providing space—literal

and otherwise—to define and solve problems. Whatever the future holds for this city and its people, those capacities will endure.

Cities' Climate Innovations Are Driving the Next Urban Transformation

Sadhu Johnston

Originally published October 28, 2019 in Meeting of the Minds

Earlier in 2019, Vancouver's city council declared a climate emergency and adopted a new set of climate-action targets that pushed its already aggressive goals to a new level. In response to the urgent need to hold global warming to below 1.5°C, the city set a new goal of being carbon neutral by 2050.

There's much more going on here than radical climate action, as vital as that is. As Vancouver and other cities invent and implement ways to decarbonize their systems and strengthen resilience to climate change, we are reinventing the basic model for urban development that has prevailed since the beginning of the Industrial Revolution around 1800. In fact, we are transforming urban design and life in cities, and Vancouver's new City Plan will fully embrace climate and equity as core principles.

As Peter Plastrik and John Cleveland explain in *Life After Carbon: The Next Global Transformation of Cities* (Island Press), the many urban climate innovations underway carry big new ideas about what cities are and how they should work. And these ideas are replacing ideas that propelled the development of the modern city model we all know.

Vancouver is one of 25 global cities covered in *Life After Carbon*. The authors detail how these "climate innovation laboratories"—from Austin, Copenhagen, and Cape Town to Melbourne, Mexico City, New York, and Shanghai—have initiated wave after wave of locally grown climate innovations that leave no urban system untouched. These cities, they report, "have come to understand themselves, their place in the world,

in a new way and act boldly on their changed awareness." Their efforts have required remarkable creativity, political courage, and resources. Their work has also spurred collaboration among government departments, and between government and the private and civic sectors.

Plastrik and Cleveland have worked in and alongside many of these leading-edge cities, have written insightful reports about cities' climate innovations, and were instrumental in the formation of two important city networks: the Urban Sustainability Directors Network and the Carbon Neutral Cities Alliance. But *Life After Carbon* provides more than a survey of urban climate innovations. The authors illuminate a compelling thesis of change that is happening on the ground, not just in theories and elusive visions. They identify four transformative ideas that are embedded in urban climate innovations and show how these ideas are being applied worldwide:

1. Carbon-Free Advantage
Cities are employing their unique advantages to turn the emerging renewable-energy economy into urban wealth and jobs. The idea that cities can drive economies through innovation and clusters of businesses is new; it overturns the idea that cities are simply supposed to provide entrepreneurs, investors, and corporations with low-cost labor markets and public power and transportation infrastructure.

2. Efficient Abundance
Cities are more efficiently using energy, materials, natural resources, and space to generate a new kind of urban abundance. In the 1800s, consumption of goods and growth of economies were considered the primary standards for abundance, and cities were designed to promote consumption. Today, though, ideas about abundance are starting to shift. Abundance is now signified by long term sustainability that is comprehensive, not just economic, and widely shared rather than possessed.

3. Nature's Benefits
Cities are restoring and tapping the power of natural systems to enhance and protect urban life. By contrast, the previous urban model swept away natural habitats and species, engineered control over waterways, consumed vast amounts of natural resources, and dumped enormous amounts of waste, while inhabitants lost direct connection with the natural world.

4. Adaptive Futures
Cities are cultivating the capacities of inhabitants and core systems to adapt to new requirements, especially those of climate change. Urban planning previously involved decision-makers imposing their will for control and economic growth on nature and society. Today, climate risks force cities to think differently about the future because it has introduced the potential for disorder and shocks unlike any cities have faced. Planning is coming to focus on resilience, sustainability, and equity rather than control. There is now more awareness that cities must build broad social consensus for change.

The framework in *Life After Carbon* rings true for Vancouver. Ours is a relatively young city, established in the 1860s with sawmills cutting some of the world's largest trees into lumber. When a fire in the 1880s swept away what had been built, a modern city rose from the ashes. It had electricity and water systems, and streetcars. It was the western terminus of the new national railroad system, and a port for shipping wood across the ocean. In other words, Vancouver started out as a modern city exploiting local natural resources in a globalizing economy. It has since grown into a city with 640,000 inhabitants in a metropolitan area of 2.5 million, heavily dependent on burning fossil fuels to power vehicles and heat buildings.

By the end of the 20th century, city leaders and residents realized that the city's future well-being did not lie in doing more of the same. In a radical change in the city's thinking, we committed to becoming a green city, a renewable-energy city, an economically competitive city, and an equitable city. It's a clear vision built on different ideas about what a city can and should be.

These commitments to action have helped drive Vancouver's economic growth. We have partnered with entrepreneurs to develop a fast-growing, job-creating "green economy" business sector, and we are home to 23 percent of Canada's clean-tech companies. Jobs and population in our community have each grown by more than a third since 1990, while our carbon emissions have decreased in that same time by about 12 percent. Vancouver has successfully branded itself as a highly desirable place for young, innovative talent to find work and build companies. A 2015 study by Brand Finance found that Vancouver is uniquely associated with being clean, green, and environmentally sustainable, resulting in a $31 billion USD brand evaluation.

Vancouver is also working toward a goal of 100 percent renewable energy before 2050. To that end, the city is reducing energy usage and switching from fossil fuels to wind, solar, and hydropower. The largest source of carbon pollution is the burning of natural gas for space and water heating in buildings, so with strong support of council, the public and the building design community, we have put in place a world-pioneering Zero Emission Building Plan for all new construction. The new building code will ensure that new buildings are energy efficient and use no fossil fuel by 2030. We built Canada's first sewer heat recovery system, which harvests heat from a significant sewer line, enabling residents and businesses to reduce their carbon emissions by up to 70 percent. To produce our own renewable energy, we are harvesting methane from the landfill and partnering with FortisBC, our gas utility, to clean the gas and put it into the fossil gas distribution system.

Our new climate-emergency targets include ecosystem reforestation in the region: by 2030, restoration work will be completed on enough forest and coastal ecosystems to remove 1 million tonnes of carbon pollution annually by 2060. Meanwhile, the city is developing its next environmental plan, which calls for accelerating and expanding its nearer term decarbonization targets. By 2030:

- 90 percent of Vancouver residents will live within an easy walk of their daily needs
- Two-thirds of trips will be by active transportation and transit
- 50 percent of kilometers driven on Vancouver's roads will be by zero emissions vehicles
- Embodied emissions in new buildings and construction projects will be reduced by 40 percent
- By 2025, all new and replacement heating and hot water systems will be zero emissions

All of this work to create a new kind of 21st century city must be done with a strong lens on equity to ensure that everyone, especially low-income people and neighborhoods, benefits from these changes.

My involvement in shifting Vancouver's thinking about its future as a city has taught me that, as *Life After Carbon* puts it, "transformational ideas are becoming a new standard for cities—not just a toolbox of innovations but a radically different way of thinking about, a model for, city development and urban achievement around the world."

The framework of ideas that Plastrik and Cleveland found in urban climate innovations reveals a common ground among cities; a simplified understanding of what they share. It's useful in several ways. Most importantly, the framework's key ideas allow us to recognize that the real and urgent work of city leaders in the age of climate change is to fashion better cities. Better cities are economic innovation motors, ultra-efficient in all regards, fully reconnected to nature, and having the social capacity to turn climate disaster into opportunity for the entire community. Few cities have put all of these pieces together.

The framework also helps city leaders recognize that other players: businesses, professionals, community organizations, and other levels of government, are not only critical to success but are embracing these new ideas and implementing them in their own spheres. *Life After Carbon* emphasizes this point in its final chapters, describing the substantial range of related activities undertaken globally by non-governmental entities.

Life After Carbon presents an inspiring account of actual urban change that could not have been written just 10 years ago; there simply wasn't enough going on then. But today, the story of cities' transformative journeys makes compelling reading for local government leaders everywhere. As we know in Vancouver, and as other cities are showing, *Life After Carbon* is prescient in declaring that "the successor to the modern city is busy being born."

A City of Gardens and Water

Rebecca Wodder

Originally published February 11, 2019 in Earth Island Journal

The trip started as something of a lark. My husband wanted to take one of the world's longest airplane flights. He loves to fly; for me, it is near-torture. If I was going to travel halfway around the globe with him, the suffering had to count. I wanted to learn something valuable to bring home and share with environmentally-minded colleagues searching for resilient solutions to water management challenges. Singapore filled the bill.

This young, small island-nation of 5.7 million people has become a world-leading "hydro-hub," and offers game-changing lessons for US cities facing growing threats to their water supplies, as well as more frequent and extreme flood events due to climate change. In Singapore, I knew I could see what fully integrated, high-tech water management looks like. What I didn't expect was how much the people of Singapore appreciate and attend to their water. The tagline of PUB, Singapore's National Water Agency, is "Water for All: Conserve, Value, Enjoy." Singaporeans' shared vision is to live in an active, high-touch relationship with their beautiful, clean city of gardens and water. They are well on their way.

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Water is existential. This was a phrase I heard repeatedly, from national water agency executives as well as from visitor center volunteers. In Singapore, water is a top-of-mind concern for political leaders and citizens, unlike in the US, where water is often "out of sight, out of mind" (until it isn't).

It's been a top concern since the earliest days of the nation, even before independence in 1965. The country has no significant rivers or lakes due to the extremely small size of the catchment (watershed), nor does it have any groundwater supplies. In the 1960s, it saw repeated episodes

of drought-driven water rationing, even while demand for water doubled between 1966 and 1971. Additionally, the new nation was burdened by frequent, widespread flooding and extreme water pollution. There were no sewers for much of population, and polluting industries, such as pig farms, were common. The precarious water situation led Lee Kuan Yew, the nation's founding father and long-time Prime Minister, to recognize that "every other policy had to bend at the knees for water survival."

In the early years, the government built the infrastructure to respond to these everyday concerns. Engineers began by constructing reservoirs for water supply, pipes for drinking water and sewage, and concrete canals to move flood waters quickly away. By the early 1970s, almost everyone had a piped water supply; by 1980, the whole island was linked to the main sewer system. Prime Minister Lee Kuan Yew ordered a thorough cleanup of the extremely polluted Singapore River.

In the 1990s, with basic water infrastructure in place, Singapore turned its attention to building a sustainable, integrated system, consisting of four "National Taps" to improve water self-sufficiency—local catchment water, imported water, reclaimed water, and desalinated water. (The incentive for self-sufficiency is high: Prior to independence, Singapore secured a long-term agreement with Malaysia to provide freshwater from the Johor River, which today meets about 50 percent of the city's water needs. But, this agreement runs out in 2061.) By 2001, PUB had consolidated authority over the entire water cycle—rain capture and drainage, sewerage, water treatment, and distribution. This comprehensive approach, known as "One Water" in the US, is fully realized in Singapore.

The most striking example of Singapore's integrated water management is recycling of wastewater, branded NEWater in Singapore. PUB uses advanced membrane technologies to produce ultra-clean, high-grade reclaimed water from treated wastewater, much of which is utilized by high-tech industry. The biggest users of NEWater are industrial plants fabricating wafers for electronic devices, which require water quality even more stringent than water for drinking. NEWater is also added to public water supply reservoirs, and treated again before being supplied to consumers as tap water. While the idea of treating and reusing what is commonly called wastewater in the US has been a hard sell to Americans, Singaporeans have embraced this high-tech solution to water scarcity. Perhaps this is because PUB consistently refers to "used" water, rather than

wastewater, to avoid the "yuck" factor. As one PUB executive, George Madhavan, remarked, "we don't sell you water, we rent it to you."

In addition to ensuring high quality water through state-of-the-art water recycling technology, PUB has invested heavily in public education and engaged political leaders and the media to build widespread support for the program. NEWater was launched in 2002, at the National Day Parade, with then Prime Minister Goh Chok Tong leading 60,000 Singaporeans in raising a toast with the reclaimed water. Today, five wastewater recycling plants supply up to 40 percent of Singapore's current water needs.

Another major step toward increasing water self-sufficiency has also helped with flood management. Instead of moving storm water out of the city and into the sea as quickly as possible, as many cities do, water managers in Singapore recognize the value of capturing every drop of rain that falls on the city. Today, two-thirds of the city is part of a catchment system that annually delivers millions of gallons of rainfall to 17 reservoirs through a comprehensive network of rivers, canals, and drains. The city has set a goal of tapping 90 percent of the land area for rain capture by 2060.

A third transformative change came in 2006, with the introduction of the ABC Waters Program. Instead of taking a utilitarian, single-purpose approach to managing storm water with grey infrastructure like concrete-lined canals, this program uses green infrastructure such as rain gardens and wetlands to capture and cleanse storm water runoff. The remaking of waterways and reservoirs has had the added benefit of creating beautiful green spaces, allowing people to connect to the water cycle and enjoy nature. The goal of ABC Waters is for Singaporeans to cherish their water, take steps to protect it, and actively enjoy being on, in, or near it.

These programs have been transformative for the country. Fifty years after independence, Singaporeans can count on clean, safe drinking water at a turn of the tap. Children are learning habits of water efficiency and conservation at a young age through multi-faceted water education, and citizens of all ages are protecting and enjoying the waterways and reservoirs throughout the city. PUB is putting into practice the words of Senegalese conservationist, Baba Dioum, "In the end we will conserve only what

we love; we will love only what we understand; and we will understand only what we are taught."

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My own immersion in Singapore's water system began at the NEWater Visitor Center. After a long, hot walk from the nearest subway station, a cold drink was my top priority. I gratefully chugged a bottle of NEWater before starting my tour of this world-class visitor center. While I'm no water sommelier, the taste of NEWater was refreshing and pure.

The center is part of the Bedok NEWater Factory which produces 18 million gallons per day of ultra-clean NEWater, using microfiltration, reverse osmosis, and ultraviolet disinfection. Visitors experience the multi-step process of water purification with lively, interactive exhibits aimed particularly at children. For instance, balls of various sizes, from basketballs to ping pong balls, are used to show how water molecules go through increasingly fine stages of filtration. The tour concludes by asking for a personal pledge to value and conserve Singapore's precious water supply. According to the exhibit's American designer, Linda MacPherson, Singapore is the first place in the world with a vigorous commitment to educating people about water.

The next morning, I met a senior engineer from PUB's Catchment & Waterways Department for a tour of the Kallang River at Bishan-Ang Mo Kio Park in central Singapore. Until 2012, the park was bisected by an unsightly and usually empty concrete canal. Fortuitously, both the park and the canal were scheduled for renovation at the same time. PUB and NParks, Singapore's Parks Department, worked through bureaucratic differences in mission and methods to restore three kilometers of the Kallang River as it flows through the park, creating a beautiful, natural environment for people and wildlife. I'd heard about otters in the area and assumed they had been introduced by humans. Not so. They came on their own, thanks to restored river habitat and clean water, and are very popular with people who live near the park.

We arrived at the same time as a boisterous group of school kids carrying equipment to explore the revived river. ABC Waters sites serve as outdoor classrooms where students can train as nature guides, develop learning trails, test water quality, and learn about clean water and wildlife.

And the enrichment opportunities are not just for youth. We passed a dozen senior citizens playing ball on a field while others practiced tai chi. Stepping stones across the river allow close encounters with nature, while a path along the river provides a place for local residents to stroll, and also serves as part of the city's broader network for pedestrians and bikers. The enhanced quality of life from a naturalized river also added economic value—privately developed apartments bordering the park increased substantially in value with the river's restoration.

Besides restored rivers, I also visited freshwater reservoirs to see how people are using them for recreation. I watched dragon boat races in Kallang Basin and kayaking on Marina Reservoir. In 2008, Singapore realized an early vision of Lee Kuan Yew—the city converted a brackish bay (where the Singapore River enters the sea) to a freshwater reservoir by building a barrage (a low dam with gates that can be opened or closed) complemented by seven huge drainage pumps that can discharge water during high tide. The barrage serves to "protect against flooding, contribute to water supply security and provide recreational opportunities" and is a good example of high-tech, high-touch solutions that Singapore employs to build a strong relationship between its people and its water. Another slightly amusing example is PUB's use of robotic SWANs (Smart Water Assessment Network), which resemble real swans, to monitor water quality in the reservoirs.

I wrapped up my exploration of Singapore's water system by meeting with PUB officials to explore why they think they've been so successful, both in integrating water management and engaging the public. George Madhavan, a long-time PUB engineer who now directs their Centralized Services Department, attributed the agency's impressive track record to good leaders willing to work together. This is not just luck—Singapore has long rated high on the World Bank's scores of good governance.

During my water explorations, I was surprised to learn that conserved water isn't one of the four "National Taps." Rather, using water wisely is considered a civic duty. To encourage conservation, PUB uses a three-pronged approach. First, they use full-cost pricing for water (the Singapore Government provides vouchers for lower-income residents). Second, they've introduced a water efficiency labelling scheme for fixtures such as water faucets and toilets and appliances such as dishwashers and washing machines to help consumers make informed purchasing decisions and

encourage suppliers to introduce more water efficient products into the market. And third, they've employed education and nudging to get people to use less water; for example, kids compete on taking shorter showers. And it's working: in 2003, per capita water consumption was 165 liters per day, compared to 143 liters by 2017. PUB has set a goal of 140 liters by 2030. By comparison, per capita domestic water consumption in the US averaged 371 liters per day in 2005, and 310 liters per person per day in 2015.

Put it all together and Singapore is on track to achieve water independence by 2060.

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Notwithstanding the enormous differences between US cities and the city-state of Singapore, there is great value in learning from the path they have taken to sustainable water security. Radhika Fox, executive director of the US Water Alliance, for one, thinks that despite the fragmented nature of water services in the US—which has 55,000 drinking water utilities, 18,000 wastewater utilities, and thousands of storm water utilities—there is much water managers can do to move in a similar direction.

She points to the Alliance's Value of Water Campaign, a collaboration of water sector organizations aiming to build a 21st century water ethic in the US. According to Fox, the campaign grew out of a recognition that, in most places in the United States, water and the infrastructure that collects, treats, distributes and regulates it has been taken for granted. This puts our communities at risk from threats to the quality, reliability, and affordability of our water supply, as well as the increasing frequency and severity of floods and drought.

The Value of Water Campaign encourages all utilities to speak with one voice on the value of water wherever it is in the water use system. To this end, the Alliance is also advancing a One Water strategy, which promotes the integrated and sustainable management of water, land, and related resources. While the Alliance doesn't have data on the number of cities considering a One Water approach, Fox noted that nearly 230 cities sent representatives to a One Water Summit last summer in Minneapolis.

Fox views institutional inertia as the biggest obstacle to One Water, given that water management traditionally has been very siloed in the US. But she sees a bright future for recycled water here, and "realistically, the only future we have." The Alliance's polling shows that younger people have no issues with recycled water and Fox believes that a generational shift in norms and values will open the door for many US communities to embrace recycled water the way Singaporeans have. Fox's 10-year-old daughter captured this evolution, saying to her mother, "Well, of course, mom, because the water that we drink is what the dinosaurs drank."

I took three main lessons from my short time in Singapore, lessons that can be applied to the US and just about any other place in the world.

First is the importance of having a comprehensive water management strategy to build resilience in the face of a changing global climate and increasing resource demands. Global warming increases the frequency and severity of flooding and droughts, exacerbating Singapore's already significant water challenges. As early as 1972, just seven years into nationhood, Singapore had developed a far-sighted Water Master Plan to achieve water independence. Government leaders chose to value and manage all water—rainwater, wastewater, drinking water—through an integrated system. The holistic approach has paid off, and other cities would be well served by adopting it.

Second, integrating water resource management with other key public and private functions, such as housing, urban development, and parks, brings added benefits like increased property values and innovative, efficient use of scarce land. According to the Centre for Liveable Cities, "[d]ynamic urban governance is one key lesson . . . PUB understood the importance of working with other agencies and involved them accordingly to create visionary integrated landscapes."

Third, everyone wins when you incorporate water in the life of your city. Combine the need for storm water drainage with open space for recreation and wildlife habitat. Seize opportunities to restore or mimic natural hydrological processes to sustainably serve multiple water management functions. Engage citizens young and old through the magnetic attractiveness of water, creating opportunities to build social awareness of our linked fates in a climate-challenged world.

Building Resilience and Preserving History in Charleston

Elizabeth Russell

Originally published June 14, 2019 in Shelterforce

In a city like Charleston, South Carolina, with deep cultural roots and more historic buildings than you can count, the threat of rising sea levels and damaging storms has galvanized an interest in increasing energy efficiency and flood protection. In addition, the effects of development on neighborhood preservation coupled with the growing impact of climate change demand a new approach that can address both issues simultaneously.

In Charleston's historically significant Eastside neighborhood, once a thriving economic center of Charleston's Black community, the city is trying new approaches to improving energy efficiency and flood protection through a $150,000 grant from the Southeast Sustainable Communities Fund. The city and its partner, the Sustainability Institute (SI), is testing solutions like weatherization, solar power, and flood proofing for Eastside's lower-income homeowners.

The Sustainability Institute provides green workforce development, particularly for at-risk populations, and was the first AmeriCorps program in the country to focus on providing energy-efficient upgrades for low-income homeowners. Its workforce training also includes soft skills and industry education, providing participants with practical and professional skills that enable them to land jobs as contractors, energy auditors, or other positions in the industry.

Eastside, like many disinvested communities and communities of color throughout the country, has a history of disenfranchisement and neighborhood "improvement" plans that have ultimately done more harm than good. Knowing this history, the Sustainability Institute sought to build trust with the Eastside community by beginning its work with

weatherization of the office of the Eastside Community Development Corporation (ECDC), a nonprofit that serves as the Eastside neighborhood association. Together, the Sustainability Institute and ECDC determined that the team would begin with a three-fold approach: 1) conduct a series of community education workshops; 2) do door-to-door outreach to homeowners and encourage them to accept the weatherization; and 3) weatherize ECDC's historic, two-story office structure as a community demonstration project.

In the fall of 2018, SI completed the energy upgrade retrofit of the ECDC building and began doing outreach. At the first community workshop, 25 families learned how to improve energy efficiency in their homes and about the free weatherization and upgrade services available from the Sustainability Institute. Since that workshop, SI has conducted several energy assessments in Eastside and completed its first residential retrofit for a longtime elderly resident. The goal is to complete 15 full-home retrofits, which consist of a holistic health, safety, and energy analysis of a home and necessary upgrades. Five homeowners will also receive solar panels and flood-proofing improvements. An additional 15 to 20 homeowners will receive weatherization, which is the process of protecting a building inside and out from the elements and making modifications to improve its energy efficiency—in turn lowering utility costs and lessening the incidence of weather-related damage and the ensuing repair expense.

Although the solar and flood-proofing work is still to come, the city's sustainability director, Katie McKain, sees the weatherization and outreach as an early win. "Reducing emissions is a huge part of mitigating climate change," says McKain. "A key component to supporting energy upgrades is that it not only helps residents reduce their costs, but also reduces the demand on energy."

The demand for energy efficiency among consumers in Eastside and neighboring communities is there, but it is often difficult for low-income homeowners to access financing for upgrades. SI wants to work with a financial partner to establish a revolving loan fund, as well as create new ways for low-income customers to access credit with area banks.

"This is an opportunity to see what works," says Mark Wilbert, Charleston's chief resilience officer. "Anything we can do to help residents have more resilient homes, that's a good thing for us because, house by house,

we become a more resilient city. If there are low cost opportunities that work in the Eastside, maybe there are things we can apply in similar neighborhoods and go after additional funding to make solutions more available throughout Charleston."

The Fairest, Greenest Cities of Them All

Laurie Mazur

Originally published July 25, 2019 in U.S. News & World Report

Just because a city is green doesn't mean it's fair.

Today, U.S. cities are leading the way to a greener future, filling a void left by the federal government's retreat. They are reducing climate-changing carbon emissions and planning for the now inevitable impacts of a warming world.

For cities at the head of the pack, there is much to be gained: good jobs in the emerging green economy; cleaner air and water; lower energy costs; and reduced vulnerability to disaster. But if those gains are not distributed fairly, U.S. cities won't achieve true climate resilience.

The good news is that it is possible to be green and fair, according to the 2019 City Clean Energy Scorecard, released July 25 by the nonprofit American Council for an Energy-Efficient Economy, or ACEEE. A handful of cities—Minneapolis, Seattle, Boston, Philadelphia, Washington and Providence, Rhode Island—are showing how it can be done.

Here's why it matters: Scientists warn that we now have about a decade to head off catastrophic climate change. Cities, which account for two-thirds of the world's energy use and 70% of energy-related carbon emissions, are key to preserving a livable climate.

Cities are rising to the challenge, the Scorecard shows. Municipal governments are using a range of policy levers, including zoning laws, building codes, public finance, transportation investment and workforce development, to promote energy efficiency and scale up renewable energy sources like solar and wind. On these measures, Boston, San Francisco and Seattle come out on top.

But, are the cleanest, greenest cities sharing these benefits equitably? The question is important, because low-income communities and communities of color have the most to gain from green energy efforts—and the most to lose in a changing climate.

Low-income communities pay dearly for dirty energy. Energy costs take a bigger bite out of their household income, making it harder to pay rent and put food on the table. People of color are especially hard-hit: Compared to their white counterparts, Hispanic households spend roughly one-third more of their income on energy bills, and African-American households pay about two-thirds more. Low-income folks are often shut out of energy efficiency and renewable energy programs that can reduce their energy costs. And their communities bear a disproportionate burden of health impacts from fossil fuel use.

Low-income communities and communities of color stand to gain from cost-cutting energy efficiency measures and from clean, low-cost renewables. They would also benefit from job opportunities in solar and wind energy, which are growing at a rate 12 times as fast as the rest of the U.S. economy.

At the same time, low-income communities and communities of color are hit first and worst by climate change impacts. It's a tragedy we see over and over again: the residents displaced from New Orleans' Lower 9th Ward by Hurricane Katrina; the public housing tenants who went without power, heat or running water after Superstorm Sandy; the senior citizens on fixed incomes who were unable to flee the fast-moving Camp fire. That's why cities must prioritize vulnerable, "frontline" communities—and involve them in planning for climate resilience.

To determine whether cities are green and fair, the 2019 Scorecard looked at several metrics, including whether frontline communities engaged in climate and energy planning, whether workforce development programs reached communities of color and whether low-income residents accessed energy efficiency incentives and efficient public transit.

While no cities completely aced the equity test, several stood out. Minneapolis emerged as the fairest green city, followed by Seattle—with Boston, Philadelphia, Providence and Washington tying for third place. Here are a few examples of what those cities are doing right:

- **Minneapolis** created "Green Zones," where residents of frontline neighborhoods advise the city on climate action plans and track the outcomes of sustainability initiatives. The city's low-income utility customers have access to a variety of money-saving efficiency programs. Public transportation is widely available, while tax and other incentives encourage transit-oriented development.

- **Seattle** formed an Environmental Justice Committee, which empowers frontline residents to influence environmental planning. The city also offers energy efficiency programs targeting low-income and multifamily customers. And the city's electric utility, Seattle City Light, funds a weatherization program for low-income households.

- **Washington** launched an Equity Advisory Group led by residents of neighborhoods most at risk from climate impacts. The DC Sustainable Energy Utility offers energy efficiency programs for low-income residents, including those living in affordable apartment buildings. And through Solar Works DC, the city trains low-income residents for jobs installing solar panels.

These cities are working to make sure that the benefits of clean energy are broadly shared. And, importantly, they understand that our communities are only as resilient as their most-vulnerable residents. In this way, they may prevent the worst impacts of climate change—and build a fairer, greener future for all.

Rethinking the Good City: Vallejo's Bold Vision

John de Graaf

Originally published July 25, 2019 in Front Porch Republic

What makes a good city? I've been thinking a lot about this. What makes for a city people are happy living in, and want to stay in? One answer comes from the Gallup polling organization, with support from the Knight Foundation. A few years ago, Gallup published a thorough study called "Soul of the Community," involving all 26 cities where Knight-Ridder newspapers are the primary print news sources. The study examined ten possible answers to the question of what keeps people attached to where they live. Its conclusions were, perhaps, surprising.

While the quality of schools (including colleges and universities), often ranked highly in people's choice of where they *want* to live, did come in fourth among the Knight-Ridder cities, economy ranked seventh and public safety eighth. The cities are quite different. They range in size from Myrtle Beach, SC to Philadelphia, PA and are scattered throughout the United States. But in 2010, in ALL 26 cities surveyed, *the same three answers* came out on top, though not in the same order in every city.

What were they?

- ***Social offerings—Places for people to meet each other and the feeling that people in the community care about each other.*** It's very important to residents to have access to free or low-cost social, cultural and artistic events that bring people together in community. Celebrations, festivals, music, dance, lots of art, and so forth. Farmers' markets also seem to work well in this regard.

- ***Openness—How welcoming the community is to different types of people, including families with young children,***

minorities, and talented college graduates. People want to be welcomed into the life of their city. Friendliness counts for a lot, and newcomers also want *agency*; they want to be encouraged to participate in decision-making, not closed off by a longstanding elite power structure. Active and visible efforts to promote tolerance and diversity are very important.

- ***Aesthetics—The physical beauty of the community including the availability of parks and green spaces.*** People want to live in a community they consider beautiful, with good access to parks, nature and green open space.

These are reasonable wishes, of course, but many of us might be surprised to find them listed as the most appreciated attributes in every city Gallup surveyed.

A Case Study: Vallejo, California

I've been noticing these three qualities while making a film about Vallejo, California, identified by Brown University as "America's most diverse city." Vallejo looks a lot like America will look half a century from now. It is only 25 percent white. Each of the other demographic groups—Asian, African American and Hispanic—also make up about a quarter of the population. Add a smattering of Pacific Islanders and Native Americans, and you have a remarkably diverse community.

If America's present polarization is any indication, there is currently a great deal of fear about such diversity. White nativist and racist sentiments are now shared by a significant part of the American population. For them, the "other" is something to be afraid of and stay away from. Immigrants are especially threatening. When Barack Obama became president, many older Americans who opposed him remarked that they wanted "our (code for *white*) America back." Vallejo is distinctly NOT that America.

Social Offerings

And yet, as I immediately discovered about the city, it's anything but a fearful place. Instead, it's an example of how diverse groups of people can thrive together. At the Saturday morning farmers' market (which closes several downtown blocks to traffic), Vallejo's melting pot, and its warmth, are on full display. Both vendors and buyers are of every race, and interactions are consistently friendly. Farmers' markets, now popping

up all over America, are great places to build community. Bill McKibben reports that shoppers there engage in ten times as many conversations as they do in supermarkets.

I found the same warmth at local ethnic celebrations like Pista Sa Nayon, an annual June gathering remembering Philippine independence from Spain. The colorful and acrobatic dancers, the singers, and the battling martial artists are Filipino Americans, a group that accounts for a fifth of Vallejo's population. But the thousands of delighted onlookers resemble a model United Nations. Everyone is welcome and feels so. A mixed-race couple I spoke with on the city's waterfront, recent arrivals from Oakland drawn by Vallejo's affordability, were quick to comment on the easy availability of interesting, and often free, cultural events made possible precisely because people from many different backgrounds call Vallejo home.

Vallejo's Filipino American mayor understands how such heterogeneity and celebration make people want to stay in the city. Bob Sampayan spent three decades on the city's police force, many of them as a homicide officer, before being elected as a representative to the city council and then, in 2016, as mayor. "Our diversity is our strength" he declares. And it's not just racial and ethnic diversity. On the wall immediately behind Mayor Sampayan's desk is a large, rainbow-colored Gay Pride flag that a constituent gave him.

Then, there are the arts. It's art, perhaps more than anything else, that helped pull Vallejo out of a troubled period in the city's past. For 150 years—ever since Mare Island, across the Napa River from downtown, became California' first naval seaport, and grew into a major naval base where the great ships that fought the First and Second World Wars (and the nuclear submarines of the Cold War era) were built—Vallejo was, in effect, a company town. Its predominant source of jobs and income was the United States Navy. The Navy drew Filipinos in the years after the Spanish-American war to work on its ships, and thousands of African Americans during World War II to build them (most Hispanics came later, many to work in the burgeoning nearby Napa Valley wine industry).

Sailors and shipbuilders kept Vallejo afloat. But in 1996, the Navy pulled out. The city's economy came crashing down, then started struggling

back as commuters to other Bay Area cities began taking advantage of its great real estate deals. Artists, priced out of many Bay Area communities, found vacant storefronts in downtown Vallejo and turned them into studios. They found each other as well and began to build a culture. A few years after the Navy left, the federal government moved several other agencies, including the U.S. Forest Service, from downtown San Francisco to Mare Island.

But the economic shock wasn't over. The housing crisis and the financial collapse of 2008 drove Vallejo into bankruptcy. Budget shortfalls cut the local police force in half, inviting gangs and drug dealers to set up shop and use the city as a hub for their Bay Area operations. Vallejo became quickly known as a dangerous place and one of the murder capitals of the state. A virtual war between the gangs and the whittled-down police force resulted in frequent death. But as the national economy improved, so did Vallejo's, and more economic refugees from the Bay Area's inflation-crazed cities bought homes or rented there. They found a welcoming community that encouraged them to be engaged.

Today, the arts are thriving. Downtown galleries attract many to Second Friday art walks, while events at the newly revitalized Empress Theater attract sizable crowds. Much of the art is quirky and fun, part of a genre called "Steampunk," which includes wacky spoofs of the Victorian-era age of steam. Mayor Sampayan calls himself "America's first steampunk mayor," and rides in the local winter Mad Hatter Parade, decked out in a top hat and aviator goggles and driving either a Jules Verne-like rocket car or his colorful "diversity cab," a large tricycle he built himself, based on examples from the Philippines. He gives rides to anyone. An artists' collective called Obtainium Works designs other bizarre vehicles, including a three-story Victorian home on wheels that's a regular at Nevada's "Burning Man" celebration.

Openness

Vallejo's arts and diverse cultural offerings provide for the first asset discovered by Gallup. They bring people together to enjoy each other's company and help build a sense of community. With so many newcomers welcomed to the city, it's also an immediately friendly place—everyone I talk to mentions that. And its civic engagement is almost legendary for a town of Vallejo's size—120,000. So that's number two.

Volunteering is widely popular, exemplified by Hannah Dunton, a thoughtful millennial who donates her time to several organizations. Not long ago, she completed a solo hike of the 2600-mile Pacific Crest Trail from Mexico to Canada, celebrated in the Cheryl Strayed novel, *Wild*. Hannah often reflects on the lessons she learned—that happiness comes from friends, beauty, a sense of purpose, not a lot of stuff. She lives simply and flies kites, both as a hobby and a form of meditation. Keeping a beautiful kite from crashing on Vallejo's windy waterfront requires full concentration and allows Dunton to de-stress from her daily job at PG & E, the giant California public utility company.

Peter Brooks, a public relations specialist who moved to Vallejo a decade ago to escape escalating San Francisco real estate prices, told me he thought the move was temporary. "I never thought I'd be here ten years," he says. "Now I'll never leave. Most people here feel this way. This is a great place and we've gotten active to keep it that way and build on it."

Aesthetics

Brooks' own engagement stems from the love for aesthetics that Gallup discovered was the number three asset for its 26 Knight-Ridder cities. As a leader of Fresh Air Vallejo, a local non-profit, Brooks helped spearhead efforts to prevent the opening of a cement factory on Vallejo's Napa River waterfront. While the Irish company that would have owned the plant called it a sustainable recycling effort to turn reclaimed concrete from destroyed buildings and roads into new cement (its slogan was "cementing a Green Vallejo"), locals like Peter feared the destruction of potentially beautiful land along the river and massive dust pollution. African American families living near the plant considered it a form of "environmental racism" that would exacerbate their children's already high rates of asthma.

The battle lasted for four years. Proponents included some businesses and members of the building trades and other unions who thought the project would mean many new jobs. A few other unions, most notably the ILWU, joined the environmental opposition. The city planning commission rejected the project and, with popular sentiment running strongly against the plant, the city council was prepared to say NO to a requested permit when the company owning the land suddenly cried "uncle" and the project was dropped.

Peter Brooks told me the deciding issue was *beauty*. The people of Vallejo wanted parks and trails along their waterfront, not train tracks and cement trucks, noise and dust. "They wanted a beautiful waterfront. They want Vallejo to be a beautiful city," Brooks said, adding that it was just like the line from the ending of the 1934 movie *King Kong*. "It was beauty that killed the beast," he observed with a smile.

Gallup suggests that part of what makes a city "aesthetically pleasing" is easy access to nature, parks, and green space. Vallejo's unusual development as a Navy town has left it with many opportunities to improve its natural amenities. In contrast to much of the overbuilt and dense Bay Area, it's a low-rise city with plenty of unused land. To the east, rolling and grassy hills support cattle ranching and hiking trails. They have been protected by Open Space legislation but are likely to feel renewed pressure from developers eager to turn them into subdivisions in one of the world's prime real estate markets.

Steve Dunsky, a U.S. Forest Service video producer in Vallejo, and I walked one of the hillside trails with Mayor Sampayan and his wife Ramona recently. They were lush green from a wet winter in California and dotted with multi-colored blooms of wildflowers. Sampayan loves to hike in those hills and insists that he will fight against any loss of the open space. He showed his wife where city workers had found a pack of mountain lion cubs near an old water tower. He is pleased that cougars and coyotes live so close to his city and wants to protect their habitat, calling humans the usurper here.

Across the wide and brackish Napa River from Vallejo's waterfront is Mare Island, where the Navy once ruled—and left behind a toxic legacy that has taken years to clean up. Developers have designs on the flatter more northerly parts of the island, which also boasts artists' studios, a new distillery, and the regional Forest Service offices. But the south end, which is hilly, rocky, and dotted with live oaks and other vegetation, is currently being maintained as a nature preserve. It's run informally by Myrna Hayes, a cheerful woman who once suffered a traumatic brain injury, though with her knowledge of the area and articulate verbal skills, you'd never guess that. Her "Visitor Center" is unique—a collection of all things left by the Navy in a funky metal building that once housed ammunition. The objects aren't really catalogued but Hayes knows what they all are.

When I visited, she was sharing the history of the place with a young couple from Holland who were excited about hiking and camping there. The visitor center is a haven for birds—wrens and swallows were busy feeding their young and making quite a racket. The Preserve's downside is the common presence of rattlesnakes, but for Hayes they add to its charm. Hayes worries though about fire, a new normal in California in the era of droughts and climate change. She grew up in the town of Paradise, where her family's home and everyone else's was burned to the ground last year, leaving at least 85 people dead.

Nature in the City

Mare Island is on the Pacific Flyway, and its annual bird migrations have been enhanced by recent efforts to restore nearby Bay wetlands by breaching dikes on the Napa River. The birds have come back in large numbers, bringing binocular-wielding tourists with them. "They've made that area into a bird sanctuary," Sampayan told me. "My favorite birds are the bald eagle, the osprey and the great snowy egret. You see them all out there and it is just amazing to see. You see sandpipers, herons, so many geese. I spend hours out there just watching these birds. Wildlife is coming back. The great snowy egret almost went extinct because they were being killed for their feathers for women's hats. There were just a few thousand left but they're back now. They are such gorgeous creatures to watch fly."

But within the city, things are not yet so beautiful. Mayor Sampayan bemoans the empty lots full of weeds and trash and surrounded by chain link fencing. He deplores the graffiti that still adorns many buildings. They give the wrong first impression, he says. Sampayan would like to see some of this space used for parks that can connect Vallejo's children with nature to a greater degree. He fears that too many of them spend little time outdoors and even less around natural settings rather than ball fields. He fell in love with Yosemite as a child in Salinas when his father took him there on vacation and has been a nature advocate ever since.

But new parks are expensive, and some people view them as a luxury. Not so say numerous studies about the impact of nature on health and happiness. In Oakland, 20 miles from Vallejo, physician Nooshin Razani of the Center for Nature and Health takes traumatized parents and children to parks to relieve their stress. Many other physicians are now

following suit, some as part of the national organization Parks Rx, which has recently begun working in Vallejo.

Sampayan has local support for his natural wishes. Rue Mapp, the founder of Outdoor Afro, recently moved to Vallejo. A tall and commanding presence, Mapp had been living in Oakland. She started Outdoor Afro because, as a University of California-trained biologist, she'd become increasingly aware of the need to reconnect fellow African Americans and other people of color with the outdoors, and especially with natural settings. For many blacks, she told me, the woods conjured frightening memories of KKK lynchings in the South, memories still strong decades after they'd come to work in northern cities like Vallejo.

Even short trips to local parks or time spent outside for a family barbecue make a difference, Mapp says. Besides its friendliness and affordability, Vallejo's emphasis on the arts appealed to Mapp. She uses a biological reference to talk about it. "Artists, I've always felt, are the *indicator species* of any city," she observes. "When the artists are healthy and thrive, so does the city. When they are driven out by gentrification or other causes, cities lose some of their soul."

The U.S. Forest Service, with its Region 5 (California) headquarters in Vallejo, has been trying to strengthen the children/nature connection for many years. But when Steve Dunsky, a video producer, and other U.S. Forest Service staffers were planning to celebrate the 50th anniversary of the Wilderness Act in 2014, they quickly discovered that few youngsters in the city had ever been in a wilderness or even knew what one was. Together with other members of the community, they decided to honor nature closer to home instead. They had to bring the wilds to the kids instead of vice versa.

Since that year, Vallejo's Visions of the Wild festival in September has grown steadily, offering opportunities for hiking, kayaking, boat tours with naturalists on the Napa River, and even a "mobile ranger station" downtown, complete with a Smokey Bear and children's activities. The ranger station was designed by Shannon O'Hare, a founder of the Obtainium Works arts collective, another symbol of the symbiosis between art and nature's beauty in the city. Dunsky also curates an environmental film festival in the Empress Theater during Visions of the Wild. It's a model he and Mayor Sampayan see as applicable in many cities.

Getting from Here to There

Yet despite all this progress, Vallejo's future is unclear. The city still lacks a vibrant downtown except during events like the farmers' market and art walks. There is hardly any traffic congestion and the sidewalks often seem empty. Almost unbelievably, parking is still free (for two hours) in the city center. But new bookstores and cafes are opening, and with potential major job-creating development coming to Mare Island, one can expect more, and sooner rather than later. As the city appeals to more Bay Area refugees with high incomes, real estate prices are beginning to rise. Lower-income residents are already seeing major rent increases, a trend Sampayan is determined to resist.

"I have a lot of concern about that because Vallejo has a lot of elderly," he told me. "We have some folks that are financially challenged and as rents go up those folks are displaced. I've heard horror story after horror story of people that have lost their place because their landlord knew that if they put fresh paint on it and fixed a few things on it and threw some plants out front that they could get several hundred dollars more a month."

But his power is limited. Some artists have lost their downtown studios as owners speculate regarding future tenants. Beauty's appeal also creates its Achilles' heel—gentrification. San Francisco is only a beautiful one-hour ferry ride across the Bay. Even many of the city's wealthy are beginning to look elsewhere to live and Vallejo is certainly part of the buzz. As they come, the income gap in Vallejo will increase. How to save the city's working-class character and diversity is the question for Mayor Bob. I watched recently as he listened to ideas offered by Anamaria Aristizabal, a visitor to his city from the South American metropolis of Bogota, Columbia.

As Aristizabal explained, Bogota in the 1990s suffered from extreme inequality, poor health and massive traffic congestion, not to mention the stray bullets of an ongoing civil war. Elected to stem the social problems that plagued the city of eight million, Mayor Enrique Penalosa was part of a line of reformers who had reduced corruption and brought new transparency to government. But he surmised that unless the poor had power and political agency, efforts to reduce inequality would founder. He had an idea. Poor neighborhoods needed to know that someone in city hall cared before they would risk engaging in politics.

So Penalosa built hundreds of parks in poor neighborhoods, where children had feared to be outside. He added new libraries, giving the poor easier access to information. He created miles of beautiful bicycle paths, and a bus-rapid-transit system with its own highways to reduce the endless commutes that left so many of the poor too exhausted to get active. And at times, he closed city streets to cars, helping clean the air and offer healthy recreation. It worked. Bogota proved that a focus on parks, beauty, education, walking, and cycling could create a far more equitable and livable metropolis, and Penalosa has become a worldwide symbol of a smart new urbanism. After a stint teaching at Harvard, he is now mayor of Bogota again.

As Aristizabal explained all of this, Mayor Sampayan grew visibly excited about Vallejo's own possibilities, and asked a series of questions. He refrained from his own speechmaking, and at the end of the meeting humbly thanked Anamaria for being an inspiration. He had a lot to think about, he told me later. One focus never far from his mind is sustainability. He wants to sharply reduce the use of fossil fuels, divest from the city's fossil fuel investments, convert the bus system to electric vehicles, reduce pollution from the Sacramento and Napa Rivers that makes it dangerous to consume locally-caught fish, ramp up re-use and recycling and inspire children to understand the consequences of actions as simple as throwing away a plastic wrapper. He'd like his city to be an urban model for the Green New Deal.

In these hopes, he's joined by Richard Fisher, a former star lineman for the nearby University of California football team. Fisher is a gentle giant, with long curly hair, a beard and a soft-spoken manner. A stay-at-home dad and husband of a physician, Fisher played in four bowl games and nearly made the pros, but instead has become an environmental activist for a whole new kind of urban community he calls "generous cities." With its plentiful vacant land, Fisher believes that Vallejo could develop large-scale sustainable farms that might feed other cities as well as its own population. Its growing community garden movement and flourishing farmers' market point the way to new approaches.

Fisher is also involved in multi-family experiments aimed toward creating more sustainable, less wasteful neighborhoods, a project led by Sustainable Solano, a local environmental group. There are other possibilities: a large-scale effort to increase the tree canopy in poor parts

of the city could provide improvements in health, beauty and quality of life, while also helping to sequester carbon. The city had been doing this using state funds, but recently the project grant ran out. Mayor Sampayan hopes the Green New Deal will bring back the funds. So far, the Vallejo community seems to be rallying behind his vision. "Fortunately," he says, "we here in California believe in climate change. We believe in the ecology of our land. We believe that we can make the positive changes that need to be made so that we have life on this planet."

And not only life, but a good life.

The Netherlands Cleared the Cars From Its Cities. Why Can't London or New York?

Chris and Melissa Bruntlett

Originally published August 9, 2019 in CityMetric

The past few months have seen an uptick in cycling deaths in cities around the world. In New York City alone, 18 people had been killed in cycling collisions by the middle of 2019, nearly doubling the city's total for the whole of 2018.

It's a sad irony that the increase in fatalities comes as countless municipalities have committed to Vision Zero—a plan to eliminate all traffic fatalities and severe injuries.

While the ethos behind Vision Zero is commendable, the vision itself is only as good as the actions taken to support it. The commitment from elected officials needs to be more than just lip service or nothing will get better—in fact, it will just get worse. The first step is prioritizing safer space on our streets.

An ever-growing number of cities are building fully separated cycle tracks to help reduce conflict between road users. London's cycleways are an excellent example of Transport for London's commitment to getting more people on bicycles while also keeping them safe on that city's notoriously hostile streets. New York City itself has spent nearly a decade taming its streets with protected cycle lanes. To some extent, these efforts are working, as more people who formerly wouldn't cycle are giving it a try.

So with all this investment in safer streets, why the increase in cycling deaths? Simply put, the investment is not commensurate with the latent demand, creating gaps that are hot spots for conflict. Intersections remain some of the most dangerous places for cyclists, who are left exposed to

conditions that are designed and optimized for car travel. That, often coupled with incomplete cycling networks, means that drivers and cyclists are left to their own devices to navigate the streets. When pitted against each other, there is one obvious "winner".

Tensions have been rising between road users for decades now, since the first Critical Mass was held in San Francisco in 1992. Transport mode tribalism has contributed to intense confrontations between those on bikes and in cars. For many cycling advocates, the fight for the democratization of our streets can start to feel hopeless.

But there are signs of history repeating itself, perhaps for the better. Following one of the recent cycling fatalities in New York City, activists took to the streets to demand the City increase its efforts to protect cyclists. They hosted a die-in in Washington Square Park—a macabre, albeit poignant, statement that road fatalities of cyclists is not an acceptable status quo.

The die-in echoed historic demonstrations that took place in Amsterdam in the mid-1970s, as part of the Stop de Kindermoord (stop the child murder) movement. The Dutch uprising followed a dramatic increase in automobile traffic, and a corresponding rash of traffic fatalities that took the lives of 400 children in 1971. Now, just as in the Netherlands nearly 40 years ago, it is the people of New York City who are demanding change.

It's not just New Yorkers. In San Diego, San Francisco, Boston, Milwaukee, Glasgow, and Wellington, NZ, human beings are literally putting themselves in harm's way to create a physical divide between cars and those traveling on bicycles. The "People Protected Bike Lane," a form of tactical urbanism, is becoming an increasing common form of protest. In these cities, adults stand alongside children to demand better conditions, just as Dutch families did in the '70's. It's a clear statement that the right to space is an equity issue with no age limit.

The fact is that we've been here before. Perhaps on different shores, but the conditions are the same. Growing congestion coupled with increased demand on limited space make our streets hostile places. If those who have been elected to serve are truly committed to a Vision Zero future, it needs to be more than just talk. Proactive policies that create safer conditions through a combination of traffic calming, complete networks

and separated facilities will go a long way to encouraging cycling without increasing fatalities at the same time.

The question is, can we learn from more recent mistakes and see the lessons that are laid out for us from history? If New York's die-in shows us anything, it's that we can take inspiration from the activist spirit of the past to demand better for our cities. Just as the Dutch stood up and ultimately created some of the most cycling friendly streets on the planet, so to can New Yorkers, Londoners and others around the world. The people are asking, now it's up to our representatives to answer the call.

Meet the Group Making Washington, DC's Streets Safer Through Do-It-Yourself Urbanism

Natasha Riddle

Originally published August 15, 2019 in Greater Greater Washington

The DC Department of Transformation—not to be confused with the District Department of Transportation—is helping cyclists and pedestrians one plunger, or traffic cone, or ad hoc handstand, at a time. What started off as a Twitter account aimed at rectifying problems with city infrastructure, @DCDOTRA has grown into a prime example of tactical urbanism. And the great thing is: Anyone can participate.

I talked to the founder of the account (who will remain anonymous by their request—many of their projects are not technically legal) about what DC DOTRA is doing, how tactical urbanism can help make DC safer for people walking and bicycling, and how citizen-led initiatives are crucial to improving urban environments.

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Q: What is The DC Department of Transformation?

A: The Department of Transformation is an imaginary city department that empowers citizens to think beyond the structures of our city government. We have the capability to have a direct impact on our neighborhoods and make ourselves safer. If there's a situation in which you feel unsafe, you have every right to fix it yourself.

That's my philosophy rooted in the idea that we have the physical right to the city and do things with it as we see fit. I know that's a controversial idea, but I love poking that dragon. That's

why I created this Twitter account: To inspire people to say, "I can do that, it's really easy to transform this experience [biking, walking, or living in the city] by doing something [about the problems]."

Q: Do people confuse you for the District Department of Transportation (DDOT)?

A: What's funny is that when I made it, I was like, "I have to make it really wacky so that if people try to tag me in it, they'd know it's not a real department." But, people still tag me in stuff, and they still message me saying, "Hey, can we get some traffic control here?" and I've taken to saying "Control it yourself, or fix it yourself," but then I actually guide them towards DDOT.

Q: What sort of physical "fixes" do you do?

A: Well, we don't do anything permanent, at least not yet. My next project might be permanent, but it's hard to do these projects without any money. I rely totally on the charity of people coming to me and saying, "I have the materials to do this." Like all the traffic cones I have, I've found on the street, abandoned outside of construction sites, or along trails. So I'm reusing these things, too.

I am inspired by the San Francisco Department of Transformation. They were doing a project in Golden Gate Park—sometime in 2012 or 2013—on an off ramp and there was a bike lane with a buffer, but since it was so wide, cars would drift into the bike lane without caring. So what they did was they got 50-60 plungers and put them up as a buffer. Within a day, the San Francisco Department of Transportation said "we're gonna install flexiposts." They were ashamed. I thought that was so powerful. I was so tired of being angry at cars, and yelling at drivers and I wanted to channel my anger at something more productive that would radicalize more people.

One of the first things that we did was on 14th and U Street where we did a human protected bike lane. I've biked thousands of miles and I'm terrified to bike on 14th Street, even

though it has a bike lane. I got 35 people to come out in the pouring rain. People were willing to stand in the rain to protect a bike lane! There was also the thing in NoMa where contractors didn't repaint the bike lane. So, one of our directors went around looking for loose stop-its and put them out in the middle of the road. People were upset that we did that. That caused DDOT to make them paint the bike lanes.

One of the biggest things that we've done are the handstands. There's one at 15th and Massachusetts and another one at 15th and U. I was inspired by some handstands that I saw in Copenhagen. It was a wooden structure secured down with sand bags. I also see people using it all the time. The bottom bar is grey now because of how many people are using it!

Q: A lot of tactical urbanists want to get rid of cars. How do you feel about them?

A: I'm obviously very anti-car. I tweet "ban cars" all the time. I think there is a way to get to a city with less cars, but a lot of that is shattering away at the facade of car culture. When I say, "Ban all cars," in some ways I'm being serious, in others I'm being facetious and trying to scare people a little bit; make them say, "Woah, there's a world in which we don't need cars?" Well, yes there is a world in which we don't need cars!

It's also a climate change issue. We have no choice but to transition away from cars. Even electric cars contribute to climate change. A lot of public health issues come from cars. For me, pedestrianism is true democracy. Respecting each other's bodies and space; there's acceptance of people in that. It's breaking away from being isolated in cars.

Q: What specific things about DC make DCDOTRA important for the way that DC is growing and changing?

A: Cars are a money pit and my focus is on equity. With climate change coming another worry of mine is gas shortages. Working class people would be really affected by a gas shortage. If we can anticipate that and transition into a more eco-friendly

way of life, then we can mitigate that long-term shock. A big revolution is also e-bikes.

Another joke that I have is that anyone can be a director [of DCDOTRA]. Last year in Anacostia, there was a bus stop without an overhang. People would bring chairs and it became a thing until they were removed. Another one of our directors painted his own crosswalk in Ward 8 in order to demand and call attention to the issue.

Q: What do you have planned for the future?

A: I have to turn up the heat! But, I can't just replace a function entirely. I'm not trying to do what DDOT can do, I'm trying to enhance and raise the bar in terms of thinking about bike infrastructure.

Often when I do these projects, a new piece of information is exposed to me. Anonymous DDOT staffers told me that they can't drill anything into the asphalt that isn't flexible because of federal regulations. That illuminates to me that these hand-stands are things we have to do on our own. Tactical urbanism is something that sprouts from the city.

This DC Apartment Building Provides Low-Income Families With Solar Power and a Resilience Center

Natasha Riddle

Originally published June 27, 2019 in Greater Greater Washington

In the heart of Columbia Heights, a new apartment building offers residents and nearby community members an unexpected service: Resilience. Jubilee Housing, a non-profit that creates deeply affordable housing for low-income residents, has joined with New Partners Community Solar Corp. to create a "resiliency center" inside The Maycroft Apartments.

A resilience hub or center is a facility that serves as point of resource distribution in case of a natural or manmade emergency. This one includes solar panels on the roof and enough batteries, funded by Pepco, to sustain the first floor community center for three days should the power go out city-wide. The building provides affordable housing for 64 families, and 40 of the units have rents between $600 and $700 a month. It's the first initiative of its kind in DC.

What is resilience, and why is a resilience center important?
Should the power grid that provides electricity to the area shut down, The Maycroft has a battery storage system that would keep vital electricity running for up to three days, though only for crucial things like common lights, elevators, and the building's emergency system.

Residents of The Maycroft can come to the resilience room located on the first floor to charge their phones, monitor the news, or store medicines in a refrigerator. The space can also be used to provide basic services like medical assistance, childcare, and a kitchen to cook food.

Resilience has become a buzzword in the last few years as cities and countries prepare for what the UN is calling an impending climate

catastrophe. The Rockefeller Foundation established 100 Resilient Cities (100RC) to help cities respond and prepare to coming climate emergencies. DC is a member of 100RC and has begun planning resilience strategies for the city.

On April 29, Mayor Muriel Bowser announced the first urban resilience strategy for the city that "is organized around three main drivers of change: economic and population growth; climate change; and technological transformation," according to a press release. One of the first initiatives, called Resilient Rivers, focuses on developing riverside communities to be able to withstand flooding caused by climate change.

Community solar in action

Even without a disaster, the array of solar panels on the Maycroft's roof save residents $40-50 each month on their electricity bill through solar credits. The solar panels work by converting energy from the sun into electricity. The electricity gets diverted by into the power grid operated by Pepco and is then redistributed to residents in the building, cutting down on greenhouse emissions.

The Maycroft array works with solar energy generated by other New Partners solar arrays in the District. The energy is distributed to low-income Jubilee residents for free thanks to the DC's Solar For All Community Solar initiative. The solar panels also provide a small daily charge to the batteries during normal, non-emergency conditions. This electricity is stored in the batteries, and in the case of an emergency, it keeps the generator running for crucial systems mentioned above.

But the solar power generated by the panels is only available when the array is connected to a working power grid. If there is a blackout due to a storm or other disaster, the New Partners solar system is automatically shut down.

That's where the batteries come in. According to Jeffrey Lesk, one of the founders of New Partners, a solar plus battery storage system would temporarily solve that problem. That lead to the partnership between Jubilee and New Partners.

"Rather than being shut down during [a] power outage, the solar array continues to produce renewable energy—but it is 'islanded' to power the

battery," Lesk told me in an email. The Resiliency Center receives power from the batteries and becomes independent from the solar and power grid, essentially becoming self-sustaining.

For Sam Buggs, a resident of The Maycroft who lives on a fixed income, the combination of resilience and solar power offers a unique and rewarding situation. "It's a great opportunity," he told me over the phone, "Every dollar goes to paying bills, so having the opportunity to save money is outstanding. It also makes us feel special to have the Resiliency Center in the building."

Equity should be a priority as the District plans to become more resilient, as low-income people are most affected by climate change. Services like the Resiliency Center could help residents and neighbors in an event of an emergency, while longer-term solutions like solar panels for low income households could benefit struggling communities for the long haul.

Equity, Health, Resilience, and Jobs: Lessons from the Just Growth Circle

Elizabeth Sawin, Nathaniel Smith and Tina Anderson Smith

Originally published August 22, 2019 in Nonprofit Quarterly

Consider this familiar pattern, easily recognizable in cities around the United States today:

> *A group of well-meaning urban planners, city leaders, conservationists, and businesses restore an urban watershed with parks, trails, and greenspace. Water quality improves; the potential for well-being, health, and climate resilience is widely celebrated. But, as the neighborhood improves, property values spike, and a wave of gentrification and displacement ensues. On top of that, most of the jobs go to people who live outside the community.*

But, in one neighborhood in Atlanta, we are seeing a different pattern play out:

> *Leaders of the watershed restoration project commit to community involvement, to holding meetings at times that residents can attend, and to making space for community perspectives. The planning process involves partners with knowledge about equity and affordable housing. They stand up for community self-determination and racial and economic equity, even with large corporate partners who have the potential to support (or drop) the project. The resulting restoration plan includes a commitment to protect against displacement and steer the benefits—and jobs—to those who need them most.*

Complex systems theory suggests that, when undesirable patterns are the *status quo*, the way to generate more desirable patterns is to shift the underlying conditions of the system—particularly the skills of individuals, their networks of connection, and the values from which they operate.

No system shift is the result of a single intervention. But leaders in the Atlanta watershed restoration project have told us that their project is turning out differently because they are *acting* differently. And they are acting differently, in part, because of their participation in an equitable growth coalition called the Just Growth Circle, which promotes cross-sectoral collaboration at the nexus of health, water, climate, housing, jobs, and racial equity.

The Just Growth Circle grew from an unusual collaboration between the Atlanta-based Partnership for Southern Equity (PSE) and Climate Interactive, an international organization that specializes in systems-level work. The Circle is helping Atlantans understand the complex urban systems they inhabit and identify opportunities to promote equitable outcomes. To that end, members of the Circle participate in diverse networks based on a solid foundation of trust. These are not temporary, transactional alliances; the Circle aims to build relationships that will endure as the city grows and evolves, seizing opportunities for meaningful change along the way.

Relationships forged in the Just Growth Circle are changing the way its members think and work. As one founder of the watershed restoration project said, "[When I first came to a Circle meeting] I was nervous and intimidated because I didn't know anybody . . . Now I work very closely with [some of them] and they have been profoundly influential on me personally. Specifically, in this project, they have helped me steer it toward advocating for community benefits and . . . thinking ahead about community impact."

This approach produces results. As noted above, Circle members helped shape the watershed restoration plan, securing commitments to protect against displacement and to benefit marginalized neighborhoods. Circle members were also instrumental in helping update a city agency's $1.2 billion capital improvement plan, winning provisions for equitable hiring and procurement.

Results like these show the potential to leverage modest investments—in convening and supporting people's learning, development, and networking—to influence spending that is orders of magnitude larger. The few hundred thousand dollars invested in the Circle have helped shape the deployment of a billion dollars in capital improvements. Add to that the millions that will be invested in watershed restoration, additional millions

contemplated for parks, and further millions for historic district development, and the scale of the opportunity becomes clear.

The full impact of the Just Growth Circle won't be known for decades, but early results are promising. So, we want to share what we've learned with the hope that our approaches might be useful elsewhere.

Synergistic Solutions Are Feasible in Theory, Difficult in Practice

We know from groups such as the World Health Organization and Transport for London, as well as an article in *International Labour Review* that—at least in theory—you can promote sustainability, resilience, and climate protection, while also creating jobs and improving health, well-being, and racial equity.

However, what is possible in theory often remains out of reach in practice. A (non-exhaustive) list of obstacles includes:

- Incentives that work against collaboration get in the way, including lack of time and capacity to pull collaborations together, battles over jurisdiction, and budgetary mechanisms that prevent pooling funds.

- Lack of partnerships wide enough to span all the expertise needed; for example, when experts in conservation don't know anyone who works on affordable housing, or vice versa.

- Lack of trust or shared vision. When opportunities arise to work across sectors, there may not be time and space for the listening, learning, and working things out required to truly move together.

- The legacy of structural racism, which influences everything from voting rights, to access to capital, to educational opportunities—all of which influence how innovative projects like those described above play out and who is able to participate in them.

Given ample time, sufficient resources, and facilitation and skill building on issues like racial equity, these challenges are surmountable. But under the pressures of time, heavy workloads, and competing priorities, many opportunities slip by.

A Novel Approach to Generating Synergistic Solutions

Launched in 2016 and supported with funding from the Surdna Foundation, the Just Growth Circle brings together almost 70 people from frontline organizations, city government, business, health, conservation, philanthropy, housing, universities, and more. A small grants program administered by the Circle helps support the participation of smaller, community-based organizations. Knowledge, learning, and resources flow within the Circle; at any one moment, the "expert" addressing the group may be a city official, a nonprofit leader, or a member of a frontline community group.

The Circle began as a much smaller group, with members focused solely on water, conservation, and equity. It has since grown to include members focused on health, jobs, housing, and more. We anticipate it continuing for many years, building and strengthening relationships between the many different sectors whose common interests meet in decisions about infrastructure, racial equity, sustainability, and green space.

The Just Growth Circle relies on a three-part facilitation/design team:

- PSE brings a focus on equity, values-based organizing, and deep knowledge of local politics, and provides ongoing stewardship of the Circle.

- Climate Interactive helps the group develop maps that pool the knowledge of Circle members and shapes the project design from a systems perspective.

- Anderson Smith Consulting plays an adaptive learning and evaluation role, helping participants and the facilitation team reflect upon what is emerging and flagging instances where participants ask for changes in content or process.

Our approach treats the evolving city as a complex system, shaped by thousands of decisions—about investment, policy, hiring, design, and affordability. This complex system can't be controlled or managed from the top, but it can be influenced by:

- Supporting the development of relationships among previously disconnected groups;

- Focusing on racial equity as an explicit value;
- Building shared understanding of the whole system, how it works, where it is subject to influence, and where unanticipated side effects must be guarded against; and
- Supporting the development of skills and courage to enable people to take bold action in moments of opportunity and resistance.

The Atlanta Context

Atlanta faces multiple challenges. The city has, over recent years, earned the unfortunate distinction of being the most economically inequitable city in the US. It has set ambitious climate change mitigation goals that will require large-scale retrofitting and new infrastructure. There is also ongoing litigation about unequal access to the ballot in Georgia's 2018 elections. Atlanta is vulnerable to climate change impacts, especially stormwater flooding from increasingly intense precipitation. All of these challenges must be tackled against the backdrop of rapid population growth that is expected to continue for decades

Each of these challenges is complex and difficult. And they are interconnected: sometimes the solutions to one challenge (say climate resilience) make other challenges (say equity) more difficult, as when investments in green, sustainable infrastructure contribute to rising housing costs, gentrification, and displacement. These situations, where a solution to one problem worsens another, can rarely be resolved without skillful multi-sectoral collaboration.

At other times, a solution to one challenge (say climate change) may help address another (say a need for good local jobs), as when infrastructure projects that reduce carbon also provide opportunities for job creation and wealth building. These solutions, too, require skillful multi-sectoral collaboration.

The interlocking nature of these issues is a feature (not a bug!) of the complex systems we live and work within.

Atlanta, like all cities, is a complex system. The city and region could move forward into many different possible futures. The Just Growth Circle

intends that over time—via sustained, strategic engagements—we can help tilt the city towards health, equity, and sustainability.

Assumptions Driving Our Project Design

We see infrastructure investment—from planning to allocation of funds to construction to use of the finished product—as a key area of intervention. Infrastructure built today determines greenhouse gas emissions and resilience for the future. How infrastructure is implemented could provide new opportunities for wealth-building and improved health—or set off a wave of gentrification.

Within this process, we recognize moments of opportunity may arise to steer towards outcomes like equity, climate protection, and health. Those moments may arise when making decisions about finance, design, local hiring, job training, affordability, sustainability, and/or resilience.

Wielding influence at these critical moments requires aligning multiple interests (say, a health group and a conservation group joining forces to fund the expansion of green space). These moments are often fleeting; unless groups with common interests are connected in advance, the moment can pass before enough trust and shared vision are established. Effective intervention, in short, requires prior community-building.

Relationships built over time have enabled Circle members to seize the moment to insert equity principles into Atlanta's Green Infrastructure Strategic Action Plan. "A window of opportunity opened up," says one Circle member. "The timing was right . . . We put the Shared Equity Values that the Just Growth Circle developed into the plan because several members of the Green Infrastructure Task Force are also members of the Circle."

The timing of openings is influenced by elections, technological advances, and—increasingly—extreme weather events. We know that moments of opportunity will come, but we cannot know what they will be or where or when they will happen. Therefore, intervention design must be flexible and adaptive.

Finally, when transforming systems to promote new patterns of behavior, it matters who acts. True solutions will incorporate the wisdom and desires of groups with the most at stake, particularly local community groups,

people from low-wealth communities, and people of color. In status quo systems, these groups often lack a voice in infrastructure decisions that will affect them. Effective interventions must support the leadership of members of impacted groups.

Design Elements of the Just Growth Circle

The Just Growth Circle has evolved a set of practices, ways of convening, and shared understandings that boost effectiveness in the midst of systemic complexity, uncertainty, and rapid change. Like the complex system itself, all of the elements are mutually interconnected and reinforcing, but for clarity we will name them by category:

Connecting an Ecosystem

Because no one group has the funding, power, or political clout to direct investment or policy towards sustainability, resilience, and equity, we aim to foster partnerships and relationships among unlikely partners. And, because of disparities in influence and access to decision-making, we work to ensure that those relationships include a mix of groups and individuals with traditional access to power and decision-making, as well as groups and individuals typically outside of those formal decision-making processes.

Such relationships can help members understand—and utilize—their place in the civic ecosystem. As one participant from a conservation-oriented organization said, "I better understand my own gatekeeper role . . . [Now I am asking] 'how do we leverage our own power and influence?' I see that I can use my role to create opportunities and a platform for those that do not have the same [opportunities]."

Each group meeting includes a "project clinic" where members present on their work in the context of the consensus values.

The Just Growth Circle Shared Values:

- **Respect Communities.** Value communities as critical partners, inviting meaningful participation, leadership, and input during all phases of the project.

- **Strengthen Communities.** Improve the quality of life for current residents as well as the overall wellness of the surrounding communities.

- **Heal Environmental Injustice.** Prioritize investment in communities that have felt the cost and burden of poor infrastructure in the past.

- **Anticipate and Protect Against Displacement.** Partner with others to manage the impacts of increased surrounding property values on vulnerable neighbors.

Growing Relationships

Because relationships take time to grow, we aim to "pre-grow" relationships and networks that are flexible and adaptable. The Circle is a space where members can share honestly about successes and failures—and explore issues like structural racism and how it impacts their work.

"I think the success of the Just Growth Circle is all about the diverse mixture of the people who attend and the leadership style of the meeting facilitators," said one participant, who is active in her predominantly African American community and who works on homelessness issues in Fulton County. "In the last session we discussed race and our individual histories. That brief conversation was so powerful, it has motivated me to plan similar discussions in my neighborhood."

By sharing stories about confronting racism and structural inequity in their own work, Circle members improve each other's skills and comfort in such conversations. Many have mentioned how Circle conversations have built their own courage for speaking out about racial equity.

Guiding Action With Shared Values

Because the Just Growth Circle operates over long time spans against a backdrop of constant change, there is a need for coherence and continuity. Shared values are also important to enable Just Growth Circle to challenge norms within systems—capitalism, the US, the South, to name a few—that for centuries have not reflected or resulted in racial equity. In short, since we seek transformation, our work focuses on values to catalyze that transformation.

The Just Growth Circle consensus values are four principles that emerged from the group in its first year and which have been refined slightly over time. While group members work in different sectors and employ different strategies, these shared values help potential new members determine

if they are aligned with the group and provide focus for everything the group does.

Creating Shared Conceptual Maps

Seizing moments of opportunity often requires coordination across different parts of a system or over time. For example, initiating job training early on in project planning will ensure that workers from the local community are ready for work when construction begins. To help draw out these interconnections, we have used systems mapping techniques. These shared maps provide a common language, offer a vehicle for talking about strategy and gaps, and have driven the expansion of the Circle's breadth of membership.

Learning, but Also Acting

For most of us, steering complex systems requires new skills and capacities. Project clinics and small grants offer two ways for participants to access new ideas, tools, and resources. But not all needed capacities are technical. Some are about encouraging participants to reflect and act on their own deepest values, even (or especially) when that is not comfortable. By providing the support of committed fellow risk-takers and allowing space for uncertainty, questioning, and informal peer coaching, we help participants bolster their own courage. In a system shaped by historical inequities, where the status quo points to a slow improvement in equity at best, individuals empowered with courage and commitment are a necessary part of steering systems towards transformational change.

Self-Steering, yet Also Nurtured

The Just Growth Circle is a self-organizing system, steered by the questions, interests, and needs of participants. For instance, a six-month exploration of gentrification and displacement emerged from the group's desire to better understand strategies to avoid gentrification. At the same time, a design and facilitation team, anchored by PSE and Climate Interactive, meets regularly in design meetings. PSE conducts continuous outreach to support current members and connect with potential new members between formal meetings.

Looking Forward

The impacts of the Just Growth Circle are only beginning. We expect many of the subtle changes we observe now to continue creating ripples long into the future. The Circle will continue to meet, grow, learn,

and evolve, making new connections and digging deeper into complex topics—from public finance, to climate change, to gentrification and displacement. We expect that impacts from the Just Growth Circle will continue to spur conversations that might not otherwise happen, bring equity into conversations and policies, and change the way that future investments are made. We expect that these decisions will in turn shape the complex, dynamic ecosystem that is Atlanta.

In a time of tremendous need and constrained budgets, the Just Growth Circle process can be powerful. A modest amount of a constrained resource (grant dollars) unlocks a complex adaptive process that maximizes human creativity, network effects, knowledge pooling, and learning. Like Buckminster-Fuller's trimtab or Donella Meadows's leverage point, the Just Growth Circle process allows small groups of people with limited resources to transform much larger, better-resourced systems.

Many indicators suggest that the future will be less stable and more uncertain than the past, and the flexible, adaptable, and self-organizing nature of the Just Growth Circle is a key advantage under conditions of uncertainty. The topics under consideration, the participants, and the emerging opportunities have all shifted during the short lifetime of the Circle and will certainly continue to evolve. But the values, relationships, skills, and personal capacities the Circle has nurtured will endure and grow—as will the potential for transformational change.

In Atlantic City, the Legacy of Segregation and Redlining Endures

Christina Jackson

Originally published October 30, 2019 in Shelterforce

This past June, the U.S. Congress opened a hearing to consider a bill that would create a commission to explore options for reparations for the descendants of enslaved people. Central to this conversation is the question of what is owed to African Americans, and what reparations would look like.

Many Americans believe reparations are unnecessary, agreeing with Senate majority leader Mitch McConnell, who said that he believes the harms of slavery were made right by the civil rights movement and the election of an African-American president. This view serves to bypass the deep, systemic ways that wealth has been taken from the majority of African Americans.

It's a history that shapes—and disempowers—Black, largely urban, neighborhoods to this day. The legacy of that history can be seen in places like the Northside neighborhood of Atlantic City, New Jersey, where—as an ethnographer from nearby Stockton University—I recently interviewed longtime residents.

Described as the "World's Playground" at the beginning of the 20th century, Atlantic City centered around the glitz, glam, and exclusivity of the boardwalk for white, middle-class tourists. With desegregation of the late 1960s, white middle class residents moved in masses to the suburbs, and from the 1960s to 1980s were the largest racial group to leave the city. As tourism declined, Atlantic City's infrastructure deteriorated, and the city became increasingly stigmatized as a dangerous and dirty place. Casinos were brought to Atlantic City in the 1970s to resuscitate it, but over time they economically polarized the city further.

For Black residents, Atlantic City had always been a Jim Crow town, as they were prohibited from being on the boardwalk and "white beaches," except for work. These residents were forced to create their own community in neighborhoods that were substandard and designed through waves of government-sanctioned exclusionary policies of redlining, racial covenants, racial steering, racial zoning, and urban renewal. While these practices are illegal today, they formed a narrative linking Blackness and Black people with financial risk and deleterious effects on neighborhood development that remains.

Today in Atlantic City, many Black residents still pay a "segregation tax" in the form of economic and social penalties brought about by these exclusionary practices. Penalties include lower property valuations, inadequate public amenities, poorer quality of life, stigma, and isolation. And while some Blacks have "made it" and moved into Atlantic County outside of the city, many have not. The fragility of Black wealth, even for those who own their home or possess other assets, is greatly misunderstood by society at large. And the cost is measurable. According to a recent Brookings Metropolitan Policy Program study, discriminatory practices have devalued homes owned by Black families by an average of $48,000 per home as of 2018.

Consider redlining, a practice that enforced segregation and denied mortgages to African Americans via the 1934 Housing Act until it was officially outlawed in 1968 by the Fair Housing Act. On maps drawn by the federal Home Owners' Loan Corporation, predominantly Black neighborhoods were deemed "hazardous" to lenders, and marked with red lines. (White neighborhoods, marked in blue, were typically designated "best.") Redlining left a legacy of segregation and inequality. According to a study by The National Community Reinvestment Coalition:

> [T]wo thirds of the neighborhoods deemed "hazardous" are inhabited, typically by Blacks and Latinos [today], researchers found. Cities with more such neighborhoods have significantly greater economic inequality. On the flip side, 91% of areas classified as "best" in the 1930s remain middle to upper income today, and 85% of them are still predominantly white.

There is no "past" effect of redlining, as the effect of its impact is clear today. In Atlantic City, segregation and redlining confined Blacks to the

80-square-block Northside section of the city. Today, the still-predominantly Black neighborhood is one of the poorest in the city, and has a concentration of its remaining low-income housing units and abandoned lots. The map below visualizes the median household income in Atlantic City in 2017: the darker the blue, the higher the income is. The whitest part of the map is the poorest area of Atlantic City, which includes the Northside.

But the story of resilience of the Northside is a nuanced one that includes triumph and disenfranchisement. Out of exclusion, families in Northside created a close-knit community that residents remember fondly. To them, redlining created a "Black world," where one lived next door to their doctor, their dentist, and their teachers, and was empowering. From the perspective of many residents, integration and casinos destroyed their community's connectedness and locked residents into a spatial caste-like status.

With desegregation came policies, technology, and initiatives that kept Black people to one destabilizing part of the city. Urban renewal plans, the deterioration of the famous boardwalk, increasing air travel, and the 1968 protest of the Miss America pageant all negatively affected tourism to Atlantic City. In the Northside between 1968 and 1972, a large-scale 80-block urban renewal project executed by Atlantic City Housing Authority director Pauline Hill decimated the South Inlet section. The project used eminent domain to seize land and displace residents, only to remain vacant for decades—it was later nicknamed "Pauline's Prairie."

As one resident noted, the official segregation of the Northside morphed in the late 1960s into the unofficial clustering of low-income and poor families. Black-owned businesses were replaced with public housing or were bulldozed. When I asked a resident who grew up in the Northside if the area was still affected by redlining, she first said "no," but then described a process that repeats the same disenfranchisement. "I grew up in a single-family home . . . but [on] either of my corners were a lot of low-income, or HUD assisted housing . . . they would bunch [people] all together in the projects. And a lot of those got torn down. Now they're rebuilding them so they're new, but it's still the same concept."

Today, Atlantic City is a majority Black and brown city with a 40 percent poverty rate whose residents are harmed by the compounding

effects of racial discrimination, age, economic instability, and environmental vulnerability. Many feel that new amenities and social services for non-tourists tend to be an afterthought, as the city seizes lower-valued land and sells it to developers for new businesses and condominiums that longstanding residents cannot afford.

The city also faces new threats from rising sea levels and the stronger storms of a changing climate. Many residents are still impacted by the detrimental effects of Hurricane Sandy in 2012. A 93-year-old resident who grew up on the Northside said, "I'm very concerned now about Atlantic City proper because of the flooding. I have friends who were in the area that was flooded . . . they're required to take the flood insurance . . . they're really struggling to try to be insured. And taxes are very expensive."

And structural racism's effects carry over to residents' children and grandchildren. Having parents who have not owned their own home lessens their ability to buy a home themselves or have help from their parents to cover down payment costs. Segregated housing has led to underfunded schools, and less access to quality amenities and neighborhood networks, affecting job prospects, earnings, and wealth accumulation. Even if residents were not displaced during urban renewal and managed to buy a home, the value of that property has drastically declined due to the ghettoization of the neighborhood over time.

Today, quality of life for many Black residents remains poor in the city. According to the Brookings Metropolitan Policy Program, children who grow up in disinvested neighborhoods such as Atlantic City have less upward mobility as they get older. They lack wealth to draw on for travel, education, or to start businesses in their neighborhoods. As Hank, a 48-year-old longtime resident, said, "We used to have a lot of African-American businesses in the Northside. And if you go to Atlantic City now . . . the only African-American businesses they have now [are] the churches and barber shops. We own nothing. So we can't support each other financial[ly] or social[ly]."

Despite its legacy as a city battered by past racial and class segregation, Atlantic City can also show us how cities that have high poverty rates can heal with the input of resilient communities of color. Over time, residents that I have spent time with through Black Lives Matter Atlantic

City, National Action Network, poetry groups, local churches and senior citizen groups envision reparations in their neighborhoods in the form of investment in the community networks and organizations that already exist—not displacing longtime residents by creating "new" neighborhoods, but on engaging them in decision-making processes.

Atlantic City should distribute resources and promote development that includes amenities that its communities and families desperately need but can't afford. Placing residential security at the center of the conversation would focus on food accessibility, affordability, job creation, mixed-income housing, and mitigation plans for future storms. In this way, the Black residents of Atlantic City can grow stronger roots in the community they have long helped to maintain.

The author would like to acknowledge residents, research assistants Sarah Mount and Yasmine Payano, and the Stockton Center of Successful Aging.

Activists Combat the Grocery Gap in Washington, DC With #DontMuteMyHealth

Meena Morar

Originally published October 23, 2019 in Greater Greater Washington

There are more grocery stores in whiter and wealthier parts of the District, and low-income communities of color are often targeted with ads for unhealthy food. Residents in affected communities have been working to address these disparities in food access and health outcomes, and they're continuing the fight with a campaign called #DontMuteMyHealth.

In 2017, people living east of the Anacostia River held a "grocery walk" to demonstrate the length a resident would have to walk to access a supermarket, and residents have been creating their own farms and markets. Now a variety of advocates are organizing through #DontMute-MyHealth, which "is about equitable access to healthier lives." Reception has been enthusiastic.

"We are getting so many people who want to be ambassadors," says Ronnie Webb. Webb co-founded #DontMuteMyHealth with Stuart Anderson in June. "They can organize events, they can talk about these issues about health in their community. It's really an overarching space that we built that amplifies the voices of all public health."

Organizers say they want to address the structural causes of food insecurity in Wards 5, 7, and 8, and help residents advocate for their own health. They're planning to hold another grocery walk, and have also organized basketball games and healthy eating workshops.

Most recently, the #DontMuteMyHealth campaign supported a bill introduced by Councilmember Brianne Nadeau and supported by eight

other councilmembers which aims to change the way sugar affects consumers' health. The Healthy Beverage Choices Act of 2019, announced on October 8, will change the current 8% sales tax on sugary beverages, and instead create a 1.5 cents-per-ounce excise tax city-wide.

Ads target low-income residents for unhealthy food

There is a direct intersection between grocery gaps and increased consumption of unhealthy, sugary products, according to Yolandra Hancock, professor at the Milken School Institute of Public Health at the George Washington University. Wards 7 and 8 have a total of three full-service grocery stores for close to 150,000 residents, according to *DCist*, while as of 2016 Ward 6 alone had 10 full-service supermarkets to serve its approximately 82,000 residents.

"When we don't have access to quality grocery stores, particularly in communities of color and lower-income [communities], we have more corner stores," Hancock said. "In more corner stores, you're going to have a predominance of product that is unhealthy for us, and a lot of times at a price point that facilitates purchasing a lot of it."

Beyond discrepancies in what stores are in each community, however, food and beverage corporations also target communities of color, according to Hancock.

"There are actually billboards advertising sugary drinks east of the river and in large parts of Prince George's County, but when you go to Ward 3 or Ward 1, you don't even really see billboards," Hancock said. "That's targeted marketing."

Black teens will receive 17.1 TV ads for junk food and sugary drinks per day, while white teens will only see 7.8, according to the #DontMuteMyHealth website. The impacts of targeted this marketing combined with a lack of healthy and accessible food ultimately harm a community's health and wellbeing.

The average life expectancy of a DC resident living in Northwest is 88 years, while a resident of Southeast is expected to live 72 years, according to the #DontMuteMyHealth website. Ward 8 residents are five times more likely to have diabetes than the residents of Ward 3.

What will the Healthy Beverage Choices Act of 2019 change?
With the new legislation, the tax on soda will shift from a sales tax to an excise tax. As a result, businesses will directly pay the tax, raising prices for consumers. This shift will make consumers think twice about their purchasing power, Nadeau says.

"The goal here in repealing the sales tax is to change people's beverage choices and to change people's behavior, to help them lead healthier lives and to help reduce these horrible diseases that are literally killing people in our community," Nadeau said.

This is not the first time the DC Council has pushed for legislation controlling the impact of sugary drinks. In 2010, Councilmember Mary Cheh proposed a one-cent tax per ounce of soda, but the bill failed by one vote.

The expected $21 million dollar revenue from the new tax would go to the Healthy Beverage Choices Fund. The fund will split revenue among the "Birth-to-Three" Act, expand funding for healthy eating programs like Produce Rx, improve parks, and establish grants to promote healthy eating.

"This is what #DontMuteMyHealth made happen. It engages the community, gives the community a voice, and it also provides a platform to educate the community on why initiatives like this are so important to our health," Hancock said. "Success for me is when everyone in the District of Columbia from Wards 1 to Ward 8 have the same access, the same life expectancy. When there isn't an almost 20-year difference in how long people live—that's the ultimate definition of success."

Many of Washington, DC's Playground Surfaces Contain Lead. How Dangerous Is This, and What Should Be Done?

Will Schick

Originally published October 31, 2019 in Greater Greater Washington

There is lead—according to four DC agencies, reaching "actionable levels"—on the surfaces of at least 17 DC playgrounds. This, understandably, has alarmed many parents and residents already concerned about reports about lead on play surfaces that come from rubber. It's unfortunately also difficult to find clear science telling us exactly how much of a danger this poses to children.

The city says it vacuumed and power-washed those sites to remove the sources of lead. However, it doesn't have a clear sense of the severity of the problem and is trying to figure out a long-term solution.

How dangerous is this anyway?
According to the Center for Disease Control and Prevention, there is no safe blood level for lead in children. Enough exposure can lead to serious damage to a child's brain and nervous system, and can result in slowed growth and development as well as learning and behavior problems.

Lead naturally occurs in soils in concentrations ranging from 10 to 50 parts per million (ppm), but years of environmental contamination from widespread use of materials such as lead-based paint and leaded gasoline have elevated its presence in urban soils in cities worldwide (not to mention our water supply). The Environmental Protection Agency rates soils in play areas with over 400 ppm of lead as unsafe for children.

To add to the confusion, government agencies have differing standards concerning lead. The Consumer Product Safety Commission's (CPSC)standard for the amount of lead permissible in children's toys is

very different from the EPA's standard for soil in play areas—the CPSC mandates that all toys have under 90 ppm of lead.

A recent study conducted by the DC Department of General Services (DGS) found that the remainder of the District's playgrounds and artificial turf fields had lead levels at or below 400 ppm, but many residents remain unconvinced of their safety. They say lead is present in the very material used to surface the District's playgrounds and turf fields, a synthetic rubber material commonly known as "PIP," or "poured-in-place."

PIP is often used to surface public playgrounds and parks since it's forgiving to falls. It's often advertised as being compliant with the regulations set forth by the Americans with Disabilities Act (ADA) since it makes playgrounds and parks accessible to people with disabilities. (There are alternatives that are ADA-compliant, like some types of engineered wood fiber.)

Councilmember Robert White, who presided over a recent public meeting held at the DC Council concerning playground surfacing materials, said that his family is also concerned about possible lead exposure. His daughter was one of the many children who had played on one of the 17 sites found to have elevated levels of lead, so White says he's particularly vested in the issue.

When broken into tiny flecks, the synthetic rubber from PIP bears resemblance to Oreo cookie crumbs, and some children have taken to eating it. The material gets into their shoes, attaches itself their clothes, and sticks to their arms, hands, and legs.

As Vic Edgerton, a Ward 1 father to two children, explained to the councilmember during a public roundtable discussion at the DC Council on October 3, "it [the bits of rubber] sticks to the sweaty skin around their faces when they try to eat it when I'm not looking. And I wish I could say that it were only disgusting, but it's toxic [too]."

Edgerton, who has a Master of Public Health in environmental epidemiology, said that his work has enabled him to study "the links between exposures to environmental contaminants and chronic diseases." In his view, the substances used in PIP contain not just lead, but other toxic materials that can be hazardous to children.

Other concerns about PIP

In Europe, the debate over PIP surfacing materials has centered on the presence of polcyclic aromatic hydrocarbons (PAHs) that are linked to health risks such as cancer. The issue has prompted the European Commission to propose a limit on the concentration of PAHs allowed in the rubber materials used in playgrounds and athletic fields.

According to testimony from various parents and advocacy groups, the PIP material is not just toxic, it's also a major contributor to the District's urban heat island effect.

Molly Rauch, a Ward 4 resident with three children, serves as the Public Health Policy Director for Moms Clean Air Force, a national organization "that works to protect children from air pollution, climate change and harmful toxic chemicals."

During her testimony, Rauch called upon the District to "install heat friendly infrastructure that does not exacerbate the effects of climate change." Synthetic materials like PIP, she explained, intensify the surface temperatures of public spaces and contribute to DC's urban heat island effect.

So where do we go from here?

At the meeting, there was no clear alternative to replacing PIP throughout the city. Grass and soil are unforgiving to children who fall on them. While many parents advocated for the use of engineered wood, a contractor with experience in installing such playground surfaces stated at the hearing that this would be difficult because it would require daily instead of periodic maintenance.

White said he's wary of rushing to endorse or advocate for an alternative substance without having first studied the issue at-length. The District government, he said, has a habit of making things worse when they rush forward with new solutions. White said in a statement to GGWash that he and his wife are still deliberating about what to do. In the meantime, he wants to ensure that caregivers are informed about what's going on.

"There is important info that we and other parents need from DGS, including the actual current lead levels at each playground in order to make an informed decision," White said. "I have been clear with DGS

that their timeline extending into next year to get us this and other information is unnecessarily long. This is critical health and safety information, so I have requested an accelerated turnaround."

SECTION III

Policy, Regulations, and Finance

How (and Why) the Federal Government Should Help American Cities Manage Storms and Rising Seas

Jeff Peterson

Originally published December 11, 2019 in Next City

As the planet warms, American coastal cities face more intense storms and steadily rising sea levels. For some, geography is kind; land lost to storms and sea level rise is likely to be minimal. For others, the critical mass of the city is at risk of periodic flooding from storm surges followed by gradual, permanent inundation by a rising sea.

Cities, however, can't respond to this crisis on their own. The federal government needs to make sure that programs it manages, like flood insurance and disaster assistance, are not making matters worse and take steps to help cities develop effective response strategies.

Coastal Flood Risk

Coastal cities have always faced flood risks from major storms. These storms kill hundreds and destroy homes, businesses, and communities. In 2017, Hurricanes Harvey, Irma, and Maria caused over 3,000 deaths and generated some $265 billion in damages. The following year, Hurricanes Michael and Florence killed over 100 and caused $50 billion in damages. Much of this destruction was a result of storm surges. These storm surges vary in height depending on the storm but can be significant. For example, storm surges in New York during Hurricane Sandy approached 10 feet.

Unfortunately, a warming climate is likely to make coastal storms more intense. Supercharged storms will bring increased precipitation and higher storm surges, resulting in more widespread flooding.

Historically, the damage from coastal storms was limited in scope and the flood water slowly drained away as storms passed. But a warmer

climate means melting glaciers and ice sheets, which is causing sea level to rise at an accelerating rate. Unlike storm flooding, the coastal flooding that comes with rising sea level occurs everywhere and comes to stay. Global sea level is likely to rise between 2 and 4 feet by 2100 and could rise by as much as 8 feet in a worst-case scenario. And sea levels will keep rising for several centuries after 2100, with as much as 30 feet possible by 2200.

Federal Government Support for Coastal Cities

Cities around the country are responding to the challenges of coastal storms and rising seas. Some are simply assessing the risks and engaging the public. Several cities, such as Boston, have benefited from "design challenges" in which teams of experts outline innovative approaches to managing flood risks. Others, including Galveston and Charleston, have constructed major coastal protection structures such as seawalls. Still others, notably New York City, are employing regulatory or financial tools including buyouts of property at risk.

The federal government has a critical role to play in helping cities manage future flood challenges. Until recently, federal agencies were reliable partners providing communities the most current science on storms and rising seas. They need to return to that job. Major national programs such as the flood insurance and disaster assistance programs, need to be modernized to account for new understanding of coastal risks. Federal agencies also need to coordinate among states and communities and manage critical infrastructure assets and ecological resources. And, the federal government can provide financial support needed to advance this work.

As a first step, the federal government needs to help cities steer new development away from risky places. The population living in risky coastal areas is expected to double by 2060, making the coastal flood problem more difficult and expensive. Making information about flood risks widely available would slow this growth. The federal government should improve public understanding of flooding by adopting a national standard for disclosure of flood and sea level rise risk at the time of sale of a property. In addition, the federal flood insurance program should take the bold step of declining to provide insurance for new development in coastal areas likely to be inundated by rising seas.

Cities are making progress in planning for coastal storms and rising seas; federal financial support for this work would assure more consistent progress around the country. The federal government needs to make grants to both states and large cities to support planning for storms and rising seas and implementation of response actions. Cities need to be able to tailor plans to local conditions but the federal government can promote best practices, like engagement of low-income communities and communities of color and cooperation with neighboring jurisdictions.

Finally, coastal homeowners need help to avoid devastating financial losses as growing flood risks drive down property values. Cities can afford to buy out some property owners, but in most cases they do not have the resources to acquire the many properties that are at risk. The federal government is best equipped to assist homeowners by, for example, buying risky property well ahead of rising sea levels. Current owners could stay until the property becomes unsafe, paying rent but not flood insurance premiums. The federal government would pay local property taxes.

Structural Protection vs. Relocation: The Federal Role

A critical choice that cities face in addressing coastal flood risk is whether to build engineered protection structures like seawalls or to step back from areas at risk of flooding. The federal government needs to participate in these decisions.

Structural protection and relocation strategies both have pros and cons. And, cities are likely to need financial assistance from the federal government to implement either approach. But, even the federal government will not be able to fund everything everywhere. The federal government should look at coastal flood risk around the country and set priorities for the funding that is available. Knowing about how much federal assistance to expect would help cities choose a financially feasible strategy.

Powerful storms and rising seas are not only a threat to cities and other communities. Also in the crosshairs are critical infrastructure, such as military bases, transportation assets, and water treatment facilities. The federal government needs to work with state and local governments to protect or relocate those facilities. In addition, ecosystems, such as beaches and coastal wetlands, need space to migrate landward as seas rise. The federal government, along with cities and states, must figure out how best to coordinate coastal flood plans developed by cities

with larger scale efforts to protect critical infrastructure and ecological resources along the coast.

Finally, large cities need to think about how their strategy for managing storm flooding and rising seas will fit with the strategies of neighboring communities. What if large cities stand their ground but neighboring communities can't afford to and instead move to safer places? The federal government needs to work with communities large and small to promote a coordinated approach to the coastline.

America's large coastal cities have a lot at stake as they develop strategies to respond to coastal storms and rising seas. The federal government needs to do more to support this important work.

Four Ways the Next President Can Fight Climate Change Starting on Day One

Daniel Reich

Originally published July 24, 2019 in The Hill

Climate change is here, and our government can act now to slow it down. The Democratic presidential hopefuls are all on board with strong climate change plans, but if a Republican Senate continues to block such measures, the president needs to act on his or her own. As a former EPA lawyer with 27 years of experience, I have seen practical, effective policies that government agencies could implement on Day One of a Democratic administration without congressional approval.

First, reward proposals for government contracts based on innovation, effectiveness and power to address climate change. During the competitive bidding process, additional points would be assigned to such proposals. This would tap a large federal spending source—$430 billion for contracts and services during 2015 alone, according to the Government Accountability Office (GAO). The idea would reward bidders that choose to pursue innovative approaches to climate change, without additional red tape.

One obvious opportunity to apply this approach is in rebuilding military installations affected by the changing climate. A January 2019 Department of Defense (DOD) report indicated that more than two-thirds of its operationally critical installations are threatened by flooding, drought and wildfires resulting from climate change. In June 2019, the GAO found that DOD lacked guidance to address climate projections for rebuilding its installations. DOD should amend its contracting processes to award points to proposals for military installation construction that promotes land-use planning and other methods to effectively address the impact of potential climate disasters.

Another opportunity: the Department of Transportation's spending to build and maintain highway infrastructure. Additional points could

be awarded to contract proposals that provide, for example, on-highway electric charging stations.

Second, the federal Securities and Exchange Commission (SEC) can shift investment—while protecting investors and stockholders—by requiring corporations to disclose their vulnerability to climate impacts. Today, the SEC requires publicly traded companies to disclose material financial risks due to climate change to investors, but the regulations are not enforced. The result is that businesses shortchange investors by submitting boilerplate generalities.

EPA could provide the SEC with expertise to ensure rigorous evaluations of the financial risks associated with climate change, at no additional cost to taxpayers. These analyses could consider risks such as supply chain disruption, threats to facilities located in flood plains and financial costs for changes in manufacturing processes to minimize greenhouse gases (GHGs). This approach assures proper disclosure and provides businesses an opportunity to identify and reduce climate-related risks.

Third, the EPA could require agribusiness to report GHGs (methane) emitted by cattle as part of the digestive process. While methane does not linger as long in the atmosphere as carbon dioxide (CO2), it is approximately 25 times more effective than CO2 at making the planet warmer. Worldwide, livestock accounts for between 14.5 and 18 percent of human-induced GHGs. EPA data indicates that 9 percent of GHGs emitted in the U.S. in 2016 were from the agriculture sector. The powerful farm lobby has been successful in blocking the EPA from enforcing the sector's requirement to report GHGs. This loophole should be closed.

Increased transparency about agricultural emissions could speed the adoption of new technology such as anaerobic digesters, which produce biogas—a renewable energy source—from cow manure.

Fourth, projects subject to the National Environmental Policy Act (NEPA), which requires analysis and mitigation of environmental impacts, should include measures to reduce GHGs. For example, under NEPA, contractors expanding the Los Angeles Airport were required to install diesel particulate filters to control environmental impacts of black carbon emitted by construction equipment. This inexpensive measure reduced emissions of black carbon, commonly called soot, which warms the earth

by absorbing light and turning that energy into heat. The mitigation measures also protected the health of local residents by reducing harmful levels of soot in the air.

These are four practical ways for any U.S. president to fight the changing climate. We need to consider them in our national dialogue on climate change if we hope to proactively address the increasing intensity of wildfires in the West and the destructiveness of flooding and hurricanes across the country.

Build a Border Wall? Here's an Idea That's Better for Communities and the Climate

Gary Paul Nabhan

Originally published February 20, 2019 in The Revelator

President Trump has declared a national emergency to fund a wall along our nation's southern border. The border wall issue has bitterly divided people across the United States, becoming a vivid symbol of political deadlock.

But for many of us who actually live along the U.S.-Mexico border, the wall is simply beside the point. We know that a wall can't fix the problems that straddle the boundary between our nations; nor will it build on our shared strengths. So a group of us—ranchers, farmers, conservationists, chefs, carpenters, small business owners and public-health professionals from both sides of the border—have come up with a better idea. We call it the Mesquite Manifesto.

Our plan would tackle the root causes of problems that affect border communities on both sides. While the media have fixated on the difficult conditions in Mexico (and other Central American nations) that propel immigrants northward, there are real problems on the U.S. side too. The poverty rate in this region is twice as high as for the nation as a whole, and joblessness drives many into the lucrative drug trade. Poor diets and inadequate healthcare contribute to high rates of disease: Nearly one-third of those who live along the border suffer from diabetes. And a rapidly growing population, along with rising demand from industry and agriculture, is stressing the region's limited water supply—a problem made worse by the changing climate.

To address these problems and build a sustainable future for the region as a whole, we look to mesquite, the iconic native tree that grows in every

county and *municipio* along the border. Its gnarly branches have provided food, fuel, medicine, shade and shelter to indigenous communities in the borderlands for more than eight millennia.

Deep-rooted mesquite trees such as velvet mesquite (*Prosopis velutina*) and honey mesquite (*Prosopis glandulosa*) are remarkably drought-resistant, anchoring the arid desert land and fixing nitrogen to improve the soil. Their seeds contain more protein than soybeans and can be milled to make flour with a low glycemic index, which helps regulate blood sugar.

It's no wonder that mesquite long sustained indigenous communities in this fragile land. What *is* remarkable is that mesquite is seen as a nuisance tree by many who live here now. Indeed there's scientific consensus that mesquites are among the most "under-managed" resources on our continent, though they cover nearly 200 million acres of arid and semi-arid lands in Mexico and the United States.

We believe that targeted investments in restoring and managing mesquite could become—dollar for dollar and peso for peso—the most cost-effective investment ever made in the future of arid America.

- Mesquite-pod flour, which is now used in baking, brewing and in the preparation of low-glycemic food products, sells in many states for $22-24 per pound;

- Sustainably harvested hardwoods that are of stunning color, texture, shape and durability. Mesquite wood can be sold for $5-10 per board foot, to be used by furniture makers, floor designers, guitar-makers and builders;

- Fuelwood that is already valued at $200-400 million per year by the "mesquite barbecue" industry, which now uses trees selectively harvested from rangelands in the U.S. Southwest;

- Mesquite honey, which is already a multimillion-dollar industry in most states along the border;

- Other products with emerging markets, including biofuels, biochar, culinary and medicinal gums, and mesquite-smoked beer, coffee and whiskey.

We propose the establishment of capacity-building centers to develop mesquite-based industries in every watershed crossing the border. These centers could provide bilingual training in a variety of skills related to arid lands agro-forestry and sustainable forest-product development. Schools and churches that have been closed down in impoverished rural areas and border cities could be renovated by local construction workers and repurposed as training centers for a binational "Green New Deal" effort.

There are many bilingual teachers, researchers, craftsmen, brewers and chefs who already have the capacity to train and mentor others in range management, ecological restoration, permaculture, hardwood craftsmanship and furniture making, honeybee management, mesquite pod milling, brewing and baking, and the marketing of non-timber forest products.

Mesquite could be cultivated on private, state and federal rangeland (but not in parks or wildlife refuges, which should remain pristine). Millions of acres could be managed in ways that restore, rather than exploit, the land. For example, the trees can be pruned or thinned for their wood, rather than clearcut. And seedpods can be selectively harvested to leave enough for wildlife and regeneration.

Managing mesquite in this way could produce environmental benefits. Mesquite forests and the plant communities they shape offer numerous "ecosystem services," including wildlife habitat for beneficial insects, birds and bats involved in pollination and pest control; flood control; heat amelioration in urban settings; and recreational amenities such as bird-watching and the hunting of gamebirds like quail and doves.

Communities on both sides of the U.S.-Mexico border need help. We do not, however, need a multibillion-dollar wall of concrete or steel. Instead, let us recognize our shared culture, economy and geography—and value the tree that has long sustained the people of this unforgiving land. By investing in mesquite, we can build a restorative economy that enables communities on both sides of the border to prosper and thrive.

The Green New Deal Means Power to the People

Denise Fairchild and Anthony Giancatarino

Originally published April 3, 2019 in The Progressive

The debate over the Green New Deal is growing more intense, but generating more heat than light. In some quarters, there is outright hysteria. ("Alexandria Ocasio-Cortez is coming for your hamburgers!") But there is also a misperception across the political spectrum that the transition to green energy requires top-down, centralized control, as Mitch McConnell recently claimed.

In fact, the transition to renewable energy envisioned in the Green New Deal holds the potential for a radical decentralization of power. That's the promise of "energy democracy," which could put power, quite literally, in the hands of the people. It is the opposite of our current system, a centralized monolith that produces huge profits (and outsized political clout) for the handful of corporations that control it.

Instead, energy democracy can return power generation to local or community control. It can bring needed jobs and investment to communities that have paid dearly for fossil-fueled power. That includes the scarred mountain towns of Appalachia, the low-income neighborhoods shadowed by power plants and refineries, and communities being displaced by sea-level rise. Thankfully, these impacted communities are already sowing the seeds of energy democracy.

For example, in the working-class city of Richmond, California, community groups have organized a "green zone" for locally owned, renewable energy projects in the shadows of a Chevron refinery. And in nearby Oakland, the People Power Solar Cooperative has created a community-owned solar project where residents pay less than the utility rate for electricity. Additional cost savings are reinvested into new cooperative energy projects.

In the Mississippi Delta, residents are reclaiming community control of rural electric cooperatives. Created as part of the original New Deal, those member-owned co-ops have lost their way, behaving more like investor-owned utilities. Rather than serve the people, they charge top dollar for dirty energy while making decisions behind closed doors. So groups like One Voice are fighting for more accountability, transparency and community control—and training residents to run for co-op boards.

And in North Philadelphia, a group called Serenity Soular has piloted solar installation training programs, and plans to create a worker cooperative owned by women and people of color. In this way, the community can build wealth and address racial inequity in the green energy jobs boom.

The Green New Deal can build on these efforts, but that will require new strategies, governing structures, institutions and investments. One promising model is Community Choice Aggregation (CCA), which has been adopted by seven states. CCAs aim to break the power monopoly by allowing local governments to leverage purchasing power and shop around for better rates, greener energy, and potentially invest in new decentralized distribution systems. If residents are fairly represented at the governing table, CCAs can transform how energy planning and decision-making is made.

The fossil-fuel era has seen ever-greater concentrations of money and power in the hands of a few, while damaging the lives of many. It is time for that era to end. The Green New Deal could usher in a new day of people power, by bringing broad-based prosperity to those who have been left behind. That's a new deal we can all get behind.

Wanted: Corporate Leadership for the Green New Deal

Daniel Reich

Originally published April 30, 2019 in GreenBiz

There is growing public debate about the Green New Deal, but businesses have largely stayed out of it. That's a mistake. The Green New Deal offers businesses a chance to work with regulators and environmental groups to reduce pollution and give back to the community—while benefiting their bottom line. I know it can be done, because we did it during my tenure at the United States Environmental Protection Agency (EPA).

Representing EPA Region 9 as co-chair of the Merit Partnership, embraced by both the G.H.W. Bush and Clinton administrations, I brought together industry leaders, regulators, environmental groups and communities for a joint venture to develop pollution prevention (P2) projects. From 1991 to 2000, the voluntary partnership implemented projects that demonstrate how to reduce environmental impacts in ways that make good business sense.

The partnership produced far-reaching results. For example, Northrop Grumman agreed to share its pioneering clean manufacturing processes with other companies. The trade association for metal finishers—long plagued by environmental enforcement actions—found a way to use water, rather than toxic chemicals, to clean produced parts. And ARCO led a roundtable on pollution prevention at oil refineries, which resulted in game-changing efforts to reduce hazardous waste.

All of these efforts produced healthy profits, along with measurable benefits for the environment. Industry costs were lowered over time and participating companies received positive publicity. Harder to quantify, but just as real, was the value of the communications channel built between regulators and the private sector, allowing them to work cooperatively to identify and correct compliance issues.

Today, the Green New Deal offers businesses a similar chance to lead on climate change. Businesses—like every other sector of society—have a substantial stake in the outcome. Extreme weather events, fueled by global warming, have emerged as one of the top 10 international business risks, according to the financial services firm Allianz.

By engaging in the fight against climate change, rather than denying the problem, companies can make better decisions as to how to adapt for the impacts of a changing climate. The Securities and Exchange Commission (SEC) agrees, requiring companies to protect shareholders, by providing a comprehensive summary of climate-related financial risks, such as the risk of supply chain disruption due to flooding. But, according to Ceres, a nonprofit sustainability group, many businesses provide general, boilerplate language. Instead, corporate leaders effectively could analyze risks and develop best practices, which could not only be used by investors, but could be shared with other companies to update their practices.

And, by joining the climate fight, businesses can help in crafting solutions that reduce environmental impacts in ways that make good business sense. Unfortunately, some industries have taken the opposite approach.

For example, trade associations for auto manufacturers recently argued that Obama-era regulations on gas efficiency for cars and light-duty trucks were too stringent. The Trump administration reacted by weakening the federal standards beyond what auto manufacturers requested and in direct conflict with what California requires. California and EPA now square off in prolonged litigation, leaving auto manufacturers to decide whether to follow federal standards and bypass lucrative markets by not meeting California requirements.

This model—in which trade associations hire lobbyists and lawyers to convince the EPA and the public that environmental regulations are an unnecessary drain on business—is not the best way forward. Leading auto manufacturers need to intervene directly with federal and state regulators to provide specific timelines on how it can technically improve gas efficiency.

The Green New Deal is a proposal in the resolution stage and help is needed to make it work. Business has the resources, skills and vested interest to tackle the unprecedented threat of climate change. This can

be done using the model of the Merit Partnership. Resist the traditional view of joining with other industry interests to object to protecting the environment. When it comes to fighting to save our planet from extreme weather conditions that cannot be reversed, reach out to regulators to propose best practices and to share those best practices and technologies with others in your sector. Companies with vision are positioned to make a difference for us all by developing methods to mitigate risks—improving their bottom lines and earning the goodwill of the public.

It's Time for Republicans to Lead (Again) on Climate

Emil Frankel

Originally published May 19, 2019 in The Hill

There are hopeful signs that the Republican Party might be moving away from its near-total denial of climate change and its opposition of measures to mitigate it. Recently, Sen. Lindsay Graham (R-S.C.) declared that climate change is real and promised a Republican alternative to the Green New Deal. And Sen. Lamar Alexander (R-Tenn.) has proposed a five-year "new Manhattan Project" to jump-start clean energy development.

As a lifelong Republican, I hope that these developments signal a return to the GOP's affirmative role on environmental issues. Among the things that I have found particularly troubling and disappointing about President Trump's dominance of the GOP has been the party's rejection of its century-old tradition of leadership on these matters.

It may be hard to remember, but, beginning in the early 20th century with Theodore Roosevelt's advocacy to conserve wilderness and natural resources, the Republican Party's commitment to environmental protection has been rich, enduring and long-standing.

Between 1970 and 2000, every significant federal law on environmental protection was enacted under a Republican president and with the significant support of Republican members of Congress. That includes the establishment of the Environmental Protection Agency (EPA), enactment of the National Environmental Policy Act (NEPA) and passage of groundbreaking clean air and clean water bills. Two of the most distinguished and successful EPA Administrators—William Ruckelshaus and William Riley—were appointed by, and served under, Republican presidents. America first engaged with climate issues when President George H.W. Bush sent Riley to Rio de Janeiro in 1992.

The Republican Party has largely walked away from this proud record in recent years. The Trump administration, which is dismantling regulations without regard to their purpose or effectiveness, has put at risk the safety net of laws and rules that protect public health and the natural and built environment.

Worse, it has rejected the science that underlies an understanding of the causes and catastrophic risks of climate change—another break with Republican tradition and principles.

All but a handful of scientists acknowledge that the climate is changing and that humanity has played a significant role in this warming trend. There is also broad scientific agreement about the effects of climate change: rising sea levels, melting polar ice caps, more intense storms, catastrophic rainfall, increased flooding and storm surges, longer droughts, and more frequent wildfires.

We are already seeing the effects of climate change: rising sea levels cause flooding in coastal cities like Miami and Norfolk, even on sunny days. In the next few years, many major coastal commercial airports will be underwater in the absence of hugely expensive seawalls and other protective measures.

The human and financial costs of catastrophic weather events place almost impossible burdens on federal, state and local governments. In the face of these realities, the federal government under prior Republican and Democratic administrations adopted regulations to mitigate the emissions of greenhouse gases, in order to slow rising temperatures.

Those regulations include strengthened motor vehicle fuel efficiency and emissions standards, which were developed under President George W. Bush and accelerated under President Obama. Last year, the Trump administration rolled back those standards and now proposes a weaker version.

Why? Motivated by anti-regulatory rigidity, and influenced by the fossil fuel industry, the Trump administration was determined to delay the introduction of technological innovations that would increase fuel efficiency and reduce greenhouse gas emissions from motor vehicles. The predetermined policy goals of the Trump administration drove an

analysis that overstated both the safety benefits of the proposed Trump rollback and the costs from introducing these more rigorous standards with the 2025 model year.

While I am no fan of "command-and-control" regulatory regimes, there is an important and judicious role for government to play when market forces have proven inadequate to protect public health and safety.

Climate change may represent the greatest threat to public health and safety humanity has ever faced. But, at this critical moment, the Trump administration and Republican congressional leadership have turned away from regulatory and statutory leadership on climate—ceding the issue to Democrats.

It's time for new leaders to restore the tradition of environmental stewardship that is so central to Republican principles.

Trump's Not-So-Secret War on State Environmental Protections

David F. Coursen

Originally published July 6, 2019 in The Hill

Trump's EPA claims to support "cooperative federalism," as a way to "rebalance the power between Washington and the states." But its actual agenda appears to be halting the wave of bold environmental protections emerging from American cities and states. To that end, the EPA now seeks to limit states' authority to protect our climate, while threatening budget cuts of nearly $1.4 billion in state environmental funding.

If this effort succeeds, our towns and cities will face dirtier air, hotter summers and more extreme weather—and there will be less we can do about it.

A centerpiece of EPA's attack on climate protection is its proposal to freeze car emission standards at 2020 levels, which would increase greenhouse gas emissions by 1.7 billion metric tons. EPA also seeks to limit state power by revoking a waiver under the Clean Air Act that allows California and a dozen states that follow its lead to set their own more stringent standards.

State authority to protect air quality has existed in one form or another for half a century. EPA has granted 50 waivers, but has never revoked one. So, it is hard to imagine a more brazen attack on state authority than rescinding this waiver, which was granted five years ago. In effect, Trump's EPA is forcibly enlisting states in the administration's war on climate protection.

Another recent salvo in that war is new guidance that would limit state authority over energy pipelines. Under the Clean Water Act, a pipeline cannot be constructed unless the state certifies that it will not cause violations of any "appropriate requirement of state law." But the new

guidance would let the federal government and energy companies run roughshod over state laws aimed at reducing air emissions and addressing climate change.

Along with shrinking state power, EPA's conception of "cooperative federalism" also means shrinking state funding, with a proposed budget that cuts support for state environmental protection by $1.4 billion.

This includes crippling cuts of $500 million in support for state environmental programs, which depend on EPA for more than a quarter of their operating budgets. The biggest cuts, $300 million, are to programs for clean and safe water, with the remaining $200 million directed at programs that protect air quality and manage hazardous waste, pesticides and toxics. These cuts would starve states of vital resources needed to carry out their role as EPA's partners in administering our nation's environmental laws and responding to emergencies like hurricanes, floods and severe storms.

The budget also proposes $43 million in cuts to brownfields programs that are key to redeveloping our nation's cities. Brownfields are contaminated or polluted sites, often in the heart of America's downtowns and former economic centers. By cleaning and repurposing these sites, cities can improve the quality of urban life and increase property values.

EPA calculates that approximately 129 million people (roughly 40 percent of the U.S. population) live within three miles of a brownfield site that receives EPA funding. As of November 2018, grants awarded by the program have reclaimed 77,000 acres of idle land for productive use, with over 141,300 jobs created and $26.8 billion leveraged.

The EPA's proposed budget would also slash more than $140 million from federal support for state and interstate programs to protect and restore nationally significant water bodies like the Chesapeake Bay, Puget Sound, Long Island Sound and Lake Champlain. America's surface waters are an important source of drinking water for our nation's communities.

But the biggest cuts, a whopping $874 million, are to a pair of highly successful state revolving loan funds that have tremendously improved our nation's water infrastructure by ensuring adequate sanitation and treatment for the water our communities depend on.

These funds are needed now more than ever. Just ask the people of Martin County, Kentucky; Salem, Oregon; Toledo, Ohio; and Flint, Michigan—who had to stop using their contaminated tap water.

They are not alone: More than 27 million Americans are served by community water systems that do not fully meet health-based drinking water standards. Every year our nation suffers a quarter of a million water main breaks, with sewer overflows that discharge billions of gallons of raw sewage into local surface waters. At the same time, some $660 billion will be needed to repair the country's aging water infrastructure over the next 20 years.

The good news is that cities and states are fighting back. Earlier this year, the House passed a budget that rejected all of the proposed cuts, and the Senate seems likely to follow suit. States are already preparing to challenge the regulatory cutbacks in court. As for water quality certification, the strong language of the Clean Water Act recognizing state authority likely means that any new EPA steps to undercut that authority will be rejected by the courts.

For Trump's EPA, "cooperative federalism" means that states cooperate while the federal government kneecaps state-level efforts to protect people and the environment. And this is from an administration that ostensibly supports states' rights. It's chilling to wonder how far EPA might go if it wanted to weaken the role of the states. Let's hope we never find out.

If I Were Still Working at the EPA, I Would Resign

Bernard D. Goldstein

Originally published April 2, 2019 in The Washington Post

For years, the fossil-fuel industry has lobbied to weaken air pollution standards. It may now get its wish.

Last week, the Environmental Protection Agency's Clean Air Scientific Advisory Committee met via teleconference to devise a new standard for airborne particle pollution. It's a vitally important task: These tiny particles reach deep into human lungs, causing significant pulmonary and heart problems. And in many parts of the United States, such pollution exceeds the existing health-based particulates standard.

But EPA Administrator Andrew Wheeler, a former coal-industry lobbyist, has hobbled the committee's long-standing process to the point that its members cannot provide an informed opinion consistent with the Clean Air Act's mandate of being "requisite to protect the public health."

I was the chair of the advisory committee, or CASAC, under Anne Gorsuch, President Ronald Reagan's first EPA administrator, and was subsequently appointed by Reagan to head the EPA's Office of Research and Development under Gorsuch's replacement, the moderate Republican environmentalist William Ruckelshaus. I would have resigned either position had the agency's overall advisory processes been subject to its current destructive alterations.

The EPA's organizational structure necessitates a strong and unbiased external advisory process. By having its own in-house science arm, the agency's political leadership can exert pressure to get the answers it wants. As a counterbalance, it is necessary to have external advisory processes through independent bodies such as CASAC.

Congress established this committee in 1977 to provide unbiased external scientific advice on air-pollutant standards, which are revisited every five years. Congress requires the committee to have seven members, including one from a state agency. But it soon became clear that a seven-member committee would not have sufficient in-depth expertise to make a science-based recommendation. Accordingly, for more than 40 years, the committee has drawn on the expertise of external advisory subcommittees established for each pollutant of concern. These much larger committees openly review the EPA's own scientific analysis of the thousands of pertinent peer-reviewed papers and inform the committee's members of their findings, which committee members then use to recommend health-based standards to the EPA administrator.

That is how it is supposed to work. But last October, Wheeler suddenly and highhandedly terminated the subcommittees working to develop recommendations for the particulate standard, as well as the standard for ozone pollution (which CASAC will review next).

The full weight of providing advice now falls solely on the seven CASAC members. The science underlying particulate standards is especially complex, and the scientific discipline of epidemiology is central to understanding the health effects of both particulates and ozone. But CASAC, for the first time in memory, lacks a single epidemiologist.

Wheeler has appointed four state agency members to CASAC, an unprecedented majority. All work for Republican governors. The current chairman of CASAC is a consultant who also works for industry clients.

Moreover, Wheeler promulgated a new rule that prohibits scientists funded by the EPA from providing the agency with advice. While the ostensible justification for this rule is to root out any pro-EPA bias, the effect is to disqualify the best scientists from advising the agency. Meanwhile, industry representatives and consultants—including those from polluting industries with a clear interest in lax standards—are welcome to provide advice.

When I served at the EPA, Gorsuch was criticized for attempting to control the statements of EPA scientists and cutting the agency's science budget, as has current EPA leadership. But she did nothing that even came close to the assault on the independence and expertise

of the scientific advisory processes carried out by Wheeler and his predecessor, Scott Pruitt.

I had hoped Wheeler would reverse Pruitt's initial policies. Instead, he has taken them well beyond the point that, were I a member of CASAC, I would have resigned. Neither my conscience, nor my concern for the respect of my peers, would have allowed me to provide advice on a complex health-related subject when I could not interact in a scientific consensus advisory process with those who have the necessary expert credentials.

I cannot ask President Trump's EPA assistant administrator for research and development to resign. That position remains unfilled. Nor is it likely that any credible scientist would accept such a nomination. But I urge the current members of CASAC to step down rather than seemingly acquiesce to this charade. The EPA's leadership is destroying the scientific foundation of environmental regulations, to the detriment of the health of the American people and our environment.

Erasing 'Climate Change' From Federal Agencies Won't Make It Go Away

Cynthia Giles

Originally published August 17, 2019 in The Hill

As the world warms and people, wildlife and the natural environment suffer increasingly devastating impacts, the Trump administration is systematically erasing climate change from government regulations and policies.

The latest: In June 2019, the White House Council on Environmental Quality (CEQ) requested comments on draft guidance on how federal agencies should consider climate when they evaluate federal actions under the National Environmental Policy Act (NEPA). Incredibly, the phrase "climate change" does not appear in the document.

The intent could not be more clear: Federal agencies are encouraged to downplay and dismiss the risks of climate change, and to minimize consideration of greenhouse emissions in NEPA reviews. This is a fool's errand.

I was the assistant administrator for EPA's Office of Enforcement and Compliance Assurance for all eight years of the Obama administration, responsible for EPA's central role in NEPA reviews by other federal agencies. NEPA requires federal agencies to assess environmental impacts before making decisions on major federal actions, like pipeline permits, the management of federal land and the commitment of federal funds for highway construction. I worked closely with CEQ as well as other federal agencies as they conducted their required careful analyses of the environmental impacts of federal actions.

Science can't be dictated in political documents. Disparaging climate change won't prevent increasingly violent storms or more extreme heat. Flooding is not held at bay by words. Any dispassionate review of the

science—including the 2018 National Climate Assessment—reveals that climate change is a danger to both people and the natural world. Erasing "climate change" from the CEQ guidance will not make it go away.

Fortunately, we still have a federal judiciary that believes that laws mean something and expects federal agencies to follow them. As the greatest environmental threat of our time, climate change is squarely within the NEPA directive to consider the impact of actions that significantly affect the quality of the human environment. Encouraging federal agencies to ignore the obvious, as CEQ's draft guidance is plainly intended to do, will only serve to tie up federal projects in the courts. Projects with obviously inadequate analysis of climate change will be delayed as federal agencies are forced to explain themselves and then sent back to the drawing board when those explanations are found wanting.

The guidance encourages agencies to diminish the importance of an individual project's greenhouse gas emissions by comparing them to national or sector wide emissions. This is how polluters have attempted to shirk responsibility for decades. NEPA is a common-sense law. Climate science and our common sense tell us that individually modest contributions collectively add up to catastrophe. The fact that a single project won't alone cause and can't alone fix climate change is not a basis to evade NEPA's obligation to rigorously consider its contribution.

As someone who worked for years to implement the noble goals of NEPA, my message to my federal colleagues is: Don't fall for it. You know where your legal and your moral obligations lie. If you don't robustly consider greenhouse gas emissions in your NEPA reviews—and evaluate means to reduce those emissions—you are very likely to face a federal judge who will question your choice. Your project and your credibility will both suffer.

I have no illusion that even a tsunami of public criticism will push this administration to adopt a more defensible approach to climate change. But professionals in the federal agencies know better. Do what the law requires. Quantify greenhouse gas emissions and evaluate alternatives to reduce them. That's your obligation under NEPA, no matter what any guidance may be urging you to do.

EPA Claims to Support 'Clean and Safe Water,' Cuts $1.4 Billion From Water Protections

David F. Coursen

Originally published May 21, 2019 in Water Online

Americans should feel confident that the water delivered to their homes by a public water system is safe to drink. But when residents of Martin County, Kentucky turn on their taps, the water may be discolored, smell like bleach, and make children itch after bathing. Last summer, the people of Salem, Oregon were told not to drink their tap water, which was contaminated with algae. And of course, the slow-motion lead-poisoning disaster in Flint, Michigan is sadly too familiar.

More than 27 million Americans are served by community water systems that do not fully meet health-based drinking water standards. Many community water systems draw their water from surface waters, but nearly half a million square miles of such waters fail to meet one or more standards for water quality, and the list is growing each year.

U.S. EPA Administrator Andrew Wheeler says that unsafe drinking water, not climate change, is the world's greatest environmental challenge. So it should be no surprise that EPA's budget proclaims "clean and safe water" as a central agency goal.

What *is* surprising is that the EPA budget proposes jaw-dropping cuts of $1.4 billion from water protection and restoration programs.

The largest proposed cuts, $874 million, are to a pair of highly successful state revolving loan funds that support critical water and wastewater treatment infrastructure projects. According to the EPA, these funds enable states to "protect public health, protect valuable aquatic resources, and meet environmental standards benefiting hundreds of millions of

people." The budget calls for each state to receive a 26 percent cut from the drinking water fund and 34 percent from the clean water fund.

Those funds have accomplished a great deal, but more is needed.

- Tens of thousands of homes lack access to basic sanitation and drinking water.

- Our nation's water infrastructure is aging and needs repair; every year communities are impacted by about 240,000 water main breaks, with billions of gallons of raw sewage discharged into local surface waters, compromising water quality.

- A recent needs survey showed that more than $420 billion will be needed to maintain and improve the nation's drinking water infrastructure over the next 20 years.

The budget strikes a blow to the most vulnerable communities by taking $27 million—90 percent of current funding—from water infrastructure for poor and isolated Alaska Native and U.S.-Mexico border communities that lack access to basic sanitation and drinking water, such as toilets and indoor plumbing.

State water protection programs face a $300 million cut. The budget slashes $260 million from water pollution grants for states to develop water quality standards, set pollution reduction goals, issue permits, confirm compliance, monitor results and restore water bodies impaired by pollution. Another $38 million would be trimmed from state drinking water protection programs.

The budget reduces funding for EPA water pollution control programs by $48 million (19 percent), even though more than 210 million Americans—2 in 3—live within two miles of a polluted lake, river, stream, or coastal area. Moreover, polluted waters are being added to the list of impaired waters faster than restored waters are being removed, underscoring how hard it is to protect and restore watersheds and aquatic ecosystems.

And, despite Administrator Wheeler's lip service to the importance of safe drinking water, the budget actually *cuts* funding for EPA drinking water programs by 8 percent.

Finally, the budget siphons more than $125 million from programs to protect and restore America's great water bodies. It completely eliminates funding for programs to help the Gulf of Mexico, Long Island Sound, and Puget Sound, and cuts $67 million—90 percent—from funding for the Chesapeake Bay.

In sum, the Trump/Wheeler EPA is talking out of both sides of its mouth: claiming strong support for "clean and safe water," but drastically cutting support for water protection. Sadly, such hypocrisy has become standard fare at the Trump/Wheeler EPA. Clean water and safe drinking water are basic human needs, and access to them should be everyone's right. America's people and its environment deserve no less.

Protecting People From Chemical Hazards—Another EPA Failure in the Making

Penelope A. Fenner-Crisp

Originally published November 25, 2019 in The Hill

Most Americans assume that the chemicals in the consumer products we buy, such as that long list of unpronounceable ingredients in your bathroom cleaner or laundry detergent, have been tested and found safe for people and the environment. The truth is, not so much. And Trump's Environmental Protection Agency (EPA) is missing an important opportunity to make those products safer.

For decades, efforts to ensure chemical safety were stymied by an ineffective regulatory regime: the Toxic Substances Control Act (TSCA) of 1976, which regulated household and industrial compounds, was widely regarded as toothless.

During my 20-plus year career at EPA, I served as a senior manager in the agency's toxics program from 1987 to 1989. The weakness of the original TSCA was a key factor in my decision to leave that position.

After years of intense discussion and negotiations, TSCA was finally amended in 2016. The Frank R. Lautenberg Chemical Safety for the 21st Century Act (the "new" TSCA) mandates that EPA evaluate new and existing chemicals with clear and enforceable deadlines, employing risk-based evaluations to determine whether a chemical poses threats to human health and the environment.

It also lowered some of the hurdles to acquiring the information needed to make these judgments. The EPA is now conducting risk evaluations of existing chemicals under the amended Act. The early results are discouraging, at best.

Given the many thousands of chemicals to prioritize and assess (or not), these risk evaluations and their associated management decisions on how to address any risks, are essentially "once in a lifetime" regulatory determinations. There is no requirement to revisit these assessments and decisions at any time. Therefore, EPA has an obligation to get it right the first time.

EPA has established a priority-setting process, ostensibly designed to identify and assess the "worst, first"—that is, the high-priority substances that have the greatest hazard and exposure potential. To date, draft risk evaluations for five of the first ten chemicals undergoing assessments have been issued for public comment and scientific peer review. And a very troubling pattern has begun to emerge—on both process and substance.

On process, while public comment periods have been set for up to three months, scientific peer reviews have been scheduled during, rather than after, these comment periods. This deprives peer reviewers of the opportunity to consider useful and robust feedback from stakeholders during their deliberations. The scheduling suggests that the agency values meeting the deadlines for decisions over the integrity of the information and its analysis.

On substance, each of these draft risk evaluations suffers from fatal flaws, some in common, others specific to the chemical under scrutiny. The overarching "systematic review process" used for identifying, selecting and grading the information to be used in each evaluation was not subjected to expert peer review before being adopted, and has since been soundly criticized by experts in the field.

In addition, EPA has not determined whether the scientific data available for each chemical under review are sufficient to make a finding about their risk. Nor has the agency made any accommodation for the inadequacy of data in determining what would be an adequate margin of exposure/safety. The agency could have saved substantial resources by addressing the problem of inadequate data on the front end. Indeed, it could have used its enhanced capabilities under the new law to request critical data from manufacturers and importers before conducting risk evaluations.

In addition, EPA arbitrarily excluded some exposure scenarios impacting women and children, and did not adequately document potential

risks to susceptible and highly exposed populations. Furthermore, when conducting exposure assessments for all populations, including workers, the agency excluded exposures from ambient air, water or soil, arguing that those would be covered by other environmental statutes. This ignores the reality that people face exposures from multiple sources—at home, at work and in the ambient environment.

Lastly, the agency has said that workers face "no unreasonable risk" from exposure to some chemicals in some situations, based on the presumption they will use fully-functional personal protective equipment. However, the reality is that personal protective gear often is not mandated or provided, does not function properly and/or is not used consistently by workers.

The new TSCA raised hopes that Americans could finally trust the safety of chemicals in the products they use every day. But if the first few EPA draft risk evaluations are any guide, we cannot expect that future chemical reviews will be credible and adequate, or provide confidence that public health and the environment will be protected. Based on the work thus far, I am not optimistic.

Sadly, Puerto Rico Recovery Plan Favors the Affluent Over the Poor

Ariadna M. Godreau-Aubert

Originally published February 21, 2019 in The Hill

Nearly a year and a half after Hurricanes Irma and Maria slammed into Puerto Rico, federal funds will soon be available to restore the island's decimated housing, economy and infrastructure. In early February, HUD released $1.5 billion of roughly $20 billion in funding earmarked for that purpose through its Community Development Block Grant—Disaster Recovery Program. That's good news.

The bad news is that—unless the right policies are in place—that funding could actually hurt the Puerto Ricans most in need of help.

Take housing, for example. Gov. Ricardo Rosselló has sketched out an Action Plan to use these grant funds to rebuild the more than 350,000 homes damaged by the storms. But, as Michael Kimmelman observes in *The New York Times*, there's a catch: "Because of federal regulations, those living in flood-prone areas won't be given any public money unless their homes comply with flood-protection standards." Impoverished Puerto Ricans can't afford to comply with those regulations—by elevating houses, employing licensed contractors, providing wheelchair access and more—so they will be denied federal funding to fix their homes.

It's not the first time Puerto Rico's hurricane survivors were denied federal aid. Many islanders live in homes that were built by hand and passed down through the generations. Nearly half of these homeowners lack clear titles to their properties. In the aftermath of the storms, FEMA wrongly required homeowners to present formal titles in order to access emergency funds. As a result, of the 1.1 million households who requested help from FEMA, about 58 percent were denied.

Puerto Rico faces a housing crisis without precedent. Punishing austerity policies, combined with rising inequality and poverty, have left thousands of families facing eviction and foreclosure. The disasters have made existing problems much worse. Denied federal assistance, many face a choice between staying in their ruined homes or becoming homeless.

In some cases, staying is not even an option. Rosselló's proposal seeks to relocate neighborhoods at risk of flooding. Here, too, the most vulnerable stand to lose everything, because the standard of risk is applied unevenly. For example, the poor, predominantly black community of Loiza has been deemed a flood risk, while just down the coast, the affluent, mostly white tourist town of Condado is regarded as "safe." Ayuda Legal Puerto Rico has identified nearly 100 communities at risk for displacement under this inequitable standard.

What should we make of a rebuilding plan helps the affluent and hurts the poor? Sadly, it fits with other policies at play in Puerto Rico today. Following the disaster capitalism playbook used in New Orleans after Katrina, local and federal officials are promoting tourism and gentrification, and luring foreign investors by granting generous tax exemptions and asking nothing in return. Community Development Block Grant—Disaster Recovery Program funds could provide the capital necessary to pursue this misguided plan.

But it doesn't have to be this way. To make sure that federal funding helps all Puerto Ricans—especially the most vulnerable—we must:

- **Adapt regulations to the local context.** Importantly, create a clear process that enables people without traditional title to apply for rebuilding assistance. And make sure grants include enough money to cover the costs of elevation or moving to somewhere where elevation is not needed.

- **Minimize displacement.** Federal regulations require Community Development Block Grant—Disaster Recovery Program action plans to include a displacement minimization policy and to consider mitigation—protecting the rights of people to stay in their homes when possible and respecting their right to dignified housing. These are absent in Puerto Rico's draft plan. Instead, the government has promoted policies that facilitate displacement.

- **Ensure transparency and informed consent.** Communities slated for relocation must be informed and consulted, as required by international human rights law. The government should guarantee that communities can enforce their right to stay or leave, with fully informed consent.

- **Apply a racial equity lens.** Many communities in Puerto Rico are at risk of flooding, but only those that are home to poor people of color are now slated for relocation. It is essential to challenge the racism at the heart of this policy. In addition to understanding vulnerability, we must also recognize the strengths inherent in each community—especially the social ties that enable people to be resilient in the face of disaster.

Access to federal funds is essential to help Puerto Rico recover from the Island's deadliest natural disaster in the last 100 years. But, as the money begins to flow, we must ask, "Puerto Rico for whom?" The current plan will rebuild for tourists and those in affluent coastal communities, while overlooking the needs of low-income people of color. It is not too late to make sure that this much-needed investment in Puerto Rico helps those who need it the most.

Six Health-Focused Fixes for SNAP

Christina Badaracco

Originally published April 11, 2019 on The Health Care Blog

The $867 billion Farm Bill squeaked through our polarized Congress at the end of last year, though it was nearly derailed by arguments over work requirements for SNAP recipients. That debate was tabled after the USDA crafted a compromise, but it is sure to continue at the state level and in the next round of debates. While Republicans tend to favor work requirements and Democrats tend to oppose them, here's something both sides can agree on: SNAP should help Americans eat healthy food.

The Supplemental Nutrition Assistance Program (SNAP)—formerly known as food stamps—provides financial resources to buy food and nutrition education to some 40 million low-income Americans. Costing taxpayers almost $80 billion per year, the program serves Americans across the spectrum of ages, ethnicities, and zip codes. Simultaneously, we reached a deficit of almost $800 billion in 2018. So how can we ensure this at-risk population of Americans can access nutritious food and better health outcomes within the confines of our current resources?

Studies have proven time and again how participation in SNAP reduces rates of poverty and food insecurity. And the program has improved substantially in recent years, with recipients now using debit-style cards to buy groceries and receiving increased benefits at thousands of farmers markets across the country.

Despite these clear benefits, SNAP dollars often don't support healthy diets. In fact, a 2015 study determined that SNAP participants had *poorer* diets, with more empty calories and less fresh produce, than income-eligible non-participants. In 2017, another study found that participants have an increased risk of death due to diet-related disease than non-participants. The authors reported that the discrepancy might be partly caused by individuals who think they have high risk of poor health and/or struggle to pay medical bills are more likely to put in the effort to enroll in and

redeem SNAP benefits. A recent survey of Americans across the country showed that foods purchased using SNAP benefits were higher in calories and unhealthy components, like processed meat and sweeteners, than those purchased by non-participants of the same income level.

What's going on? As a dietitian, my previous work with low-income patients at a prominent Boston hospital opened my eyes to the numerous barriers many of them face in following a healthy diet. My role involved counseling patients ever-so-briefly on improving their diets and checking boxes on a computer screen to send them on their way to receive their nutrition assistance benefits.

Many low-income residents live far away from high-quality grocery stores and farmers' markets, and lack a consistent or safe way to get there. They can't afford some of the most nutritious and fresh foods, and/or lack time to prepare meals from scratch. So, they end up getting the most calories for their dollar by eating energy-dense fried fast food or frozen foods, ready to fill a hungry belly at a moment's notice. Indeed, the SNAP allotment falls just above $2 per person per meal (for the highest earning single person). This population has a higher risk of being overweight and sick because unhealthy food is cheaper and more widely available. But the reason why diet and health are in many ways worse among recipients compared to others at a similar income level warrants further study; indeed, this is an area that researchers continue to investigate.

Moving forward, we need to ensure that SNAP helps struggling Americans eat food that is actually good for them and promotes good health, supporting family life and preparation for the working world. Here are six suggestions for future farm bills:

- **Prescribe produce.** Because the majority of SNAP households have at least one member on Medicaid or the Children's Health Improvement Program (CHIP), integrating a healthy food prescription program and more robust nutrition education for these recipients as part of Medicaid could better promote shared health outcomes. The bipartisan Food is Medicine Working Group, founded in early 2018, was instrumental in integrating language about a pilot produce prescription program into the recently-passed Farm Bill. That pilot can yield real data about the health benefits of such programs, which can then be ex-

panded based on justifiable outcomes. Connecting health and nutrition via enrollment in federal programs provides a unique opportunity to drive progress.

- **Make shopping safe.** Given that public health research has shown strong associations between community violence and food insecurity, attempts to increase food access must focus on improving *safe* access. Farmers' markets and healthy corner stores receiving funding through the Healthy Food Financing Initiative (HFFI) can be incentivized to open at police stations or schools, with built-in added security to allow families to use their benefits.

- **Leverage purchasing power.** Expand funding for food hubs through the Local Food Promotion Program to support centralized purchasing of healthy staples for SNAP recipients within concentrated communities of beneficiaries to lower marginal costs and increase access. Food could be distributed to community centers via a model like a community supported agriculture (CSA) or meat share.

- **Incentivize healthy eating.** It's possible to improve diets without substantially increasing costs by expanding incentives for buying healthy foods and adding disincentives for unhealthy foods. Thousands of farmers' markets currently offer double dollars incentive programs—funded through Food Insecurity Nutrition Incentives (FINI) and/or philanthropy—so expanding this beyond farmers' markets could make a huge impact.

- **Connect growers and eaters.** Better connecting SNAP recipients to urban agriculture or community gardens can address the lack of understanding among Americans about where and how food is grown while also promoting local food production. This could involve expanding the jurisdiction of the Food and Agricultural Service Learning Program (FASLP) beyond children to include adults using SNAP.

- **Teach food literacy.** SNAP-Ed can be a valuable tool to teach basic nutrition to recipients, but is wholly underutilized and should focus on teaching more hands-on cooking skills to

people without basic food literacy. This is critical at a time when Americans spend less time than ever preparing food. Emphasizing or incentivizing programming in teaching kitchens—perhaps in existing schools or community centers, where families can receive a meal and learn hands-on skills—may translate to improved home cooking skills.

Debates over the next Farm Bill are sure to be as contentious as the last. But policymakers across the political spectrum can agree that our tax dollars should support better health and nutrition for SNAP recipients. Implementing these solutions can improve the diets of SNAP recipients, with a longer-term benefit of boosting health and reducing healthcare costs. That will require better cooperation across programs, creativity on the part of state agencies administering these programs, and reprioritizing programs and dollars to support health outcomes.

Maryland Joins Washington, DC in Passing 'Clean' Energy Legislation. But Is Burning Trash Really Clean?

ThienVinh Nguyen and Natasha Riddle

Originally published June 11, 2019 in Greater Greater Washington

Environmental activists are currently working to change Maryland's Clean Energy Jobs Act of 2019 to un-designate trash incinerators from the state's list of clean energy production methods. The law, passed on April 2019, mandates that the state source half of its electricity from renewable energy sources by 2030. All of it must be renewable by 2040.

This bill comes on the heels of DC passing its own ambitious Clean Energy Act, which mandates that 100% of the District's electricity will come from clean energy sources by 2032, while cutting emissions by 50% by 2032. Virginia legislators, on the other hand, rejected a bill requiring all the state source 100% of its electricity from clean sources by 2036 earlier in the year.

At first glance, Maryland's bill is encouraging in that it requires the state's utility companies to subsidize solar and wind farms, with the goal of reducing fossil fuel consumption and greenhouse gas emissions. It also aims to increase clean energy businesses and create "green" jobs.

Unlike DC's Clean Energy Act, which explicitly does not include "waste-to-energy" as a renewable energy source, Maryland's Clean Energy Jobs Act includes not only trash incinerators, but also paper mills that produce a fuel byproduct called "black liquor." In DC, Maryland, and Virginia, there are currently five incinerators.

Waste-to-energy controversy

Maryland's Senate first amended the legislation to exclude trash incineration as a renewable energy source. However, that change nearly killed the

bill, thanks to strong opposition by industry lobbyists, so the Maryland House of Delegates put the provision back in.

This inclusion of trash incinerators, which are found in the renewable portfolio standards (RPS) of 23 states nationwide, have divided lawmakers. Environmentalists are generally opposed to them because they are costly, polluting, and pose a health risk to people nearby.

According to a report by Marie Donahue of the Institute of Local Self Reliance (ILSR), Maryland's inclusion of trash incinerators traces back to 2011, when the state became the first and only state to "elevate" trash incineration to a Tier I renewable energy source, equivalent to "clean" technologies like solar and wind power. This allowed them to earn more valuable renewable energy credits than if they were classified as Tier II technology, or not at all.

"[This] legislation continues millions in subsidies for trash incineration. [It's] a total farce for ratepayers who are being forced to subsidize burning trash because legislators, aided by lobbyists, dubbed it clean energy," says Maryland State Senator Michael Hough (R - District 4, Frederick and Carroll Counties) who voted against the Maryland Clean Energy Act.

Maryland State Senator Ron Young (D - District 3, Frederick County), who voted in favor of the Act, agrees. He's introducing legislation to remove waste-to-energy from Maryland's renewable portfolio standards. "I am very opposed to incinerators and [keeping] them Tier 1," said Young in a phone interview.

What is waste-to-energy and why does it matter?

Trash incinerators and their contribution to the grid have been a hot button issue in the United States for the past decade. While they began as a waste management strategy, they were rebranded as "waste-to-energy," in which the burning of trash powers a steam generator to create electricity.

"It is a marketing ploy for the incineration industry" says Caroline Eader, a contributor to ILSR and advocate for zero waste solutions. "They are sold to communities as a solution to trash, [but] they are one of the most polluting and expensive sources to generate electricity."

For instance, the Baltimore trash incinerator, The Wheelabrator, is considered the city's largest contributor to industrial pollution. A Chesapeake Bay Foundation report found that the plant has caused $55 million in health problems, while collecting government subsidies.

Beside being classified as a Tier 1 renewable, Eader worries that the inclusion of trash incinerators can further incentivize this "dirty" industry while allowing the state to use this technology to meet its "clean" energy goals. While many incinerators have been shutting down in the past few years due to cost and environmental concerns, this provision may enable some to remain open.

What now? Community efforts towards cleaner energy and zero waste
Aside from introducing legislation which would reclassify trash incinerators as a Tier 1 renewable energy technology, there have recently been community efforts to close down existing trash incinerators.

"Despite trash incinerators still receiving Tier 1 RPS credits, there is mounting opposition to trash incineration in Montgomery County and Baltimore City," says Josh Tulkin, Maryland State Director of the Sierra Club. "Sierra Club will be connecting with communities located near Maryland's two incinerators to discuss the issue and strategy and how we can help accelerate our shift to zero waste and away from incineration. We will be advocating for more bold and aggressive waste-reduction, composting, and recycling."

Tulkin does not believe that shutting down incinerators will incentivize new ones: "No new trash incinerators have been built in this entire region in decades . . . The economics does not work out. Furthermore, the incinerators require contracts with the municipalities."

A major problem remains even with the closing down of incinerators: The question of how trash will be managed, given that incinerators have been powered by waste.

"We throw away a lot of things that shouldn't be thrown away. The general mix of things going into incinerators includes compostable materials [among other materials] that create greenhouse gases," says Emily Ranson, Program Organizer with Maryland's chapter of Clean Water Action.

The environmental advocates interviewed unequivocally believe that the solution to trash incineration lies in pursuing "zero waste" solutions. Ranson, for instance, thinks that investment by the state in alternatives to trash incineration will also bring more jobs to Maryland residents, from pursuing high quality recycling to resource recovery and composting.

"Not only are there alternatives to burning trash, these alternatives are being tested out successfully in Maryland already," says Ranson.

Curbside composting and pay-as-you-throw are among the alternatives being tested out in Maryland. The town New Windsor is testing out its pay-as-you-throw program, which charges residents a fixed fee for three bags of garbage. So far, the town has seen the volume of trash decrease. Montgomery and Prince George's County already have some of the highest recycling rates in the region, at about 60%.

The Baltimore Clean Air Act may also determine the fate of both the Wheelabrator incinerator and the Curtis Bay Energy incinerator, the former of which processes medical waste for 20 states as well as Canada. If these incinerators close, in addition to the one proposed in Montgomery County, waste will likely be sent to other landfill sites while city and state officials reduce the amount of waste sent to these sites or to out-of-state incinerators.

For now, the best solution is the recognition that our electricity is inextricably connected to our consumption and that the best solution is to bring to scale the tried and true adage of reduce, reuse, and recycle, while holding municipalities accountable for incentivizing truly clean energy.

Repealing the Clean Water Rule Is Not About Protecting Farmers

Mark Ryan and Betsy Southerland

Originally published September 20, 2019 in The Hill

Last week, EPA Administrator Andrew Wheeler signed a rule repealing the 2015 Clean Water Rule. That Obama-era rule defined the rivers, streams and wetlands considered "waters of the United States" in other words, waters requiring protection under the federal Clean Water Act.

The repeal was justified, in large part, because of the Clean Water Rule's impact on farmers. Calling it "one the worst examples of federal regulation," President Trump said the Rule is "prohibiting [farmers] from being allowed to do what they're supposed to be doing."

In fact, the Clean Water Rule had very little effect on farmers. The real beneficiaries of the repeal include deep-pocketed developers, the fossil fuel industry, and mining companies.

Farmers were never seriously impacted by the rule. That's because the original 1972 Clean Water Act regulates discharges from "point sources," but exempts most agricultural discharges, relieving farmers of the need for permits for runoff from their land. It doesn't matter if a neighboring stream is a "water of the United States" if a farm's runoff into it is exempt. When the Clean Water Rule was passed in 2015, it included all of the original exemptions from the Clean Water Act, and even added new ones.

Second, the Clean Water Act exempts farming and ranching activities from the need for a permit to fill wetlands if those wetlands are "prior converted cropland." In other words, if a wetland has been tilled, farmed or ranched for years, it's exempt from the normal permitting requirements, regardless of the new definition of waters of the United States.

Third, in response to farmers' concerns, the Clean Water Rule added a new exemption for certain types of ditches and puddles, to ease the concern that EPA would start regulating minor water bodies on farmers' properties. The Rule has been in effect in 21 states for almost four years, and there have been no reports that agriculture in those states is doing worse than in the states where the rule is not in force.

So, who really benefits from the repeal of the Clean Water Rule? To answer that question, we looked at EPA data on who is seeking permits under the Clean Water Act to fill wetlands, streams and shorelines. Those permit-seekers are the true beneficiaries of loosened regulations. The data show that farmers rarely request such permits. The majority of the 248,688 federal permits issued from 2011 to 2015 were given to developers and extractive industries such as oil, gas and mining companies.

These data make clear that the Trump administration's repeal and replacement of the Clean Water Rule is being done to allow builders to drain wetlands, oil and gas drillers to dredge pipelines across streams and wetlands, and mining companies to fill in small streams and wetlands without getting a federal permit or mitigating the damages of these actions.

The 2015 rule is currently in effect in 21 states, the District of Columbia and all U.S. territories, and stayed in the rest of the country pending the outcome of litigation. When the repeal goes into effect, it will remove the protections currently in place in those 21 states. The Trump administration has proposed a replacement rule, which is expected to be finalized in December; it will significantly curtail what waters and wetlands are protected under the Clean Water Act.

EPA and the Army Corps of Engineers argue that the repeal will not harm the environment, since states will step up to protect these waters and wetlands once the federal government removes Clean Water Act protection. The history of water pollution regulation in this country instructs otherwise.

Before Congress enacted the Clean Water Act, the states were in charge. Rivers caught fire, beach closures and fish kills were common, and two-thirds of the nation's lakes, rivers and coastal waters were unsafe for fishing or swimming.

Today, states will find protecting wetlands very challenging because state budgets are very limited, and only 20 states have some sort of wetlands protection program. Thirty-six states have laws that make it difficult for them to take actions beyond those required by federal law. Great harm will be done because, once a stream or wetland has been filled or drained, it is lost forever. The loss of wetlands will harm water quality, while removing our best defense against flooding.

By significantly curtailing the reach of the Clean Water Act, the Trump administration is turning back the clock to 1972. All Americans—farmers included—will suffer the consequences of degraded water quality and damaging floods.

Demand More From the Transportation Bill

Steven Higashide

Originally published October 10, 2019 in The Progressive

Americans now face the impacts of climate change in our everyday lives. Flooding and wildfires endanger us from Miami, to Houston, to Los Angeles. Rising seas will now inevitably impact our coasts, while rising temperatures threaten the habitability of cities nationwide.

This crisis is spurring both the American people and U.S. politicians to act. Across the country, young people have called "climate strikes." Media coverage of environmental issues is on the rise. Several members of Congress and presidential candidates have called for a Green New Deal that would invest federal resources to green the economy while creating quality jobs, an idea that polls well in moderate districts.

Against this backdrop, it might seem encouraging that, over the summer, members of the U.S. Senate's Environment and Public Works Committee unanimously advanced a bill, the America's Transportation Infrastructure Act (ATIA), that *The Washington Post* called "the first transportation bill to acknowledge climate change." After all, transportation is the largest contributor to greenhouse gas emissions in the United States.

What the headlines don't say is that the ATIA "acknowledges" climate change in the same way that sending a pallet of bottled water to Flint, Michigan "acknowledges" the lead crisis. The bill's historic contribution to climate change is a $10 billion program to pay for projects that reduce emissions and protect infrastructure from the effects of climate change.

But the same bill would add $32 billion to traditional road programs that states use to expand and widen highways, encouraging us to drive more often, for longer distances. This bill doubles down on the programs that have bequeathed the United States the most carbon-intensive

transportation system in the developed world. It goes against the settled science, which tells us that greening transportation will require both electric vehicles and building our cities and infrastructure in ways that make it easy to drive less often.

How could federal transportation policy actually reckon with the climate crisis? It would mean setting a clear goal that states reduce transportation emissions, with consequences for not doing so. It would recognize that highways are fossil fuel infrastructure as surely as pipelines and coal plants are, and make states justify road megaprojects instead of giving them blank checks to build.

It would also have to do more to make it possible to get around outside of private vehicles, and in doing so would fix long-standing mobility gaps. Cities like Nashville and Denver wouldn't struggle to find money to install sidewalks, which are missing on 40 to 60 percent of their street networks. Public transit systems wouldn't routinely stop running on the weekend and at night, and instead would provide real access for more people.

The received wisdom on Capitol Hill is that we clamor for a bipartisan agreement on infrastructure, regardless of whether that deal offers real hope for a sustainable future. That's an old idea for an old world.

In today's world—and despite the fact that it includes a few good programs—the ATIA looks too much like cynical politics. It treats the climate like any other interest group, not the urgent fight of our time. We have to demand more.

The Least Sexy, Most Important Resilience Strategy

Laurie Mazur

Originally published October 21, 2019 in American City & County

When you think of procurement, what comes to mind? Ordering office chairs? Hiring a waste-hauling firm? You probably don't think of procurement—the steps governments take to obtain goods and services—as a way to create the resilient cities of the future. Think again. According to Shalini Vajjhala of the design firm re:focus partners, procurement might be the "least sexy, most important resilience strategy there is."

The need for resilience is clear. Across the U.S., cities and towns are struggling to repair or replace what's politely called "legacy" infrastructure—water, transportation, and communications systems that date to the Eisenhower administration—or even to the Civil War.

And those systems must be retooled for a future that will look very different from the past. As climate change gets real, many regions have already warmed by 3.6 degrees Fahrenheit. So local governments are confronting problems they've never seen before, such as extreme heat in Montana, "500-year" rain events that come nearly every year or "sunny-day flooding" in cities including Norfolk and Miami Beach.

New challenges demand new approaches. But innovation often runs into the buzzsaw of bureaucracy—including cumbersome procurement processes. Designed to prevent waste, fraud and abuse, "public procurement processes are much more challenging than those in the private sector," says Marc Pfeiffer, a procurement expert at Rutgers University's Bloustein School of Planning and Public Policy. For example, in Boston—a city that is pioneering ways to reform its procurement processes—purchasing a service worth more than $35,000 has historically been a 65-step process that takes about five months.

Such processes can discourage innovation, by making it easiest for governments to buy the stuff they've always bought, from the companies they've always bought it from. "To buy different things," says Vajjhala, "cities need to be able to buy things differently."

New tools spur innovation

Some local governments are working on that, by using new procurement tools such as requests for ideas, competitions, and performance contracts. While conventional procurement tools—requests for proposals and the like—require a product or service to be clearly defined at the outset, the new tools are more open-ended and outcome-oriented. As a result, these new tools can produce a range of creative solutions, while bringing in new ideas, partners, and resources.

For example, Prince Georges County, MD used a performance contract to launch its Clean Water Partnership in 2015. The 30-year public-private partnership with the engineering firm Corvias began with two overarching goals: to use green infrastructure to improve stormwater management, and to boost the County's economy by hiring local small and minority-owned businesses to carry out the work. The Partnership has so far met or exceeded all of its economic, social, and environmental objectives—on time and under budget.

Procurement can also be used "to find the answers you can't find within City Hall," says Susanne Torriente, Chief Resilience Officer for Miami Beach. Torriente is currently using procurement to encourage an interdisciplinary approach to sea-level rise in the City's historic districts. "A coastal engineer can solve the flooding problem, but it might look kind of gray and industrial and not fit, aesthetically," says Torriente. "Or an architect and urban planner might have something that fits but doesn't have the same water-retention qualities. When you bring these disciplines together, you just get a better product at the end of the day."

So Torriente crafted a solicitation for a team that understands Miami Beach architecture and history, as well as climate science and coastal engineering. The City is now working with that interdisciplinary team to develop construction guidelines for historic districts. "We are tapping the expertise out there, the innovation of the marketplace, and really forcing the breakdown of silos to create more innovation and better products that we need," says Torriente.

Procuring resilience in smaller cities

While larger cities and counties are experimenting with new procurement tools, it's a heavy lift for smaller jurisdictions that lack sufficient resources and staff. To help smaller cities use the power of procurement to boost resilience, re:focus partners and The Atlas, with the support of The Kresge Foundation, worked together to pilot a procurement toolkit for small and medium-sized cities in 2018.

The toolkit, now available for free online, can help cities of any size improve their procurement game. City officials and staff from more than 100 different cities have used the toolkit since it launched. The toolkit first walks participants through the process of framing the problem, discouraging narrow thinking that can limit innovation. It then offers a menu of tools, suggesting ways to determine the best fit for the problem at hand and the resources available. Finally, the toolkit offers templates for setting specifications.

Throughout, the toolkit is accessible and engaging—even using a "Mad Libs"-type exercise to help think through problems and solutions. "To maximize scale and impact, online resources for local governments must be easy to use and really engaging," says Ellory Monks, co-founder of The Atlas. "This was especially true as we were designing the toolkit, because procurement is one of the most complicated issues out there." Pfeiffer, the Rutgers procurement expert, agrees. "This toolkit is an excellent framework that people can build on, and adapt to their local circumstances," he says.

Redefining resilience in Norfolk

To road test the toolkit, re:focus partners and The Atlas brought together leaders from seven small- and mid-size cities that need to upgrade legacy water infrastructure systems. Staff from the City of Norfolk, VA attended the workshop, where they identified options for addressing high-priority climate, resilience and equity challenges. Now Norfolk is putting those ideas into practice.

Rising seas and sinking land pose an existential challenge to some of Norfolk's neighborhoods. The City knew it needed to redevelop three public housing projects, which were experiencing chronic flooding. "We had a big-picture idea of what we wanted," says Susan Perry, Special Assistant to the City Manager, "But we wanted to know how people with more experience would tackle the problem." So the City embarked on

an information-gathering process that included a request for ideas and two requests for proposals.

The information-gathering project included extensive interviews with residents of the housing projects. While flooding was a top priority for most, residents' pressing needs also included job training and after-school programs. Many wanted to escape the concentrated poverty of the projects, preferring housing vouchers that would enable them to live elsewhere. Listening to residents affirmed the City's broad approach to resilience—that it's not just about preventing floods, but about building the economic resilience of residents and the shared strength of neighborhoods.

Norfolk is now implementing the first phase of the redevelopment, constructing new mixed-income housing on higher ground near the old projects. The new housing will be surrounded by 30 acres of greenways, parks and bioswales, providing a neighborhood amenity along with effective stormwater management. Residents will be given a choice of living in the new development or using vouchers to rent in other parts of the City. And the nonprofit contractor hired to manage the redevelopment works closely with residents to boost their economic mobility and housing stability.

By using the request for ideas to find out what residents wanted, Norfolk developed a clearer, more comprehensive vision for the City's future. "Engaging the community leads to overall resilience," says Perry. "It's never just about flooding."

Norfolk and other cities are showing that procurement can be about more than bureaucratic processes and paperwork. Done right, it can expand our understanding of problems and solutions, and supercharge government's capacity to take on the biggest challenges of our time.

It's Time for a Moratorium on New Fossil Fuel Extraction

Denise Fort

Originally published November 12, 2019 in High Country News

Last week, the Trump administration declared that the U.S.—the world's second-largest emitter of greenhouse gases—is officially withdrawing from the Paris climate accord. This will give yet more encouragement to fossil fuel companies across the West, meaning more money in public coffers and happier times for the politicians who allocate funding.

At my home here in New Mexico, many are giddy about the state's oil boom. But people also are deeply conflicted about the effects of oil and gas on the climate crisis. We just passed legislation to close down our coal-fired power plants, and cities are moving aggressively to reduce their climate footprint. And many do not regard oil and gas development as a desirable neighbor. In Santa Fe County, home to many New Mexicans who are used to having some agency in their lives, the threat of oil and gas development in the Galisteo Basin inspired a moratorium and a tough land-use ordinance that would effectively ban it.

People who live near oil and gas facilities know the full costs of the wealth generated by fossil fuels. They may be affected by air pollution, including air toxins, elevated ozone levels, the danger of explosions, the likelihood of spills and the injection of unknown chemicals into groundwater. Residents are affected by the scraping of land for drill pads, pipelines and other infrastructure, the construction of roads, and the impacts of all this on area wildlife and endangered species. Reclamation of arid desert lands is rarely completed. Energy development also threatens important cultural and archaeology sites; members of the Navajo Nation and TEWA Women United, a group of Pueblo women, are currently fighting to stop fracking in the Greater Chaco region.

Even worse, the continued development of the world's oil and gas bring us much closer to an unlivable future. The Environmental Defense Fund estimates that the industry releases 13 million metric tons of methane each year. Methane is a greenhouse gas that is about 85% more destructive than carbon dioxide, and, astoundingly, it accounts for a quarter of the climate effects that we're experiencing now. The Trump Administration is rolling back methane rules, and emissions are rising. In addition, the burning of oil and gas adds carbon dioxide to the atmosphere, crippling attempts to limit rising temperatures.

The Southwest is sometimes called the epicenter of climate change in the U.S., although that dubious distinction might be shared with many other regions. But increasing aridification—a clunky word that is more accurate than drought because "normal" times will not return—will hit the region hard. And the consequences will be heartbreaking; in just one example, 100% of all conifers in the Southwest are expected to be gone by 2100.

It's not easy to know whether we should celebrate our ample oil reserves or bemoan the consequences for our state and the world. Oil and gas development is a particularly thorny topic in New Mexico, an especially poor state that ranks last in public education and first as the worst place to raise a child. New Mexico's tax structure has long been in need of reform, with heavy dependence on a gross receipts tax and very little use of property or income taxes. As a result, the state relies heavily on the oil and gas revenues that provide one-third of its general fund revenues.

What will New Mexico, a state that just committed to a 100% renewable energy supply for its power plants, do about the energy boom that is exploding in the Permian Basin? It seems supremely unfair that oil, a word synonymous with wealth, is too dirty to mine and burn when this impoverished state needs all the revenue that it can get.

New Mexico and other states that depend on fossil fuels need to wake up from the somnolence that oil wealth is bringing. The boom-and-bust cycle will continue, at least partly because the world is finally transitioning to renewable energy, though the more familiar fluctuation of global markets is also a factor. Other states have diversified their economies and broadened their tax bases, and it is urgent that oil-rich states do the same. Finally, the state must listen to those who are negatively affected

by development and show itself accountable for the high costs of oil and gas, as well as the revenues.

National leaders have begun to call for a moratorium on new development on federal lands. This is a much-needed first step, one that points to the federal government's role in subsidizing oil and gas through accelerated leasing on our public lands, as well as the role energy exports play in degrading these lands. Federal policies have long promoted oil and gas development. It's time they did a better job of helping states with the energy transition, too, much as we are slowly attempting to do in Appalachia and other regions hit by declining coal production.

The Water Resource Right Outside the Window

Mary Ann Dickinson

Originally published February 25, 2019 in Governing

Across most of America, the lawn sprinklers are taking their winter's rest, but it won't be long before billions of gallons of water start nursing thirsty turf back to life.

Nationwide, the tug of war over diminishing water resources provokes challenging questions about how we should prioritize water use among competing interests like agriculture, urban consumption and the environment. These questions grow increasingly difficult as more communities realize they don't have enough water to go around.

Many communities believe that, because they've already witnessed significant reductions in water use, they now need to start building their supplies only through options like reservoirs or desalination. In some cases they're right, but in most cases they're very wrong. The fact is, we're not finished with efficiency and conservation. Outdoor water use is the next frontier.

It's true that we've made great strides in conservation. Average annual indoor household water use has dropped by 22 percent since 1999, thanks largely to the use of high-efficiency toilets and showerheads as well as more water-efficient clothes washers and other appliances. But outdoor residential water use represents a largely untapped and immensely promising source of water savings.

Even a small reduction in water use on home landscapes can have a significant impact on community water supplies. Landscape irrigation is estimated to account for almost one-third of residential water use — nearly nine billion gallons a day. And as much as half of the water used outdoors is wasted due to evaporation, inefficient equipment and overwatering.

Driven by persistent drought conditions, communities throughout North America have already implemented programs to incentivize and accelerate water-efficient changes to urban landscapes. From Sacramento, Calif., to Austin, Texas, they have tested diverse approaches, including free or subsidized efficient-irrigation technologies: incentives and design assistance to help homeowners replace unneeded, water-intensive turf with more climate-appropriate plants; and educational campaigns to increase awareness of outdoor water use.

A new research effort from the Alliance for Water Efficiency—the most comprehensive to date—shows that these programs and policies make a real difference for a community's water supply portfolio, regardless of the type of program. Across programs analyzed, the average water-use savings for single-family customers ranged from 7 percent up to 39 percent.

A San Diego County Water Authority initiative illustrates how effective these efforts can be. The agency's Sustainable Landscapes Program helps homeowners achieve multiple benefits, from efficient water use to stormwater management. It holds "Landscape Makeover" classes, offers technical assistance, distributes compost and mulch, and provides rebates for smart irrigation technology. The average participant has saved 42,000 gallons annually. That's enough water to meet the needs of a four-person household for nearly 100 days.

These are especially high-value water savings that reduce the peak demand on the water system, and therefore can help drive down long-term utility and customer costs. Even better, these programs reap increasing returns. Homeowners who invest in a sustainable landscape continue to do so and build water savings over time. This growing reservoir of conserved water makes their communities more resilient to potential water shortages and able to accommodate growth, while also boosting watershed health.

Local decision-makers may wonder if residents are truly ready to alter their landscapes. Our survey of more than 3,000 North American homeowners indicates that the time is ripe to promote a new landscape ideal.

While beauty and appearance was the most important aspect of their landscapes, nearly half of respondents also wanted their landscapes to be water-conscious. And contrary to popular belief, for most people a beautiful outdoor space doesn't always conjure up visions of endless expanses

of thirsty grass. More homeowners desired trees, flowers and functional spaces for entertaining.

Sustainable landscapes come in many shapes and sizes, depending on the region and climate. They may feature colorful native plants, increasingly smart irrigation technologies triggered by a phone app to apply just the right amount of water, or new drought-tolerant turf grass species that use 30 percent less water than conventional varieties. What these landscapes have in common is that they help homeowners enjoy their outdoor spaces while also supporting important community water objectives.

Decision-makers at the community, regional and state levels are already facing hard choices about how to distribute shrinking water resources across equally important needs. Outdoor water-use efficiency provides a mostly untapped strategy to stretch existing supplies without the need to deprive farmers and businesses of water or build more expensive infrastructure. Achieving that goal requires recognizing the value of sustainable landscapes, investing in programs that work and starting a conversation within our communities about the water source right outside our windows.

Opportunity Zones Could Provide Major Boost for Clean Energy, Sustainable Development

Julia Parzen and Graham Richard

Originally published August 14, 2019 in GreenBiz

When Darren Walker, president of the Ford Foundation, a $13 billion foundation guided by a vision for social justice, and Steve Mnuchin, President Donald Trump's treasury secretary, agree that the Opportunity Zones program is the biggest economic development opportunity in 50 years, it's worth taking a closer look.

A provision of the Tax Cuts and Jobs Act of 2017, the Opportunity Zones (OZone) program seeks to spur investment of patient capital in low- and moderate-income communities across the United States. The program allows investors to delay or avoid paying capital gains taxes if they invest in Qualified Opportunity Funds that then invest within Census tracts designated as Opportunity Zones.

Market watchers are predicting $200 to $300 billion in investment in the nation's 8,700-plus OZones. And federal rules have made it clear that green economy projects—such as local power generation, microgrids, EV charging stations and energy storage—are eligible for OZone investment.

The OZone program is a good fit for clean energy and sustainable development. First, the tax benefits—capital gain tax deferral, partial forgiveness of tax on capital gains and forgiveness of additional gains on investments in OZones—make it easier to include sustainability features because the projects can deliver higher returns and be structured with simpler capital stacks. The higher return on Opportunity Fund investments, for example, could allow sponsors of clean energy projects to add features to projects or partner with energy customers that are considered more risky, as proposed by Jon Bonanno, CXO of

New Energy Nexus. New Energy Nexus provides assistance to global energy entrepreneurs.

Already, OZone projects are being completed with simpler capital stacks that lower costs. For example, about 80 percent of the Tappan workforce housing project in Cleveland is funded by an Opportunity Fund. Funding so much from a single source is new for development projects in Cleveland, according to Josh Rosen of Sustainable Community Associates. JD Supra, the online platform for legal content, has reported that sponsors of renewable energy projects may be able to rely on Opportunity Fund investors enough to not need traditional renewable tax credit investors. Opportunity Fund capital not only could reduce transaction costs, but also expand the investor base for clean energy projects.

Second, the program allows for more comprehensive and holistic projects. In fact, the lack of restrictions on investments in the Opportunity Zone program creates an opportunity for integrated, interdisciplinary development plans. With the clarifications in the federal rules for OZones making it clear that clean economy projects are eligible, every project can be a clean energy and a clean jobs-producing project.

Third, the program allows for a deeper commitment to neighborhood success than many past economic development incentives. That's why Bo Menkiti of the Menkiti Group has teamed up with Local Initiatives Support Corporation (LISC) to pursue OZone funding for its Neighborhood Investment Model, which includes LEED buildings. Because OZone investors must keep their capital invested for a full decade to realize the maximum tax benefits, they have a stake in a neighborhood's long-term success. In this way, the OZone program creates space to combine clean energy projects with initiatives to train local workers and nurture new local clean economy businesses.

This last point is key. Many community-centered and impact investors are concerned that the Opportunity Zone program will spur gentrification and displacement, and that current residents will not benefit from neighborhood improvements. Indeed, the program currently lacks requirements to report on or achieve benefits for those now living in OZones. But if structured with purpose, investments can produce significant benefits for current Opportunity Zone residents.

For example, clean economy projects can be designed to lower local energy costs, provide job training for the relatively high-paying jobs in the solar sector, nurture new businesses for people of color and increase community resilience through local power production, microgrids, EV charging, batteries and broadband. Chart House Energy Opportunity Fund in Michigan and Norfolk Solar Qualified Opportunity Fund both have as part of their design a commitment to hiring local residents and providing them with job training.

The urgency to address climate change, shift to renewable energy, and deepen community resilience is resonating with investors in Opportunity Funds, according to Julia Shin, VP at Enterprise. Enterprise is exploring creation of a Sustainability Opportunity Fund to meet demand from impact investors. There will be a high level of demand for renewable energy projects from investors, according to Chris LeWand, of the global business advisory firm FTI Consulting. Both Bonanno and Cody Evans of Homecoming Capital have seen this demand in action. They agree that more capital gains investors are seeking clean energy projects than clean energy projects in OZones ready for investment.

Clean energy and resilience projects also are attractive to investors because they can enhance project value. For example, Arctaris Impact Fund included a solar field in its Opportunity Zone-based industrial park project in Flint, Michigan, because the savings on electricity and rent will attract businesses to the park. Arctaris Impact Fund intends to raise $750 million for projects in OZones. Thirty percent will be for investments in alternative energy, broadband and real estate infrastructure projects.

Decennial Opportunity Fund, hoping to make $1 billion in Opportunity Zone investments, is including clean energy in all its projects both because of the value it adds and the potential to reduce the cost of capital by unlocking tax credits and PACE financing. For example, Decennial Opportunity Fund plans to invest in a 100 percent net zero redevelopment on the former Michael Reese Hospital site in Chicago, a brownfield site that has been shuttered for 10 years.

The clean economy opportunity could all come together in Puerto Rico, where 95 percent of the island is a designated Opportunity Zone. Puerto Rico's government plans to use the OZone program to rebuild from the devastating hurricanes of 2017 while enhancing resilience and

advancing a clean economy. The Global Resilience Institute of Northeastern University, which has developed a decision-support system to guide the prioritization of resilience investment needs, is working in selected communities in Puerto Rico to leverage OZones to advance community and infrastructure resilience. It also is advocating for the deployment of $120 billion of federal disaster recovery and other federal funds in OZones.

It is unclear whether the Opportunity Zone program will deliver on its larger promise of jobs and development for current residents in low-income communities. But the program does offer a significant opportunity to accelerate clean energy and sustainability projects in struggling communities across the U.S. and in ways that produce local economic development benefits. Today, key players are gathering. New interest, innovation, and leadership are catalyzing a growing pipeline of deals. Leveraged successfully, the Opportunity Zone program could produce gains for communities, investors and the planet.

Power Shutoffs: Playing With Fire

Denise Fairchild and Kim Evon

Originally published October 17, 2019 in Energy Central

California's fire season is back. Yet if this past week is any indication, our emergency response remains woefully inadequate. When disaster strikes we are far from being energy resilient, ensuring reliable access to electricity for our most vulnerable communities.

Climate fires are California's new normal. Dangerous combinations of high (20-60 mph) sustained winds and tinderbox drought conditions wreaked havoc throughout the state last week. Massive evacuations from the Saddleridge fire in northwest Los Angeles and the Reche Fire in Moreno Valley spared life, if not property, from thousands of acres of burning land.

Pacific Gas and Electric (PG&E) took pre-emptive measures. They shut off power in over 30 counties in northern California. In this way, they avoided a repeat of the 2018 fire season, the state's deadliest, in which electrical equipment was blamed for conflagrations that killed 85 people and destroyed 19,000 homes.

But the shutoffs were a disaster of another kind. They left close to a million people and more than half the counties in the state without power, or recourse, for nearly a week.

The PG&E power shutoffs were a colossal failure, according to utility and elected officials, local agencies, and residents. The disruption was widespread: accidents caused by failed street lights, schools closed, businesses idled, food supplies and basic services—public transit and water—compromised. And as premeditated as this emergency response was, residents were left in the dark; not just from the power outage, but from the lack of information. No one could get information about what to expect or what to do in a power emergency. PG&E's communication and computer systems crashed, their website went down, their community

resource centers were underprepared and useless. The shutoff prevented fires, but not the burn; everyone fumed.

There must be a better plan for power outages, and emergency response in general, to prepare for recurring natural and manmade disasters. This is especially important for vulnerable communities. Life and death hangs in the balance. Financially strong families and businesses were inconvenienced, but managed. Early reports indicate that hospitals and nursing homes were protected by backup generators. Isolated and helpless, however, were the countless families and their caregivers who rely on ventilators, respirators and refrigeration for medical reasons. SEIU2015, the California Long Term Care Workers' Union that represents over 400,000 caregivers across the state most of whom provide in-home care to seniors, children and adults with disabilities say most of these caregivers and their patients are stranded whenever there is a blackout.

The utility sector needs to proactively engage and support the home health sector in its energy and emergency management strategies. A recent focus group study of home health care and nursing home workers by Emerald Cities Collaborative and SEUI2015 found the lack of communication a common theme.

> *Most facilities have a communications plan. They are required to call families informing them that they can take their family resident home. But often families can't, especially if they require life support equipment . . . feeding tubes, breathing tube, etc.*

Moreover, it was a rare exception in which evacuations were well-executed.

> *I live in Santa Paula with the Thomas fire. They shut off our electricity. My son is on a feeding tube/respirator. I was holding his head to make sure he didn't stop breathing. Trying to move his head to help with breathing. I have no back-up generators. I talked to FEMA, but no one could help me. He is 190 lbs. There was no evacuation plan or help. I can take care of his medicines and other things, but I can't move him. I had no info on where to take him.*

In addition to better communication and emergency planning, the greater need is for energy resilience. It's time to put battery storage

technologies into the homes and facilities of vulnerable communities. The Clean Energy Group thinks there is a pathway: Its recent report *Home Health Care in the Dark* offers suggestions for restructuring California's experimental and underfunded Self-Generation Incentive Program (SGIP) to provide backup power for nursing facilities and home health care. SGIP's focus on accelerating the use of battery storage technologies with renewable (and nonrenewable) energy generation could help medically dependent families during power outages.

The Clean Energy Group's study also suggests changing the focus from carbon reduction to energy resilience, increasing access for non-homeowners and low-income populations, considering portable technologies, and mostly communicating with the home health care sector to access and refine the program.

The new normal requires new strategies, new technologies and new partnerships with America's caregivers to ensure the sick, the elderly and the most vulnerable are climate and energy resilient. Let's be clear: power shutoffs without energy resilience strategies is still playing with fire.

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Island Press 2000 M NW Ste. 650 Washington, DC 20036

RESILIENCE MATTERS 2018

E-BOOK: FREE
PAGES: 175
PUBLISHED: JANUARY 2019
ISBN: 9781642830651

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Edited by Laurie Mazur

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