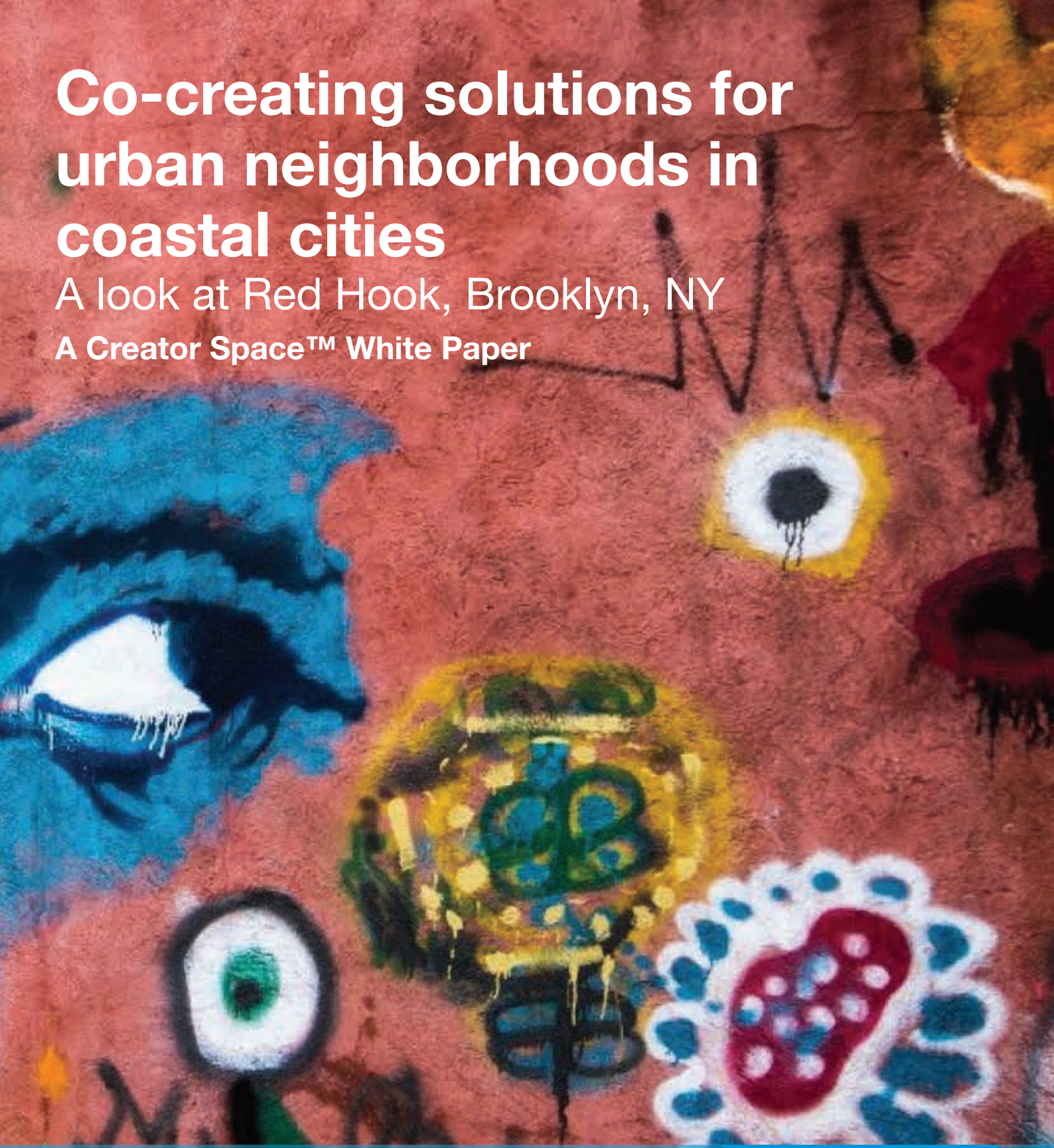
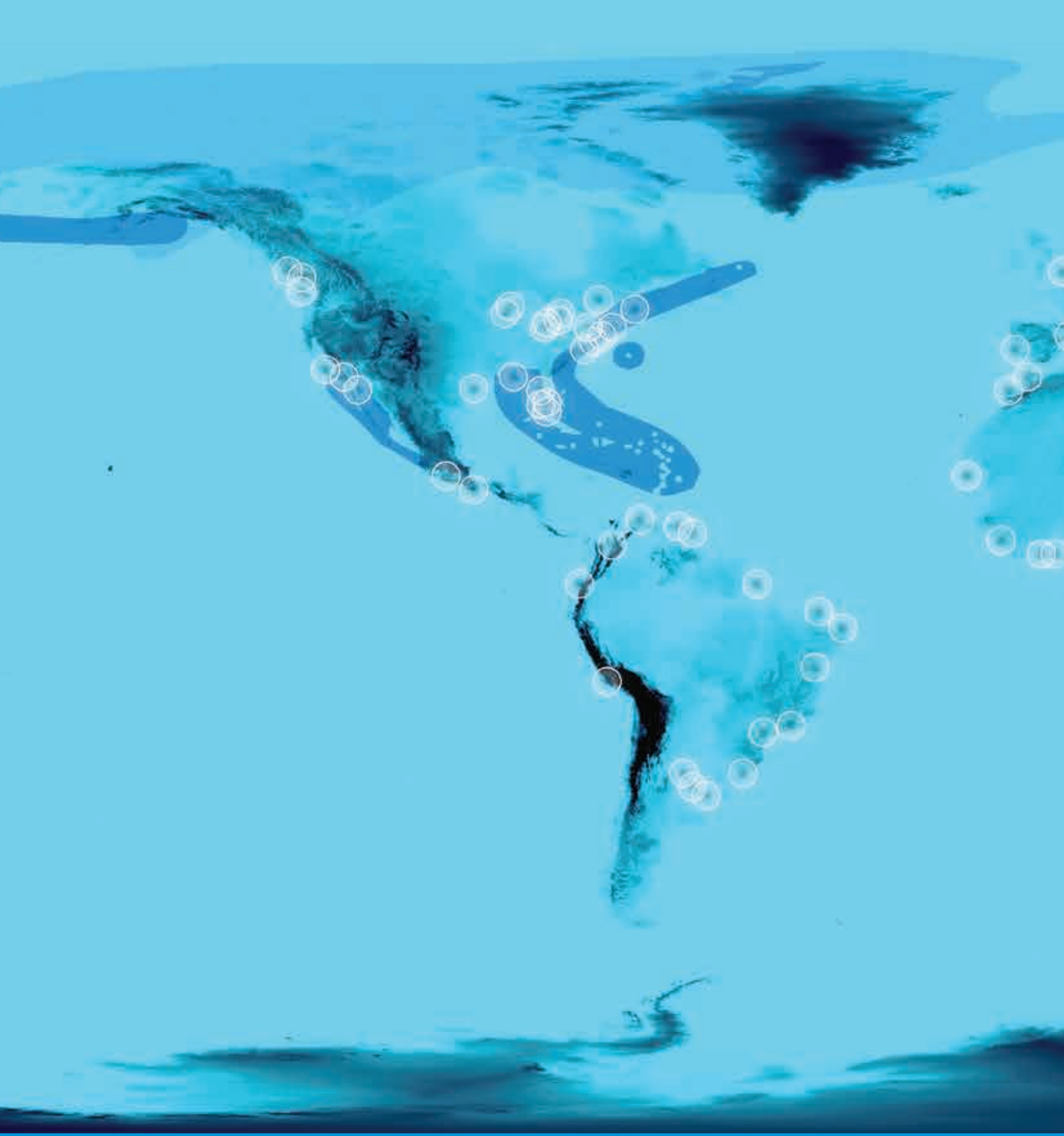
Co-creating solutions for urban neighborhoods in coastal cities

A look at Red Hook, Brooklyn, NY

A Creator Space™ White Paper



BASF
We create chemistry



INTRODUCTION: COASTAL CITIES

More than 600 million people call the world's coastal cities home, but those areas face dramatic changes to their sustainability.

GLOBAL POPULATION DENSITY EMPHASIZING THE COASTAL REGION (WITHIN 100KM OF SHORE) AND AREAS WORLDWIDE EXPOSED TO HURRICANES.
Source: LandScan 2011 DATA

Purpose

More than 600 million people call the world's coastal cities home; by 2100 that number will likely rise to more than a billion. Those cities are some of the most historically important, beautiful, and culturally treasured places on the globe. Yet their future is in peril. Growing populations and the pressures of economic development threaten to overwhelm their historic character and quality of life. Homogenization, overcrowding, and excessive demands on infrastructure could erode the distinctive features that first made these cities appealing and successful.

Worse still, climate change presents a new menace to coastal cities: rising seas and higher storm surges will cause periodic or even permanent flooding that could be devastating. Those stakes only increase with the growth in urban populations and economies.

As a diversified chemical company, BASF has decades of experience developing innovative solutions for all categories of built environments and infrastructure around the world. It provides more than 600 products and chemistry for energy efficiency, efficient construction, higher-performance materials, safety, and more that can improve the lives of people living in urban areas. Getting these and other available technologies to work for citizens and their communities, however, demands more than a generic "plug and play" approach. It requires the contribution of multiple stakeholder groups who can help to understand the challenges and can co-create design solutions that may enhance the quality of urban life.

With that in mind, BASF organized Creator Space™ New York City in 2015, with a focus on finding solutions that would improve the quality of life in the New York neighborhood of Red Hook as a case study relevant to coastal cities globally. The event pulled together a wide variety of stakeholders with extraordinary passions for this cause—Red Hook residents, local businesses, artists, scientists, engineers, and more—and engaged them in a multi-day co-creative exercise. It enabled collaborations with experts on urban living and city planning from the design firm Terreform ONE, the Stevens Institute of Technology and other universities, as well as organizations like the Museum of Arts and Design in New York. The goal of those rich discussions was not merely to brainstorm but to develop a plan for implementing the best of the ideas.

What emerged from these deliberations was an understanding that the quality of urban life ultimately depends on successful engagement with three broad challenges: Habitat (development of buildings, spaces, and infrastructures that support a desirable way of life), Citizenship (fostering spirits of community involvement, activism, and capability that go beyond simple consumerism), and Resilience (the capacity to survive and efficiently recover from disruptive, potentially catastrophic events). Those principles of Habitat, Citizenship, and Resilience became the standards by which the proposed solutions were measured.

This whitepaper is an interim report that summarizes some of those solutions emerging from Creator Space New York City. BASF, both locally and globally, and other cooperating partners will use this paper as the basis for further discussion and planning. It is also intended to fuel the interests and involvement of newcomers who might wish to improve Red Hook's prospects.

Some of the specific solutions developed for Red Hook and discussed here may find direct relevance in other coastal cities. Yet the greater promise for other cities may lie in adopting this way of thinking about their challenges and in using co-creative approaches to finding their own solutions. Only solutions created by communities, by people intimately and passionately connected to their local communal needs, can summon the resilience and prosperity they deserve.

In 2015, BASF chose to celebrate the 150th year of its existence by connecting people and ideas around the globe. This co-creation program, called Creator Space, aims to address challenges of urban living, energy and food, with existing and new partners. The global Creator Space tour inhabits creative locations in six cities: Mumbai, Shanghai, New York City, São Paulo, Barcelona and Ludwigshafen. At each tour stop, Creator Space connects industry experts, scientists, representatives from government, NGOs and society, as well as artists, to co-create solutions for a locally relevant challenge. The Creator Space white paper series consolidates the findings of each tour stop as a basis for continued collaboration. At Creator Space New York City in May 2015 the participants worked on the question: "How can we revitalize Red Hook's built environment to invite people to work, play, and experience better urban living?"

"Coastal defenses reduce the risk of floods today, but they also attract population and assets in protected areas and thus put these at risk in case the defenses fail..."

Stephane Hallegatte
Senior Economist, World Bank

Which Coastal Cities Are at Highest Risk of Damaging Floods?

At risk for the greatest overall cost of flood damage:

1) **Guangzhou, China**
2) **Miami, United States**
3) **New York, United States**
4) **New Orleans, United States**
5) **Mumbai, India**
6) **Nagoya, Japan**
7) **Tampa, United States**
8) **Boston, United States**
9) **Shenzen, China**
10) **Osaka, Japan**

The top four cities alone account for 43% of the forecast total global losses.

However, developing-country cities move up the list when flood costs are measured as a percentage of city gross domestic product (GDP). Many of them are growing rapidly, have large populations, are poor, and are exposed to tropical storms and sinking land.

At risk for costliest damage as percentage of city GDP:

1) **Guangzhou, China**
2) **New Orleans, United States**
3) **Guayaquil, Ecuador**
4) **Ho Chi Minh City, Vietnam**
5) **Abidjan, Ivory Coast**
6) **Zhanjiang, China**
7) **Mumbai, India**
8) **Khulna, Bangladesh**
9) **Palembang, Indonesia**
10) **Shenzen, China**

From the joint Organization for Economic Co-operation and Development (OECD) and World Bank study *Future Flood Losses in Major Coastal Cities*, published in *Nature Climate Change*, August 2013.

Amanda Burden
Principal at Bloomberg Associates

"How can you change with opportunity for all, but maintain the essential character of a neighborhood?"

Lessons from Hurricane Sandy

Climate change presents a new menace to coastal cities. Can Red Hook provide a model for urban resilience?

The New York City metropolitan area exemplifies the promise and the problems of coastal cities in the 21st century. Preeminent as a center of economic and cultural importance, its population has grown to 8.4 million. Yet the city is an archipelago, with four out of its five boroughs on islands. Large portions of the city are only a few feet above sea level, and many of those are dense residential and mixed-use neighborhoods highly prone to flooding.

The most vulnerable of those neighborhoods might be the Red Hook section of Brooklyn. Situated on a marshy peninsula extending into New York harbor, this once thriving area has been slowly rebounding from severe economic reversals during the 20th century. It had been making real progress in recent decades.

Then came Hurricane Sandy in 2012, which passed directly through New York City. In New York, the storm killed at least 53 people, racked up $32 billion in property damages, and disrupted global financial markets. The storm surge put much of Red Hook under water, set back years of redevelopment and took a toll on its residents' lives. The sad prospect that future storms could repeat this pattern is sobering.

The blow that Hurricane Sandy dealt to Red Hook and the rest of New York City was dramatic—but it can also be a wake-up call. How can we use this fresh awareness of Red Hook's vulnerabilities to spur the right kind of development that addresses this community's real long-term needs? How can we preserve Red Hook's unique character and quality of life while also promoting its economic growth and safeguarding it against future floods? Finally, how can measures taken in Red Hook serve as a model for other cities?

Many of us at BASF North America are part of the greater New York metropolitan area and know firsthand the struggles of the residents of Red Hook, particularly in the wake of Sandy. As BASF celebrates its 150th anniversary, the global company is also reflecting and acting on its responsibilities to the communities in which its people work, live and play.

ALEX STEFFEN
American Futurist at Planetary Thinking

" ....In many cities, the era of the suburban commuter, along with the era of the car, is drawing to a close."

AERIAL VIEW OF RED HOOK, BROOKLYN.

DRIVERS OF CHANGE TO IMPROVE URBAN LIVING IN RED HOOK, BROOKLYN, AND ELSEWHERE

HABITAT

CITIZENSHIP

RESILIENCE

Red Hook Residents Speak Out

Ahmed El_Husseiny
Red Hook Resident/Artist

David Sharps
President, Waterfront Museum

Scott Pfaffman
Red Hook Resident/Artist

Lou Sones
Red Hook Resident/Founder, GAGS

Tim Gilman-Sevcik
Red Hook Resident

Gita Namden
Red Hook Resident

Carolyn Rogalsky
Red Hook Resident

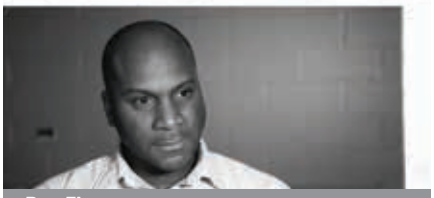
A. Jason Ross
Red Hook Resident/Business Owner

John McGettrick
Red Hook Resident/Veteran Activist

Tone Johansen
VP/Co-Owner of Sunny's Bar

Alison and John Hockenberry
Red Hook Residents/Media Personality

Victoria Hagman
Red Hook Resident/Business Owner



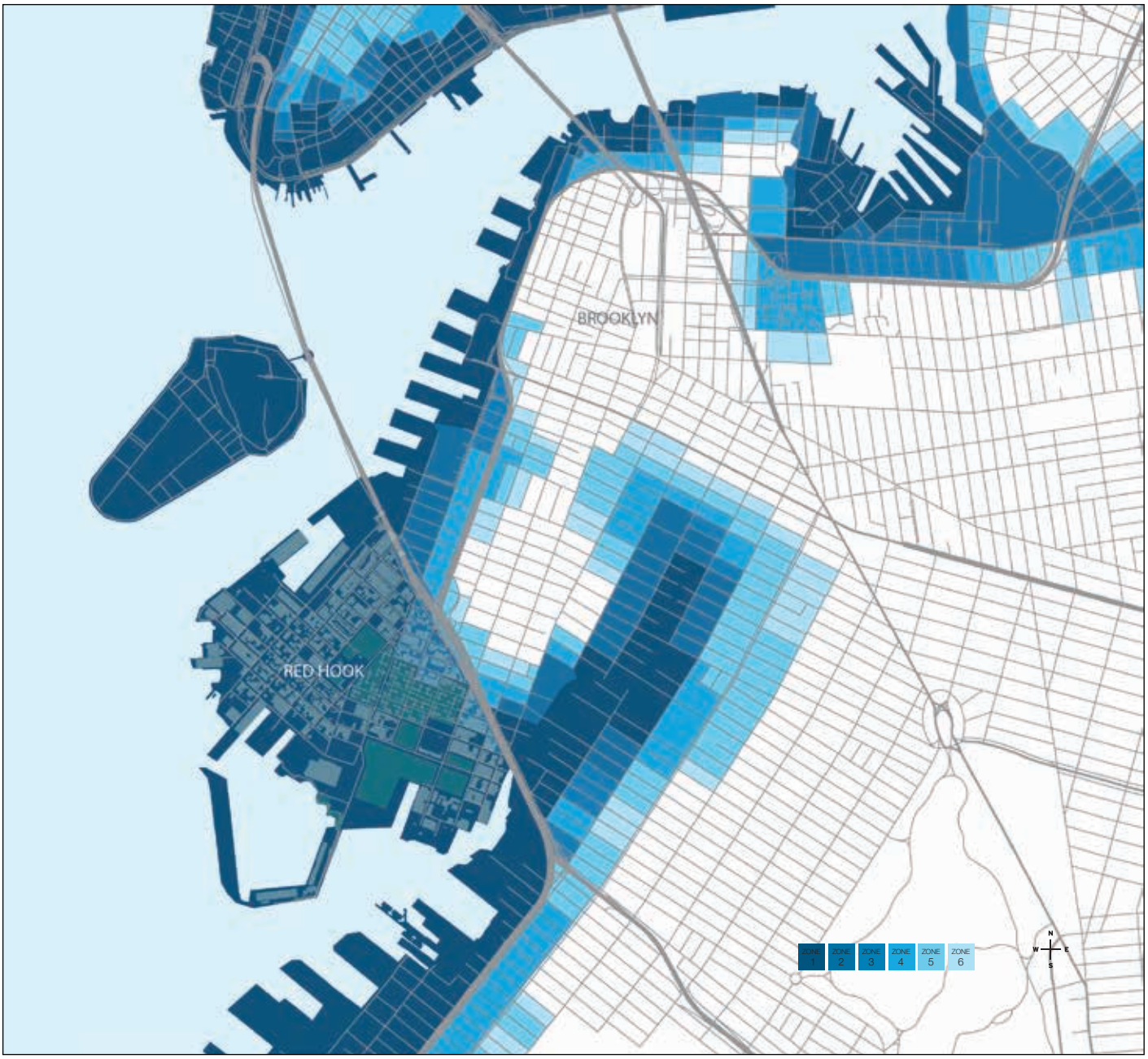
Reg Flowers
Red Hook Resident/Founder, Artistic Director Falconworks Artists Group

Elsie Felder
Red Hook Residents/Community Board Member

Prof. Alexandros Washburn
Director, Urban Xcellence Center, Stevens Institute of Technology

SATELLITE VIEW OF HURRICANE SANDY ALONG EAST COAST OF U.S. IN OCTOBER 2012
Source: NASA

NEW YORK CITY HURRICANE EVACUATION ZONES: RED HOOK, BROOKLYN
Source: NYC GOV/Terreform ONE



On the Frontlines: $129 Billion in Property at Risk from Flood Waters. *Source: Office of the New York City Comptroller*

When the Federal Emergency Management Agency proposed new, expanded 100-year flood zones in 2014, the number of New York City buildings falling within them jumped from about 24,000 (by a 2010 estimate) to more than 84,000. The assessed value of properties in the zones increased from $58.6 billion to $129.1 billion.

In Brooklyn alone, the number of structures in the flood zone rose from about 5,600 to more than 42,000, with an increase in value of about $24 billion.

Red Hook in Transition

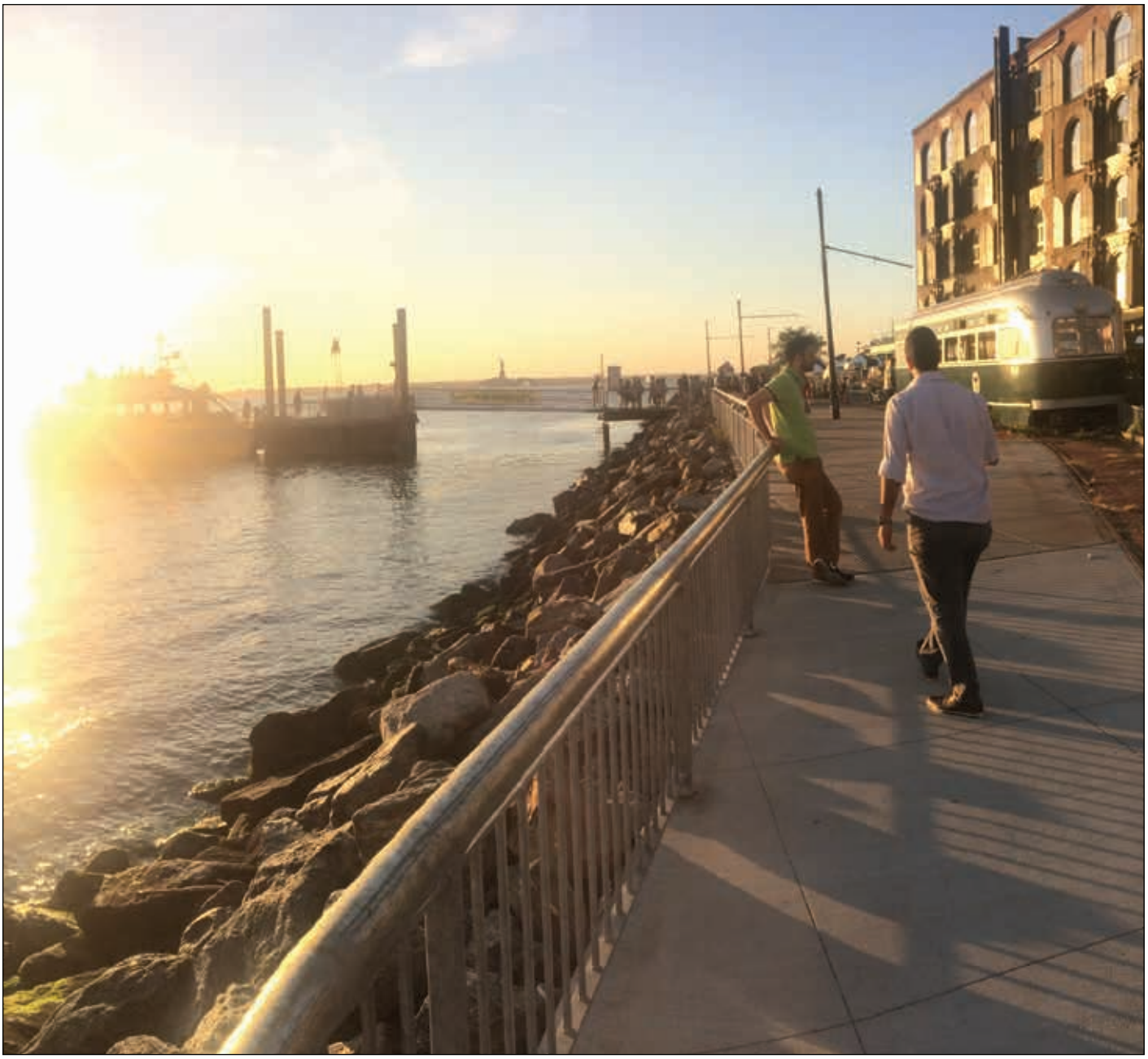
By the 1920s Red Hook had become the busiest freight port in the world. Between the 1960s and 2001, its population dropped by half.

Red Hook is hungry for change yet struggling to overcome the legacy of its past. When the original Dutch settlers named Red Hook and incorporated it into the new town of Brooklyn in the 1600s, it was just a marshy square-mile peninsula at the mouth of the harbor. But with the rise of shipping along the Erie Canal and down the Hudson River in the 1800s, Red Hook's location suddenly took on commercial importance. Wetlands and ponds were filled with earth to support new streets and the construction of warehouses and businesses. Immigrant laborers streamed to Red Hook, drawn by opportunities for work as longshoremen and warehouse laborers. By the 1920s Red Hook had become the busiest freight port in the world.

But during the Great Depression the collapse of shipping turned the center of Red Hook into a "Hooverville" for the homeless. When the freight industry switched to containerized shipping in the 1960s, longshoreman work largely vanished and New Jersey ports claimed most of Red Hook's business. Red Hook's economy and population both declined steeply. By 2001, Red Hook's population had dropped to about half of its 1950s zenith; despite a big rebound, it remains underpopulated by comparison with the rest of the city.

PANORAMIC VIEW OF RED HOOK, BROOKLYN
Source: Alex Washburn

PROMENADE IN RED HOOK, BROOKLYN
Source: Alex Washburn



Red Hook in Maps: Transportation

Mounting transportation problems also sapped Red Hook's strength. Public transit has long been vital to most New York commuters, but Red Hook has never had direct subway service. Popular electric trolleys that ran through Red Hook were decommissioned in the 1950s and never replaced. In the 1960s the completion of the elevated Gowanus Expressway and the Brooklyn Battery Tunnel at the edge of Red Hook was hailed as a breakthrough for most of Brooklyn because it connected the heart of the borough with Manhattan. But the construction also nearly walled off Red Hook from more prosperous adjacent neighborhoods and further complicated movement in and out of the community.

The quality of life nosedived. In 1990, a cover story in *LIFE* magazine notoriously tagged Red Hook as one of the country's ten worst neighborhoods and "the crack capital of America."

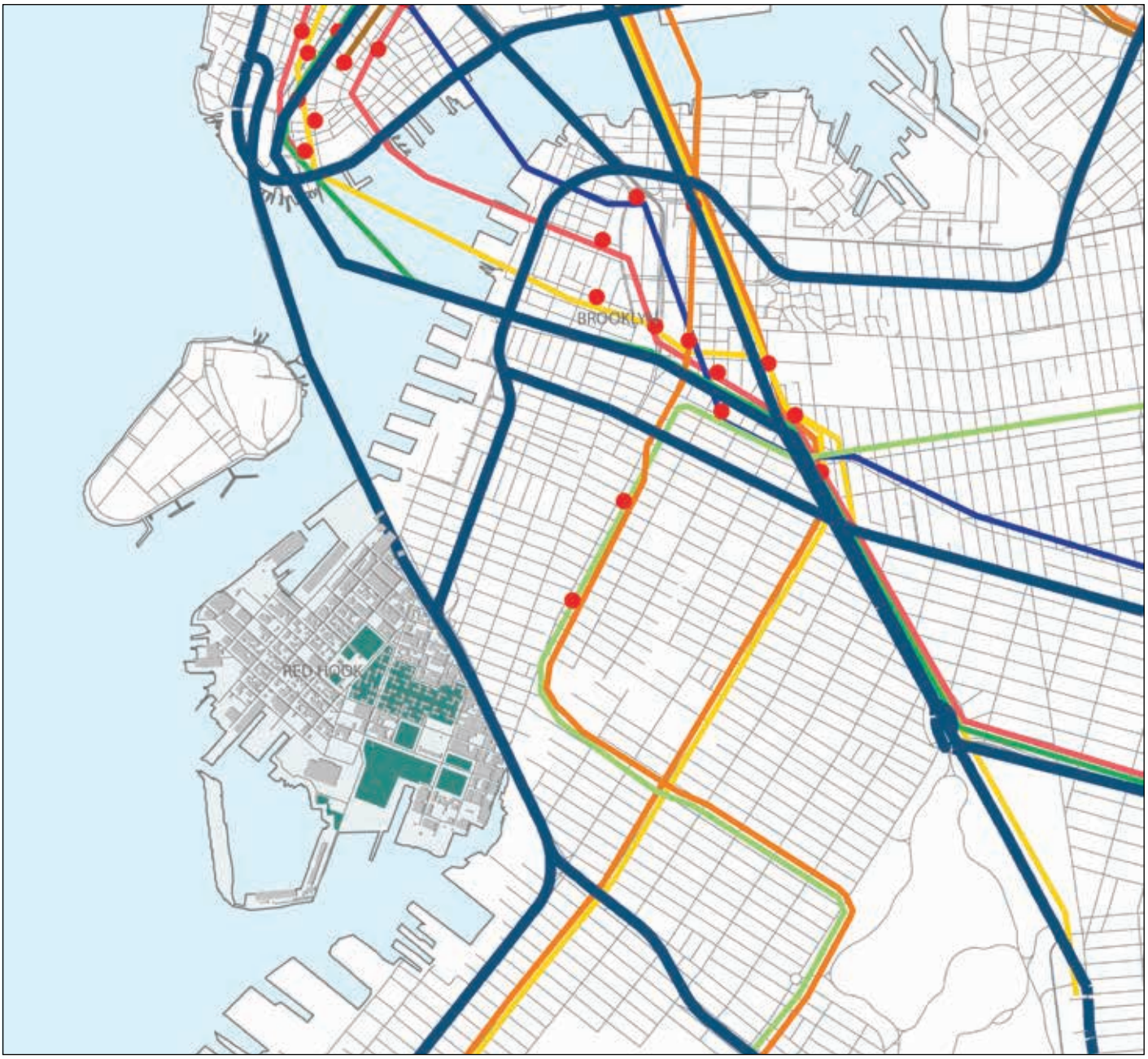
The current housing situation in Red Hook typifies all too well both its socioeconomic problems and the fragmentation that locks it into an undesirable status quo. For more than 8,000 residents, home is in the public housing projects situated at the heart of the neighborhood—the New York City Housing Authority's (NYCHA) Red Hook Houses. Unemployment in the Red Hook Houses is high, and those within the projects are isolated, both physically and socially, from casual contact with the rest of the neighborhood.

Nevertheless, important investments over the past two decades in the waterfront, commercial district, community gardens and schools have rekindled hopes for Red Hook. Although zoning regulations restrict the options for creating new residences and hotels, older industrial buildings have been repurposed as office workspaces and workshops. The neighborhood became home to the largest of the city's nine Fairway grocery markets in 2006. A bustling 346,000-square-foot IKEA store opened at the waterfront in 2008 and brought with it a ferry service to southern Manhattan. Late in 2014, the Los Angeles-based real estate development firm Estate Four announced its plans to create a Red Hook Innovation District: a $400 million project that would

BROOKLYN QUEENS EXPRESSWAY IN RED HOOK, BROOKLYN

The transportation infrastucture bypasses Red Hook.

TRAFFIC AND PUBLIC TRANSPORTATION ACCESS IN RED HOOK, BROOKLYN
Source: Terreform ONE



56% ride

PUBLIC TRANSPORTATION: 56% of the population of New York City uses the public transportation system. Public transportation saves 37 million metric tons of carbon dioxide annually–equivalent to the emissions resulting from the electricity generated for the use of 4.9 million households or every household in Washington, D.C., New York City, Atlanta, Denver, and Los Angeles combined.

Red Hook in Maps: NYC Hurricane Evacuation Zones

renovate 12 acres (1.2 million square feet) in the heart of Red Hook into multi-use structures that would preserve the neighborhood's traditional red-brick industrial look while adding public plazas and park space.

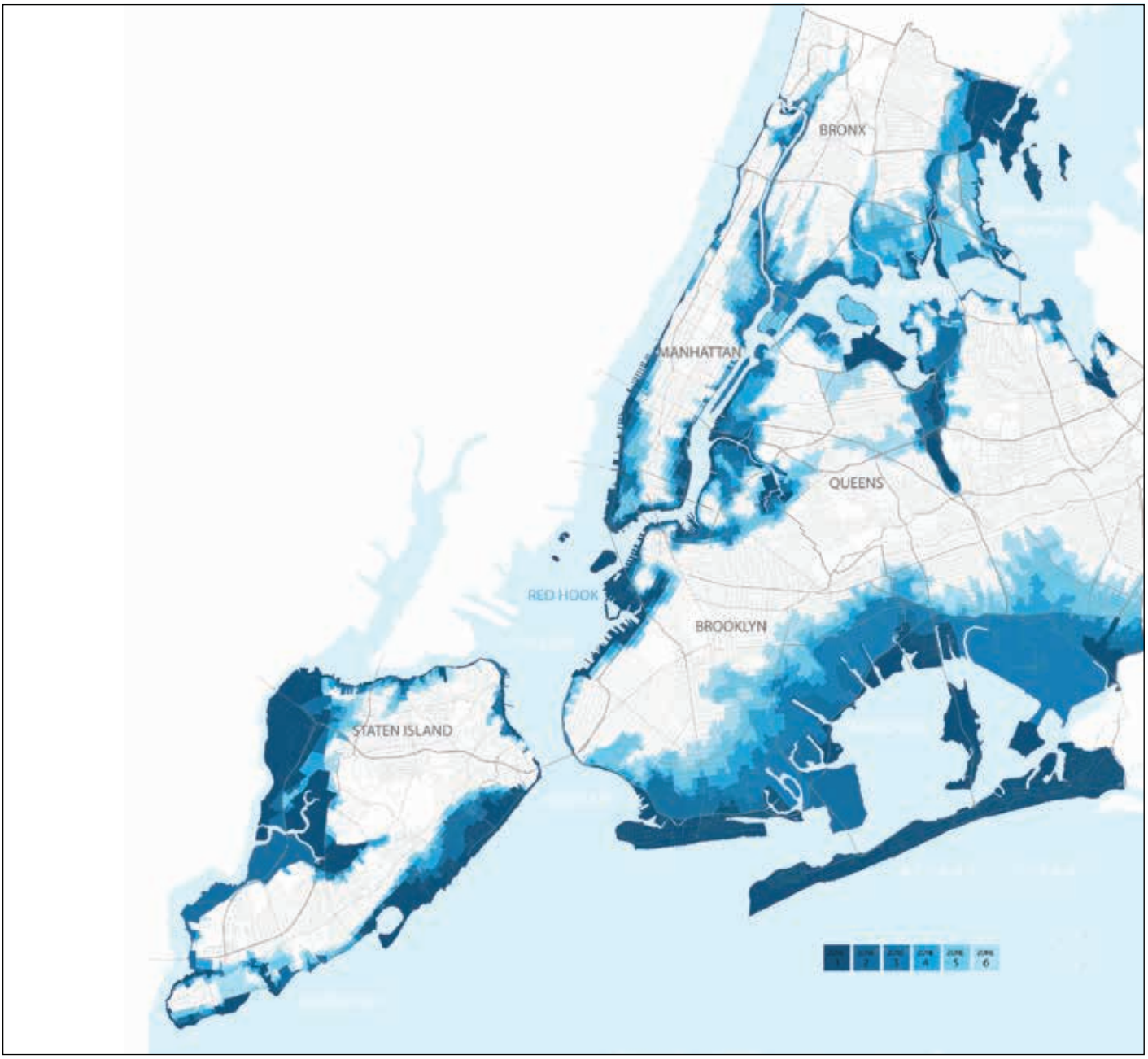
As a mixture of residential, commercial, and industrial properties, Red Hook seems rich in potential as a model for quality urban living. Yet the devastating flooding caused by Hurricane Sandy in 2012 was a powerful reminder that progress here can still be undone too easily: storm surges like the one from Sandy may have been once-in-a-century events in the past but climate change almost guarantees the next one will come far sooner.

The challenges for Red Hook are clear. It will and must change, but how can it build for a successful future without sacrificing its soul? And how can it be more resilient in the face of environmental reversals?

How can Red Hook be more resilient in the face of environmental reversals?

RED HOOK RESIDENTS IN THEIR NEIGHBORHOOD AFTER HURRICANE SANDY

NEW YORK CITY HURRICANE EVACUATION ZONES: RED HOOK, BROOKLYN
Source: NYC GOV/Terreform ONE

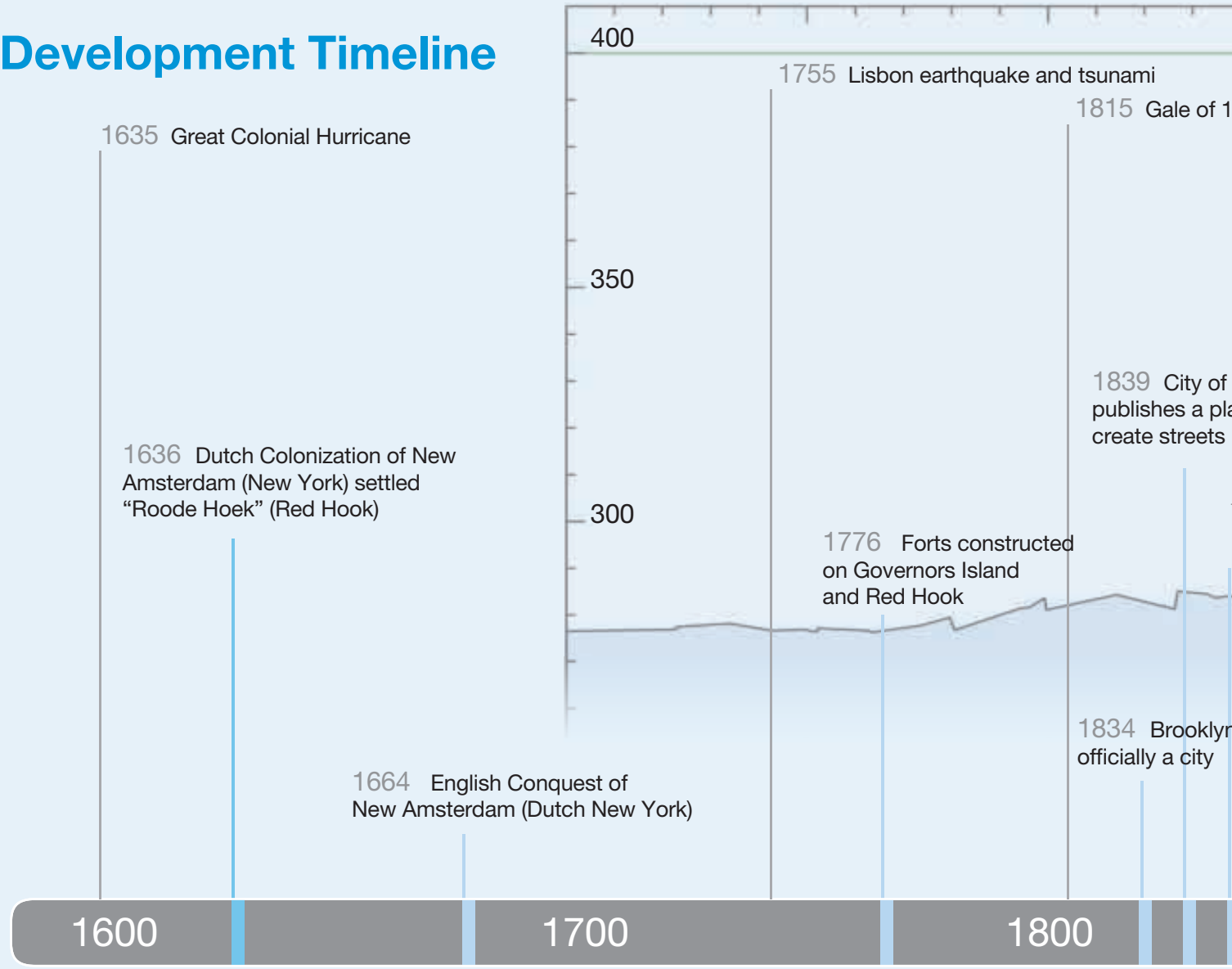


6.5 feet

SEA LEVEL RISE: Most predictions say the warming of the planet will continue and will probably accelerate. Oceans will likely continue to rise as well, but predicting the amount is an inexact science. A recent study says we can expect the oceans to rise between 2.5 and 6.5 feet (0.8 and 2 meters) by 2100, enough to swamp many of the cities along the U.S. east coast. More dire estimates, including a complete meltdown of the Greenland ice sheet, push sea level rise to 23 feet (7 meters), enough to submerge London.

Red Hook Across the Centuries

Development Timeline



BROOKLYN

>late 1600s
By 1684 all Native Americans were "sold" to European settlers

1776 - 1783
British occupation of NY metro area

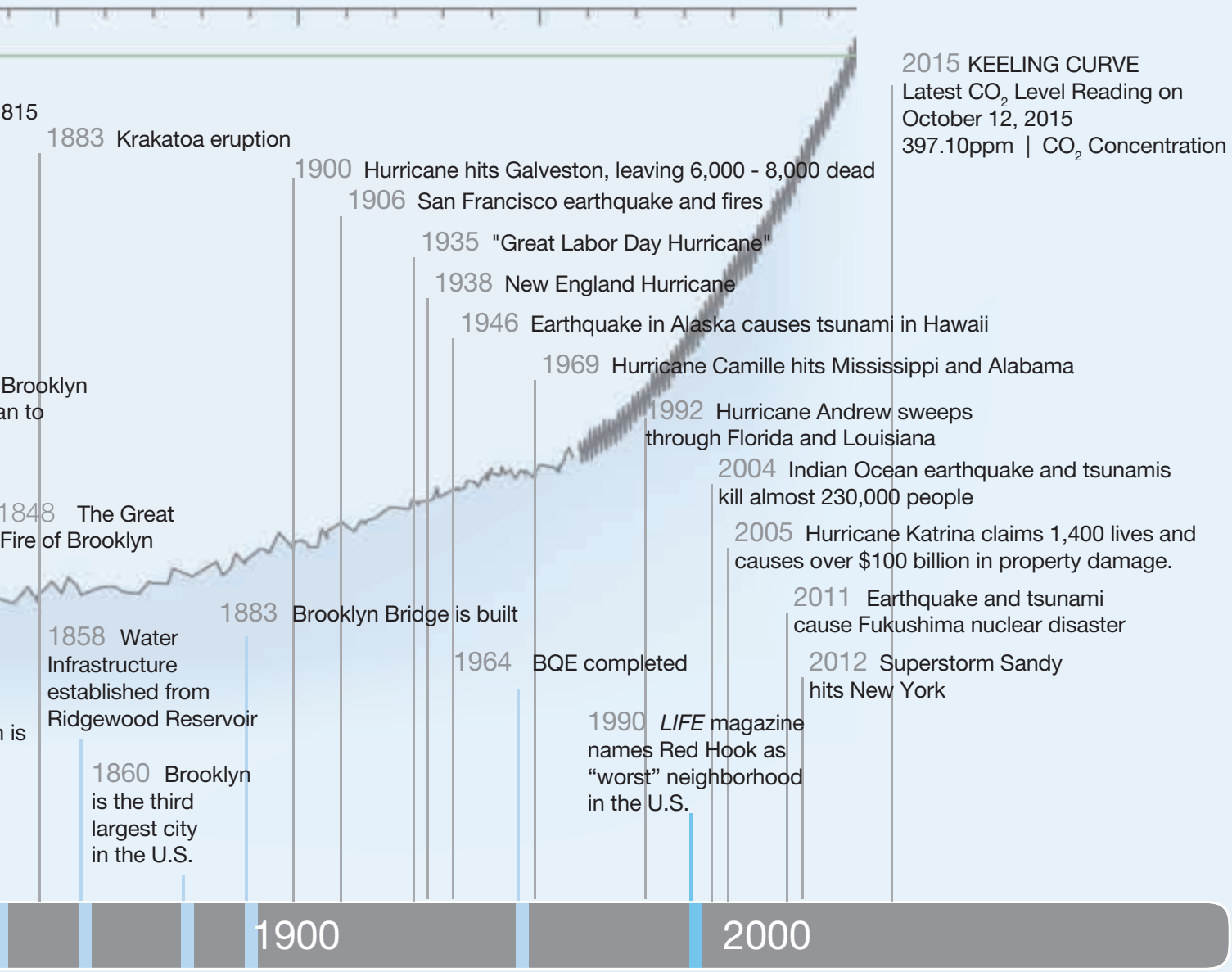
RED HOOK

1636 - 1776
Red Hook is settled by Dutch immigrants, who created tidal mill ponds in low lying areas

1840s
Entrepreneur ports along th

BASF

1865
The found of BASF



1900 - 1950s
Mass urbanization of the East River Shore

1936 - 1964
Brooklyn Queens Expressway is planned and completed at a cost of $137 million

1934 - 1968
Robert Moses completes 13 expressways in New York City and Brooklyn

1920s
Red Hook is the busiest freight port in the world

1930s During the Great Depression, shantytowns, known as "Hoovervilles," are set up in the Red Hook neighborhood due to the large number of unemployed

1873 BASF opens first sales office in North America

1913 First use of Haber-Bosch process on industrial scale to produce synthetic ammonia

1929 - First antifreeze for cars
1931 - Carl Bosch wins Nobel Prize
1934 - First magnetic audio tape
1936 - First buna tires made from synthetic rubber
1949 - First crop protection agent
1951 - Dawn of plastics era w/ Styropor
1966 - BASF audio tapes

2012 BASF opens new LEED double platinum HQ in Florham Park, N.J.

SOLUTIONS

Ideas for Reshaping Red Hook

URBANEERING RESILIENT WATERFRONT: STORM WATER RETENTION IN THE BROOKLYN WATERFRONT.
Source: Terreform ONE

Ideas for Reshaping Red Hook

These ideas represent an approach to solving problems of resiliency and sustainability that coastal cities around the world can adapt to their own needs.

All the ideas for reshaping Red Hook that came out of Creator Space™ New York City and specifically the Summit event were given additional rounds of consideration during workshops held later in Dearborn, Mich., and Florham Park, N.J., that were attended by representatives of BASF and its partners. To assess the potential of the ideas for realistically improving the quality of urban life, the participants evaluated and discussed how well each idea seemed likely to encourage better developments in Habitat, Citizenship, and Resilience.

The best of those ideas were refined further and developed into the list on the next ten pages. These ideas are not meant to work in isolation; rather, they are deeply interwoven and will be most successful when they are allowed to work in concert. Some components of these ideas are optimistic and would pay off only in the long run, but by design they can deliver tangible returns soon on modest investments, too. Their success will depend on a robust spirit of citizenship in Red Hook that can lead the way, but they also have the power to inspire and sustain that love of community.

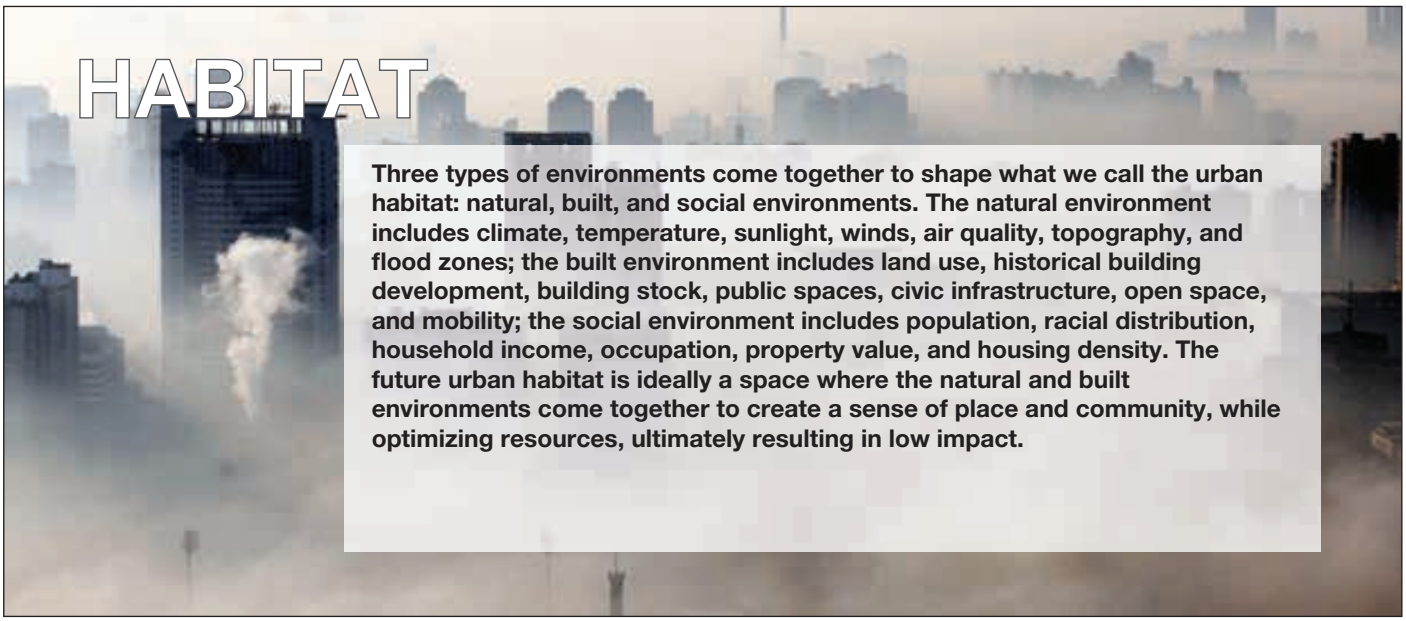
Moreover, the ultimate value of these solutions is not restricted to Red Hook. These ideas represent an approach to solving problems of resiliency and sustainability that coastal cities around the world can adapt to their own needs.

HABITAT

CITIZENSHIP

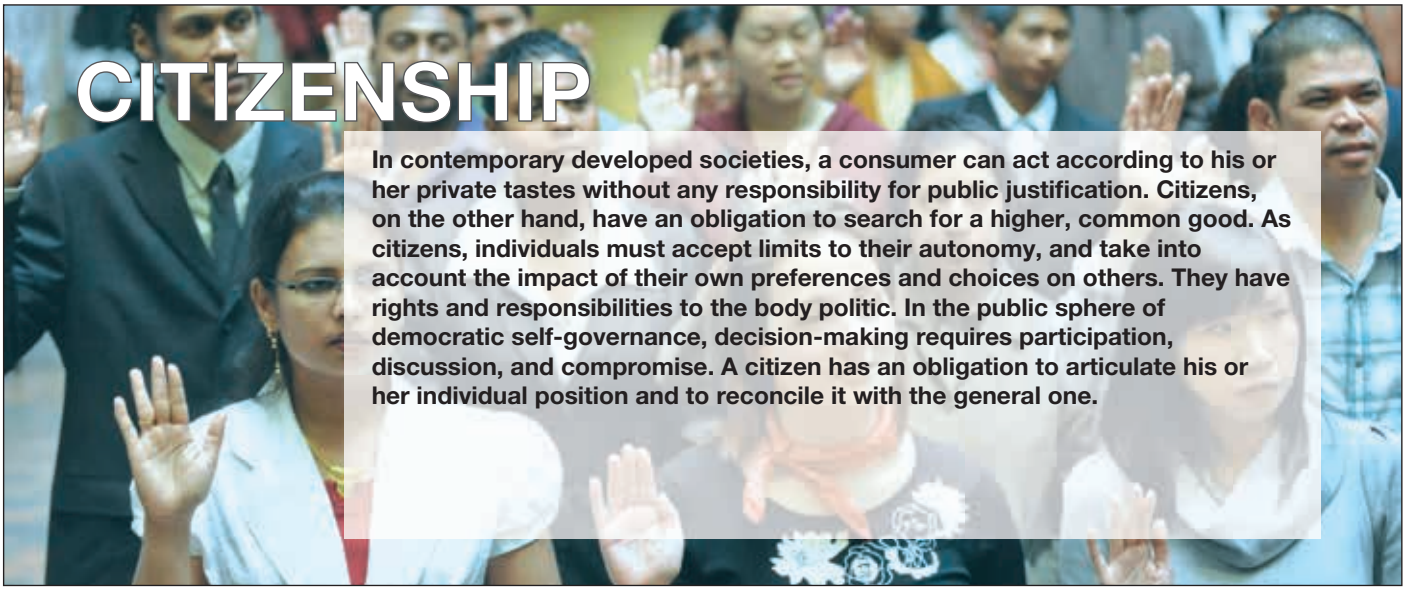
RESILIENCE

SOLUTIONS



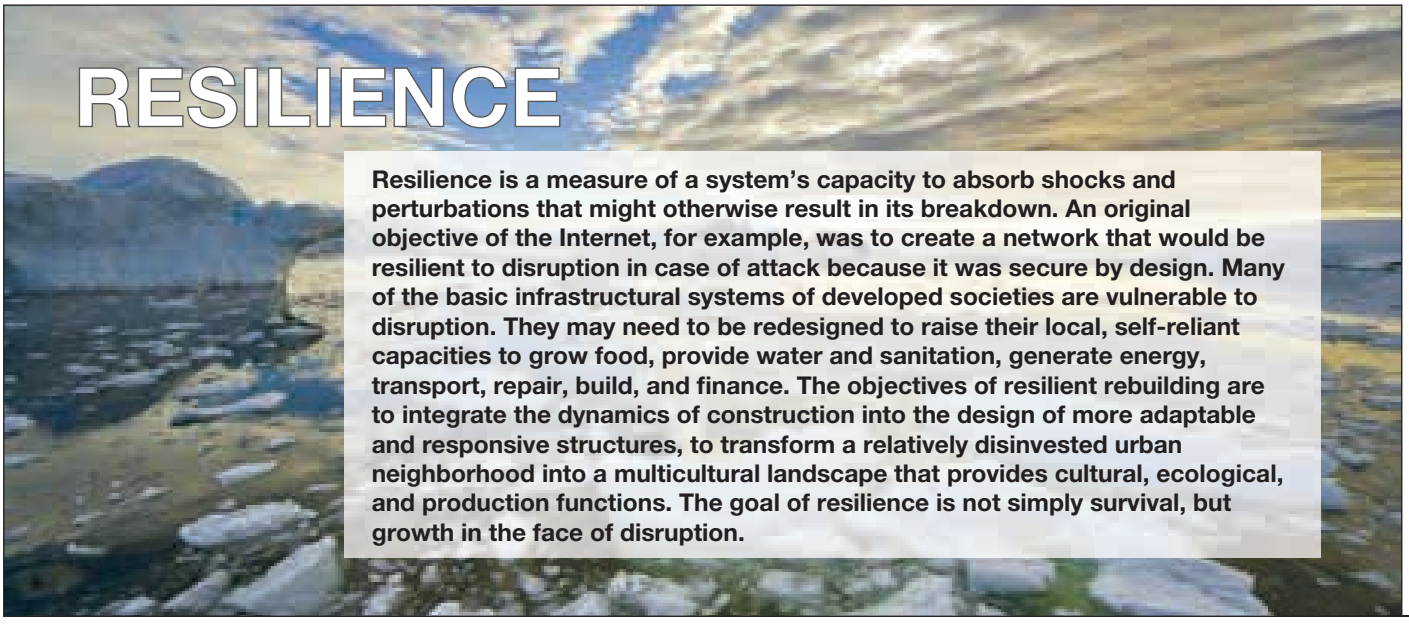
HABITAT

Three types of environments come together to shape what we call the urban habitat: natural, built, and social environments. The natural environment includes climate, temperature, sunlight, winds, air quality, topography, and flood zones; the built environment includes land use, historical building development, building stock, public spaces, civic infrastructure, open space, and mobility; the social environment includes population, racial distribution, household income, occupation, property value, and housing density. The future urban habitat is ideally a space where the natural and built environments come together to create a sense of place and community, while optimizing resources, ultimately resulting in low impact.



CITIZENSHIP

In contemporary developed societies, a consumer can act according to his or her private tastes without any responsibility for public justification. Citizens, on the other hand, have an obligation to search for a higher, common good. As citizens, individuals must accept limits to their autonomy, and take into account the impact of their own preferences and choices on others. They have rights and responsibilities to the body politic. In the public sphere of democratic self-governance, decision-making requires participation, discussion, and compromise. A citizen has an obligation to articulate his or her individual position and to reconcile it with the general one.



RESILIENCE

Resilience is a measure of a system's capacity to absorb shocks and perturbations that might otherwise result in its breakdown. An original objective of the Internet, for example, was to create a network that would be resilient to disruption in case of attack because it was secure by design. Many of the basic infrastructural systems of developed societies are vulnerable to disruption. They may need to be redesigned to raise their local, self-reliant capacities to grow food, provide water and sanitation, generate energy, transport, repair, build, and finance. The objectives of resilient rebuilding are to integrate the dynamics of construction into the design of more adaptable and responsive structures, to transform a relatively disinvested urban neighborhood into a multicultural landscape that provides cultural, ecological, and production functions. The goal of resilience is not simply survival, but growth in the face of disruption.

IDEA 1

Establish a Network of Green Corridors

Green corridors are an opportunity to transform and reinvigorate neighborhoods like Red Hook by enhancing circulation, absorbing or channeling runoff from rainstorms, and enabling the growth of vegetation.

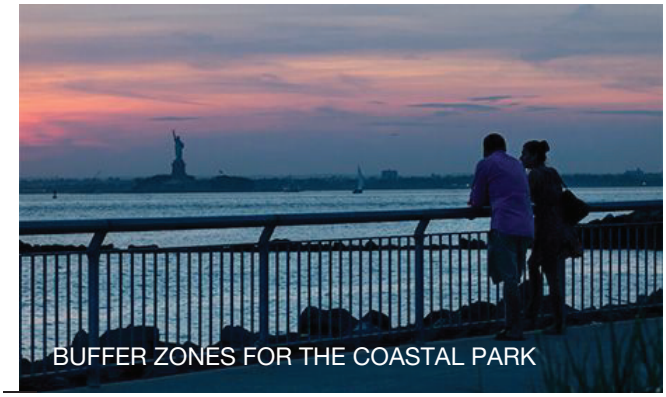
Green corridors include (in order of increasing scale):

> Bioswales—networks of deep tree pits that can catch rainwater and absorb rain runoff.
> Bike paths, pedestrian routes, and alternative transportation systems that accommodate bike-sharing programs and community gardens.
> "Daylighting" creek beds—connecting underground drainage to surface flows by exposing existing underground creeks in Red Hook and connecting them to light, and air, so vegetation can grow again.
> Actual canals—the ultimate tool of drainage in Venice, Amsterdam, Suzhou and other cities.

A network of Green Corridors in Red Hook could connect the subway to the waterfront, integrate the Red Hook Houses into neighborhood circulation routes, and link existing green spaces in the community. Under this plan, which would add a new dimension to the neighborhood running perpendicular to Van Brunt Street, cross-streets would be re-landscaped to include wider sidewalks, trees, and other vegetation, thus establishing better spaces for pedestrians. For the sake of bicyclists and pedestrians, it would be relatively easy to make safer bike lanes under the Brooklyn-Queens Expressway that connected to the nearest subway in Carroll Gardens. This informal transportation system would offer de facto connections between the subway, the center of Red Hook, and the ferry to Manhattan.

How does that make Red Hook a better place? The Green Corridors would contribute to the three main goals of enhancing habitat, citizenship, and resilience. They would:

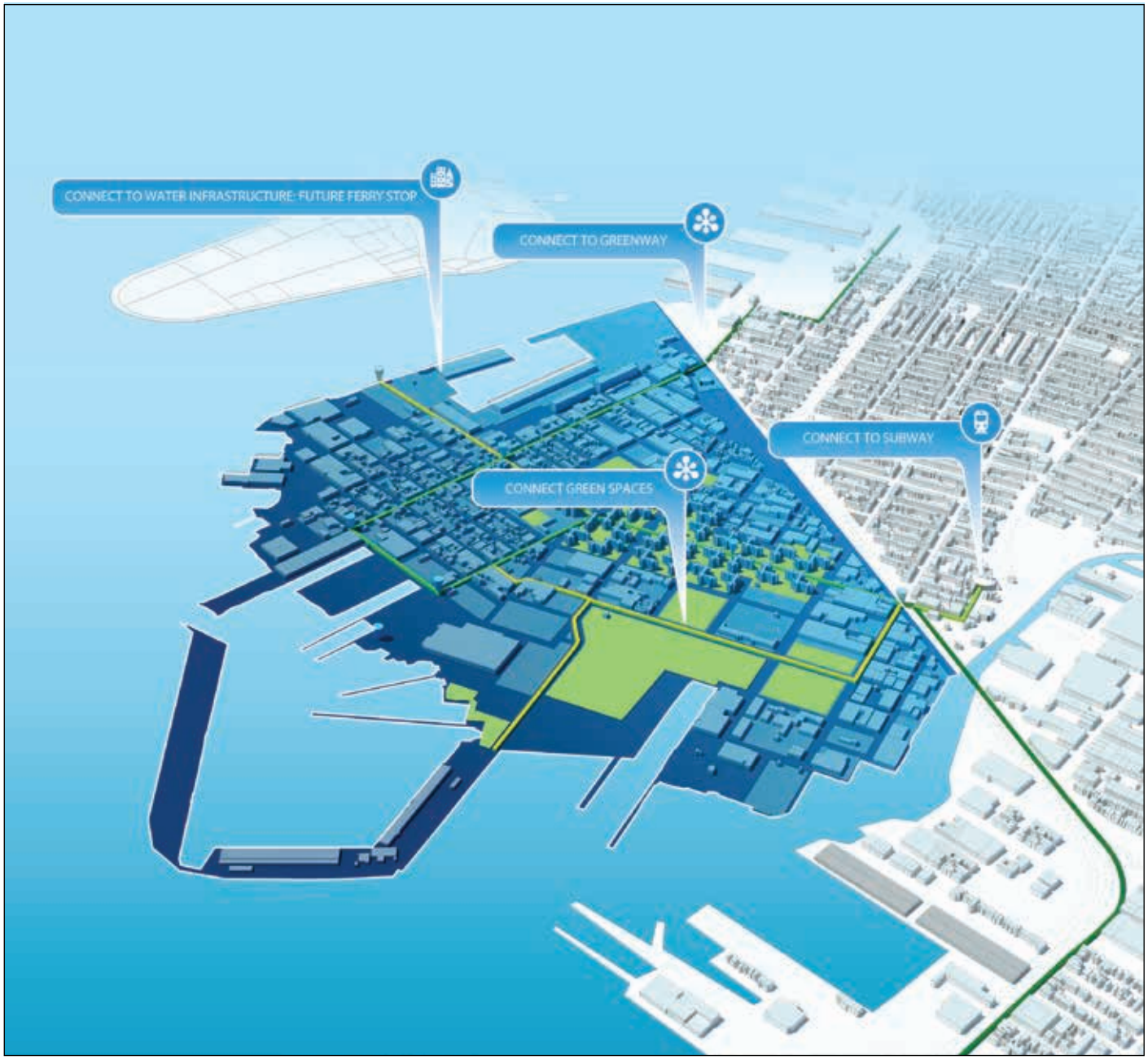
> *Improve social cohesion* by putting the Red Hook Houses at the center of the neighborhood.
> *Improve transportation* within Red Hook by creating new connections to existing transport systems.
> *Reduce the isolation* of Red Hook.
> *Increase resilience* by flood prevention.

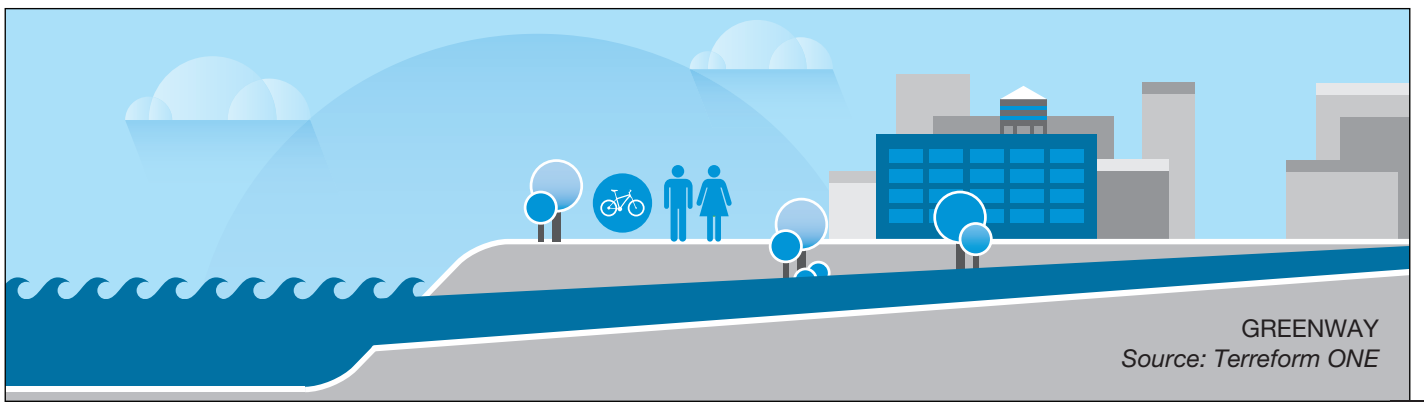


BUFFER ZONES FOR THE COASTAL PARK

SOLUTIONS

HABITAT | GREENWAY
Source: Terreform ONE





GREENWAY
Source: Terreform ONE

IDEA 2

Create a Coastal Park

Red Hook needs a first line of protection from storm surges and rising sea levels.

Sea walls have traditionally provided this kind of defense, but they cut off the land from views and access to the water. A concrete wall around Red Hook would clearly be unacceptable to the Red Hook community. Can we achieve the same goal in a better way?

The goal of the Red Hook Coastal Park would be to provide a softer edge that offers views and recreation as well as protection. It could consist of a hybrid system of permanent berms and temporary gates along the existing edge of the neighborhood, with bikeways integrated into the design.

A second line of protection, further away from the existing shoreline, could create a buffer zone with breakwaters, dikes, and ponds to filter runoff or absorb water from storm surges. Taller barriers built farther from the shore would minimize obstruction of views to the water while maximizing the protection from storms.

Careful exploration of this idea with the Red Hook community is of course an essential first step: we would need to know what preferences and concerns they had about the variety of possible forms such projects might take. At the same time, conversations would need to be held with flood insurance companies and the civil government, whose support would also be crucial. The New York City Economic Development Corporation could also help to gauge the beneficial impact of various plans on Red Hook's economy.

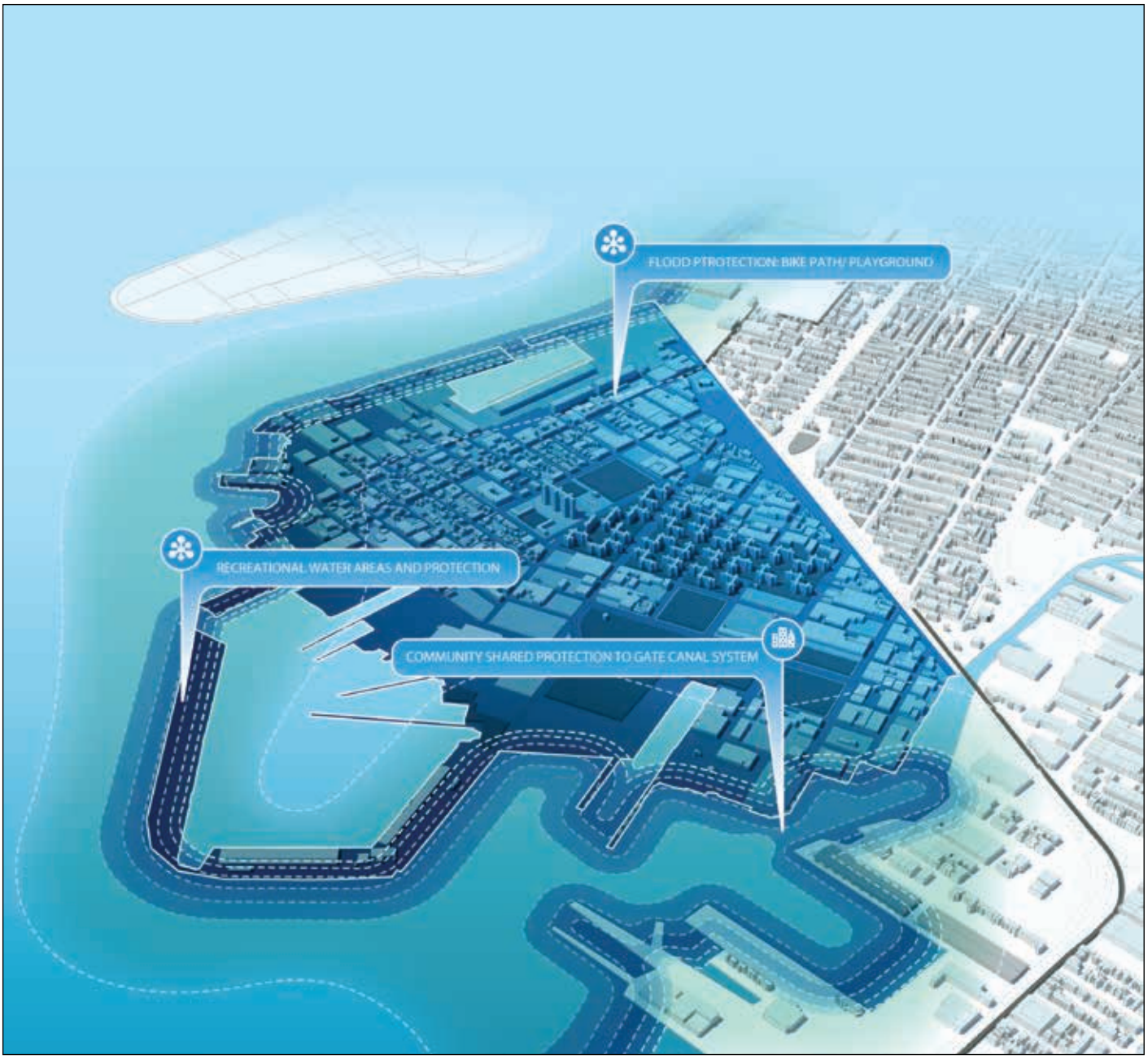
The construction of a coastal park may sound like an expensive undertaking until insurance savings are calculated. For example, creating several miles of bulkhead, landscaping it, and filling the space could easily cost $50 million and take 10 years. Yet recall that insurance companies paid out $50 million in damages to Red Hook from Hurricane Sandy—a single storm. Moreover, the transformation of Red Hook into a non-flood plain by this perimeter development could qualify for federal Housing and Urban Development grants and other sources of funding that could offset the costs.

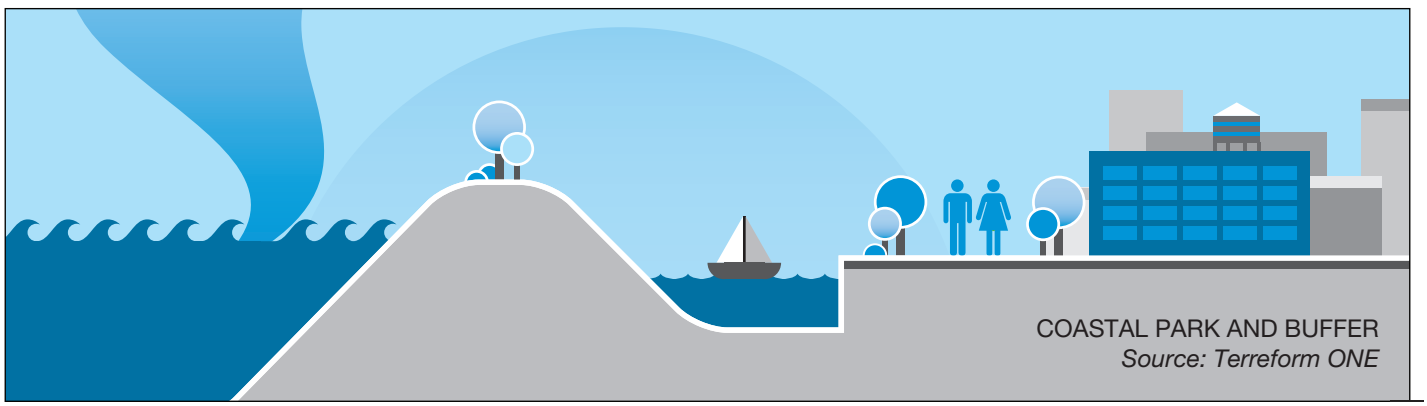
Completion of the new perimeter barrier and coastal park would be a long-term goal, but in the near term, we can develop temporary fabric structures that are deployable in an emergency and capable of protecting for a few hours. Use of these barriers could be used to collect data on flooding patterns and to increase trust in the plan for a permanent barrier. Most important, it could improve Red Hook's security and resilience against floods sooner.

RAPID DEPLOYABLE FLOOD BARRIERS

SOLUTIONS

RESILIENCE | COASTAL PARK
Source: Terreform ONE





COASTAL PARK AND BUFFER
Source: Terreform ONE

IDEA 3

Establish a Center for Job Training and Human Services

One of the main issues holding back the unemployed members of the community, particularly among the 8,000 people living in the public housing of the Red Hook Houses, is a lack of access to information, education, and services that would improve their prospects. The creation of a properly equipped hub or community center for workforce development, entrepreneurship, and civic involvement could address this lack.

Residents of Red Hook could turn to this "Hub for Human Potential" for leads on job opportunities and training in employable skills, particularly ones relevant to sustainable construction, renewable energy, urban farming, local manufacturing, and related occupations. Such skills are not easily outsourced, which could make them the foundation for a more stable local economy. The demand for green job training in Red Hook is not merely theoretical: it has been explicitly requested by the community on many occasions and is advocated by a member of the current New York city council. The training could also be dovetailed with plans to rehabilitate the Red Hook Houses project that have already been proposed by NYCHA.

The proposed center could serve as a vehicle for presenting a Red Hook Resiliency Toolkit: a consolidated, streamlined source of intelligence about resilient, sustainable habitat development. The resiliency toolkit would summarize updated community building codes, best construction practices, paths to funding, and other related information.

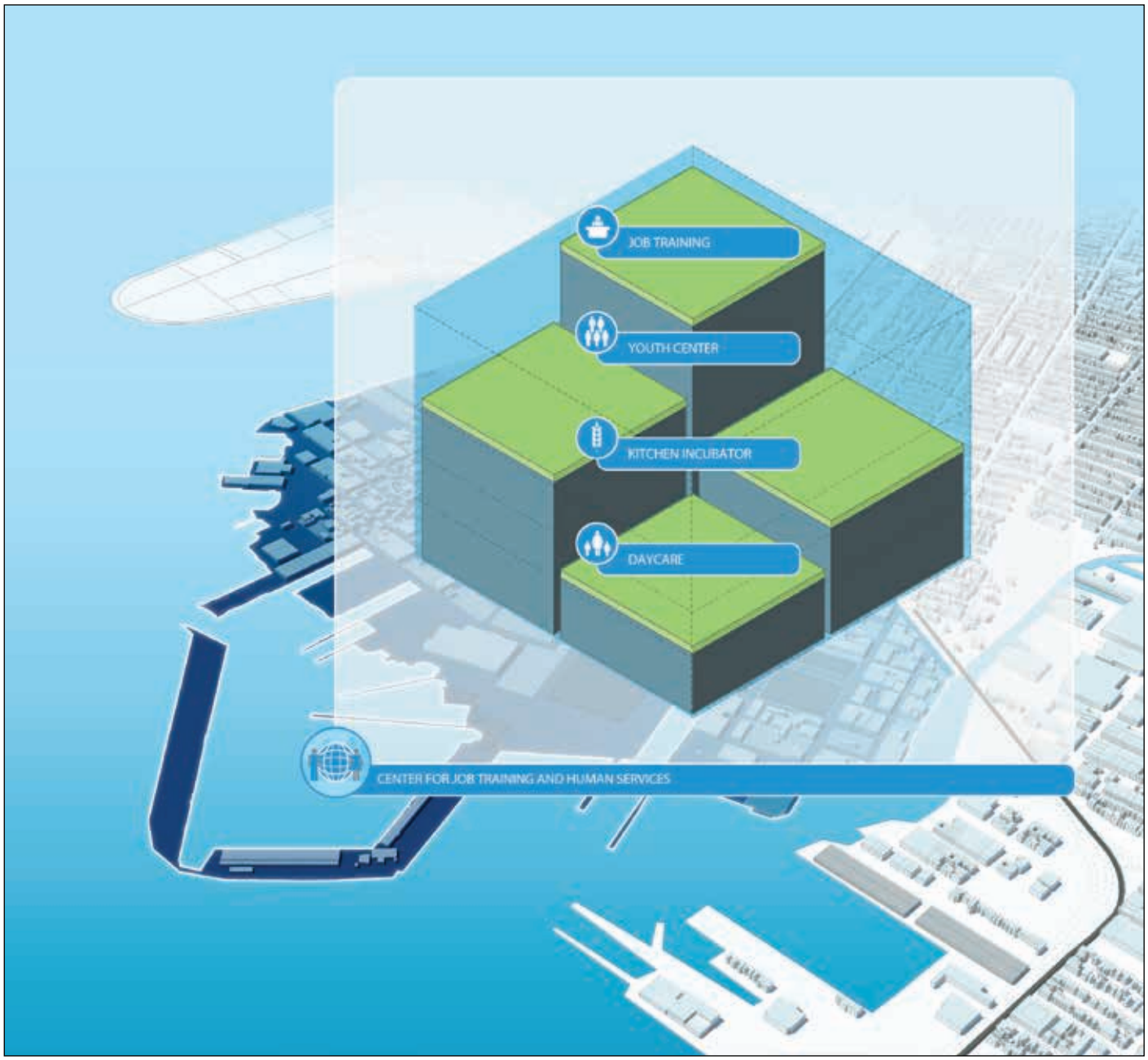
The center could become an incubator for local businesses, offering workshops and other events aimed at aspiring entrepreneurs. Graduates of these training programs could then start businesses or gain employment by putting their new skills to work where they learned them. Indeed, the infill construction of a site that might house the jobs training center itself could serve as a demonstration project for training workers, showing off the relevant technologies, and drawing contributions from local artists and craftsmen. If the NYCHA and potential partner organizations hired these graduates to renovate the Red Hook Houses themselves and to adaptively re-use other city-owned properties in the community, they would gain a platform for job creation and education that creates instant value in the form of much needed improvements to the properties. The pride and sense of community emerging from these job programs would in turn prevent Red Hook's residents from becoming disenfranchised from the redevelopment of their own neighborhood.

Beyond its role in employment, this center could serve as a hub for access to daycare, medical care, and other information and services that would promote better living and greater community activism. In this way, the center would encourage interaction among Red Hook's varied constituencies and foster more civic pride.

JOB TRAINING IN THE SOLAR INDUSTRY
Source: Office of Energy Efficiency & Renewable Energy

SOLUTIONS

CITIZENSHIP | CENTER FOR JOB TRAINING AND HUMAN SERVICES
Source: Terreform ONE



IDEA 4

Rethink Red Hook's Public Housing

The public housing in the Red Hook Houses puts a roof over the heads of its 8,000 residents but does little to advance their prospects or encourage a spirit of true community. Economically, socially, and physically, the public housing isolates the residents from the rest of Red Hook and locks them into an unsatisfactory status quo. Rethinking and renovating the Red Hook Houses could change that, however, to the benefit of the residents and the community as a whole.

For example, renovation could transform the existing housing complex into one that embodies better values for the future, such as greater energy efficiency and more resilience against floods. Tenants in units below the flood line could be moved to new, higher units. Opportunities could be explored for more efficient use of energy and the recycling of heat among the residential units. Cogeneration and rooftop solar energy panels could produce electricity for the sake of residents and be distributed through a micro-grid, which could mitigate wide power outages and sustainably reduce the residents' utility bills. At the previously discussed Center for Job Training, for example, residents could be trained in the installation and upkeep of the solar panels as well, which would help to lower the overhead costs, give them employable skills, and instill a greater sense of communal participation and stewardship in the complex.

Other sustainability concepts that could be incorporated into the Red Hook Houses and supported by educational training in the community as needed might include rainwater harvesting to conserve fresh water, Net Zero and Passivhaus energy-efficient construction standards, and ride-sharing programs for electric vehicles recharged by the micro-grid.

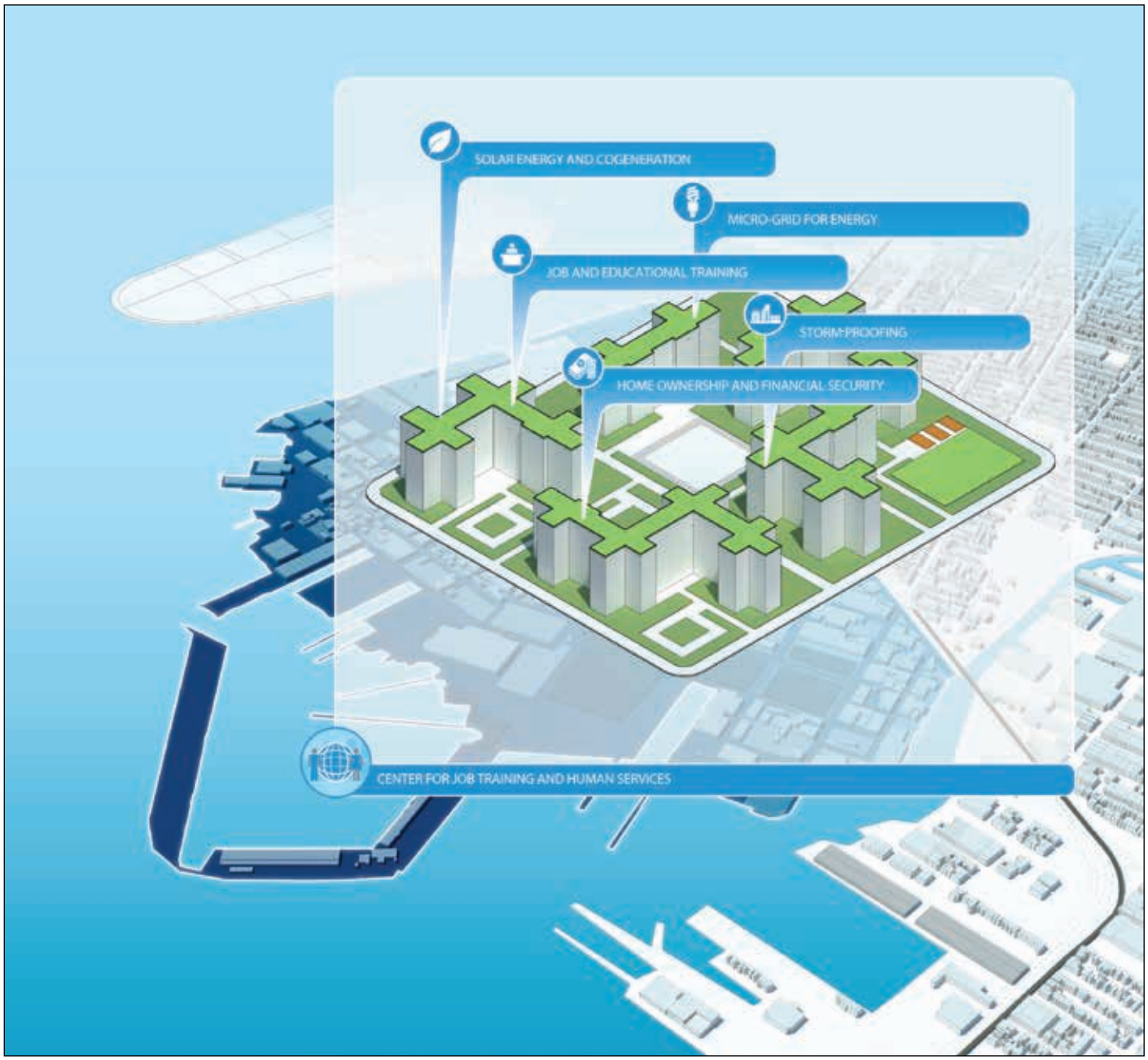
An ambitious but highly speculative extension of this idea would be a program that enabled some residents in the Red Hook Houses to transition to homeownership. Under an action plan that would need to be developed jointly by community members and the NYCHA, some of the units now in public housing might become eligible for purchase as units within a facility designated as a co-op.

Such an ownership program would offer participants a type of equity and financial security that has been denied public-housing residents in the past. With more motivation to repair and maintain their homes and participate in management of the cooperative, residents would raise the quality of their own lives and those of their neighbors. A new spirit of pride could take root in the Houses. It would also encourage a greater sense of membership in the Red Hook community as a whole.

ADAPTED GREEN ROOF
Source: Alex Washburn

SOLUTIONS

RESILIENCE | PUBLIC HOUSING
Source: Terreform ONE



IDEA 5

Inspire With a Model Block

The city block is the foundation of any neighborhood. Can we develop plans and prototype a model block to take on the challenge of Habitat, Citizenship, and Resilience in Red Hook? How can new construction in Red Hook provide flood-resistant buildings for living and working, while contributing to street life at the same time?

The power of detailed, specific examples to inspire and educate should never be underestimated. The design and implementation of a model block could encapsulate shared goals for living in a sustainable, equitable, and resilient community and serve as a template for development in Red Hook and beyond. It could incorporate new building technologies, accommodate existing building stock, and demonstrate to residents and commercial interests how smart design can create urban spaces that preserve the livable, attractive, affordable character of a neighborhood while also making it more sustainable and resilient in the face of threats like floods. It would provide an appealing and practical framework for living and working in the area, and a tangible glimpse of how Red Hook—and coastal city communities like it around the globe—can grow and change with greater resilience and energy efficiency.

Starting from the bottom, the ground floor of the model block would need to be flood-proof, yet still open to street life. To accomplish that goal, the model block will need to be mixed use and provide microretail on the ground floor to activate the street level.

Waste heat from small manufacturing facilities could be captured to warm neighboring residences, while roofline photovoltaic arrays generate shared power for a local micro-grid. Repurposed rooftops could be made green with urban farms and gardens, promoting a measure of food self-sufficiency but also, more importantly, greater social involvement and natural beauty. Sidewalks could be reshaped into more inviting spaces with wider setbacks that offered room for walking, green space, and drainage.

The initial research and design stage would be charged with identifying promising block-scale sites for such development. Participants in Creator Space™ New York City focused their attention on the potential of a test block that stretches between Van Brunt, Imlay, Vernon, and Commerce Streets. It is noteworthy that the Red Hook city block bordered by Wolcott, Ferris, Conover, and Dyckman Streets was recently put up for sale, and it could become a site for a realized model block project if an appropriate consortium of civic-minded organizations chose to purchase and develop it. Yet even the planning for such a site would be supremely helpful as a template that local developers could use in their own projects. The model block template would demonstrate that sustainable development could engage realistically with Red Hook's existing buildings and zoning issues and any potential sensitivities associated with them.

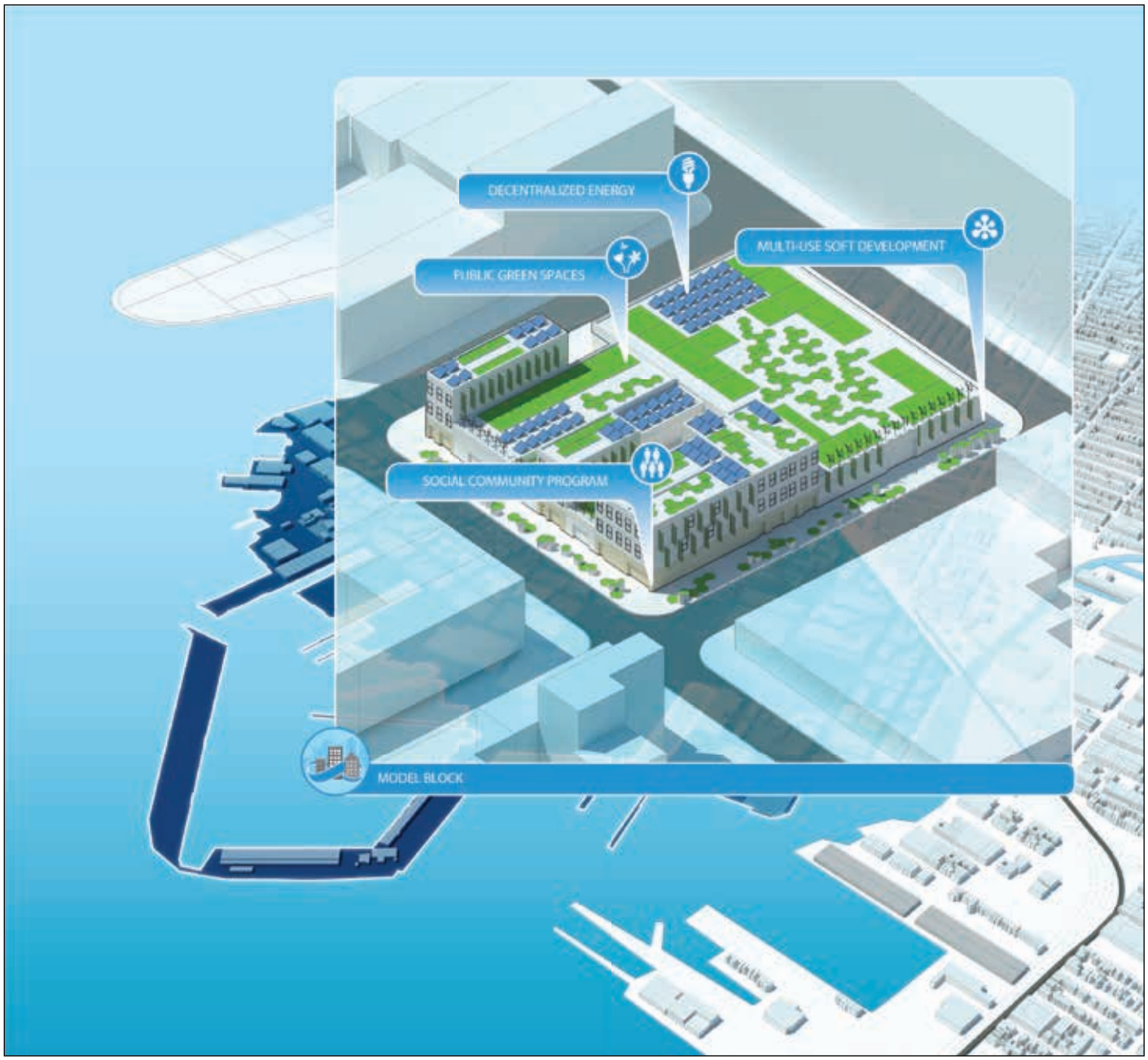
Expert input would be sought on zoning, building, and technology considerations, but equally important would be input from stakeholders in the local community, landowners and developers, and government officials to ensure that the planned block would embody an ideal that Red Hook truly wanted. Nonprofit and professional organizations could also be invited into the project as appropriate. Concepts for the intended energy-efficient, multi-use structures could be drawn from design competitions.

Once plans for the model block were in hand, further publicity and outreach to landowners and developers could emphasize that these plans and supporting documentation would be made available for them to adapt to their own projects. The implementation of the plans as a realized model block of sustainable development could be pursued if stakeholders wished to do so. Indeed, it would be an ideal opportunity to employ many of the graduates of the job training programs conducted at the Center for Job Training proposed earlier. But implementation would not be strictly necessary: if the template for the model block catalyzed sustainable development throughout Red Hook, it could be counted as a success.

FUTURE GREEN STREET
Source: Terreform ONE

SOLUTIONS

HABITAT | MODEL BLOCK
Source: Terreform ONE



Implementation and Next Steps

Change is coming to Red Hook no matter what.

Change is coming to Red Hook no matter what. The task for everyone who cares about this community is to ensure that the change will be desirable: that it will preserve the best of the past while encouraging more security and quality of life. Reshaping Red Hook may sound ambitious but it can be done one step at a time by setting up a process that can keep the project moving forward with whatever adjustments are needed.

Such a process will involve many partners, and any discussion of partnership must begin with the Red Hook community itself because their feedback is indispensable. Creator Space™ New York City was one foray into hearing their passionate concerns and tapping into their insights, but it should be only the first of many such opportunities.

Specific projects will always require a solid tripod of support. The generosity of appropriate philanthropic and foundational partners will of course be crucial. Partners with strong scientific and design qualifications—ideally, ones drawn from the independent academic world—must also be recruited to plan the work and make sure the investments are spent wisely. But projects will also need advocacy partners from within the community. Through the media, community gatherings, and other venues, these credible voices can provide ongoing progress reports to the public and help to maintain coalitions of support.

A number of groups within the New York City area are already active advocates for projects in Red Hook that are fully in the spirit of these proposals. For example:

> The Brooklyn Greenway Initiative (BGI) has already proposed constructing green corridors, better pedestrian spaces, and the rerouting of heavy traffic away from Van Brunt Street.

> The Red Hook Innovation District project is creating 12 acres of new and renovated construction that will create more public spaces and multi-use structures.

> The design and innovation firm Kohn Pedersen Fox Associates will be handling the renovation of the Red Hook Houses, having been awarded that contract by the NYCHA.

> Portside is a Red Hook community group whose work on Sandy Recovery won a White House award. Currently operating from a ship in the Atlantic Basin, they are developing resiliency, education and economic development programs from the maritime perspective, bringing together the communities ashore with those afloat. Their next step is to curate and house a resiliency and maritime training center in an adjacent warehouse.

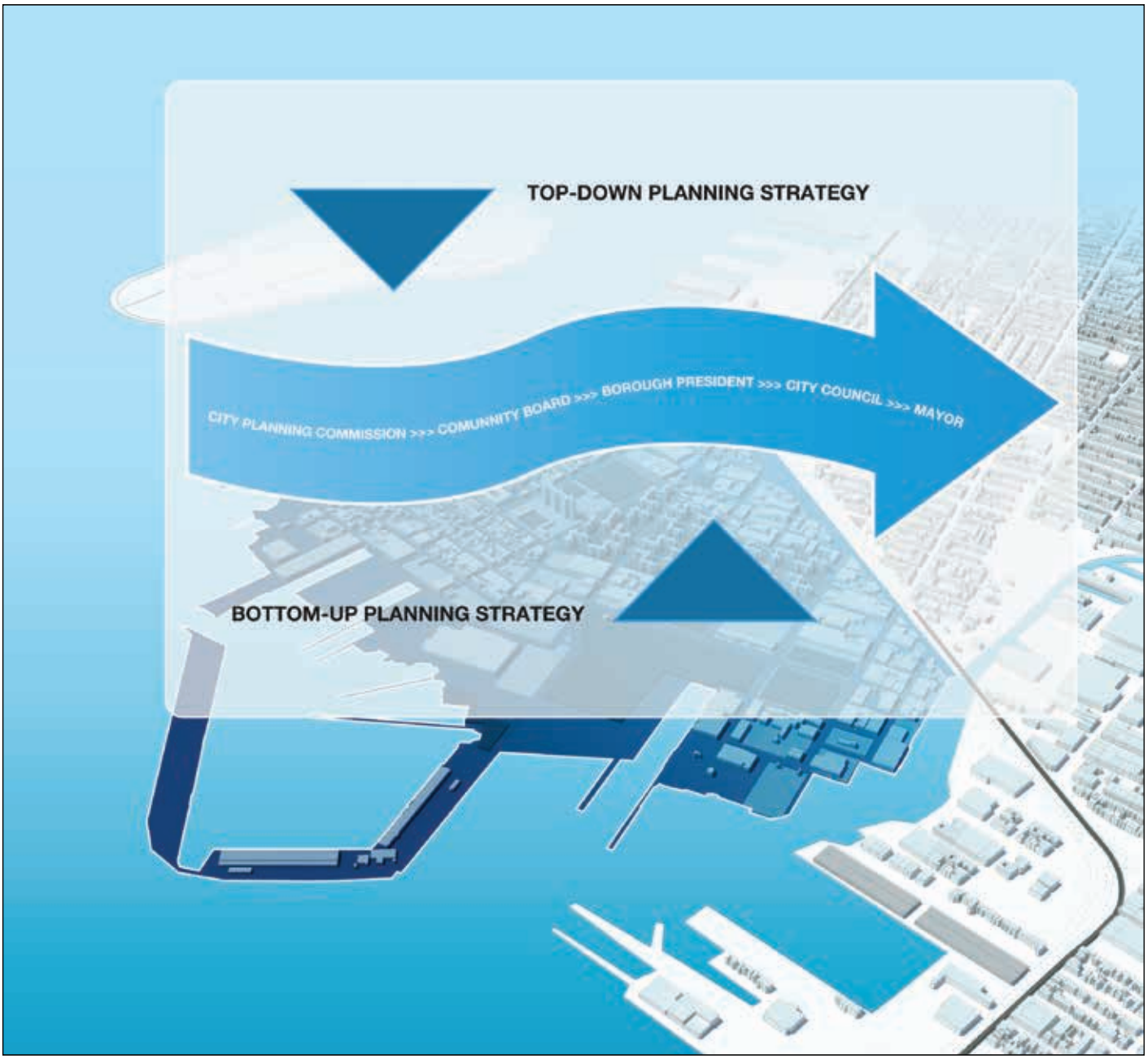
Every effort should be made to dovetail these projects' planning with the solutions in this paper.

For further funding, the participation opportunities can be presented to private development partners; every effort can be made to reach out to smaller “mom and pop” local interests as enthusiastically as to larger corporate companies. The Community Reinvestment Act compliance departments of banks will also recognize the value of investing in a more resilient Red Hook. To help navigate the regulatory issues, government advocates will also be needed at the borough, city, state, and federal levels.

As one of the many partners in the ongoing redevelopment of Red Hook, BASF stands ready to help get the project rolling. Beyond direct financial support, BASF can uniquely contribute to the development of holistic solutions. It could make available a wide range of products and chemistries to improve the performance of construction projects, such as insulation materials for roofs, walls, and foundations, as well as air barrier and waterproofing materials that increase durability and extend life cycles. It can also offer in-depth expertise drawn from its global experience and workforce.

Yet the challenge of reshaping coastal urban communities like Red Hook around the world is one that should speak to all of us. More than half a billion people will soon be struggling with the problems of preserving their communities’ character in the face of rising seas, rising populations, and rising economic needs. One of those communities may be yours or near you. How will you contribute to its future? When it comes to improving the quality of life, all of us have a responsibility.

UNIFORM LAND USE REVIEW PROCEDURE
Source: Alex Washburn



When it comes to improving the quality of life, all of us have a responsibility.

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