

Resilient New Orleans

Strategic actions to shape our future city





City of New Orleans
Mitchell J. Landrieu, Mayor
Jeffrey P. Hebert, Chief Resilience Officer

**We are shaping
the future
New Orleans.**



August 25, 2015

Dear Friends,

Nearly 10 years ago, on August 29, 2005, Hurricane Katrina devastated the Gulf Coast, becoming the costliest disaster in United States history. As that fateful storm shrouded our city in darkness, the federal levee system protecting New Orleans failed, flooding 80 percent of our city and the homes and businesses of 1 million people in the region. In total, Hurricane Katrina and its aftermath claimed over 1,800 lives.

After the last decade of Katrina, Rita, Ike, Gustav, Isaac, the BP oil spill, and the Great Recession, it is safe to say that New Orleans has faced the biggest challenges any American city has ever faced. But New Orleans is a resilient place with resilient people. With resolve, determination, and commitment from the entire nation across public, private, and philanthropic sectors, we not only came back, but we are rebuilding New Orleans better and stronger than before.

Even as some continue to deal with the effects of Katrina and the federal levee failure, there are new challenges that confront us—climate change and rising sea levels, land subsidence and coastal erosion, and lack of equity and opportunity for all New Orleanians to grow and thrive. For our city, being resilient means more than levees holding back water and wetlands protecting us from storms. It means striking a balance between human needs and the environment that surrounds us while also combating the chronic stresses of violence, poverty, and inequality.

As we look to our future challenges and opportunities, our innovative spirit will help us find creative solutions that protect the city’s people, culture, and infrastructure. Our commitment to action will define the next chapter of the city’s history. We must seize the moment. We not only have an opportunity to continue in the positive direction of the past several years, we have a responsibility to get it right and set the city on a more just and sustainable path for generations to come. We cannot afford to fail.

As we move beyond the 10th anniversary of Hurricane Katrina toward our city’s 300th anniversary in 2018, I am calling on each of you to join in our shared vision of becoming a global leader in urban resilience.

Sincerely,

A handwritten signature in blue ink that reads "Mitch Landrieu". The signature is fluid and cursive, with a large, sweeping flourish at the end.

Mitchell J. Landrieu
Mayor



EXECUTIVE SUMMARY

Three years from now, New Orleans will enter its fourth century. When it is home to the next generation of New Orleanians, what sort of place will it be?

The actions we take today will shape our future city for the coming generation. What must we do now to make the next generation more equitable, more adaptable, and more prosperous? How can we make their New Orleans a dynamic urban landscape—aligned with its natural environment? What leadership is needed—from individuals, communities, and the public and private sectors—to realize the city we envision?

Resilient New Orleans addresses these questions and sets forth aspirations to guide our work and specific actions to tackle these challenges. We are building upon the existing visions and plans developed over the past decade. Guided by 100 Resilient Cities—Pioneered by The Rockefeller Foundation, ***Resilient New Orleans*** combines local expertise with global best practices to confront our most urgent threats and seek ways to redress our legacy of inequity and risk. We propose bold yet pragmatic actions to adapt our city to our changing natural environment, invest in equity, create flexible and reliable systems, and prepare for future shocks.

Our approach is organized into three sections, each with a vision for our future city.

ADAPT TO THRIVE

We are a city that embraces our changing environment.

By adapting our city to our natural environment and the risks of climate change, we can create opportunities for all New Orleanians to thrive. We must align our infrastructure and urban environment with the realities of our delta soils and geography. Our adaptation must be both physical and behavioral. Rather than resist water, we must learn to embrace it, building on the confluence of Louisiana’s culture, history, and natural systems. As we look to the wisdom of the past, we must also prepare for the risks of the future.

We will adapt to thrive by advancing the restoration of our coastal wetlands, which protect our communities and support our economy. We will implement our regional Urban Water Plan to reduce flood risk, mitigate soil subsidence, and beautify our communities. We will provide incentives to property owners to retrofit their homes to be more resilient to storms. We will further environmental stewardship programs to create a culture of environmental awareness at every stage of life. Just as we adapt to our changing climate, we will also commit to mitigating our own contribution to climate change.

CONNECT TO OPPORTUNITY

We are an equitable city.

By investing in equity, we are investing in resilience. Equity will be the driving force behind our economy’s growth and innovation, our communities’ safety and stability, and our families’ health and prosperity. While New Orleans’ economic recovery and growth in recent years has been remarkable, it has not been enjoyed equitably. We will grow our economy by investing in stable, healthy communities where individuals have the training, access, and support needed to connect to opportunity.

To build equity, we will invest in the financial stability of our low-income households. We will work to narrow the digital divide to lower the barrier to workforce participation. We will continue to invest in homicide reduction, public safety, and social cohesion. We will continue to improve the health of our communities and expand access to affordable housing through integrated policy and investment.

TRANSFORM CITY SYSTEMS

We are a dynamic and prepared city.

We are building a New Orleans for the future—one that embraces change, prepares for the risks of the future, and honors our traditions. To achieve this vision, we must not only adapt, we must transform. Through better management, coordination, and service delivery, we can unlock value by improving daily life while also preparing the city as a whole for future shocks. By modernizing our operational systems, we will better equip residents and businesses to evolve from consumers of public services to partners in addressing shared challenges.

We propose to achieve this by redesigning our regional transit systems to connect people, employment, and essential services. We will promote sustainability as a growth strategy, seeking ways to increase energy efficiency and renewable energy sources. This strategy calls for investment to increase the redundancy and reliability of our energy infrastructure with microgrids. The City of New Orleans will establish the Mayor's Office of Resilience and Sustainability to integrate resilience-driven decision making across public agencies and the Center for Resilience to deliver the outreach and education components of building community resilience. We will develop a pre-disaster plan for post-disaster recovery that prepares the city to rebound quickly and

emerge stronger. Through a small business resilience initiative, we will develop the preparedness of our business owners and entrepreneurs.

For centuries, we have demonstrated our ability to innovate and adapt in the face of major challenges. While New Orleans has recovered from many shocks in the past, our future is threatened by rising seas and coastal erosion, crime and a lack of economic opportunity, income inequality and disparate health outcomes. We now stand before a critical threshold. We must move beyond the devastation of the past and cross into the possibilities of the future.

New Orleans will continue to lead, serving as an urban laboratory for innovation and change, working to recognize and adapt to an unpredictable future, and remaining committed to the equitable adaptation and transformation of coastal cities worldwide. As a global leader, we have a responsibility to seek wisdom and guidance from around the world, to listen to the stories of our peers, and to share our progress toward shaping the future city—a Resilient New Orleans.

Resilient New Orleans

Strategic actions to shape our future city

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Shaping the Future City

New Orleans is becoming a global leader in resilience thinking and action. We are moving beyond our recovery to focus on our future, and this strategy outlines many deliberate steps forward. We are now stronger, more knowledgeable, and more innovative than ever before. We are positioned to build the future city: one that is responsive to our delta and coastal geography, locally forged and globally connected, and founded on the equity of opportunity and social mobility. While our challenges are many, our will and capacity to act have never been greater.

The children born in 2015 will be 35 years old in 2050. What we do today will help determine their future and the future of their city. The next generation will be more equitable, more adaptable, and more prosperous. As children, they will have better educational opportunities; as young adults, they will have better mobility throughout the region; and as adults, they will have better career opportunities and a safer city in which to raise their own families.

When we imagine the future New Orleans, we see a dynamic urban landscape that is aligned with its natural environment—we embrace living with water. We envision strong leadership from individuals, businesses, and public agencies that prioritize building city resilience. We see a city where every individual has access to the education, services, and resources needed to succeed; safe and affordable housing; employment; and the transportation to get there.

We are building the future New Orleans today.

OUR RESILIENCE CHALLENGE

Many of the threats to New Orleans are not surprises to residents or visitors. The most prominent environmental shocks come in the form of severe storms or hurricanes and flooding events. The impacts from these events are only exacerbated by the presence of cumulative physical stresses, like land subsidence and coastal wetland loss, and social stresses, like poor economic, educational, and health outcomes among vulnerable populations.

City resilience is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.

Our environment is changing. Climate change is accelerating it.

New Orleans was founded in the 18th century due to its strategic location for commerce in the Mississippi River Delta and on the Gulf of Mexico. Today, the natural systems upon which the city was built continue to sustain the city, but also threaten it. The deltaic soils underfoot and the wetlands that largely surround the city are part of a shifting coastal landscape that offers unique challenges for the built environment. The natural and coastal systems of Southeast Louisiana are directly connected to the urbanized area of New Orleans, providing natural

protections from storms and storm surge and creating landscapes for economic development.

Shocks like hurricanes are compounded by daily stresses on the city's natural and built environment. The rapid loss of coastal wetlands puts extra stress on the city's flood protection system, while hard surfaces that do not absorb water and sinking urban soils exacerbate flood risk from regular rainfall. Sea level rise and a projected increase in frequency and intensity of storm events are expected to accelerate coastal land loss, adding greater stresses to our levee and flood protection system, while more extreme heat will directly threaten other infrastructure systems and the health of our residents. We are already facing many climate change-related challenges in advance of other cities and regions around the world due to our unique geography.

City resilience is about more than building stronger infrastructure to hold back the water and withstand the wind. Our capacity to adapt is founded on our knowledge and learning from past experiences with shocks and stresses. However, some fundamental aspects of our existence as a coastal city have been hidden behind walls and under asphalt, including our slowly sinking deltaic soils and our disappearing wetlands. While we now may recognize the risks that a hurricane presents, we still lack a widespread public awareness of how climate change increases the future risks to our city.



We will continue to adapt to our semi-aquatic home. With a comprehensive coastal master plan and implementation strategy, Louisiana is already taking action on coastal protection and restoration efforts. Today, New Orleans is ready to be an urban model for living with water and adapting to the rapid environmental changes that will only accelerate with climate change.

Equity is critical to our resilience.

Many New Orleanians suffer the chronic social stresses of poverty, unemployment, and violence. Wide disparities exist in employment and wages, educational attainment, and health outcomes. These social stresses are correlated with a greater vulnerability to physical shocks: low-income households in New Orleans are more likely to be located in areas at greater risk of flooding and land subsidence. These chronic stresses compound the risks of intermittent shocks, leaving our communities that already experience inequity further exposed to risk, and weakening our resilience as a city.

Even as we look to the future, we cannot ignore past injustices. Racial inequity is present in every facet of our society—employment and income, education and health, violence and justice, housing and social mobility. To advance as a city, we must confront this reality collectively and seek meaningful ways to address its effects in our institutions, our communities, and our families. With a strategy that prioritizes racial equity, we will be stronger as a society and more capable of responding to adversity.

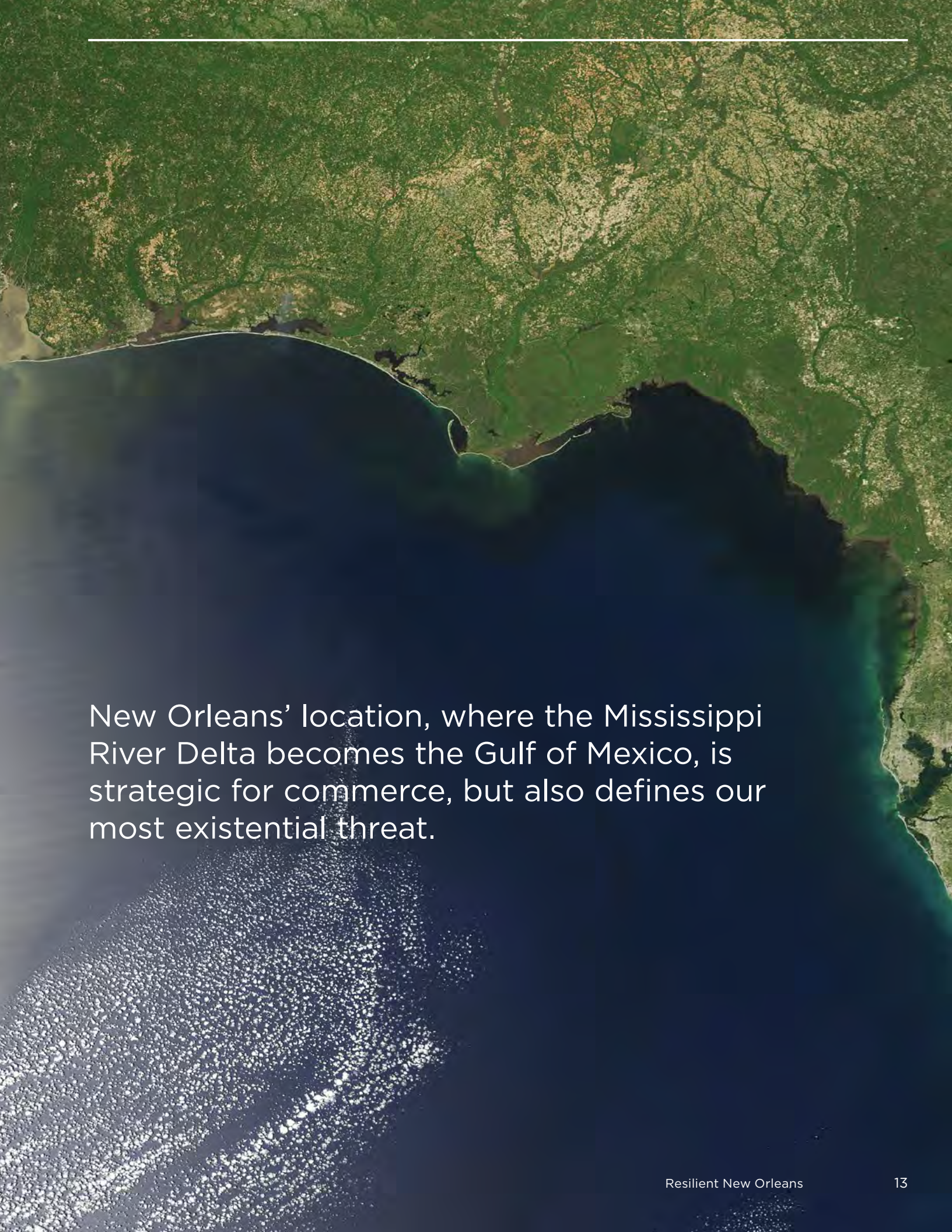
The future is uncertain.

As we seek to make resilience thinking a part of our daily practice, we must plan and prepare for a future that remains uncertain. Even in our recent history, new challenges have emerged. For example, following the levee failures and floods of 2005, New Orleans spent years preparing for another major storm event, only to be shocked in 2010 by BP’s drilling rig explosion and oil spill—considered the largest environmental disaster in US history—which sent over 210 million gallons (780,000 cubic meters) of oil flowing across our coast.

While not common to our city, other potential threats could include terrorist attacks, infectious disease epidemics, drought, and civil unrest. We might not know what shocks we will face, but we do know our future will be dynamic and complex. We need transportation systems that can get us to work every morning, but also move us to safety during a crisis. We need electricity and water systems that we can count on to keep us productive and that we know will perform under stress. We need a government that is agile enough to deliver critical services to all people in all conditions. By creating systems that are flexible enough to address multiple challenges and reliable enough to continue to support us, we can shape a city that can thrive no matter what may happen.



New Orleans
is a coastal city.

An aerial photograph showing the Mississippi River Delta and the Gulf of Mexico coastline. The land is a mix of green and brown, indicating vegetation and bare earth. The water is dark blue, and the coastline is irregular. The text is overlaid on the lower left portion of the image.

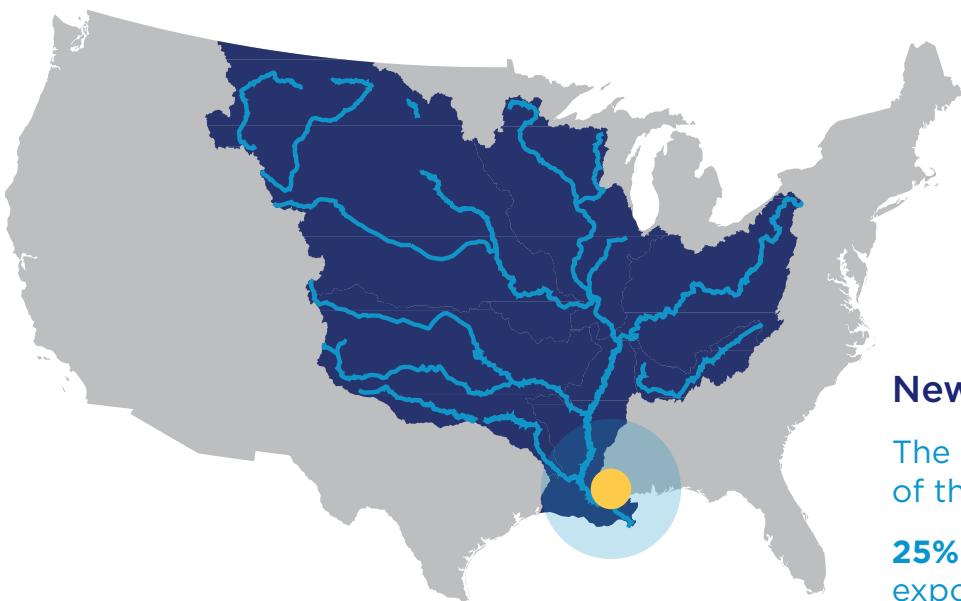
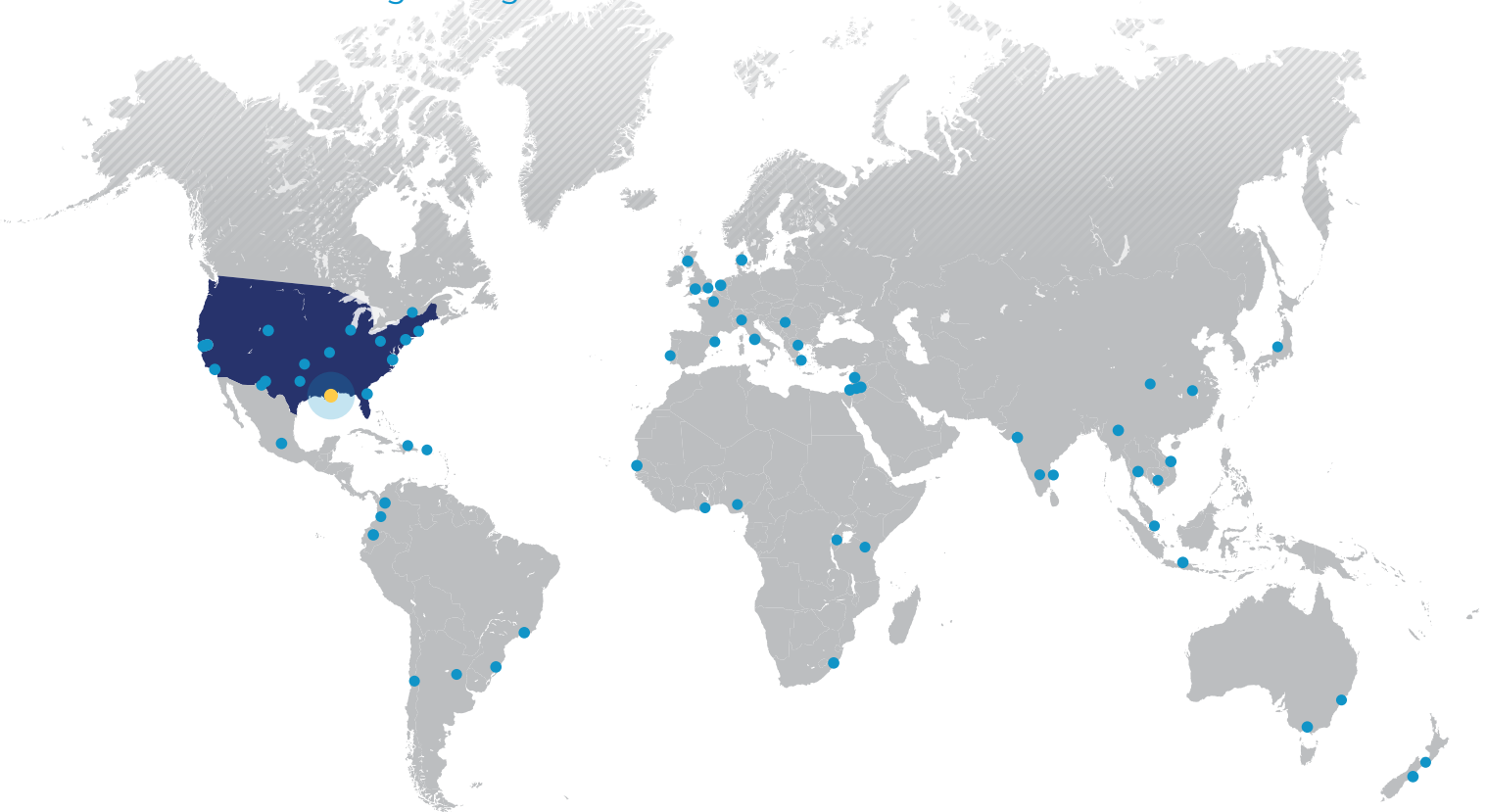
New Orleans' location, where the Mississippi River Delta becomes the Gulf of Mexico, is strategic for commerce, but also defines our most existential threat.



GEOGRAPHY

New Orleans and the World

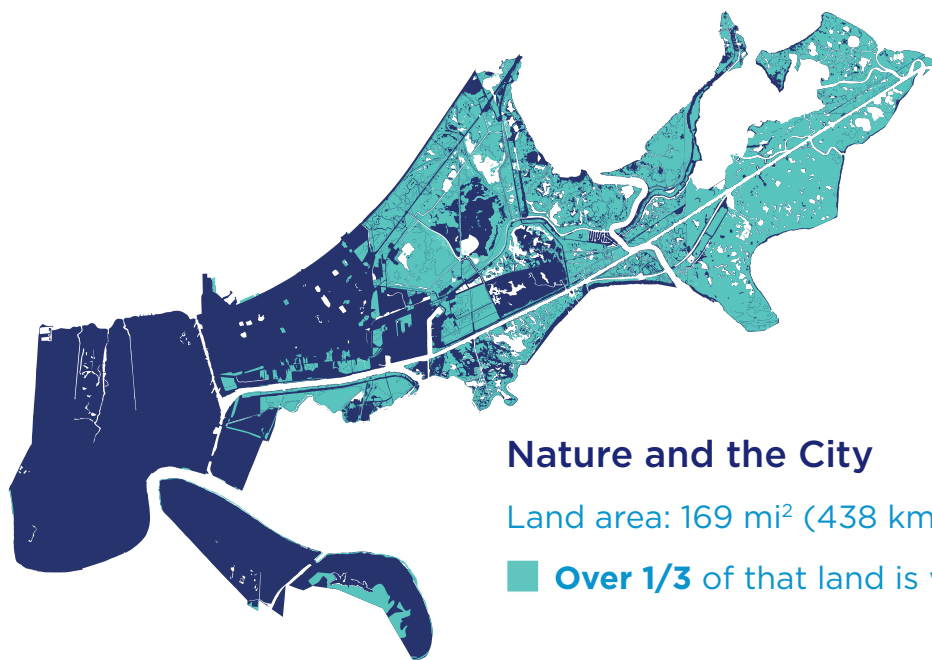
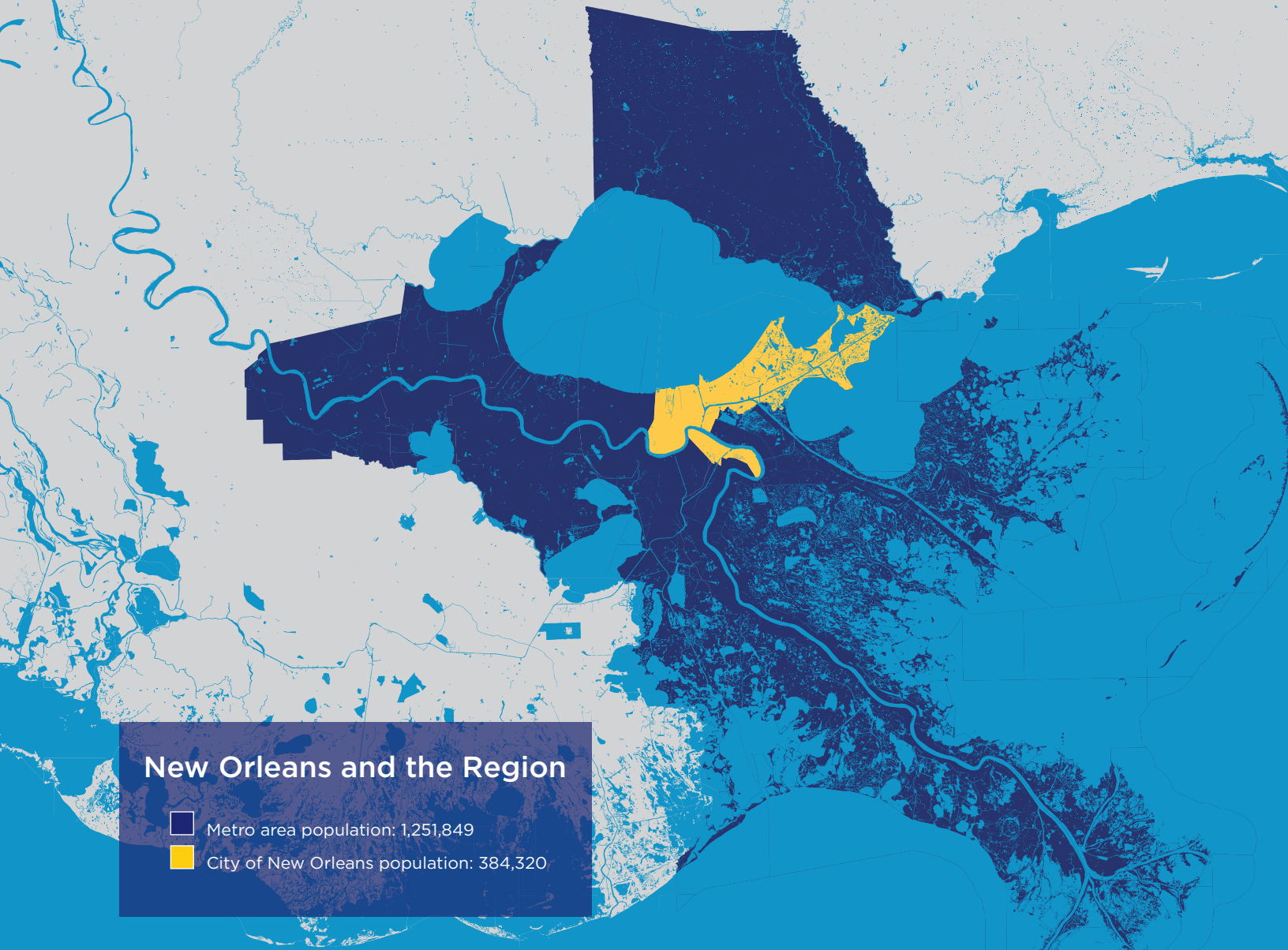
Global learning through the 100 Resilient Cities Network



New Orleans and the Nation

The Mississippi River drains **40%** of the continental US.

25% of US waterborne exports are shipped through Louisiana's five major ports.

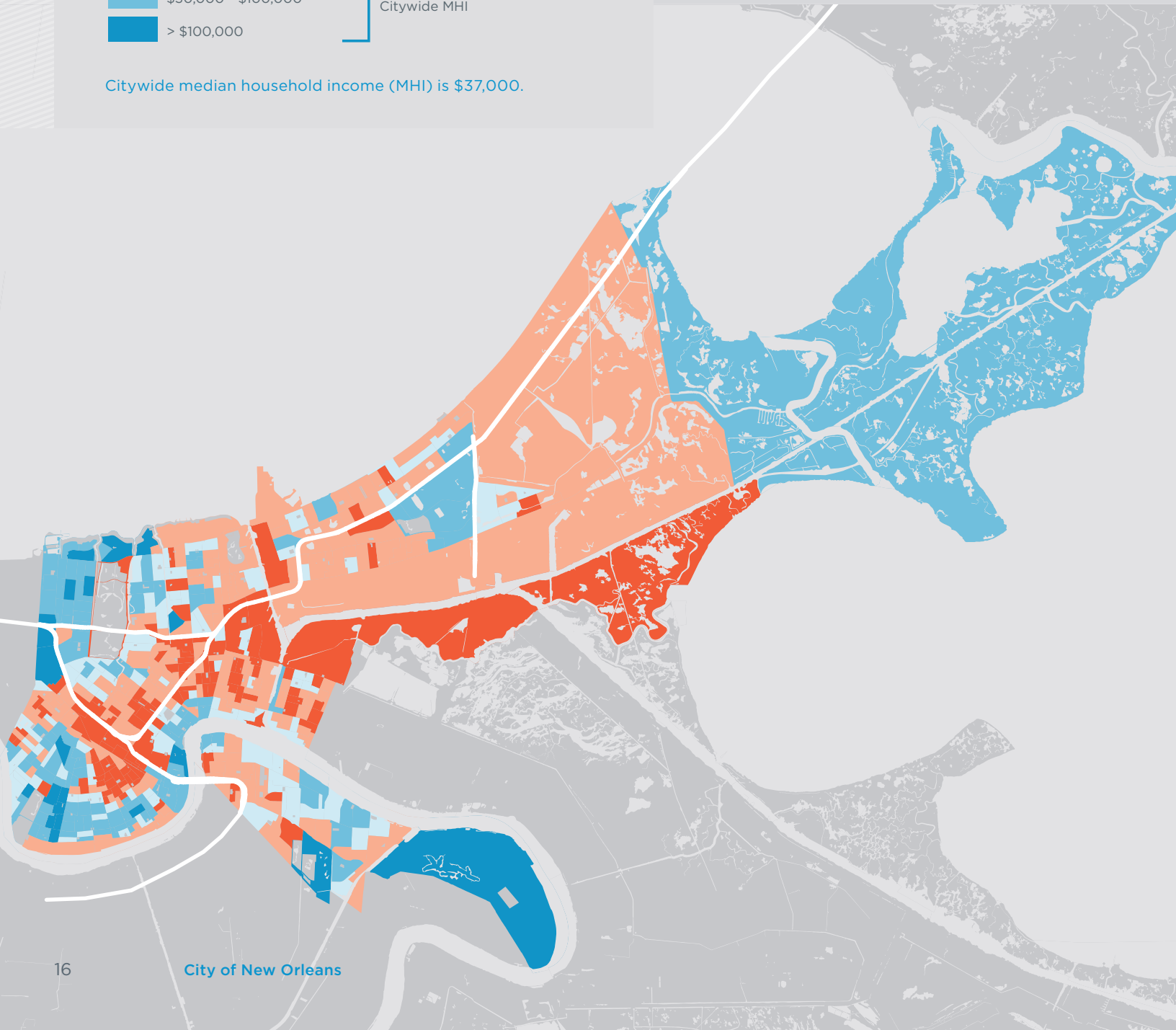


DEMOGRAPHICS

New Orleans by Household Income

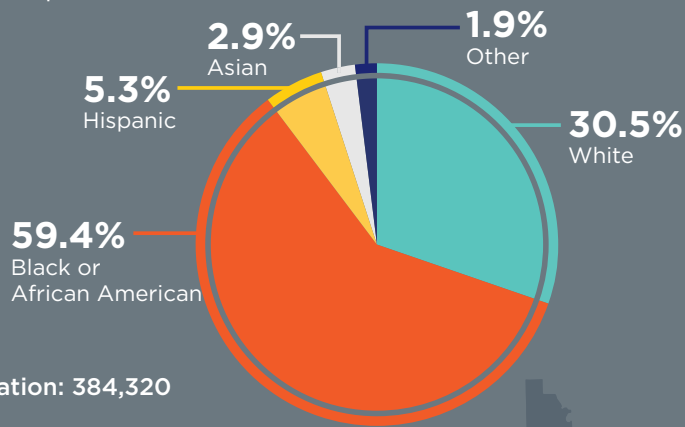


Citywide median household income (MHI) is \$37,000.

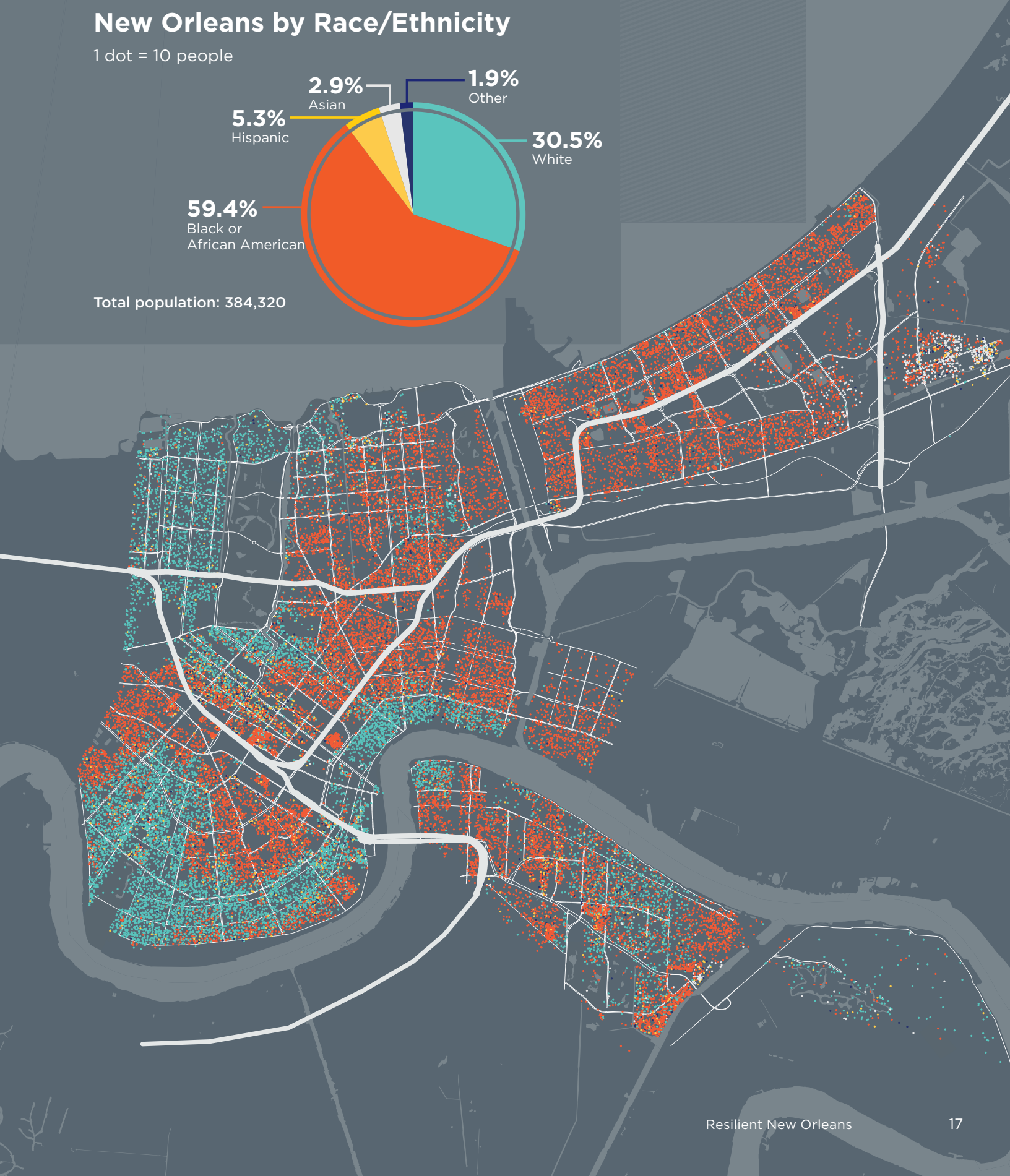


New Orleans by Race/Ethnicity

1 dot = 10 people



Total population: 384,320



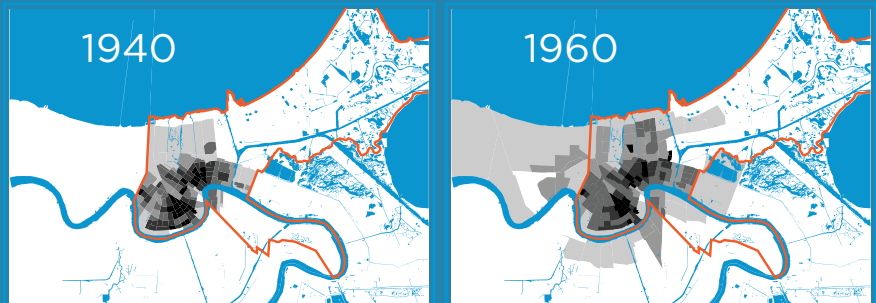
REGIONAL TRENDS

We have abandoned our long history of living with water. For the first two centuries of the city's existence, we occupied the high ground nearest the Mississippi River and the natural ridges throughout the region. With the advent of highly efficient pumping technology in the early 20th century, the draining of swampland in low-lying parts of the city and region incentivized new development to spread into previously uninhabitable locations. With this development came suburbanization and regional sprawl, setting the stage for challenges to our water management and flood protection systems, as well as to our ability to connect residents to regional job opportunities.

Henry L. Abbot's Civil War map, "Approaches to New Orleans," 1863

Population Density: 1940 - 2010

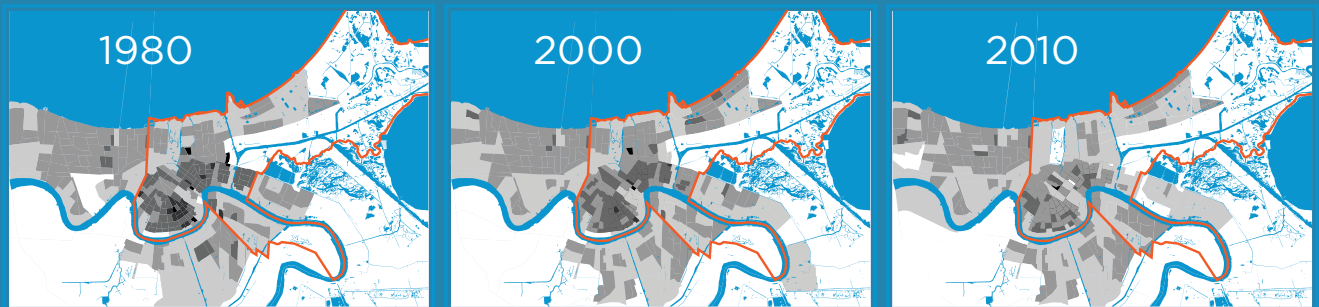
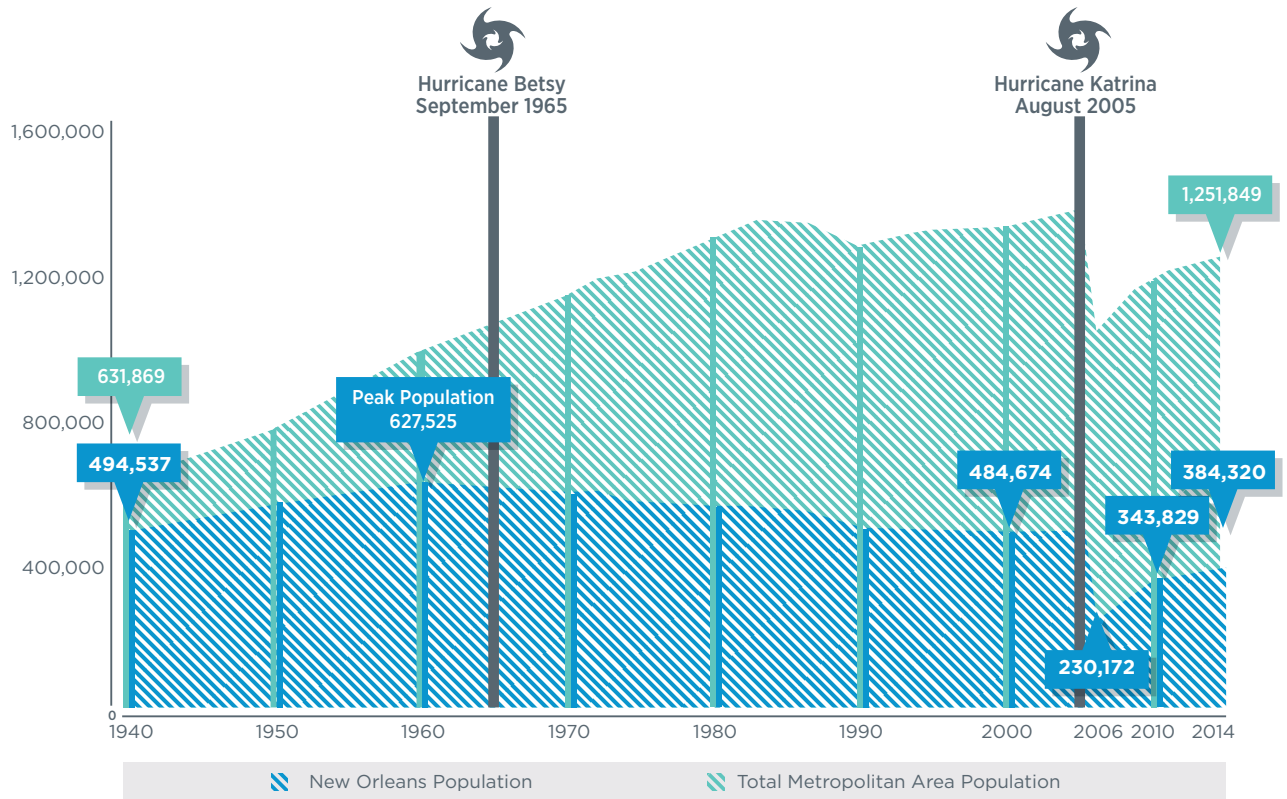
The population of New Orleans in 2000 was almost exactly the population of the city in 1940. However, the city occupied approximately twice the land area, spreading away from the high ground near the river toward lower-lying areas.



PEOPLE PER SQUARE MILE

0 - 1,000	1,001 - 5,000	5,001 - 10,000
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Population Change: 1940 - 2014





From Strategy to Implementation

STRATEGY DEVELOPMENT PROCESS

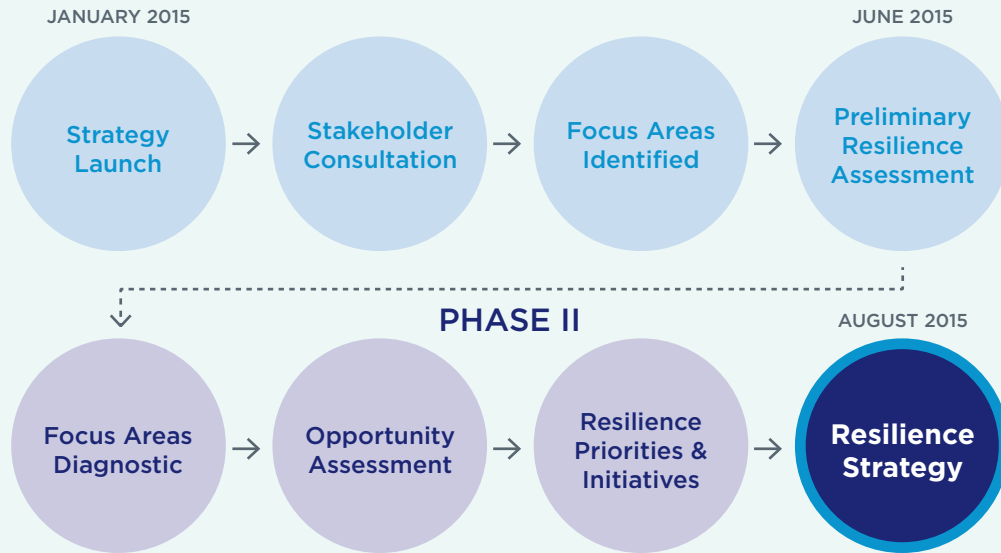
We developed this strategy by researching the challenges facing New Orleans, gathering input from stakeholders with relevant knowledge and expertise, and sourcing best practices from around the world. We investigated the city's shocks, stresses, and assets. We met with local organizations and stakeholders to understand how the city's resilience is perceived today, to gather local best practices, and to devise new approaches.

Over 350 individuals participated throughout the process and provided valuable insight into what contributes to and detracts from the city's resilience, what local expertise and knowledge exist, and what specific needs are not being met. In addition, the Office of Neighborhood Engagement convened

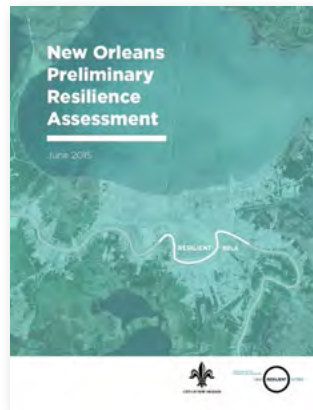
a summit of neighborhood leaders to solicit perspectives on city resilience.

This research was then compiled in the Preliminary Resilience Assessment and grouped into focus areas. Working groups, composed of local and outside experts, met to further explore each focus area and propose potential approaches and solutions. This, in turn, led to a more detailed analysis of the opportunities within each focus area and resulted in more specific workshops on issues such as financing, risk modeling, and design. The proposals developed through this process directly inspired the actions set forth in this document.

PHASE I



The creation of this strategy followed a two-phase process developed by 100 Resilient Cities—Pioneered by The Rockefeller Foundation. In Phase I, research was conducted and focus areas were identified to guide Phase II goal and strategy development.



The Preliminary Resilience Assessment details the Phase I strategy development process, including early stakeholder engagement. It can be downloaded at www.nola.gov/resilience/pra.



Over 350 individuals contributed to the strategy development process.



2005

2006

2007

2008

2009

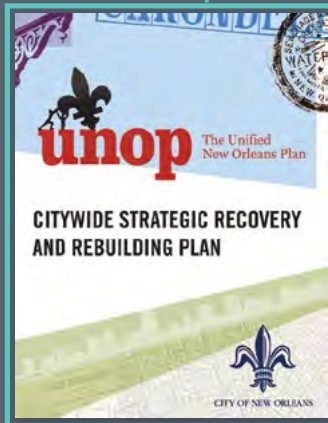
2010

Bring New Orleans Back Commission

Neighborhoods Rebuilding Plan

New Orleans Schools Facilities Master Plan

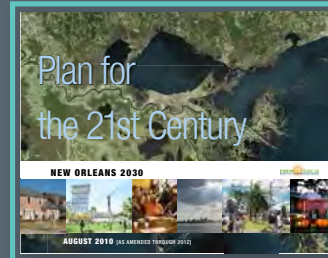
FEMA ESF-14



Unified New Orleans Plan (UNOP)

A comprehensive recovery plan to guide the deployment of disaster recovery funding

Unprecedented resident engagement: UNOP hosted three Community Congresses, the largest of which took place simultaneously in 21 cities, convening 2,500 displaced New Orleanians.



Plan for the 21st Century

The Master Plan for the city of New Orleans

Defining resilience: The Master Plan dedicates a chapter to resilience, which it defines as “living with water and natural hazards.”



Hazard Mitigation Plan

Provides a detailed evaluation of city risks and outlines a strategy to reduce hazard impacts on people and property

Defining hazards: The plan’s primary focus is on acute shocks (e.g., hurricanes and lightning). However, it also addresses some long-term stresses, such as coastal erosion, subsidence, and drought.

FROM RECOVERY TO RESILIENCE

Over the past decade, we have undertaken extensive planning efforts to guide the recovery and rebuilding of our city and to envision the long-term future of New Orleans. We are moving beyond what was damaged in the past to look forward to the possibilities of the future.

These planning processes have included broad and intensive outreach and engagement of residents, civic leaders, and experts across the city and beyond. This document does not represent another planning process—we do not seek to replicate the vast work that has been done over the past decade, or to create another plan. This strategy builds upon the existing visions by creating a series of short-term actions with long-term goals that provide a road map for implementation. In order to achieve this, we have reviewed previous work to understand the evolution of resilience planning that leads us to this integrated strategy today.

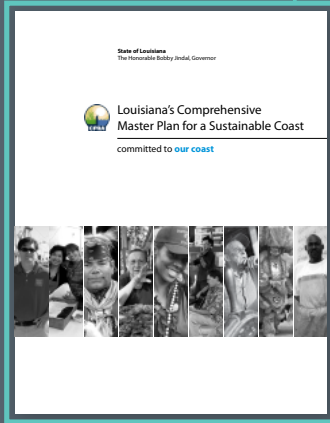
2011

2012

2013

2014

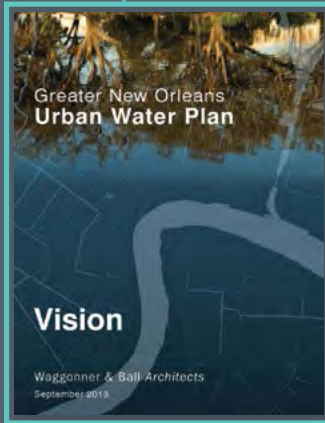
2015



Louisiana Coastal Master Plan

Proposes a series of projects that will sustain ecosystems, safeguard coastal populations, and protect vital economic and cultural resources by reducing flood risks and rebuilding wetlands

50-year planning: The plan accounts for acute shocks and long-term risks associated with coastal erosion, as well as the inherent uncertainty in the coast's future.



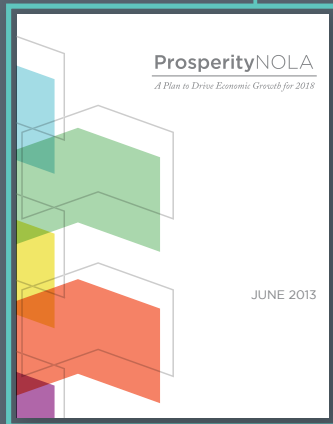
Greater New Orleans Urban Water Plan

Provides a road map for innovative regional water management for New Orleans and neighboring parishes

Living with water: The Urban Water Plan pioneered the vision for embracing water for the future of our region.

New Comprehensive Zoning Ordinance adopted

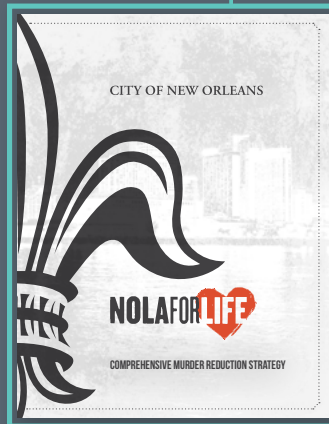
New Capital Improvements Plan adopted



ProsperityNOLA

A citywide economic development strategy

Planning for equity: This plan highlights equity as a growth strategy for our economic development.



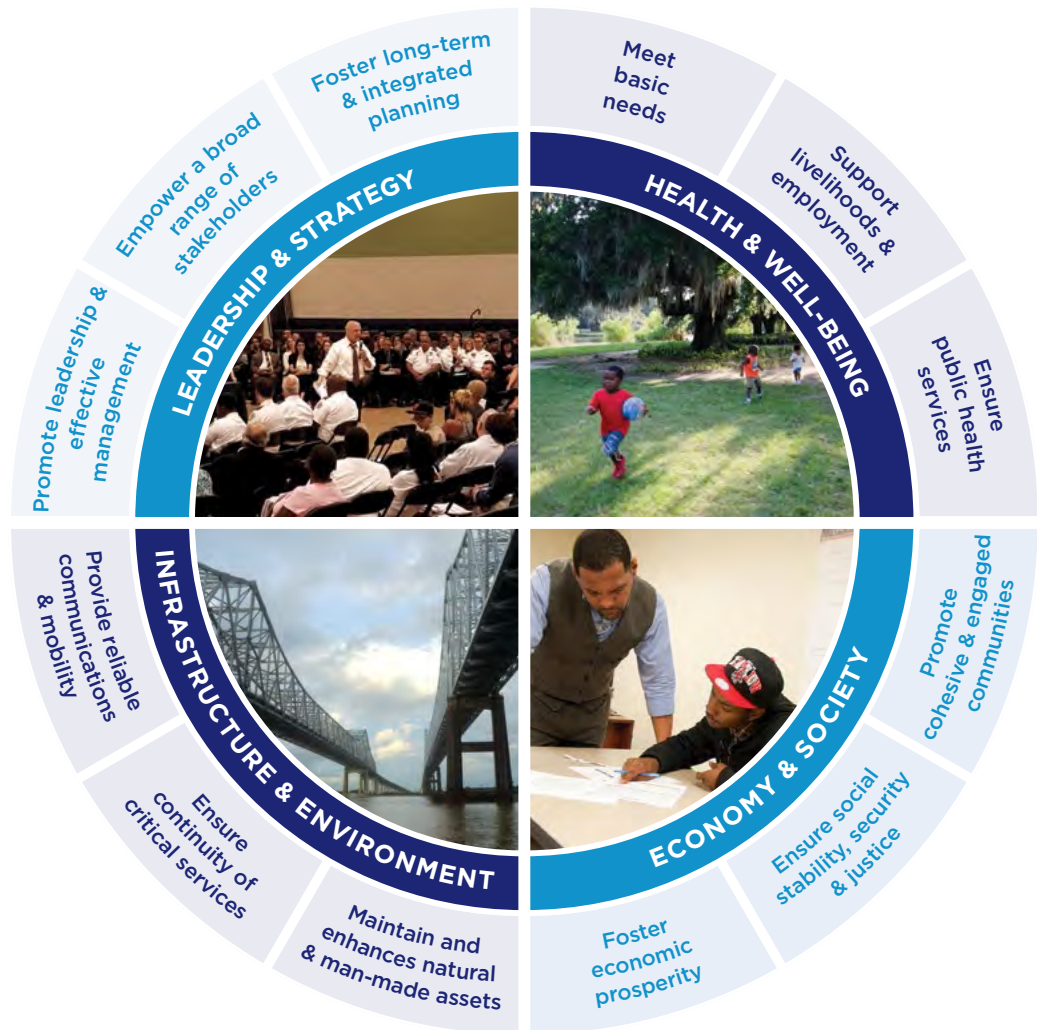
NOLA FOR LIFE

New Orleans' Comprehensive Murder Reduction Strategy

Focus on our youth: NOLA FOR LIFE prioritizes youth engagement and education to build a safer and healthier society.

100 RESILIENT CITIES

100 Resilient Cities - Pioneered by The Rockefeller Foundation (100RC) helps cities around the world become more resilient to the physical, social, and economic challenges that are a growing part of the 21st century. 100RC provides this assistance through funding for a chief resilience officer in each member city to lead resilience efforts; resources for drafting a resilience strategy; membership in a global network of peer cities to share best practices and challenges, and access to a variety of resilience tools, including the City Resilience Framework. New Orleans was one of the first members of the 100 Resilient Cities Network, and Resilient New Orleans was supported by the 100RC process.



OUR APPROACH

Working to build resilience is different than conducting business as usual. It means breaking down traditional divisions between agencies and organizations to find common purposes. It means designing to deal with the next event rather than just assessing the last one. It means improving our cities today in ways that also make them better prepared for the risks of tomorrow.

Our guidepost for designing a strategy that achieves these outcomes has been the **City Resilience Framework**. The framework, developed by Arup with

support from The Rockefeller Foundation, is made up of four dimensions—Health & Well-being, Economy & Society, Infrastructure & Environment, and Leadership & Strategy—and is further defined by 12 drivers of resilience. We used the framework throughout the process to assess the connections between our challenges, identify critical areas of weakness, and develop actions that build upon our strengths. We also used the framework to facilitate a comprehensive discussion of resilience with our stakeholders.

At each stage of the process, we also relied on the qualities of resilient systems as a touchstone to guide the development of our actions. We continually sought strategies that were:

- **Reflective:** informed by our past experiences
- **Resourceful:** made efficient use of our limited resources and attracted new resources
- **Robust:** were designed to be strong but also could fail safely
- **Redundant:** had backup or spare capacity when needed
- **Flexible:** had alternative paths to achieve the same outcome
- **Inclusive:** involved those who bear risk and responsibility
- **Integrated:** coordinated across public and private organizations to achieve common purposes

The Resilience Dividend

By using this approach to evaluate and set priorities, New Orleans will achieve the Resilience Dividend: Instead of investing to reduce impacts from a single hazard or improve a single metric, the city will make strategic decisions to improve its overall strength and endure multiple shocks and stresses. Investing in resilience can save money, save lives, and build a more equitable and prosperous city.

An example of the Resilience Dividend in action

Developing a reliable and comprehensive multimodal transit network will help New Orleans be more resilient whether the challenge is to be efficient and coordinated in times of emergency response, to enable low-income families to connect to opportunity, or to improve safety and connectivity. The point of entry might seem like a single infrastructure project, but it has the potential to create benefits across sectors, scales, and potential shocks. This is the Resilience Dividend in action.



REDUCES HARMFUL EMISSIONS

CONNECTS PEOPLE TO JOBS

PROVIDES EMERGENCY CAPACITY



IMPLEMENTATION & MONITORING

Our strategies will only be as effective as our ability to act. This document serves as a focal point and initial work plan for taking action to build resilience. The newly formed Mayor's Office of Resilience and Sustainability and the chief resilience officer will have responsibility for implementing the strategy by coordinating with partners and agencies. The office will advise the mayor on policy, guide prioritization, and provide regional leadership on resilience. To further integrate resilience into our regulations, policies, and practices, the office will work closely with the City Planning Commission and Hazard Mitigation Office to ensure consistency with the City's Master Plan and Hazard Mitigation Plan.

By coordinating regionally, we can solve immediate and long-term problems that no single municipality or parish can address. Single jurisdictions cannot effectively build better levee systems, restore the coast, create stronger economies, ensure safe and affordable housing for our workforce, or build a transportation systems that will serve us into the future. It is only through cooperation among cities and towns acting together as a region that we will

be able to effectively engage these challenges.

The principles and actions outlined in this strategy are designed for results and immediate benefits, but with long-term aspirations founded on the concept of generational change.

The City will develop indicators and targets to track the progress of this strategy. The Office of Performance and Accountability (OPA), which promotes better city services through data-driven management, decisionmaking, and accountability, will support the Mayor's Office of Resilience and Sustainability to develop and track these measures. The City will make the data available publicly through ResultsNOLA, its quarterly reporting program for performance management.

DEMONSTRATING GLOBAL LEADERSHIP

For centuries, we have demonstrated our ability to innovate and adapt in the face of major challenges, making New Orleans well known as a model of community-based recovery and resilience. Today, New Orleans is continuing to lead, serving as an urban laboratory for innovation and change, working to prepare for an unpredictable future, and remaining committed to the equitable adaptation and transformation of coastal cities worldwide.

As part of the growing 100 Resilient Cities Network, we have been able to connect with resilience leaders around the world to learn from their wisdom and experience, while also sharing our own. New Orleans was the site of the inaugural Chief Resilience Officer Summit in November 2014, where we had the opportunity to showcase our progress along with the challenges that remain. The summit reminded us that resilience as a practice should always be grounded in our everyday lives and that ideas for our collective future might not always come

from the places we expect. As a global leader, we have a responsibility to seek wisdom and guidance from all continents, to listen to the stories of our peers, and to share our progress toward shaping the future city.

FUNDING

Funding for the actions and initiatives outlined in this strategy will be derived from various sources, including existing government budgets, new grants and revenues, philanthropic funds, and private partnerships.

Leveraging and maximizing existing sources of funding is a top priority. Aligning the City's budgetary priorities with the resilience strategy, by utilizing the resources we already have to achieve multiple benefits, is the first step to investing in a resilient future. Strategically programming new sources of funds, particularly those that can be targeted to

build resilience, like RESTORE Act funds, the BP Settlement, Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant program, and the US Department of Housing and Urban Development (HUD) National Disaster Resilience Competition, will provide a down payment on our future.

Beyond locally controlled funds, the City of New Orleans will continue to partner with federal and state agencies on their projects that have a direct impact on the future of the city. An example is strengthening the partnership between the City and the Louisiana Coastal Protection and Restoration Authority (CPRA) on projects both inside the city and outside the city that have a direct impact on our resilience. In addition, where the actions in this resilience strategy are aligned with the investments and missions of our private sector partners, we will seek to expand the partnerships to support these initiatives.

Leveraging one-time funding sources

In 2010, the Gulf Coast experienced the worst environmental disaster in US history after the BP oil rig explosion and spill. In July 2015, BP agreed to pay \$18.7 billion in fines—the largest corporate settlement in US history. It is anticipated that \$6.8 billion will be made available to the State of Louisiana, and \$45 million to the City of New Orleans, to further a variety of coastal protection, remediation, and adaptation projects moving forward. This presents a prime opportunity for the state and city to operationalize resilience planning in coastal protection.

Credit: United States Navy

Visions and Actions

The following sections outline our many interconnected challenges and lay out strategic approaches and goals for each challenge. In order to achieve each goal, a series of strategic actions will be implemented, focused both on immediate results and generational change. The initiatives within these sections are both ambitious and pragmatic, both short term and long term. Most are new, while others are already succeeding, and we will seek ways to amplify their impact. Some will be implemented immediately, while others will need more study. However, they all have committed organizations and agencies, City support, and potential resources to pursue implementation.

- **Featured Actions** are key initiatives for immediate implementation.
- **Supporting Actions** are projects to be developed in the near future.
- **Ongoing Actions** are examples of initiatives currently underway that demonstrate how New Orleans is already working to build resilience.
- **Aspirations** are the visions we hold for 2050 to guide our actions.
- **Resilience Values** are the multiple benefits, both direct and indirect, that we stand to gain by taking these actions.

We recognize that becoming a truly resilient city will require significant investment in both time and resources. It will require the hard work of our public and private leaders, and each and every person who lives and works in our city. This document is a call to action—a statement of values that will evolve and focus our activities to build resilience for decades to come.

The following pages outline the goals we will pursue and the actions we will take to build our city's resilience. They are organized by three visions for our future city:

ADAPT TO THRIVE

We are a city that embraces our changing environment.

We will:

- Advance coastal protection and restoration
- Invest in comprehensive and innovative urban water management
- Incentivize property owners to invest in risk reduction
- Create a culture of environmental awareness at every stage of life
- Commit to mitigating our climate impact

CONNECT TO OPPORTUNITY

We are an equitable city.

We will:

- Invest in household financial stability
- Lower barriers to workforce participation
- Continue to promote equitable public health outcomes
- Continue to build social cohesion
- Expand access to safe and affordable housing

TRANSFORM CITY SYSTEMS

We are a dynamic and prepared city.

We will:

- Redesign our regional transit systems to connect people, employment, and essential services
- Promote sustainability as a growth strategy
- Improve the redundancy and reliability of our energy infrastructure
- Integrate resilience-driven decision making across public agencies
- Invest in pre-disaster planning for post-disaster recovery
- Develop the preparedness of our businesses and neighborhoods

ADAPT TO THRIVE



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We will:

Advance coastal protection and restoration

Invest in comprehensive and innovative urban water management

Incentivize property owners to invest in risk reduction

Create a culture of environmental awareness at every stage of life

Commit to mitigating our climate impact

Introduction

By adapting our city to our natural environment and the increasing risks of climate change, we can create opportunities for all New Orleanians to thrive. Successful adaptation will mean creating resilient systems and a culture of environmental awareness among all New Orleanians.

Throughout our city’s history, water has been essential to New Orleans’ existence but has also threatened it. The only constant in our natural environment since the city’s founding in 1718 has been change. New Orleans is built upon some of the newest land in the world—the shifting soils of the Mississippi River Delta. Prior to the construction of major levees and flood control structures in the 20th century, the Mississippi River spent more than 7,000 years changing course and depositing sand, clay, and silt along its banks to build the land around us. In the past 100 years, we have channelized the river, dug canals, laid pipelines, drained wetlands, and introduced invasive species—all to establish conventional settlement and commercial patterns on a challenging environment.

Largely due to our own influence, we have been losing the coastal wetlands that sustain us both physically and economically at a rate of more than 16 square miles (41 square kilometers) per year. River levees deprive the delta of the necessary sediment to build new wetlands; canals and pipelines destabilize marshes, allowing exposure to damaging saltwater. Even in the city, the soft soils beneath us are not static. The ground in New Orleans is sinking—as much as 10 feet over the past 100 years in some parts of the city. Known as subsidence, this process is partially a result of our practice of pumping water out of the city as quickly as possible, which dries and compacts the typically moist soil—buckling streets, bursting pipes, and destabilizing utility poles.

Sea level rise and the increased frequency and intensity of extreme storm events are projected to accelerate coastal land loss, adding greater stresses to our levee and flood protection system, while more extreme heat will directly threaten other infrastructure systems, such as electricity distribution, and the health of our residents. New Orleans is arguably more threatened by global climate change than almost any other US city, but we are also more capable than ever to address its effects.

New Orleans is ready to become a global leader in addressing environmental



Hurricane Isaac approaches Louisiana, 2012
Credit: NASA

Our climate is changing.

Louisiana is experiencing the highest rate of relative sea level rise in the world:

4.3 ft (1.3 m)
by 2100.

By 2050, Louisiana will likely experience temperatures

above 95° F (35° C)
on **80+** days per year.



A resilient approach to infrastructure designs for multiple benefits, including spaces for recreation, sites for environmental engagement, and opportunities for commerce.

Credit: Ripple Effect

“This is a floating city, floating below the surface of the water.”

— Benjamin Latrobe, describing New Orleans, 1819

and climate change. We must align our infrastructure and urban environment to the realities of our delta soils and geography. Rather than resist water, we must embrace it, building on the confluence of Louisiana’s culture, history, and natural systems. As we look to the wisdom of the past, we must also prepare for the risks of the future.

The infrastructure of the future city will look different than it does today. Our parks and schoolyards will be designed with native plants and trees to soak up water; our canals and streets will provide greenways for recreation and water management. The infrastructure of the future New Orleans will work with natural systems, be redundant and reliable, provide multiple benefits to residents, and even beautify the city.

Our adaptation must be both physical and behavioral. Our historical experience of living with water in Southeast Louisiana has been largely forgotten. Much of our water flows behind walls and through culverts, where we rarely see it. Despite being a place that is so defined by hydrology, we have systematically hidden water from our daily experience. We need spaces where we can regularly encounter the water that surrounds us, learn about how it shapes our city, and explore ways to manage its presence.

Generational change starts at a young age, with children being exposed to water during swimming lessons, in parks, and on neighborhood streets. For our students, incorporating our local geography and hydrology into formal education is essential to begin lifelong learning and engagement with the risks and opportunities of our collective future. With a new generation of emerging environmental stewards, we are poised to become a global leader in sustainable environmental management.

Being ready for a dynamic future economy will be an important outcome of our successful adaptation. Building new types of infrastructure and retrofitting conventional systems is already growing our local water economy. More than 14,000 new water management jobs have been added to our region since 2010, with more growth projected.

Our future in the Mississippi River Delta will inevitably be wet—with less land around us and more intense storms projected—and in order to thrive and prosper we need to accept water and transform how we manage it. Our dynamic environment both sustains and

threatens us in Southeast Louisiana, and our understanding and stewardship of it will only become more critical.

A resilient approach examines the relationship among critical systems and commits to collaboration between private, public, local, regional, and national actors. We have already begun to work together to protect and restore our coast. We are committed to comprehensive urban water management that will help us live with our abundance of water.

We are building the future delta city. We have a responsibility to the next generation of New Orleanians to be reflective of our past and flexible in adapting our city and our lives to a new reality. We have a responsibility to the world to share our progress.



Credit: Greater New Orleans Urban Water Plan

Water Boulevards



Today's conventionally paved streets are full of potholes and require frequent and expensive repairs, due in part to soil subsidence. Innovative street and public realm designs can slow and store rainwater, reducing flooding and slowing subsidence.



Multiple Lines of Defense

Greater New Orleans is surrounded by 133 miles (214 kilometers) of newly strengthened levees, floodwalls, and pump stations—the largest coastal flood control system in the nation. This recent \$14.5 billion investment in hard infrastructure is critical to our future, but coastal restoration and comprehensive urban water management must complement and support that investment to ensure maximum flood protection capacity.

Advance coastal protection and restoration

FEATURED ACTION

Leverage critical resources for coastal projects

Lead: City of New Orleans

Partners: Louisiana Coastal Protection and Restoration Authority; Greater New Orleans, Inc

ASPIRATION

The coast is healthy, functioning, and sustains industries, communities, and ecosystems.

▶▶ RESILIENCE VALUE

By protecting and restoring our coast, New Orleans can reduce flood risk, protect critical economic assets, and safeguard indispensable wildlife habitat and recreational areas.



To improve the flood protection provided by coastal wetlands, New Orleans will support the efforts of the Louisiana Coastal Protection and Restoration Authority (CPRA) by leveraging financial resources available through the BP settlement, the National Disaster Resilience Competition, and the RESTORE Act. **In partnership with the CPRA, the City will help advance coastal restoration and protection projects in Orleans Parish that benefit the city of New Orleans and the region, providing flood protection, habitat restoration, and workforce opportunities.**

The Coastal Master Plan’s risk reduction targets of “500-year” storm protection can only be achieved through a combination of “structural” flood protection, such as levees and coastal restoration, and “nonstructural” approaches, including home elevations and flood-proofing measures. New Orleans will be the model for combining these approaches through the development of coastal projects and complementary urban water management strategies and the reduction of risk by adapting the urban environment.

Our Disappearing Coast

Coastal land lost since 1932:
1,900 mi² (4,920 km²)

Projected land loss by 2060,
without action:
1,806 mi² (4,677 km²)

The channelization of the Mississippi River deprives Southeast Louisiana of the sediment that builds coastal wetlands, while the oil and gas, shipping, and logging industries have caused severe damage to make way for pipelines and canals. This damage causes saltwater intrusion that further degrades our natural ecosystem and exacerbates the effects of storms. Because coastal wetlands reduce storm surge and tropical storm intensity, their loss puts the city's flood protection system and national economic assets at risk. The coast also supports numerous communities, wildlife and recreational areas, and industries that depend on its health for their survival.

Data Source:
Coastal Protection and Restoration Authority,
2012 Coastal Master Plan

MAP
Future without action scenario

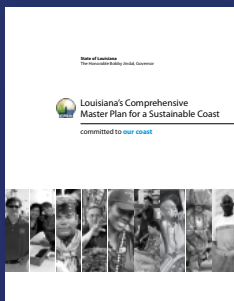
■ Land projected to be lost by 2060

ONGOING ACTION

Master Plan for a Sustainable Coast

Lead: Louisiana Coastal Protection and Restoration Authority (CPRA)
Launched: 2007, updated 2012, next update 2017

The 50-year, \$50 billion Coastal Master Plan combines hard structures, such as levees and floodwalls with restored wetlands and barrier islands to build multiple lines of flood protection. This plan uses advanced scientific modeling and projections and strategically aligns local, state, and federal resources to achieve comprehensive coastal protection.



Invest in comprehensive and innovative urban water management

FEATURED ACTION

Implement Urban Water Plan projects

Lead: City of New Orleans

Partners: Sewerage & Water Board of New Orleans; Trust for Public Land; Deltares; Greater New Orleans Foundation; Trimble; New Orleans Redevelopment Authority; GNO, Inc

ASPIRATION

New Orleans embodies the principle of *living with water*, managing urban stormwater and groundwater carefully to align with natural processes and support economic growth.

RESILIENCE VALUE

Through comprehensive urban water management, New Orleans can lower infrastructure costs, reduce flood risk to people and property, temper soil subsidence, and transform unsightly infrastructure into attractive amenities that enhance neighborhoods and improve quality of life.



The City of New Orleans will implement comprehensive stormwater management to complement the traditional drainage system of pipes and pumps with green infrastructure that delays and detains stormwater in landscaped spaces. The City is partnering with national and international experts to prioritize projects through a detailed analysis focused on hydrology, economy, and social equity. The City is actively pursuing funding for the first round of projects through FEMA Hazard Mitigation funds and the National Disaster Resilience Competition, among others. Through the incorporation of resilient design and construction standards, we intend to serve as a model for transforming our urban environment to live with water.

ONGOING ACTION

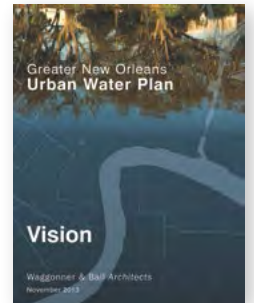
Greater New Orleans Urban Water Plan

Lead: GNO, Inc

Partner: Louisiana State Office of Community Development

Launched: 2013

The transformative vision for living with water in Greater New Orleans directly addresses groundwater and stormwater as critical factors in shaping a safer, more livable, and more economically vibrant region. The vision addresses three basic issues in Orleans, Jefferson, and St. Bernard Parishes: flooding caused by heavy rainfall, subsidence caused by the pumping of stormwater, and wasted water assets.



ONGOING ACTION



New Stormwater Regulations in Comprehensive Zoning Ordinance

Lead: City of New Orleans

Launched: 2015

Revisions to the Comprehensive Zoning Ordinance now require the mitigation of runoff associated with new development or reconstruction, using on-site water catchment techniques to slow surface flow and, in turn, reduce subsidence rates throughout the city. These new regulations are an important step in affecting change in land use development throughout our city.

ONGOING ACTION



Green Infrastructure Demonstration Projects

Lead: New Orleans Redevelopment Authority, Sewerage & Water Board of New Orleans

Partner: Louisiana State Office of Community Development

Launched: 2014

The New Orleans Redevelopment Authority (NORA) and Sewerage & Water Board of New Orleans (SWBNO) are building a series of green infrastructure demonstration projects to show the public how underutilized spaces can be developed to detain stormwater and designed to make neighborhoods more attractive. NORA is transforming vacant lots into rain gardens that draw runoff from the street, store it temporarily, and capture many of the pollutants it carries. SWBNO is funding innovative green infrastructure solutions such as green roofs, bioswales, and pervious pavement. These projects show us what is possible and how infrastructure can not only protect us but also beautify our communities.

Incentivize property owners to invest in risk reduction

FEATURED ACTION

Establish resilience retrofit program

Lead: City of New Orleans

Partner: Deutsche Bank—AllianceNRG

ASPIRATION

Households and business owners have access to the resources, capacity, and expertise required to adapt to their changing environment and future threats.

▶▶▶ RESILIENCE VALUE

By investing in their own resilience, households and business owners will create readiness at the community level that will spur economic development, lower individual liability, and reduce the burden on public funds for disaster recovery.



Rain gardens and home elevations, seen here in the Lower Ninth Ward, are examples of ways homeowners can invest in risk reduction.

New Orleans will develop a resilience retrofit program to provide incentives for property owners to reduce their own risk. The City is exploring the use of innovative financial instruments to launch the program, including the Property-Assessed Clean Energy (PACE) program. PACE is a voluntary program in which property owners can make energy efficiency improvements at little or no upfront cost, with loans repaid through property tax bills for up to 20 years. **Low-interest capital and a potential reduction in insurance premiums will serve as incentives to property owners to invest in storm resilience improvements** such as elevation, floodproofing, storm shutters, and stormwater management features.

SUPPORTING ACTION

Develop standards for resilient design

Lead: City of New Orleans
Partners: American Institute of Architects, US Green Building Council

Clear guidance on risk reduction measures in the urban development of New Orleans is critical. Specific design and performance standards will be developed for residential and commercial structures, as well as the public realm.

ONGOING ACTION

Community-based Green Infrastructure and Capacity Building

Lead: Water Wise NOLA
Launched: 2014

Water Wise NOLA is a group of community and professional partners working to advance green infrastructure in Greater New Orleans and strengthen public awareness of water-related issues. Water Wise NOLA promotes simple solutions to the problem of localized flooding, organizing workshops for homeowners, neighborhood organizations, and key professionals.

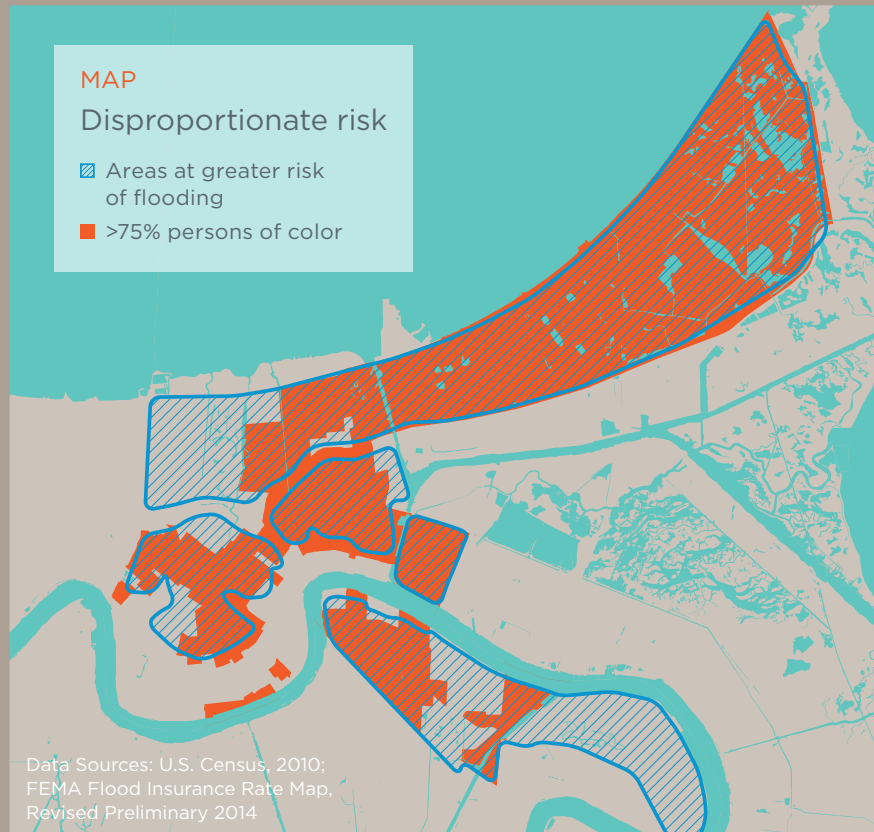


Credit: Water Wise NOLA

CHALLENGE IN CONTEXT

MAP Disproportionate risk

- ▨ Areas at greater risk of flooding
- >75% persons of color



Data Sources: U.S. Census, 2010; FEMA Flood Insurance Rate Map, Revised Preliminary 2014

Living with flood risk

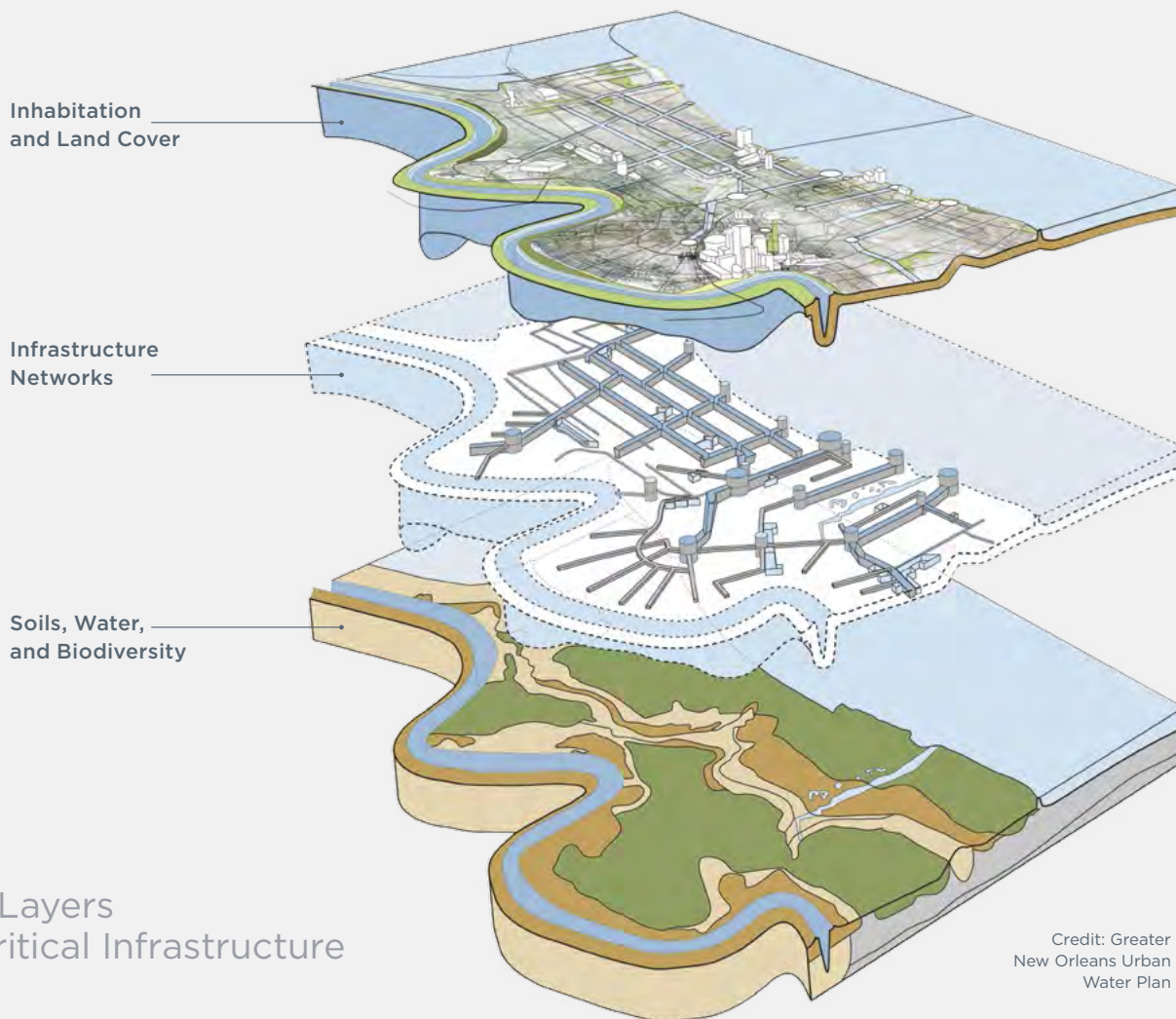
As wetlands were drained in the 20th century to make way for urban development and federal flood insurance became widely available, more households and businesses were constructed in flood-prone areas. Due to real estate policies that reinforced racial segregation and historic settlement patterns tied to topography, people of color and lower-income residents are today more likely to live in low-elevation areas at greater risk of flooding and subsidence.

CRITICAL INFRASTRUCTURE

Critical infrastructure in New Orleans is more than just levees, bridges, and canals. It is a complex series of interdependent built and natural systems that keep our coastal city safe, productive, and healthy. Part of a resilient approach to infrastructure is an accurate understanding of the full geographic and functional breadth of these systems and the connection between our built urban environment and the managed landscapes that surround us.

Shocks like hurricanes have cascading effects on the city’s critical infrastructure systems. When one system is compromised, it negatively impacts the function of other critical systems. For example, a power outage during a storm may compromise the function of the energy-intensive pumping stations, resulting in severe street flooding. We recognize the interdependence of these systems and are committed to their comprehensive management and adaptation to future conditions.

Infrastructure—such as reliable and affordable transportation and communication networks—is not just critical for protection against shocks, but also for supporting economic growth and stability, providing reliable service delivery, and enabling equitable access to opportunity for all New Orleanians.





100 RESILIENT CITIES NETWORK HIGHLIGHT

Inspiration from Rotterdam

Living and designing with water

The Netherlands, a country situated primarily below sea level, has always been at the forefront of innovation in water management, with a thousand-year history of building dikes and other control structures to protect against flooding. But with climate change, the country is seeing rising seas and heavier storms further challenge its ability to live with water. The city of Rotterdam has chosen to tackle the threats associated with impending climate change and flooding risks by embracing it as a chance to strengthen the main ambitions of the city. Surrounded on all sides by water, the Dutch delta city is looking to design innovations that turn the city into a sponge, creating countless spaces for absorbing and storing rainwater, including water plazas, green roofs, and even a water storage facility in an underground parking garage. These spaces not only reduce flooding in the city, but also connect water to opportunity, recreation, and beautification. As global leaders in living with water, the Dutch are exporting their expertise to other cities facing threats from climate change and sea level rise, creating jobs and growing their economy as a result.

For the Dutch, learning to live with water and adapting to a changing delta environment start at a young age. Children's books depict lessons about canals, and students compete in state-sanctioned sand castle building competitions coached by expert engineers to see whose structures can withstand the tide the longest. Water is ubiquitous in the lives of Rotterdammers, who every day cross scenic canals that flow through their city. Environmental awareness and education are deep and ongoing—as critical to the city's future as floodwalls and water plazas.

Credit: Oostip van Duivenbode



Create a culture of environmental awareness at every stage of life

FEATURED ACTION

Develop knowledge and capacity of emerging environmental stewards

Lead: City of New Orleans
Partners: Louisiana Children’s Museum, Ripple Effect, Evacuteer



Credit: LCM, Mithun

The future Louisiana Children’s Museum campus in City Park, focused on water education.

ASPIRATION

The next generation of New Orleanians has an accurate understanding of our physical environment and the risks we face, and has developed the capacity to prepare for and adapt to those risks.

▶▶▶ RESILIENCE VALUE

By equipping our youth with the knowledge and understanding of local hydrologic and geographic conditions and processes, we develop leaders for today and tomorrow for adapting to our changing natural environment.

We will actively facilitate connections that prioritize the development of environmental stewardship and disaster readiness in our region’s students. **The City will partner with organizations already serving as hubs for experiential learning about the environment and preparedness and support content development with the best information available about our changing environment.** Going beyond the inclusion of geography as a curriculum element, we seek expand to opportunities to experience the power of water and our environment across in-classroom subjects and in the wider city-as-laboratory. For example, Ripple Effect partners with teachers, designers, and water experts to rethink in-school science education. Around the city, students engage in site-specific design challenges that also meet national science standards.

We recognize the need for physical sites outside of schools for students and educators alike to interact and learn about how we live with water. As an example, the Louisiana Children’s Museum is committed to being a space for environmental education and experiences for children and adults—with a focus on all the ways we live with water in coastal Louisiana.



Ripple Effect is a collaboration of local designers, teachers, and water experts that promotes “water literacy” through design-based in-school instruction.

This topographic model helps educators at KIPP Central City Primary teach students about relationships among water, land, and people in New Orleans.

Credit: Ripple Effect

Create a culture of environmental awareness at every stage of life

FEATURED ACTION

Establish resilience center

Lead: City of New Orleans
Partners: Rockefeller Foundation; Tulane University; GNO, Inc; 100 Resilient Cities

ASPIRATION

New Orleans is a global leader in urban resilience, with the facilities and resources to share our experiences while continuing to learn from the daily realities of a complex urban condition.

▶▶▶ RESILIENCE VALUE

By fortifying our neighborhoods and practitioners with leadership in resilience thinking and practice, we can empower New Orleanians to recognize complexity and make well-informed decisions.



The Building Centre in London

The City and its partners will establish the Center for Resilience to support the outreach and capacity building functions of the Office of Resilience and Sustainability. Since many of the steps that are required to make our city more resilient require the action of individuals, community-based organizations, and business owners, the Center for Resilience will provide a space and programming to build awareness and expertise, to develop projects and partnerships, and to exchange ideas and practices both locally and globally.

Community outreach programming will offer an opportunity for global theories to meet local realities, advancing the public’s understanding of New Orleans’ challenges and connecting resilience concepts to our everyday lives. Leadership development programs will integrate resilience-driven thinking into the curricula of local leadership programs. Training and professional education will enable public and private sector practitioners to improve their technical skills and gain knowledge in best practices. The Center for Resilience will also host visitors, showcase the work New Orleans is conducting to build resilience, and export throughout the world the knowledge and expertise our city has developed.

SUPPORTING ACTION



Create leadership development program for city resilience

Lead: City of New Orleans

Partners: Neighborhood Partnership Network of New Orleans; GNO, Inc; New Orleans Regional Leadership Institute; CBNO/ MAC Bryan Bell Leadership Forum; Tulane University Disaster Resilience Leadership Academy

In order to prepare for and respond to future shocks and stresses, we must create and foster leadership within our communities and public agencies to spur, inspire, and encourage concepts of resilience on a daily basis among friends, family, and neighbors. In collaboration with community partners, the City will coordinate a resilience leadership curriculum, customized to local New Orleans organizations, culture, and challenges. This leadership program will empower local networks of community and civic leaders to effectively prepare for and respond to future disasters in their neighborhoods.

SUPPORTING ACTION

Launch Coastal New Orleans public awareness campaign

Lead: City of New Orleans

Before we can be prepared to incorporate resilience practices into our communities and businesses, we must first understand the urgency of environmental issues and why it is important to act today. The City will partner with other public and private organizations to develop a multimedia campaign to highlight the coastal conditions and processes that created our city, sustain it today, and threaten its existence. We will focus on our geography as a coastal delta city, the unique natural challenges that we face, and how we can all be environmental stewards.



Commit to mitigating our climate impact

FEATURED ACTION

Design and implement climate action plan

Lead: City of New Orleans

Partners: C40, Urban Sustainability Directors Network



ASPIRATION

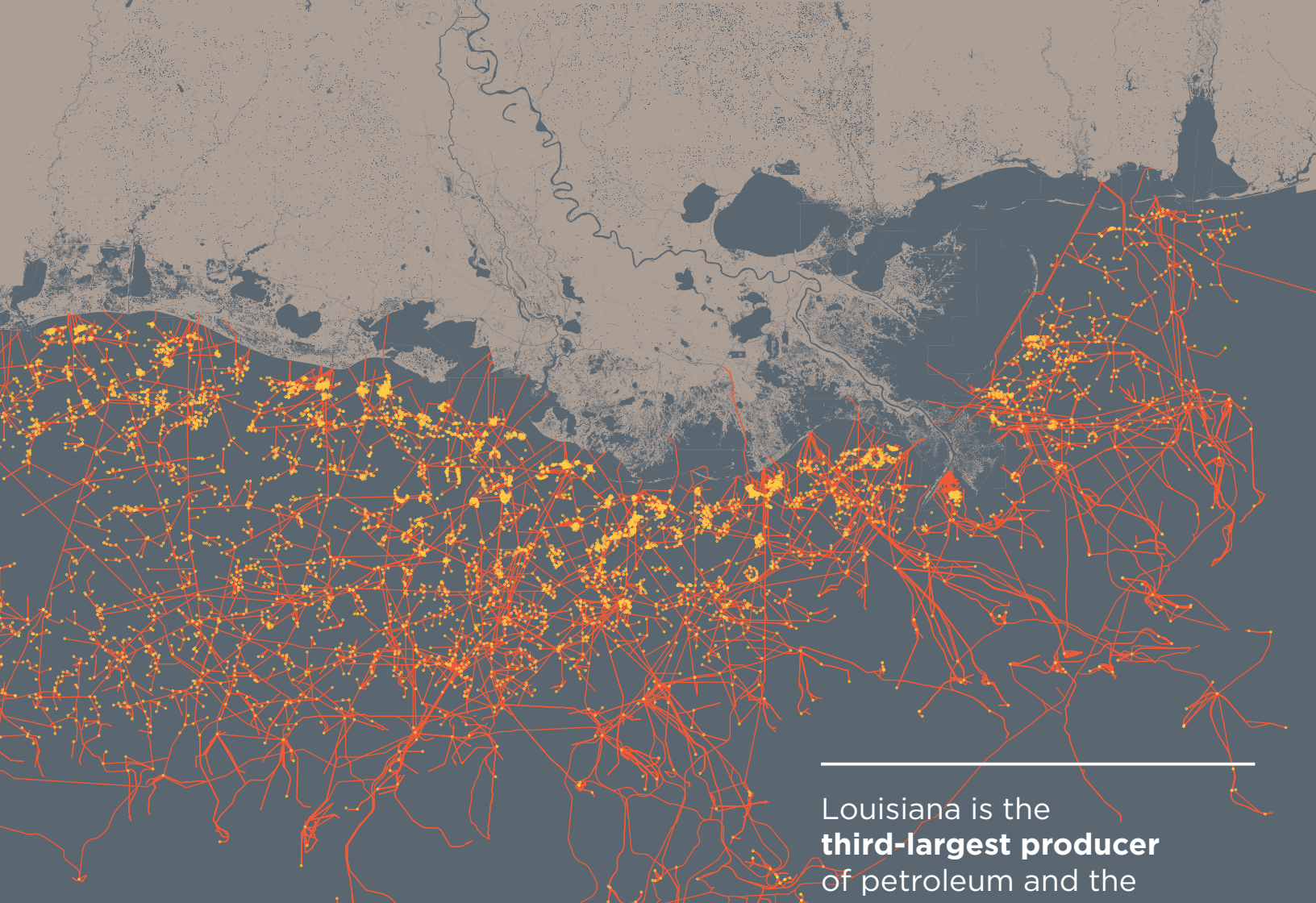
As a global community, we are slowing the pace of human-generated climate change.

▶▶▶ RESILIENCE VALUE

By joining the international community of cities committed to reducing their contribution to global climate change, we are also benefiting our local community through improved air quality and increased resource efficiency.

New Orleans is arguably more affected by climate change than any other US city, and while we are committed to adapting to our changing environment, we also share a responsibility to mitigate our impacts on climate change. New Orleans will join the growing international movement that seeks to limit our collective contribution to global climate change. **We will set aggressive greenhouse gas reduction targets for 2050 and implement a plan to achieve them.**

We will begin by determining our baseline emission levels, and then we will identify specific strategies to reduce them. The plan will set forth multiple strategies for reducing our climate impact, including transit improvements, land use policy changes, investments in alternative energy and energy efficiency, and greening and conservation projects. We will then monitor our progress against measureable goals. The climate action plan will augment our climate adaptation measures already underway. Many of our climate adaptation strategies, such as wetland restoration, green infrastructure, and transportation improvements, will also have mitigation benefits.



CHALLENGE IN CONTEXT

Louisiana is the **third-largest producer** of petroleum and the **second-largest producer** of natural gas in the US.

Dependence on Fossil Fuels

Every year Louisiana provides the US with more oil and gas than we import from Saudi Arabia. The extraction of fossil fuels has been critical to our region's economy for the past century. Thousands of Louisiana families rely on jobs in the oil and gas industry. But the blessing of abundant natural resources can also be a curse. Tens of thousands of miles of pipelines cut through our marshes, exacerbating coastal land loss, and fossil fuels are the primary producers of climate change-inducing greenhouse gases. As a region, we have been slow to shift our consumption and our economic drivers away from traditional energy sources like oil and gas and toward adopting large-scale renewable energy.

MAP

Offshore oil and gas infrastructure

- pipeline
- platform

Data Source: Bureau of Ocean Energy Management

CONNECT TO OPPORTUNITY

We are
an equitable
city.

We will:

Invest in household financial stability

Lower barriers to workforce participation

Continue to promote equitable public health outcomes

Continue to build social cohesion

Expand access to safe and affordable housing

Introduction

By investing in equity, we are investing in resilience. Equity will be the driving force behind our economy’s growth and innovation, our communities’ safety and stability, and our families’ health and prosperity.

New Orleans’ economic recovery and growth in recent years has been remarkable. Despite the enormous impacts from the floods of 2005, the global financial crisis, and the BP oil spill, New Orleans has continued to recover its population, add jobs, and keep overall unemployment lower than most cities around the country. Furthermore, new businesses are forming at a rate well above the national average, and New Orleans has been recognized nationally as a top location to start and grow a business. But this revitalization has not benefited everyone and in many cases has even furthered inequity.

While the majority of New Orleanians are African American, most low-income households and people of color have not shared in the recent economic growth and prosperity. Wages have declined when adjusted for inflation. Income inequality has grown. Joblessness

exceeds 50 percent among African-American men. Minority-owned businesses compose 27 percent of total firms in metro New Orleans but receive just 2 percent of total business receipts. The effects of workforce inequality extend beyond the worker or job seeker. Today in New Orleans, 39 percent of children and 27 percent of all New Orleanians are living below the poverty line. Wide disparities in public health outcomes exist, including higher rates of heart disease, diabetes, and cancer, and lower life expectancies for African-American residents compared to white residents.

We are actively working to address these inequities with a comprehensive set of projects and initiatives that reduce violence, build healthy and stable communities, connect workers to opportunities, and increase wages and improve livelihoods. However, even as we look to build equity in the future, we cannot ignore past injustices and our city’s legacy of inequity. Racial and economic inequity is present in every facet of our society and threatens our resilience as a city. We must meaningfully address this challenging reality and its effects in our systems, our institutions, and our communities.



Credit: CPRA

Coastal restoration projects will provide more local job opportunities as the water sector grows.

The Opportunity of Growing Industries


Southeast Louisiana is fast emerging as a leader in the environmental services sector, but sustained growth and benefits to our local workforce and economy are not inevitable. We need to continue to foster local business growth and local hiring practices to create more local job opportunities and keep wealth in our communities. Greater New Orleans, Inc, the regional economic development alliance, is committed to further developing the emerging water and environmental services sector, with a goal of Southeast Louisiana becoming a global hub of businesses that profitably manage environmental issues and challenges. At the same time, the City of New Orleans is working to prepare the local workforce for the dynamic industries of the future city, especially as we embrace living with water.

Our dynamic economy requires an adaptable workforce with the skills and training needed to pivot to new industries. We witnessed the impacts of economic shifts when modernization in the shipping industry and an economic downturn in the petroleum industry left generations of workers behind. We have to prepare today's workforce for emerging industries and connect New Orleanians to the opportunities of the 21st century.

Access to opportunity comes in many different forms. It means providing sector-specific technical training and "soft skills" development. It also means partnering with our anchor institutions and emerging industries to change hiring practices and strengthen employment opportunities for local job seekers and small businesses. Reliable and affordable childcare, physical and behavioral health care, and transportation are also fundamental to connecting potential workers to employment.

We are working to increase household and family stability since it directly influences our ability to succeed. Trauma and severe stress interfere with learning. Housing instability and poor health threaten careers and frequently result in debt. Incarceration often leads to further crime rather than to rehabilitation. Hopelessness can be more harmful than a hurricane.

By investing in the safety, stability, health, and housing of our communities, New Orleans can create connections to opportunity that did not exist previously. The economic growth that can be realized from investing in our people is an example of the Resilience Dividend. Just as we must adapt our city to align with the environment, so too must we shift the landscape of opportunity toward equity.



“There can be no renewal of our relationship with nature without a renewal of humanity itself.”

– Pope Francis
Encyclical Letter, *Laudato si'*,
On Care for Our Common Home, 2015

Invest in household financial stability

FEATURED ACTION

Create emergency savings account program

Lead: Foundation for Louisiana

Partners: City of New Orleans, Micro Finance Opportunities

ASPIRATION

Households and business owners have the resources, capacity, and expertise required to adapt and respond to future shocks and threats.

▶▶▶ RESILIENCE VALUE

By increasing savings, households will have greater financial stability and be better prepared to respond to shocks while growing our overall economy in an equitable way.



Building on the model of the Individual Development Account, a **savings-matching program for low- and moderate-income earners to set aside funds for emergency uses will be launched.** A lack of access to savings poses a threat to many New Orleanians in times of crisis. By building savings for emergency purposes, New Orleanians will be better prepared to handle unexpected costs. The program will provide an entry point to banking for the many unbanked and under-banked individuals in New Orleans, making them less susceptible to predatory lending and costly financial products. The emergency accounts will be complemented by an effort to empower individuals and families to become more financially literate. Financial education efforts will focus on understanding credit, banking, and investment strategies.

Income inequality

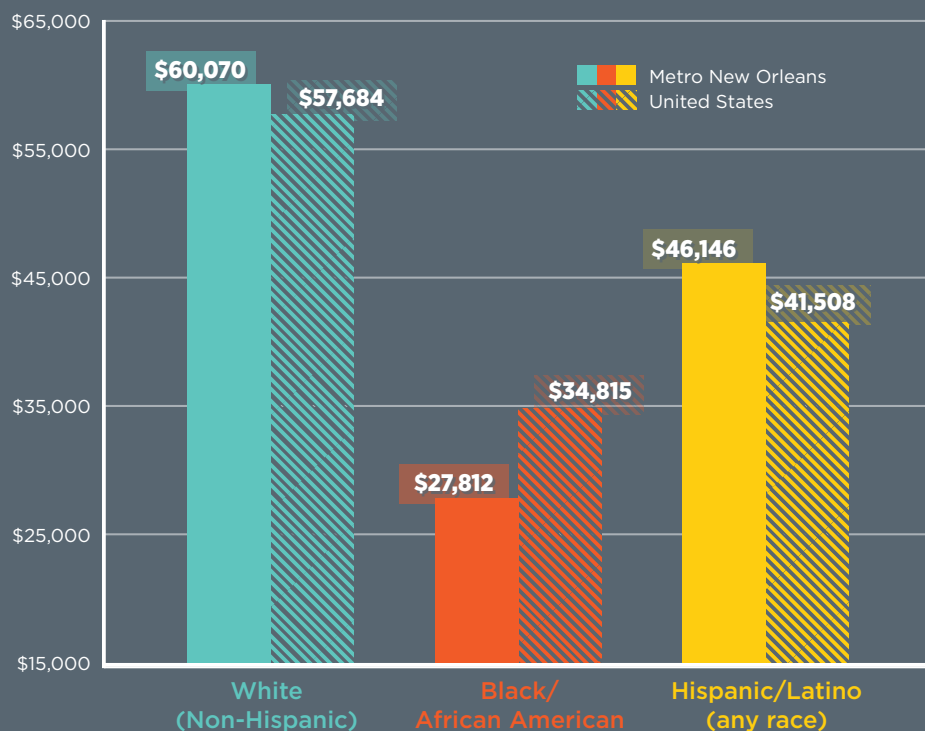
New Orleans' median household income of \$36,631 is **30% lower** than the US median household income of \$52,250.

12.5% of New Orleans residents are unbanked (without a bank account) compared to **5.1%** in the metropolitan area.

32.5% of African-American households in New Orleans are unbanked.

People of color in New Orleans are more likely to bear the burden of poverty. The unequal distribution of wealth that has plagued New Orleans for decades has produced communities with high concentrations of poverty and little access to avenues of economic and social mobility.

Median Household Income by Race and Ethnicity



Source: The Data Center, New Orleans Index at Ten

ONGOING ACTION



Incorporate living wage provision into public contracts

Lead: City of New Orleans

Launch: 2015

After raising the minimum wage for public employees in 2014, the City will continue to lead by example, extending living wage requirements to publicly issued contracts with private companies. By expanding the number of people in New Orleans and its region who are able to earn a wage that can support a family's needs, we succeed in creating a more resilient economy and population.

Lower barriers to workforce participation

We are building and connecting the future workforce to emerging economic opportunities and social growth by preparing local residents with skills, education, support, and greater access to resources.

FEATURED ACTION

Launch digital divide innovation challenge

Lead: City of New Orleans
Partner: CityMart

ASPIRATION

All New Orleanians have the opportunity to gain the skills, training, education, and support needed to fully participate in our economy, prosper, and reach their full potential.

▶▶▶ RESILIENCE VALUE

By increasing digital participation, New Orleans will be more economically competitive, better prepared to respond to shocks, and more likely to reduce disparate outcomes in income, employment, education, and health.



Rosa F. Keller Library in Broadmoor

The City will launch a challenge to call for creative approaches to increasing digital access, literacy, and participation throughout New Orleans. This initiative will investigate who is lacking access and literacy and the best approaches to these challenges. The City and its partner will help define the problem, carry out market research to understand what solutions exist, and engage a wide range of experts and entrepreneurs who have developed successful strategies elsewhere to craft strategies for New Orleans. Through the challenge, New Orleans will seek to increase digital participation in order to enhance residents' connection to educational and workforce opportunities, heighten awareness of emergencies, and make the city more economically competitive.

The Network for Economic Opportunity

Lead: City of New Orleans

Launched: 2014

Partners: Ford Foundation, WK Kellogg Foundation, Living Cities, Foundation for Louisiana, Greater New Orleans Foundation

The Network for Economic Opportunity (the Network) focuses on connecting disadvantaged job seekers and businesses to opportunities. Since launching in 2014, the Network's key initiatives have included:

- **Policy improvements**, such as strengthening enforcement and compliance with the disadvantaged business enterprise (DBE) program and executing a local hiring initiative to employ residents
- **Opportunity centers**, where workforce development organizations provide foundational skill development
- **Case management** and supportive services
- **Sector-specific job training** to increase opportunities through partnerships with large employers and projects including the new airport terminal, new hospitals, and the Sewerage & Water Board of New Orleans

The water management sector in Greater New Orleans is one of our fastest-growing fields. With over 14,000 new water jobs added since 2010, the region is now beginning to face a skilled labor shortage, particularly among the local workforce. **The Network has forged a partnership with Delgado Community College's Water and Wastewater Treatment Program and the Sewerage & Water Board to train certified water infrastructure personnel**, creating direct local career pathways in advanced manufacturing. We will continue to increase the impact of these specialized training programs to connect our local workforce to the growing opportunities of the future economy.

Anchor industries in our region offer quality jobs with career potential. The Network is engaging the leadership of these industries to strengthen employment and procurement opportunities for area job seekers and small businesses. The Network is also exploring models for worker-owned cooperatives that could provide anchor institutions large-scale, locally procured services and enterprises that produce and keep wealth within our communities. Local hiring and purchasing commitments are not the only ways in which anchor institutions can maximize their positive impact on the local community, but they are essential to increasing equitable access to livable wages and careers.

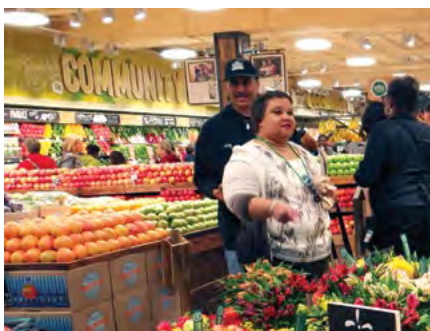


Strive New Orleans is a program of the Network for Economic Opportunity that provides "soft skills" training and coaching for people struggling to find work.

Continue to promote equitable health outcomes

We are working together to address the many complex health challenges and inequities that face our city. New Orleans Health Department is leading efforts with a resilience lens—working to incorporate “health in all policies”—through which our land use, economic development, nutrition, and transportation are also considered fundamental to our health.

ONGOING ACTION



Fresh Food Retailer Initiative

Lead: City of New Orleans

Partners: The Food Trust, HOPE Enterprise Corporation

The City of New Orleans Fresh Food Retailer Initiative continues to increase access to fresh foods in traditionally underserved neighborhoods by providing forgivable and/or low-interest loans to supermarkets, grocery stores, and other fresh food retailers.

ONGOING ACTION

New Orleans Community Health Improvement Plan

Lead: City of New Orleans

Partner: Louisiana Public Health Institute

The New Orleans Health Department has joined with a community partner to implement a community health improvement plan to promote these basic tenets: access to physical and behavioral health care, violence prevention, healthy lifestyles, and family health. In addition, it addresses social determinants of health disparities. This plan will result in a growing number of affordable health clinics, an increase in outpatient mental health services, renewal of the Greater New Orleans Community Health Connection (GNOCHC) waiver through 2016, and outreach efforts to increase enrollment in health insurance programs, working toward making health care accessible to all New Orleans residents.



CHALLENGE IN CONTEXT

17% of adults in the city were uninsured in 2013, and from 2009 to 2013, African Americans ages 18 - 64 were nearly twice as likely to be uninsured than white adults.

12% - 15% of New Orleans children suffer from asthma—a leading cause of school absenteeism.

100 RESILIENT CITIES NETWORK HIGHLIGHT

Inspiration from Mexico City

Comprehensive solutions for improving health



In 1992, the U.N. called Mexico City the “most polluted city on the planet.” Poor air quality had catastrophic effects on the health and opportunity of its residents—leading to tens of thousands of hospitalizations each year and causing schools and offices to close on unsafe air days. Since then, the city has become a leader in environmentalism with bold and innovative approaches to regulation, smart design, and building awareness.

Mexico City closed down or moved high-polluting industries, required gasoline to be reformulated, and introduced a program called “Hoy No Circula,” which requires commuters in private cars to stay off the road one day per week. These regulations have been supported by smart design and resource-efficient systems, including expanded subway networks, bicycle sharing, zero-emission bus corridors, and a design for the city’s new airport that includes park spaces called “lungs” that reduce and absorb air pollutants. Recognizing a need for cultural changes, the city developed various outreach programs to inform people about the problem and invite them to act. The city’s air quality home page, which receives upward of 50,000 visitors a day, shares real-time data and resources with residents.

While Mexico City can still further reduce harmful air pollutants, many have recognized the great strides the city has taken over the past two decades toward improving health and quality of life for residents. In 1992, Mexico City had only eight days with air quality considered “good.” In 2012, that number had improved to 248.



Continue to build social cohesion

New Orleans continues to build social cohesion by directly confronting the persistent challenges of violence and racism. By intervening at every level of society—from the individual to the institutional—New Orleans is seeking ways to reduce gun violence and incarceration, develop opportunities for our young men, and open new forums for dialogue on racial reconciliation.

ONGOING ACTION

NOLA FOR LIFE

Lead: City of New Orleans
Launched: 2012

The City of New Orleans launched a comprehensive murder reduction strategy in 2012 called NOLA FOR LIFE, which uses prevention, intervention, enforcement, and rehabilitation strategies to help young people and families succeed. NOLA FOR LIFE, along with partner organizations and volunteers, has developed initiatives to reduce violence and shootings, promote jobs and opportunity, revitalize neighborhoods, and strengthen the New Orleans Police Department.



Midnight Basketball is one of many NOLA FOR LIFE programs connecting young New Orleanians with positive role models, community resources, jobs, and educational opportunities.

CHALLENGE IN CONTEXT

Despite major reductions since 2004 due in part to policy reforms and outreach efforts, **incarceration rates that exceed three times the national rate** further strain social cohesion in New Orleans neighborhoods and continue to act as barriers to workforce participation.

ONGOING ACTION

Welcome Table New Orleans

Lead: City of New Orleans
Partners: William Winter Institute for Racial Reconciliation, WK Kellogg Foundation
Launched: 2014

Launched in 2014, the **Welcome Table brings together diverse groups of New Orleanians to work toward racial reconciliation.** They share experiences and stories, build relationships, listen and learn from one another, and finally, create and execute projects that will build a better, stronger city. Welcome Table groups come together to work through a facilitated process of discussion, relationship building, and action. By meeting in safe, civil, and facilitated spaces, the groups are able to work through each phase to build greater understanding of each other and critical issues facing our city.



The first New Orleans Welcome Table participants share their stories in 2014.

100 RESILIENT CITIES NETWORK HIGHLIGHT

Inspiration from Medellín

Integrated infrastructure for opportunity and hope

In recent years, Medellín, Colombia, has become known as a global model for confronting city violence, polarization, and social inequity. For a place that was once known around the world for its drug cartels and incredible rates of violence—in excess of 5,500 murders per year in the early 1990s—Medellín's success is truly remarkable. By investing in its most disadvantaged neighborhoods and directly connecting them by transit to new opportunities, Medellín has transformed itself and the lives of countless residents.

The most striking example of infrastructure improvements takes the form of the Metrocable—a gondola system that connects some underserved and formerly isolated hillside neighborhoods to the commercial and industrial opportunities of the valley. The transit expansion was not completed in a vacuum, however. Complementary investments have also been made in the form of integrated public libraries, community centers, and parks that improve the social and physical landscape of those areas most affected by violence in the past. Perhaps most importantly, meaningful attention and investment have been given to communities that have felt overlooked in the past, improving trust and a sense of pride.

These new additions have not only reshaped the urban environment in a beautiful way, but can also be credited with helping to drastically lower the city's crime rate. By 2013, the city reported a reduction in its murder rate by a factor of 10 compared to the 1990s.

Credit: Megan Echols

Expand access to safe and affordable housing

SUPPORTING ACTION

Launch Integrated Housing Policy

Leads: City of New Orleans

Partners: US Department of Housing & Urban Development, LA Office of Community Development, LA Housing Corporation, Housing Authority of New Orleans, NORA

The Integrated Housing Policy will establish the framework by which the City will invest in both place and people to expand access to a range of safe, quality housing options that are affordable to them and with access to jobs, services, and neighborhood amenities that support their families and well-being.

This policy is based on a multilayered approach of increasing the supply of affordable housing through the strategic use of financial subsidies and development incentives while building the skills of residents and the capacity of small and disadvantaged business enterprises to take advantage of the growing number of quality, high-wage jobs and contracting opportunities in the metropolitan area.

This policy builds on the work of the past decade, in which local, state, and federal government agencies, through significant coordination and in partnership with non-profit and for-profit housing developers, have already made significant investments in affordable housing, developing nearly 5,000 affordable rental units, completing 637 housing renovations for low-income homeowners, and building 551 permanent supportive housing units. Additionally, four major public housing developments have been completely redeveloped as mixed-income communities, transforming those neighborhoods and improving the surrounding area.



ONGOING ACTION

HousingNOLA

Lead: Greater New Orleans Housing Alliance

Partners: Foundation for Louisiana, Greater New Orleans Foundation, City of New Orleans

Launched: 2015

HousingNOLA is a community-based 10-year plan designed to meet the housing needs of all New Orleanians, focused on equity, design, and accessibility. Public, private, and non-profit stakeholders are working together to promote access to safe and affordable housing across the city.

ONGOING ACTION

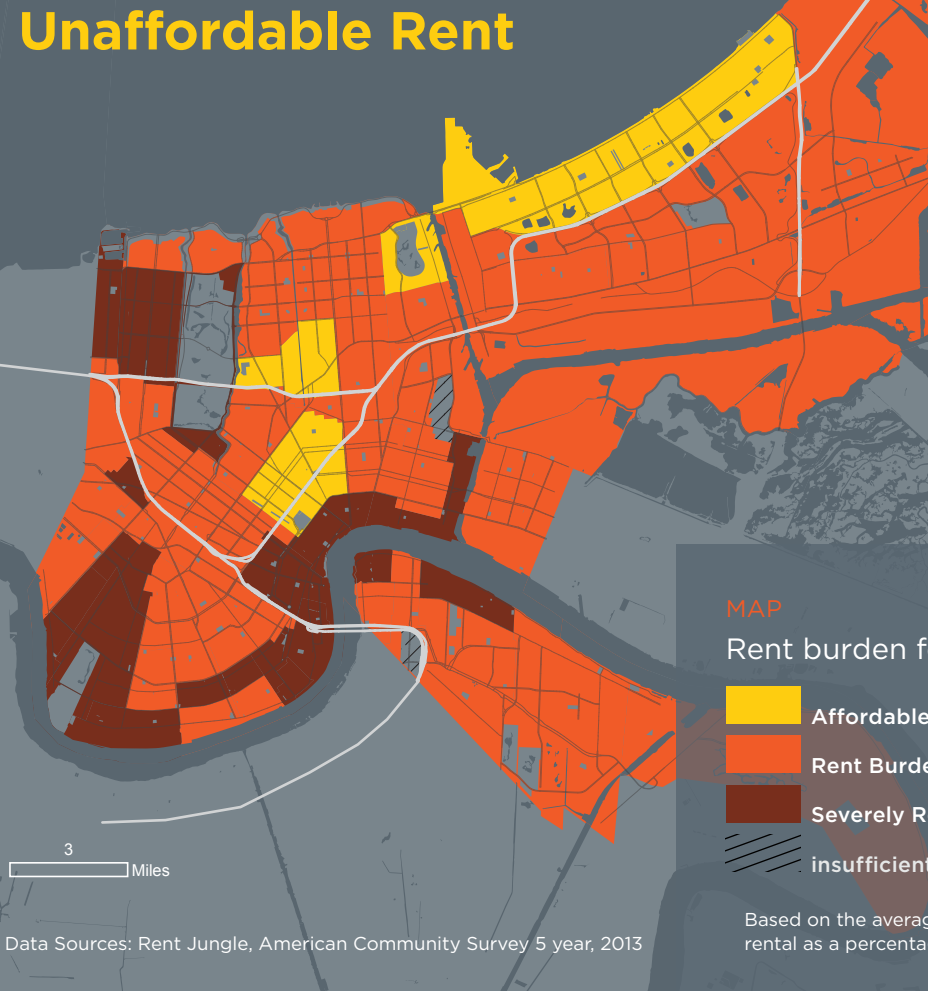
Affordable Housing Requirements in Comprehensive Zoning Ordinance

Lead: City of New Orleans

Revisions to the Comprehensive Zoning Ordinance now require the inclusion of affordable housing. Planned developments must now include affordable housing to pursue density bonuses, and a new downtown riverfront district requires affordable units in all new development.

Unaffordable Rent

More than half of all New Orleans households rent, compared to roughly a third of households nationally. Over the past decade, rents have been rising faster than incomes, resulting in a rising number of households paying more than 30 percent of their incomes in rent—considered unaffordable by federal standards. Lack of affordable housing forces many households to move to more affordable areas in the region, where public transit options to employment are less accessible.



MAP

Rent burden for a family of four, by neighborhood

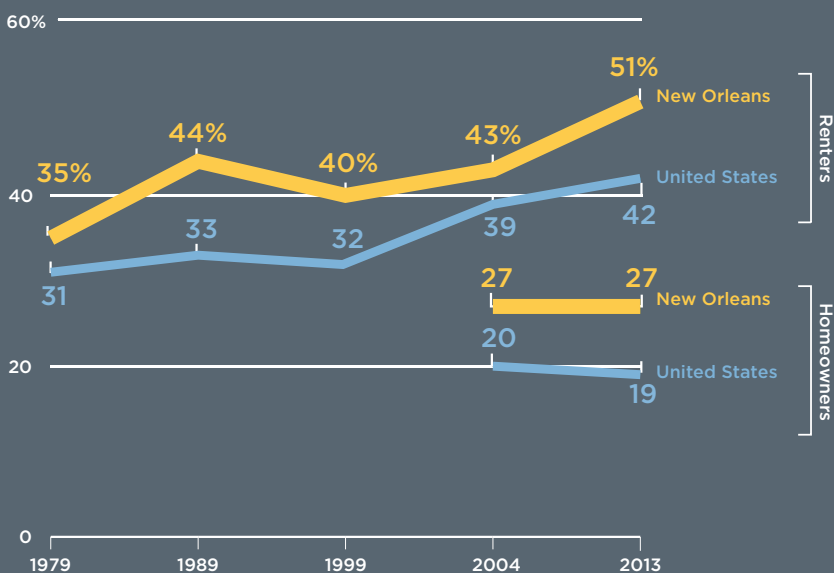
- Affordable (0% - 30% of median income)
- Rent Burdened (31% - 50% of median income)
- Severely Rent Burdened (51% - 87% of median income)
- insufficient data

Based on the average neighborhood listing price of a three-bedroom rental as a percentage of citywide median income for a household of four.

Data Sources: Rent Jungle, American Community Survey 5 year, 2013

Households paying unaffordable housing costs

35% or more of pre-tax income on housing



Source: The Data Center, New Orleans Index at Ten

More than half of renters in New Orleans are rent burdened, meaning they spend more than 30% of their income on housing costs.

Monthly median rent for a one-bedroom apartment in New Orleans has increased from **\$698** in **2004** to **\$925** in **2014, surpassing the national average.**

TRANSFORM CITY SYSTEMS

We are a
dynamic and
prepared
city.



We will:

Redesign our regional transit system to connect people, employment, and essential services

Promote sustainability as a growth strategy

Improve the redundancy and reliability of our energy infrastructure

Integrate resilience-driven decision making across public agencies

Invest in pre-disaster planning for post-disaster recovery

Develop the preparedness of our businesses and neighborhoods

Introduction

We are building a New Orleans for the future—one that embraces change, prepares for the risks of the future, and honors our traditions. To achieve this vision, we must not only adapt, we must transform.

Our future city will be one in which we live with water, invest in opportunities, and prepare ourselves for whatever unforeseeable challenges we may face. In order for people to connect to the opportunities of the future, we need modern and efficient transportation options to get workers to jobs and students to school. In order to bounce back from future shocks, we must prepare our city, neighborhoods, and businesses. In order to reduce our reliance on fossil fuels and join the global community in mitigating climate change, we must invest in renewable energy sources and design for greater efficiency.

Shocks threaten our existence and complicate our daily lives. Sometimes they come in the form of a hurricane, while other times an electrical surge interrupts our access to clean water.

Our city has faced significant shocks over the past decade in the form of infrastructure failures, floods, recessions, oil spills, and storms. While we cannot predict exactly what future challenges are ahead or when they may come, we can be certain we will face them. Planning and preparing for future shocks is critical. This means making sure small businesses have tools to open sooner after storms. It also means developing a plan in advance for how we will recover our critical infrastructure, deliver social services, and rebuild our homes after a disaster. By planning in advance of a major shock, we can accelerate the recovery process, make more efficient use of scarce resources, and reduce the overall economic and social impact to the city.



In order to be a city that supports the health, safety, and prosperity of its people, we need systems that are reliable—both in times of crisis and in our daily lives. A comprehensive and efficient transit system is key to creating opportunities for social mobility. In order to be an equitable city, it is imperative that we invest in a multimodal regional transportation system that connects people to jobs, education, services, and recreation.

Part of reliability is an understanding of where redundancy is most appropriate—knowing where backups can ensure the continuity of our most critical services. By creating redundancy in the electrical grid, we can reduce downtime at facilities like hospitals and pumping stations, thereby limiting the potentially devastating impact of electrical outages. By reducing the rate of increasing demand through energy efficiency measures and diversifying production sources through renewable energy, we can reduce our impact on the environment.

During the past five years, the vast majority of basic municipal services and structures have been updated or transformed. Our work is not done. In order to be resilient, city government cannot simply provide basic public services but must also make these

delivery systems flexible to future needs, robust and redundant in the face of shocks, integrated across agencies and departments, and responsive to community concerns. The public and private sectors must incorporate resilience thinking into decision-making processes to ensure that investments are strategic, create multiple benefits, and have a view to the future.

Through better management, coordination, and service delivery, we can unlock value by improving daily life while also preparing the city as a whole for future shocks. By modernizing our operational systems, we will better equip residents and businesses to evolve from consumers of public services to partners in addressing shared challenges.

Our delta city is already defined by its dynamism, and our future will only be more complex. We need to prepare now by building systems that are flexible enough to respond to changing demands and conditions. Transforming city systems is about taking action today to build the city of tomorrow.

“Planning is most effective when it is practiced in advance.”

— William McDonough

Redesign our regional transit system to connect people, employment, and essential services

FEATURED ACTION

Redesign regional transportation systems

Lead: City of New Orleans, Regional Transit Authority
Partners: Ride New Orleans, Bike Easy



ASPIRATION

New Orleans is a car-optional city with an integrated, efficient, and reliable multimodal regional transit system, prioritizing connections to employment and focusing on pedestrian and bicycle safety.

▶▶▶ RESILIENCE VALUE

By investing in a robust world-class transit system, we will be more equitable, be more economically competitive, reduce our environmental impact, and support growth.

The City will hire a Transportation Coordinator to facilitate a transit system redesign and implementation strategy to connect people, employment, and services. The City will lead by example in promoting mass transit use by providing public employees with a pre-tax transit pass.

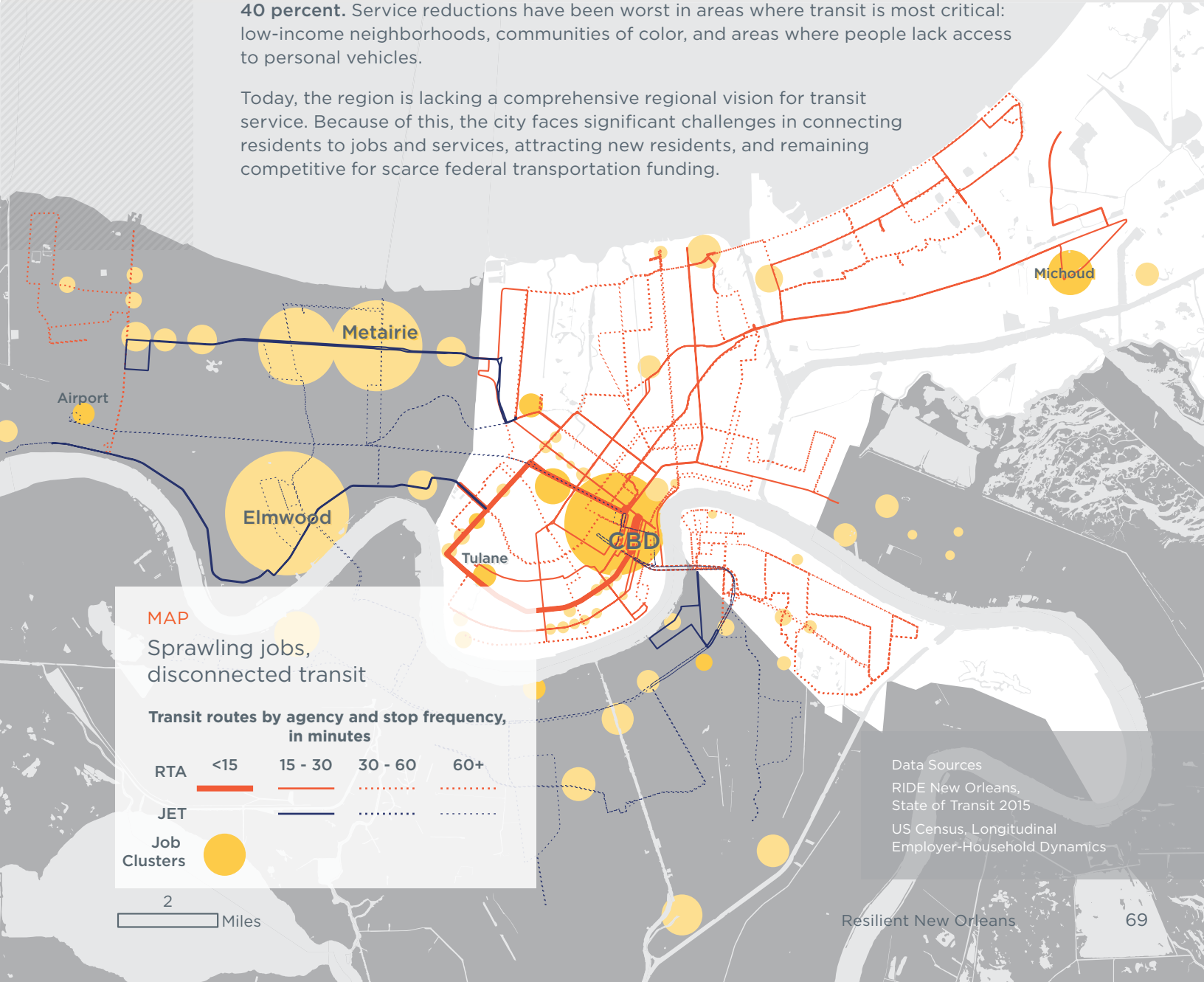
The City of New Orleans will work with the Regional Transit Authority (RTA), neighboring jurisdictions, local advocacy organizations, and national experts to develop a multimodal regional transit vision. We will work together to create a detailed road map to guide investment in service improvements and expansion today and in the future, with a view to developing a comprehensive regional network. Establishing critical linkages between regional economic development projects and employment centers, such as the UMC-VA Medical Center and Louis Armstrong International Airport, identifying potential bus rapid transit (BRT) corridors will help guide early planning efforts. Our future multimodal transit system will integrate bicycle and pedestrian networks, with a “Vision Zero” goal of no pedestrian or bicycle fatalities on city streets.

Our jobs are regional, but our transit system is not.

New Orleans was late to create a regional transit authority, doing so only in the late 1970s and early 1980s, and the effort was curtailed from the outset by the decision by surrounding parishes to withdraw from the Regional Transit Authority. While any efforts at regional transit floundered, the RTA operated an efficient and widespread system—primarily based on bus service—that served the entire city with frequent and dependable routes until the eve of Katrina.

However, since Katrina, **New Orleans’ transit system has only regained 45 percent of the level of bus service**, and the **operating budget for the RTA has been reduced by almost 40 percent**. Service reductions have been worst in areas where transit is most critical: low-income neighborhoods, communities of color, and areas where people lack access to personal vehicles.

Today, the region is lacking a comprehensive regional vision for transit service. Because of this, the city faces significant challenges in connecting residents to jobs and services, attracting new residents, and remaining competitive for scarce federal transportation funding.



MAP
Sprawling jobs,
disconnected transit

Transit routes by agency and stop frequency, in minutes

Agency	<15	15 - 30	30 - 60	60+
RTA	Solid Red Line	Dashed Red Line	Dotted Red Line	Long Dashed Red Line
JET	Solid Blue Line	Dashed Blue Line	Dotted Blue Line	Long Dashed Blue Line

Job Clusters
Yellow Circle

Data Sources
RIDE New Orleans,
State of Transit 2015
US Census, Longitudinal
Employer-Household Dynamics

2 Miles

Promote sustainability as a growth strategy

FEATURED ACTION

Launch Downtown Energy Efficiency Challenge

Lead: Downtown Development District

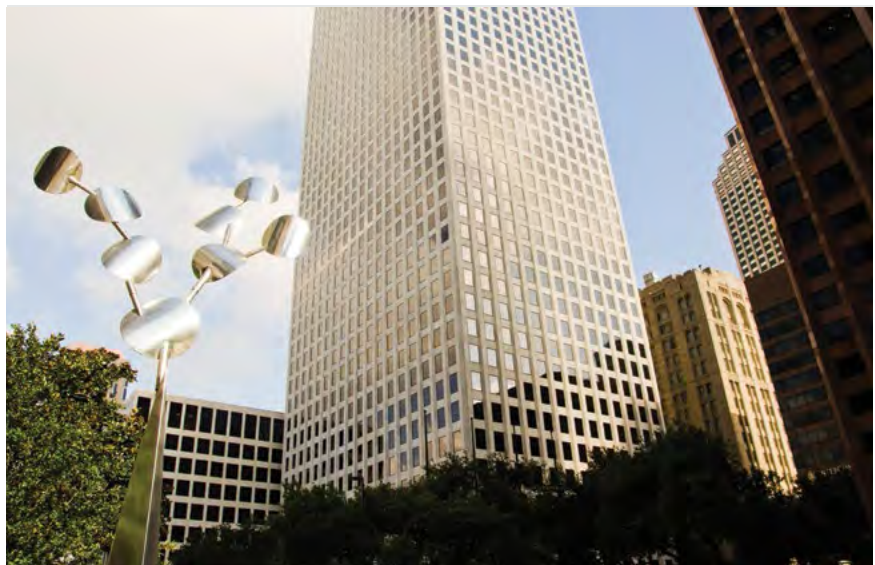
Partners: City of New Orleans, Entergy

ASPIRATION

New Orleans is a national leader among peer cities in reducing energy use and its related environmental impact.

RESILIENCE VALUE

By reducing energy use, New Orleans will reduce operating costs for businesses, reduce the city's impact on the environment, and promote the city as a leader in sustainability and climate adaptation.



The City will partner with the Downtown Development District (DDD) to launch a Downtown Energy Efficiency Challenge that will engage property owners, businesses, and employees in a one-year competition to reduce overall energy consumption in the New Orleans CBD. City Hall will lead by example by reducing its energy consumption, seeking renewable energy sources, and promoting good practices.

ONGOING ACTION

City of New Orleans Energy Efficiency and Usage Initiatives

Lead: City of New Orleans

The City has begun to reduce the energy consumption of public assets. Fifty-five public school buildings have been built or renovated to LEED silver standards. The city replaced 23,000 streetlights with new energy-efficient LED fixtures, leading to a significant cost savings. The city stands to save significantly more by increasing efficiency in other public facilities and introducing renewable sources of energy.



Credit: Jaysin Trevino

100 RESILIENT CITIES NETWORK HIGHLIGHT

Inspiration from Chicago

Leading by example on efficiency and sustainability



In 2000, Chicago built the city's first green roof garden on City Hall to signal to residents and businesses the city's commitment to sustainable strategies and to demonstrate the potential of innovative retrofits to Chicago's historic building stock. This green roof reduces stormwater runoff, conserves energy, decreases the urban heat island effect, and improves air quality. Over the past 15 years, hundreds of property owners across Chicago have followed City Hall's lead and installed green roofs of their own, supported by incentive programs for existing buildings and encouraged by "cool roof" regulations on new developments.

When it comes to sustainable design, the City of Chicago continually leads by example. The City's current Retrofit Chicago initiative is a coordinated, cross-sector plan to improve energy efficiency in municipal, commercial, and residential buildings across the city. Through creative financing strategies, the city is upgrading 60 municipal buildings—including libraries, police stations, and health care facilities—to reduce energy consumption and operating costs. In addition to public sector improvements, over 20,000 residential units have been upgraded, creating savings for renters and homeowners. Retrofit Chicago's voluntary Commercial Buildings Initiative sets a goal of 20 percent energy use reductions in five years for participating buildings. Through these programs, buildings across the city are seeing gains in efficiency and savings on utility bills, while creating jobs and improving the city's impact on the environment.

Improve the redundancy and reliability of our energy infrastructure

FEATURED ACTION

Launch microgrid pilot project

Lead: City of New Orleans

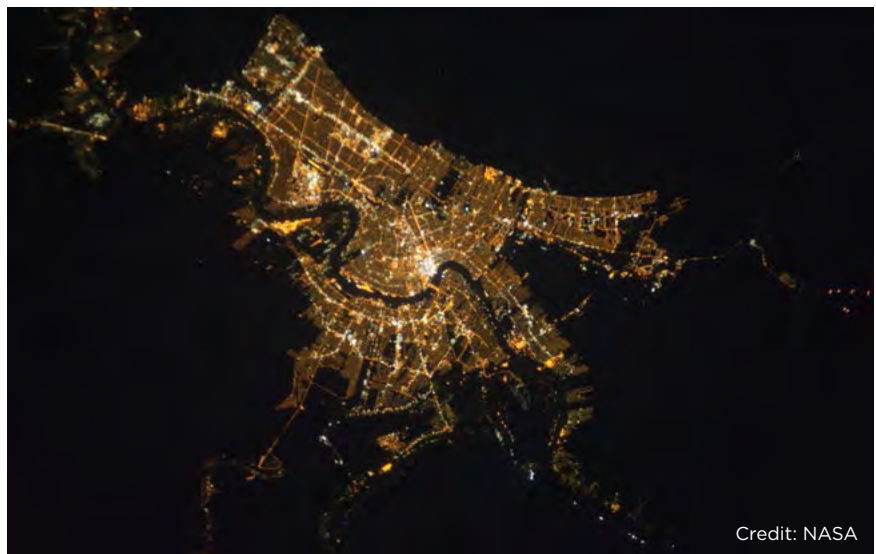
Partners: US Department of Energy, Sandia National Laboratories, Sewerage & Water Board of New Orleans, Entergy

ASPIRATION

Greater New Orleans has a reliable and redundant energy production and distribution network that is able to meet and adapt to the increased demands and risks of the 21st century.

▶▶▶ RESILIENCE VALUE

By providing energy backup during shocks and outages for a variety of co-located critical infrastructures (e.g., pumping stations, hospitals, communications), we can support faster disaster response and recovery, and avoid losses of life and property.



Credit: NASA

The City of New Orleans is assessing the risks of energy outages to critical infrastructure systems and conducting feasibility studies for backup generation, or microgrids. Microgrids are small backup electrical generation and distribution systems that can disconnect from the traditional grid to operate autonomously and help mitigate the effects of outages. Microgrids can help strengthen grid resilience and support quicker system response and recovery. Microgrids also support a flexible and efficient electric grid by enabling the integration of renewable sources of energy. In addition, the use of local sources of energy helps reduce energy losses in transmission and distribution, further increasing efficiency of the electric delivery system.

We are highly dependent on the electrical grid, and a major outage can have severe consequences. Reliable power is especially important for infrastructure and critical facilities that support and protect public health and safety, including water and wastewater, police and fire, hospitals, and communications systems. Our city has multiple critical functions or services that are interdependent, such that a loss of power or energy to one facility or service will adversely affect other functions or operations. For example, loss of power to a water treatment plant for an extended period could reduce the ability to pump water, impacting not only public health, but also firefighting and water for industrial uses. Therefore, extended power outages can have cascading impacts or lead to a devastating chain of failures of critical services.

SUPPORTING ACTION



Partner with regional energy utility to advance efficiency and renewable sources

Lead: City of New Orleans

Partner: Entergy

The City of New Orleans and its partners will promote creative policies, such as decoupling, which incentivizes the utility to reduce energy use, and of renewable portfolio standards, which require increased percentages renewable energy sources. By modernizing our approach to energy use and generation, we can reduce our environmental impact and lower our energy costs.

CHALLENGE IN CONTEXT

In August 2012, Hurricane Isaac brought high coastal surges, strong winds, and heavy rainfall, which persisted over the city for 51 hours. Hurricane-force winds caused widespread power outages,

leaving **over 787,000 customers without power** in Louisiana.



Energy Vulnerability

Reliable energy is essential for the swift response and recovery of a city. Today, New Orleans' households, businesses, infrastructure, and public facilities sometimes suffer electrical surges and outages. Climate change and rising temperatures are expected to increase electricity demand among New Orleanians and physical strain on infrastructure, causing increased vulnerabilities to the system. Likewise, warming temperatures are predicted to increase the strength and frequency of tropical storms, creating greater risk of damage to distribution lines.

When critical services like potable water, sewer systems, or drainage pumping stations are down due to power outages, even briefly, it can cause damage to infrastructure, economic losses to businesses, and hazardous public health consequences. In order to adapt to the more extreme conditions of a changing climate, greater capacity, efficiency, and redundancy must be incorporated into how we produce and consume power.

Integrate resilience-driven decision making across public agencies

FEATURED ACTION

Establish Mayor’s Office of Resilience and Sustainability

Lead: City of New Orleans
Partners: 100 Resilient Cities, Urban Sustainability Directors Network



ASPIRATION

City government evaluates investments, programs, and policies based on their ability to mitigate the impacts of future threats, to adapt the city to environmental change, and to take advantage of emerging opportunities.

▶▶▶ RESILIENCE VALUE

By crafting policies and programs based on their potential to create multiple benefits, New Orleans can make itself safer, healthier, and more economically stable using existing resources.

The Mayor’s Office of Resilience and Sustainability, led by the chief resilience officer, will **facilitate the adoption of best practices and capacity building throughout city government**. The office will coordinate across the region and organize its work across the three pillars of the city’s resilience strategy: Adapt to Thrive, Connect to Opportunity, and Transform City Systems. The Mayor’s Office of Resilience and Sustainability will integrate with the existing resilience initiatives at the New Orleans Redevelopment Authority (NORA) and be supported by the Office of Performance and Accountability (OPA) on metrics and monitoring.

SUPPORTING ACTION

Launch City Resilience Index

Lead: City of New Orleans
Partner: Rockefeller Foundation

The City of New Orleans will pilot the City Resilience Index (CRI) to serve as a holistic framework for monitoring across sectors and scales. The CRI will be managed by the OPA. Ongoing updating and monitoring of CRI metrics will be part of the City’s practice of resilience and play a critical role in measuring the ultimate impact of New Orleans’ resilience building efforts.

ONGOING ACTION

Performance Management Programs

Lead: City of New Orleans

Launched: 2010

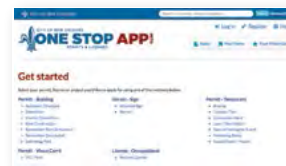
Since initiating its successful STAT programs in 2010, the New Orleans OPA has led a transformation in the improvement, tracking, and reporting of public service delivery. Based on successful models piloted in Baltimore and New York City, the STAT model enables New Orleans city departments to set goals and track progress, creating a culture of transparency and accountability. New Orleans' STAT models are used for an array of issues, such as blight, crime, and quality of life, and have received recognition both locally and nationally for their successes. OPA will support the work of the Mayor's Office of Resilience and Sustainability through the collection and monitoring of data related to resilience-building projects.

ONGOING ACTION

One Stop Shop for City Permits and Licenses

Lead: City of New Orleans

Launched: 2012



The One Stop Shop provides physical and online locations for streamlined customer service for permits, licenses, and enforcement cases. The One Stop Shop eliminated confusing bureaucratic processes spread out over multiple offices and replaced them with straightforward procedures at a customer-centered location where wait times have been slashed from hours to less than 20 minutes and construction permits are issued within days rather than weeks.

ONGOING ACTION



Integrated Asset Management

Leads: City of New Orleans,
Sewerage & Water Board of New Orleans

Launched: 2014

Through an agreement between the City and the Sewerage & Water Board, public infrastructure management projects are coordinated from planning to design to construction. Subsurface utility maintenance and other projects are conducted in concert to minimize construction tasks and costs. The City is now exploring digital asset management systems to further improve performance, coordination, and public reporting.

Invest in pre-disaster planning for post-disaster recovery

FEATURED ACTION

Create pre-disaster plan for post-disaster recovery

Lead: City of New Orleans
Partners: iParametrics, Swiss Re



ASPIRATION

The City of New Orleans is prepared for future disasters and ready to carry out an efficient, comprehensive, and equitable recovery while building adaptive capacity and providing cross-sectoral benefits.

▶▶▶ RESILIENCE VALUE

By planning for comprehensive disaster recovery in advance of a major shock, the city can accelerate the recovery process, make more efficient use of scarce resources, and reduce the overall economic impact of future shocks.

The City of New Orleans will **develop a comprehensive plan for post-disaster recovery that incorporates critical infrastructure systems, land use, housing, economic development, and public health services.** The plan will also set forth a sustainable recovery management framework to increase predictability and stability in the use of resources and ensure a resilience-driven decision-making process.

The City of New Orleans has been a national leader in developing innovative ways to utilize federal disaster funding, but a comprehensive financing strategy includes public, private, and insurance funding sources. The City of New Orleans is working to **identify the most advanced insurance coverage models to reduce exposure in the face of risk,** including parametric policies, risk pooling, and green infrastructure modeling.

SUPPORTING ACTION

Implement resilient infrastructure recovery and risk transfer for critical assets

Lead: City of New Orleans
Partners: Swiss Re, Veolia

The City of New Orleans will conduct a thorough risk assessment of the city’s critical infrastructure to determine the exposures and the associated costs of disasters in various scenarios. With this assessment, the City will be able to isolate systems that are critical to continued livability of the city and have deployable private market assets prepared to repair and improve the system immediately after an event. Through this process, New Orleans will be positioned to be the first city to pre-fund the disaster resilience of its critical infrastructure using private market assets. Catastrophic losses will be pre-funded through the transfer of the risk to the private market. This will decrease the chances of sustained impairments to basic services and save the city and its residents substantial expense in the future while improving the speed of recovery.

ONGOING ACTION

Citywide Parcel and Building Survey

Lead: City of New Orleans
Partner: Esri

In order to assess risk and measure blight reduction, the City is developing a rapid method for surveying building conditions on every parcel in the city, capturing photography using car-mounted cameras and engaging community members to evaluate each parcel. Outside of crises, the property condition data can be used to develop strategies for risk reduction, code enforcement, and reuse of vacant property. After a disaster, the imagery can be quickly collected and used to rapidly assess recovery needs and support services, such as mobile first aid clinics, food and water distribution, and temporary housing. During disaster recovery, a citywide property condition census conducted at regular intervals can provide crucial progress updates and be used to strategically deploy public services and case management. Having comprehensive pre-storm data can facilitate more efficient reimbursement from FEMA and private insurers.

ONGOING ACTION

City-Assisted Evacuation

Lead: City of New Orleans
Partner: Evacuteer

In order to develop and implement a comprehensive citywide evacuation strategy for all residents, the City of New Orleans partnered with the non-profit organization Evacuteer to raise awareness and assist in New Orleans’ public evacuation option, City-Assisted Evacuation (CAE). Evacuteer recruits, trains, and manages volunteers to assist during evacuations.

For purposes of CAE, 17 special staging areas for evacuation pickup were identified and marked prominently with 14-foot-tall stainless steel sculptures. Known as Evacuspots, they serve as meeting and pickup points during mandatory evacuations and exist as awareness-building public art. Evacuteer also operates EvacuKids, a disaster-preparedness and hurricane education program for children, in order to build capacity and preparedness in New Orleanians of all ages.



Credit: Evacuteer

Evacuspot sculpture

Develop the preparedness of our businesses and neighborhoods

FEATURED ACTION

Develop small business resilience program

Lead: City of New Orleans

Partners: New Orleans Redevelopment Authority, New Orleans Business Alliance, UN-ISDR, Walmart Foundation

ASPIRATION

Businesses will have access to the resources, capacity, and expertise required to prepare and respond effectively to disasters and economic downturns.

▶▶▶ RESILIENCE VALUE

By investing in disaster preparedness, business owners will lower their own risk exposure, spur further economic development, and improve the continuity of critical services in times of disaster response and recovery.



Barber Wilbert "Chill" Wilson was one of the first local business owners to return to New Orleans after Katrina and get back to work in his community.

The City and its partners will bring technical assistance to small businesses and help them develop disaster preparedness strategies. This initiative will modify the existing United Nations Disaster Resilience Scorecard to apply to small- and medium-sized businesses on strategic corridors in New Orleans. Building off of the work of the City Planning Commission's Main Street Resilience Program, we will measure resilience readiness and prioritize actions for each corridor in short-, medium-, and long-term time frames, then conduct an awareness and training program for each of the corridors. The initiative will enable each business owner to assess his or her preparedness, identify achievable improvements, and explore resources to support business continuity, increase energy and resource efficiency, and enhance economic stability.



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SUPPORTING ACTION

Launch neighborhood resilience program

Lead: New Orleans Redevelopment Authority

NORA will develop a program to provide technical assistance and planning support to neighborhoods to assess their resilience and devise strategies and projects that address their challenges and risks. By working together to address their common risks, neighbors can build social cohesion, develop new solutions, and reduce their exposure to risk. The program will be piloted in select neighborhoods building off of community development work previously undertaken by the City and NORA.

SUMMARY OF FEATURED ACTIONS

We intend to begin implementation of the strategy immediately, and the Featured Actions provide the work plan. The table below summarizes the Featured Actions described throughout the strategy, showing the project lead, partners, potential funding sources, and status of the project.

Featured Actions				
Vision/Action	Lead	Partners	Funding Source(s)	Status
Adapt to Thrive				
Leverage critical resources for coastal projects	Mayor's Office of Resilience & Sustainability	CPRA; GNO, Inc	RESTORE Act, BP Settlement, CPRA, NDRC	In development
Implement Urban Water Plan projects	City of New Orleans, Sewerage & Water Board	SWBNO; NORA; GNO, Inc; GNOF; Trust for Public Land; Deltares; Trimble	HMGP, NDRC, BP Settlement, SWBNO	Underway
Establish resilience retrofit program	Mayor's Office of Resilience & Sustainability	Deutsche Bank	Public bond, private investment	In development
Develop emerging environmental stewards	Mayor's Office of Resilience & Sustainability	Ripple Effect, Evacuteer, Louisiana Children's Museum	Philanthropy, private investment	In development
Establish resilience center	Mayor's Office of Resilience & Sustainability	Rockefeller Foundation; Tulane University; GNO, Inc	Philanthropy, private investment	In development
Design and implement climate action plan	Mayor's Office of Resilience & Sustainability	C40, Urban Sustainability Director's Network	CNO, philanthropy	In development
Connect to Opportunity				
Create emergency savings account program	Foundation for Louisiana	CNO, MFO	Philanthropy, private investment	In development
Launch digital divide innovation challenge	Mayor's Office of Resilience & Sustainability	CityMart	Philanthropy, private investment	In development
Transform City Systems				
Establish Mayor's Office of Resilience and Sustainability	Mayor's Office	100 Resilient Cities, Urban Sustainability Director's Network	CNO, philanthropy, private investment	Underway
Create pre-disaster plan for post-disaster recovery	Mayor's Office of Resilience & Sustainability	iParametrics, Swiss Re	CNO, philanthropy	Proposed
Redesign regional transportation systems	City of New Orleans/RTA	Ride New Orleans, Bike Easy	TBD	Proposed
Launch Downtown Energy Efficiency Challenge	Downtown Development District	CNO, Entergy	private investment	In development
Develop small business resilience initiative	Mayor's Office of Resilience & Sustainability	NORA; NOLABA; UN-ISDR; Walmart Foundation	Philanthropy, private investment	Underway
Launch microgrid pilot project	Mayor's Office of Resilience & Sustainability	USDOE, Sandia National Laboratories, SWBNO, Entergy	Federal grant	Underway

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