



# GREATER INWOOD RESILIENCE PLAN

JUNE 2024



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# EXECUTIVE SUMMARY

Resilient Houston, a plan published February 2020, is in direct response to the devastation and catastrophic flooding caused when one trillion gallons of rain fell on Houston during Hurricane Harvey in 2017. The plan defines 62 actions across 18 goals to enhance Houston’s resilience against acute shocks and chronic stresses, climate adaptation, and increasing energy demand.

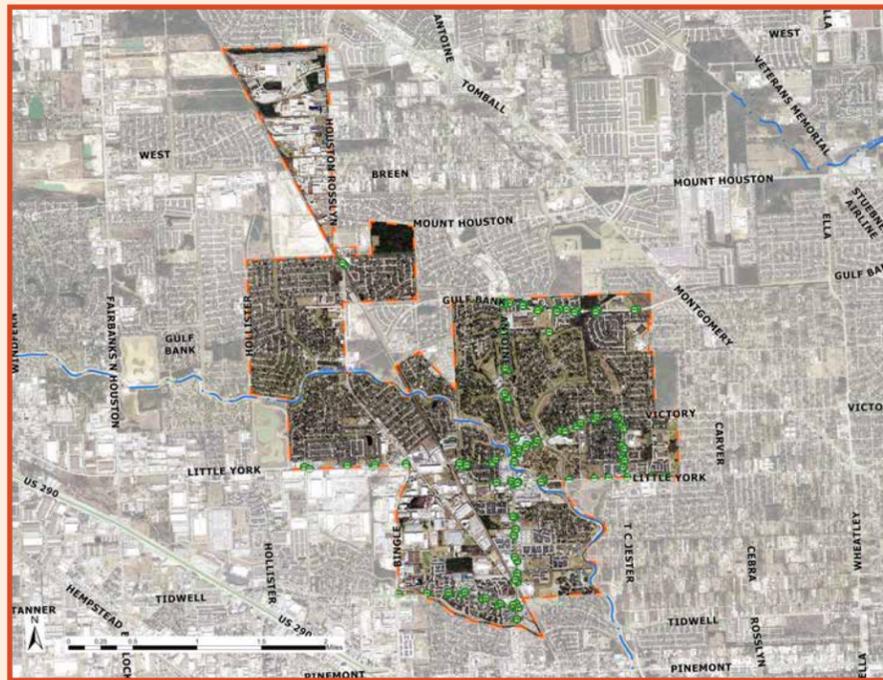
The Greater Inwood Neighborhood Resilience Plan implements a key target of Resilient Houston to develop 50 neighborhood plans by 2030. The plan provides a community-based vision of neighborhood resilience. It makes recommendations for people-based and place-based strategies and actions to improve neighborhood resilience. The Greater Inwood neighborhood was selected for this planning effort due to severe recurring flood damage (Hurricane Harvey), heat severity, winter-related vulnerability (Winter Storm Uri), watershed location, aging infrastructure, and reduced economic opportunity.

The shared purpose of Resilient Houston and Neighborhood Resilience Plans is to reduce the impacts of stresses, and improve recovery from adverse events. Houstonians are consistently reminded of the urgent need for transformative change and for these changes to be built on long-term holistic, equitable, and inclusive strategies and actions.

The Greater Inwood Super Neighborhood Council #5 boundary is located in the northwest part of Houston. It is accessible via six major thoroughfares: Antoine Drive, West Little York Road, West Gulf Bank Road, Pinemont Drive, Victory Drive, and Tidwell Road. The Burlington Northern Santa Fe Railroad bisects the community. It is 30 minutes away from downtown Houston, the

**The community’s vision for resilience in their neighborhood coupled with the foundational goals and targets of the Resilient Houston parent plan, provide the basis for the strategies and actions recommended in this plan.**

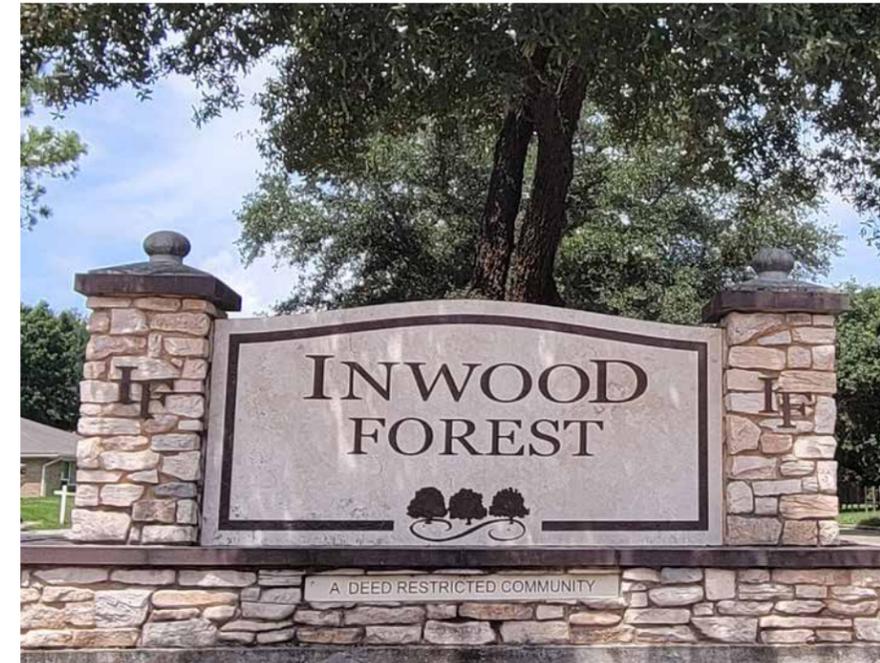
Texas Medical Center, the Galleria, and the George Bush International Airport. It is located within Council District A, with a small portion in Council District B.



Greater Inwood Area Map

Over the course of 10 months, the planning team was actively engaged with the Greater Inwood community to formulate the Greater Inwood Neighborhood Resilience Plan. The team took direction from the community via public meetings, surveys, conversations with community leaders, working sessions with the Neighborhood Support Team (NST), and proactive residents. The meetings provided the basis for the plan’s development and recommendations.

The community’s goals have been vetted and coordinated with City staff through several Technical Advisory Committee (TAC) meetings intended to ensure the plan’s feasibility, identify lead departments and agencies, and identify potential funds to support projects.



This plan includes the vision and goals expressed by the community, a brief community history, an existing conditions analysis, a description of the approach to community engagement, projects developed to further the vision and goals that will increase resilience, and the tools that lay the foundation for implementation. This plan is accompanied by several other documents that provide context on the importance of resiliency, scientific basis and analysis that supports this effort, global best practices to draw from, and a framework for organizations that wish to create their own neighborhood resilience plan. They include: Watershed Best Practices, a Baseline Analysis, a Funding Matrix, and the Neighborhood Resilience Planning Guide. These companion documents can be found on the [Planning & Development Department’s website](#).

**“Enshrining equity and equitable outcomes in all policies and programs is an essential step toward addressing root causes of inequity, including historical disinvestment and disproportionate negative impacts for communities of color and our most vulnerable residents.”**

— Resilient Houston pg. 130

Based on conversations with the community, the top neighborhood priorities have been identified:

- Focus on interventions to promote public safety on the trails and throughout the community
- Expand the Inwood bicycle and pedestrian network to improve connectivity to key destinations
- Focus current and future investment on Inwood’s Livable Center initiative to promote economic development in the shopping center at Antoine Drive and West Little York Road
- Enhance the five bridges crossing over White Oak Bayou and Vogel Creek with improvements that emphasize the area’s natural beauty
- Plant native trees in key locations around the neighborhood to improve community pride, reduce flooding and reduce the impacts of heat
- Increase community advocacy and civic engagement across neighborhoods

**SURVIVE**  
**ADAPT**  
**THRIVE**

# WHAT IS NEIGHBORHOOD RESILIENCE?

Since 2000, the City of Houston has experienced 18 major weather events including flooding, extreme heat and cold, and drought. In August 2020, Houston's Climate Impact Assessment projected weather events would continue along this trajectory, or that the events would continue to intensify both in frequency and magnitude (*Climate Impact Assessment: 9*). These projections could mean more severe droughts, a rise in sea level, more intense coastal flooding, and increased intensity of storms. It is imperative that the community works consistently toward reducing the impact of future events.

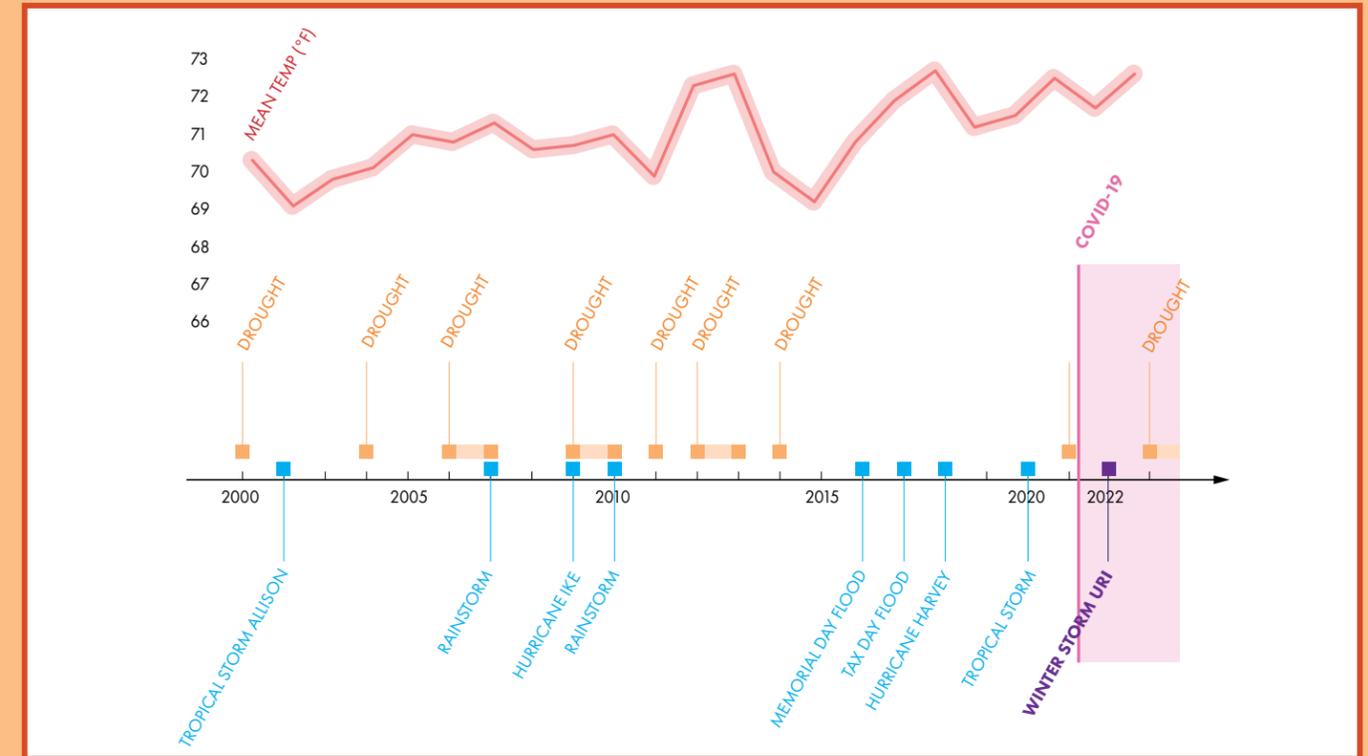
The neighborhood is experiencing a general warming trend and changing precipitation patterns. The City of Houston's *Climate Impact Assessment* published in August 2020, summarizes Houston's changing climate, finding that the City has already experienced:

- Increases in the average temperature of all seasons;
- Lengthening of summer, with summer beginning earlier and ending later;

- Increases in energy demand for cooling buildings for the spring, summer, and fall seasons;
- Increases in the number of hot days per year (defined here as maximum temperature above 100°F) and the number of warm nights per year (defined here as minimum temperature above 80°F);
- Increases in the temperature of the hottest days experienced each year;
- Longer multi-day heatwaves;
- Little change in total annual precipitation but a decrease in summer precipitation and increase in fall precipitation; and,
- Greater variability in day-to-day precipitation that includes both slight increases in number of dry days and increasing risk of drought due to soil moisture decreases resulting from higher temperatures, as well as increases in the precipitation falling during extreme precipitation events such as the wettest three-day period each year" (*Climate Impact Assessment: 7*).

In addition to weather events, stresses and shocks can include other types of events such as pandemics, economic changes such as rising energy prices, sudden spikes in housing demand, and exposure to environmental toxins. Each event adds to the nature and scope of what a resilience planning effort must consider.

Given the increased likelihood of extreme weather events, and the compounding effects of repeat or multiple events on a community, as well as underlying stresses, it is imperative that tangible action be taken now to reduce the impact of events and optimize recovery. This plan is a key step in taking action to mitigate the impacts of climate change and other extreme events on the community.



City of Houston's timeline of stresses + shocks between 2000, and today.

"**Temperatures** in Texas have risen almost 1.5 degrees Fahrenheit since the beginning of the 20th Century.

**Historically unprecedented warming** is projected during this century, with associated increases in extreme heat events."

"Although projected changes in annual precipitation are uncertain, increases in **extreme precipitation events** are projected.

Higher temperatures will increase soil moisture loss during dry spells, increasing the intensity of naturally occurring **droughts**."

"Future changes in the number of land falling **hurricanes** in Texas are difficult to project. As the climate warms, hurricane rainfall rates, storm surge height due to sea level rise, and the intensity of the strongest hurricanes, are all projected to increase."

<https://statesummaries.ncics.org/chapter/tx/>

A **Neighborhood Resilience Plan** is a strategic action plan for government, community leaders and innovators looking to address core resilience issues facing their community. It has the flexibility to align both to Resilient Houston's goals and targets while also aligning to the unique physical characteristics and community priorities of the neighborhood. The plan guides the community, its leaders, and its elected representatives toward decisions that reduce and

mitigate neighborhood vulnerabilities. It provides the essential foundation for forming partnerships with local government, philanthropy, community-based organizations, and other institutions and organizations. To ensure that the community's vision and goals outlined in this plan are realized, ambitious performance targets, implementation timelines, and feasible funding strategies are embedded in the projects section.

This plan is designed to:

- Ensure the community is equipped with the best resilience knowledge, skills, and resources available.
- Enable the community to take ownership of their neighborhood by seeking grants and private partnerships;
- Support community advocacy in local government decision making processes; and,
- Identify strategies and projects that will create tangible change in the neighborhood.

# OTHER RESILIENCE EFFORTS

Neighborhood Resilience is also supported by planning and implementation that occurs city-wide, on the state level, and includes other governmental partners also focused on the health and resilience of Houstonians. The resilience work of all levels of government work together for the well-being, safety, and prosperity of its residents and businesses. Some of the resilience resources that are available include the following:

## Office of Emergency Management

The City's Office of Emergency Management (OEM) is committed to safeguarding the Houston community against all hazards and threats through coordinated planning and response. OEM is responsible for administering and keeping current the City's Emergency Management Plan, the recently updated Hazard Mitigation Action Plan (2023-28), Operational Plans, and more. As the chief coordinating office for the City of Houston during emergencies and special events, OEM operates the Emergency Operations Center where representatives from numerous agencies and stakeholders work together to ensure the safety and security of the event or operation. Through intentional and coordinated efforts, the City engaged with the most vulnerable communities to ensure their voices were represented in our hazard mitigation planning. Thanks to the diligent work of several partners under the leadership of OEM, the City of Houston is now recognized by the National Weather Service as a StormReady community, recognizing our efforts at mitigation and planning for the weather hazards in our region. The StormReady recognition has lowered insurance premiums in some communities.

[www.houstonoem.org](http://www.houstonoem.org)

## Preparedness Guide

When emergencies occur, our daily lives can be disrupted, having serious effects on our families, friends, and neighbors. This is why preparedness is so important. Having knowledge, skills, and abilities to quickly respond to a disaster is everyone's job. You can be prepared by following a four-step preparedness process: make a plan, have an emergency kit, be informed about disasters, and help members of your community prepare themselves. Download your Disaster Preparedness Guide and checklist today.

Preparedness Steps:

1. Make and Practice Your Family Emergency Plan
2. Build an Emergency Kit
3. Stay Informed
4. Know Your Neighbors

[www.houstontx.gov](http://www.houstontx.gov)

## Alert Houston (get alerts)

Receiving emergency notifications keeps you informed about what's happening during an emergency and how to stay safe. The City of Houston offers emergency alerts through the AlertHouston emergency notification system. People who live or work in Houston can receive emergency notifications via email, text message and through a mobile app. To find out more information about AlertHouston, and to sign up for alerts, visit [www.alerthouston.org](http://www.alerthouston.org).

Emergency information is also available online at [www.houstonemergency.org](http://www.houstonemergency.org) or [www.alerthouston.org](http://www.alerthouston.org).

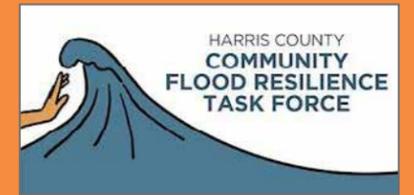
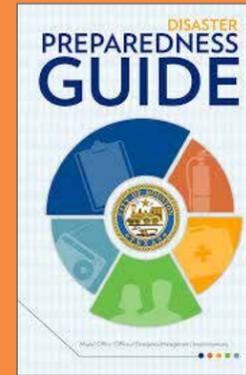
## Community Emergency Response Team (CERT)

The CERT Program was created in order to train citizens on how to help others without putting themselves in harm's way. The Federal Emergency Management Agency (FEMA) formalized the CERT program in 1993, and it is now available nationwide. Under the direction of local emergency responders, CERT teams help provide critical support by giving immediate assistance to victims, providing damage assessment information, and organizing other volunteers at a disaster site. The CERT curriculum is taught from an all-hazards approach and each community emphasizes the disasters, both natural and man-made, to which they are most vulnerable. Although preparedness steps may vary from community to community, the goal remains the same: "to do the most good for the most amount of people" in an emergency, such as in the event of a natural disaster.

CERT trains volunteers in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. The CERT trainings in the greater Houston area are listed on the Harris County Citizen Corps webpage. All CERT training is provided free-of-charge and is taught by local professionals. Trainees can attend the following:

- The National CERT program
- The organizational structure used by government agencies in disasters
- Basic first aid techniques
- Basic search and rescue techniques, and,
- Ways to ensure individuals are prepared for a disaster.

[www.harriscountycitizen corps.com/Training/CERT-Training](http://www.harriscountycitizen corps.com/Training/CERT-Training)



## Houston Community College

Houston Community College (HCC), in partnership with the City of Houston, offers resilience courses focused on building sustainable capacity. Through their One College-One Community approach, HCC leverages facilities across every neighborhood to strengthen localized disaster preparedness and recovery.

HCC launched a first-in-the nation "Resiliency Center of Excellence" to connect residents, employers, civic organizations, neighborhoods, and small businesses with fast-tracked education and certification to reduce loss of life and increase well-being and economic stability through risk mitigation. HCC's Resiliency Center includes:

- Public Safety and Rescue
- Disaster Case Management
- Enhanced Facility and Infrastructure Construction
- Medical Triage
- Data Science /Internet of Things/ Drones
- Debris Removal/Reuse
- Customized employer content to address persistent challenges from weather, health, and man-made perils, and other courses.

[www.hccs.edu](http://www.hccs.edu)

## Community Flood Resilience Task Force (CFRTF)

Since its establishment in 2020, the Harris County Community Flood Resilience Task Force (CFRTF) has been actively developing a comprehensive Flood Resilience Plan. This plan prioritizes infrastructure enhancements, including channel and drainage improvements, and equips communities with resources for flood risk management. It incorporates advanced flood modeling and monitoring technologies for better forecasting, and advocates using green spaces and wetlands for natural flood mitigation. Emphasizing collaboration, the plan involves partnerships with local, state, and federal agencies for a unified flood management approach. The CFRTF website provides additional support through annual reports, a flood resilience repository, a framework for flood mitigation project prioritization, the Flood Mitigation Benefit Index, and guidance for the Infrastructure Resilience Team.

[cfrtf.harriscountytexas.gov](http://cfrtf.harriscountytexas.gov)

## State of Texas Emergency Assistance Registry (STEAR)

The State of Texas' STEAR program is a free registry that provides local emergency planners and emergency responders with information on the needs in their community. Texas communities use the registry information in different ways. Registering yourself in the STEAR registry DOES NOT guarantee that you will receive a specific service during an emergency. Available services will vary by community. For more information on how your community will use information in the STEAR registry, contact your local emergency management office.

Who Should Register?

- People with disabilities
- People who are medically fragile
- People who have limited mobility
- People who have communication barriers
- People who require additional medical assistance during an emergency event
- People who require transportation assistance
- People who require personal care assistance

[www.tdem.texas.gov/response/state-of-texas-emergency-assistance-registry](http://www.tdem.texas.gov/response/state-of-texas-emergency-assistance-registry)

# A RESILIENT GREATER INWOOD

The Greater Inwood area was developed in the early 1960s for oil executives during the Houston oil boom. During this period, the Inwood Forest Country Club and a private golf course were built and later became a community gathering place. The club, located on Antoine Drive, closed in 2007. This ethnically diverse community has a mixture of land uses, with single-family residential comprising the majority (85%) of the land uses. These homes are in 35 neighborhoods including Inwood Forest, Candlelight Oaks, Woodland Trails, Candlelight Forest, Forest West and Antoine Forest Village.

Industrial uses account for the second highest (9%) land use and are concentrated primarily along two major thoroughfares, Bingle Road and North Houston Rosslyn Road. The International Paint Company is one of the major employers in the area. Office uses, which account for the least (2%) land use, are scattered throughout the area. Several large apartments in the area are located along Antoine Drive, Tidwell Road, De Soto Street, Holly View Drive, West Little York Road, and West Gulf Bank Road.

This community has faced environmental disasters including the devastating floods caused by Hurricane Harvey in 2017. The storm caused widespread damage and forced many residents to evacuate their homes. However, the local community and its leaders responded with remarkable determination, working together to rebuild and recover. In the wake of the storm, community members came together to help those in need, providing shelter, food, and other essential resources. Local organizations and leaders played a critical role in coordinating relief efforts and advocating for the needs of the community.

In addition to their response to Hurricane Harvey, the community and its leaders



Inwood Forest Golf Course

Photo: Wikipedia.org

continue to work to build resilience in the face of ongoing challenges and have developed significant capacity. This plan builds on the existing efforts and this strong resilience capacity in the neighborhood. For this community, working toward resilience means preparation for the types of events projected to occur. Major events like public health pandemics, flooding events, prolonged heat waves, and other minor events are projected to occur as the result of our changing climate.

Preparation may reduce neighborhood risks, lessen impacts on the community, and help to optimize emergency response and recovery. This effort aims to improve community safety from climate risks by addressing past flood damage and finding ways to reduce energy costs. The plan recommends upgrades to stormwater systems to prevent street flooding and adding greenery and

amenities for safer walking and biking, promoting community health and well-being. It also invests in building connections between community members to help each other in times of need.

Despite the challenges they face, the people of Greater Inwood have shown a remarkable capacity for resilience and perseverance. By working together and advocating for their needs, they continue to build a brighter future for themselves and their community. The Greater Inwood Neighborhood Resilience Plan is a key organizing tool to prepare for the community's future. The plan serves as a model for future neighborhood planning efforts that can be replicated at the community level, either independently, or in partnership with the City.

Through community planning, Greater Inwood will be better prepared to endure adverse climate related events.



Impact of Winter Storm Uri, Feb. 2021



Impact of Hurricane Harvey, Aug. 2017

One of the benefits of the community is its diverse population and engaged civic groups. Inwood residents are proud of their neighborhood. The Near Northwest Management District (NNMD) in Greater Inwood significantly helps to improve roads, sidewalks, trails, and bus shelters. NNMD also promotes the economic condition of the community, and provides use of their Conference Center to hold public, private, and educational events. This resilience plan can help guide future grant opportunities, community engagement ideas, and as a toolkit for residents who may be interested in championing specific projects. Residents and stakeholders may use this plan to increase resiliency by continuing to participate in local civic groups to help expedite current and future capital projects.

The Greater Inwood community's priorities have been consistent across several recent planning efforts. A bicycle path along White Oak Bayou up to Victory Drive is currently under construction. This path will connect Greater Inwood to Downtown. In addition, Antoine Drive is being restriped to include bike lanes from Pinemont Drive north to White Oak Bridge. (Near Northwest Management District Livable Centers Plan, February 2012).



Inwood Fire Station #4, 1976

Photo: Wikipedia.org

# HOW TO USE THIS PLAN

**THIS PLAN GUIDES and SUPPORTS** decision-making for local investments in physical infrastructure, programs, and policies. The Greater Inwood Neighborhood Resilience Plan provides the foundation for forming collaborative partnerships with local government, philanthropy, community-based groups, and other organizations. The plan establishes a clear vision that the community can use to get organized and outlines a process which

various stakeholders can use to collaborate with the community to achieve shared goals. It does so by defining projects and programs for the neighborhood to plan for resilience challenges. It is a tool for the community to guide decision-making, identify stakeholder roles and responsibilities, and forge the partnerships and networks essential for mitigation and recovery.

## Community Members + Organizations

For community-based plan users, the neighborhood resilience action plan helps to engage various stakeholders productively and systematically, including local government, nonprofits, and other private interest groups. The plan provides a clear statement of what is needed to realize neighborhood resilience in Greater Inwood. Having a clear statement of what is still needed in a City-led plan makes it clear to grant administrators and private partners how they can help the neighborhood. The plan provides a framework of strategies and actions to ensure shared understanding of the intended vision, goals and accountability—the who, when and how—among various stakeholders. By following the plan, these organizations can work relatively independently within the same framework.

## Community Advocates

Use this plan to attain procedural justice, or as a tool to advocate for community interests and priorities. Advocacy that is grounded in an agreed-upon plan document carries weight in conversations with local government and other private partners. The plan can guide decision making at Super Neighborhood Meetings, City Council Meetings, and other local government committees. It also serves as a means of constructively holding the community, partners, and local government accountable for their part in realizing this plan, by identifying project leads, timelines, and metrics for success. The plan is designed to support community-identified priorities and therefore is intended to be used by community-based organizations and community leaders to support their advocacy efforts. Advocacy efforts might include requesting funds by partnering with local donors, state and federal government. It may also include developing programs, or increasing service levels from City departments and agencies, or prioritizing physical infrastructure investments made by Harris County Flood Control and

## What is Resilience?

“Resilience is the capacity of a system, be it an individual, a forest, a city or an economy, to deal with change and continue to develop. It is about how humans and nature can use shocks and disturbances like a financial crisis or climate change to spur renewal and innovative thinking.”

<https://www.stockholmresilience.org/>

“Enhanced resilience allows better anticipation of disasters and better planning to reduce disaster losses—rather than waiting for an event to occur and paying for it afterward.”

<https://www.nationalacademies.org>

other governmental agencies. In these, and other advocacy efforts, the plan serves as the basis for implementing broader change, provides assurances to organizations granting funding to CBOs such as local nonprofits, and other community driven initiatives.

## The community’s resilience vision for the neighborhood:

- Increase Public Safety Along Trails in Greater Inwood
- Increase Awareness of Green Resources to Improve Resiliency
- Enhance Bridge Crossing to Celebrate the Waterways
- Implement Tree Planting Projects on former Golf Course to Increase Resiliency
- Improve Hike and Bike Pedestrian Connectivity
- Increase Economic Development in Shopping Centers
- Increase Civic Engagement Across Neighborhoods

## Community Partners

Partners outside the community and local government often have aligned interests, since resilience helps support property values. Resilience also strengthens local businesses, improves the environment and ecology, builds equity, and in some cases, can serve as an economic stimulus tool. Shared goals between business interests and resilience efforts can

be leveraged to ensure timely implementation of the neighborhood resilience action plan. Community partners should think of the Greater Inwood Neighborhood Resilience Plan as a cohesive community-driven vision for how the area can endure during challenging times. The **Guiding Principles** lay out strategies and actions, along with key stakeholders and their responsibilities.

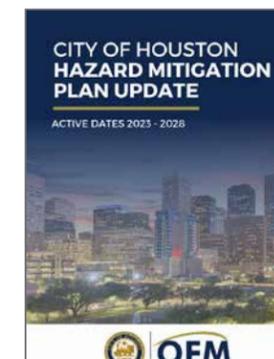
Stakeholders, particularly private partners, can review the plan to better understand where additional support may be needed. Additionally, partners can review the projects and the implementation steps to find shared interests to pursue. The funding, metrics, and timelines support finding ways to optimize private interests with broader neighborhood resilience principles.



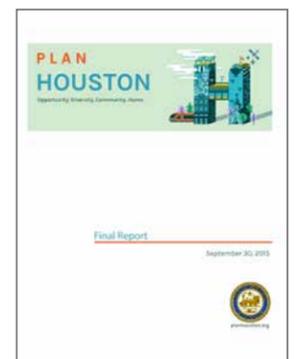
Resilient Houston, 2020



Houston Climate Action Plan, 2020



Hazard Mitigation Plan Update, 2023-2028



Plan Houston, 2015

# ASSESSMENT & FINDINGS

The assessment and findings provide the basis for plan recommendations, in combination with the community engagement findings. The assessment findings came from:

- Spatial analysis of flooding and extreme heat impacts on community assets and people;
- Conversations with the community on the impacts of, and recovery from Hurricane Harvey; and,
- Consideration of the compounding effects exacerbating chronic social stresses.

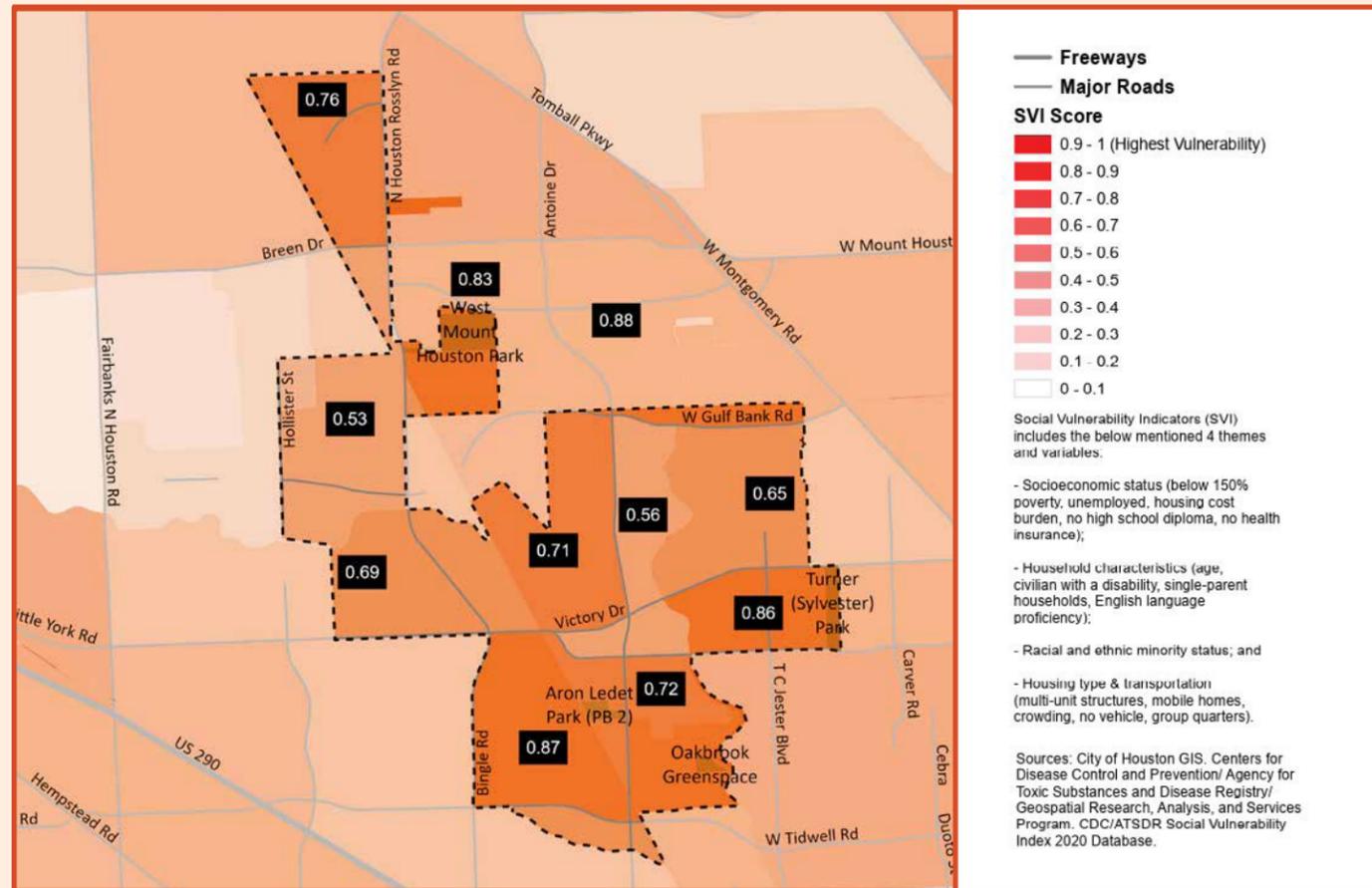
The community-identified priorities, including flooding, housing, public safety, and neighborhood capacity, provide the context for analyzing the Greater Inwood

community's vulnerabilities. The findings largely align with the community's priorities, as discussed in the Community Engagement section. Heat vulnerability, and the general impacts of heat, are not as evident such as flooding or the condition of homes in the neighborhood. However, the City of Houston and HARC partnered with NOAA in 2020, to address heat, publishing resources via the H3AT program hosted by HARC. Flood vulnerability was estimated using the following assessment factors:

- Location relative to the FEMA National Flood Hazard Layer (NFHL), which shows both the 1% and the 0.2% annual chance floodplain boundaries;

- The year the structure was constructed, which governs the nature of the floodplain regulations in affect at the time the structure was built; and,
- Whether the structure is considered a critical facility (such as a hospital, or nursing home).

"Highly vulnerable" assets are classified as having 'highly combined vulnerability and risk' to severe flooding based on the assessment factors previously outlined.



Social Vulnerability Index by Census Tract

## Summary

The vulnerability indicators consider three factors: the overall flood vulnerability of homes and businesses in the neighborhood, the individual factors of flood vulnerability related to homes in the neighborhood, and social vulnerability of residents living in the neighborhood.

The spatial analysis for determining relative levels of vulnerability takes into account location of parcels and structures, property use, and floodplain building requirements in place when the property was built. Despite there being properties at higher risk of flooding than some other areas in Houston, this should not overshadow the fact that virtually all of Houston is at risk of flooding.

At the neighborhood level, a significant portion of the Greater Inwood neighborhood is highly vulnerable to, and at risk of flood damage. Out of its 9,229 identified properties, 3,412 (37%) are subject to a 1% annual chance or higher of flooding (which exceeds the current standard of care for new development and civil infrastructure). This includes 2,915 residential properties (85.4%), 336 government-owned properties (9.8%), 50 commercial properties (1.5%), and 30 industrial properties (0.9%). Of the 2,915 highly vulnerable residential properties, 2,271 are single-family properties (78%) and 644 are multi-family properties (22%). It is important to note that many of the government-owned properties in the area are existing parks and open spaces, along with former residential properties cleared and bought out over the years as part of Harris County's flood mitigation efforts.

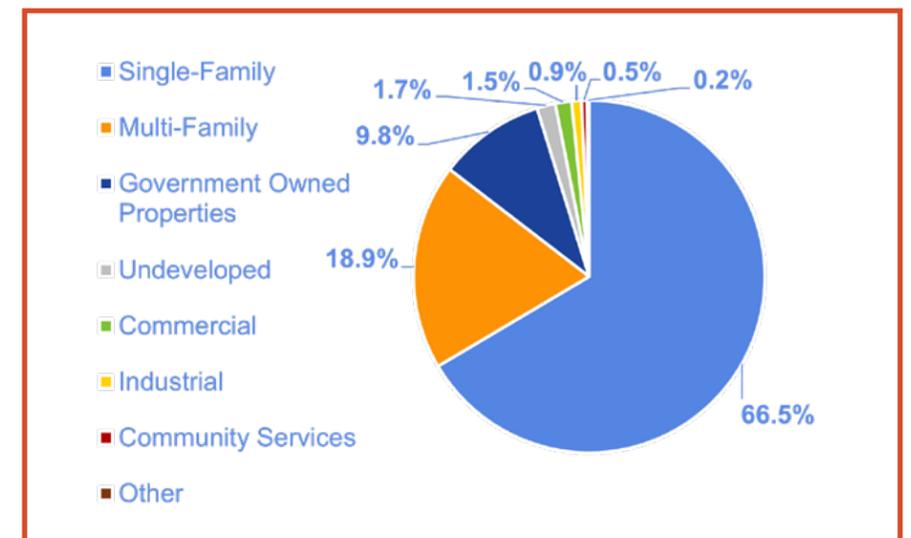
The Social Vulnerability indicators study, based on Census Bureau's American Community Survey (ACS) five-year estimates in 2020, identify approximately 10% of residents without access to a vehicle. The average median household income across census tracts in the neighborhood is about \$41,422 and 42% of households pay more than 30% of their income for housing

## Vulnerable Greater Inwood properties at risk of floodplain inundation

- 3,412** Total number of vulnerable properties
- 2,915** 36% of all Residential Properties
- 336** 82% of all Government-Owned Properties
- 58** 17% of all Undeveloped Properties
- 50** 44% of all Commercial Properties
- 30** 23% of all Industrial Properties
- 17** 44% of all Community Service Properties
- 6** 19% of all Other Properties

## Residential properties highly vulnerable to, and at risk of floodplain inundation

- 78%** Single-Family
- 22%** Multi-Family



Social Vulnerability by Land Use

# ASSESSMENT & FINDINGS

expenses. As such, these households are more likely to have difficulty affording other items like healthy food and healthcare.

Only 23% of residents aged 25 years and older have a college education. Employment options and the types of jobs attainable are also limited. Furthermore, approximately 19% of households are without a computer with a broadband Internet subscription. When doing public outreach activities or awareness campaigns, it is important to consider

other forms of communication to reach those with limited, or no digital access.

## Flood Vulnerability

Neighborhood flooding can occur from a variety of sources, including bayou flooding, extreme rain events, tropical storms, and hurricanes.

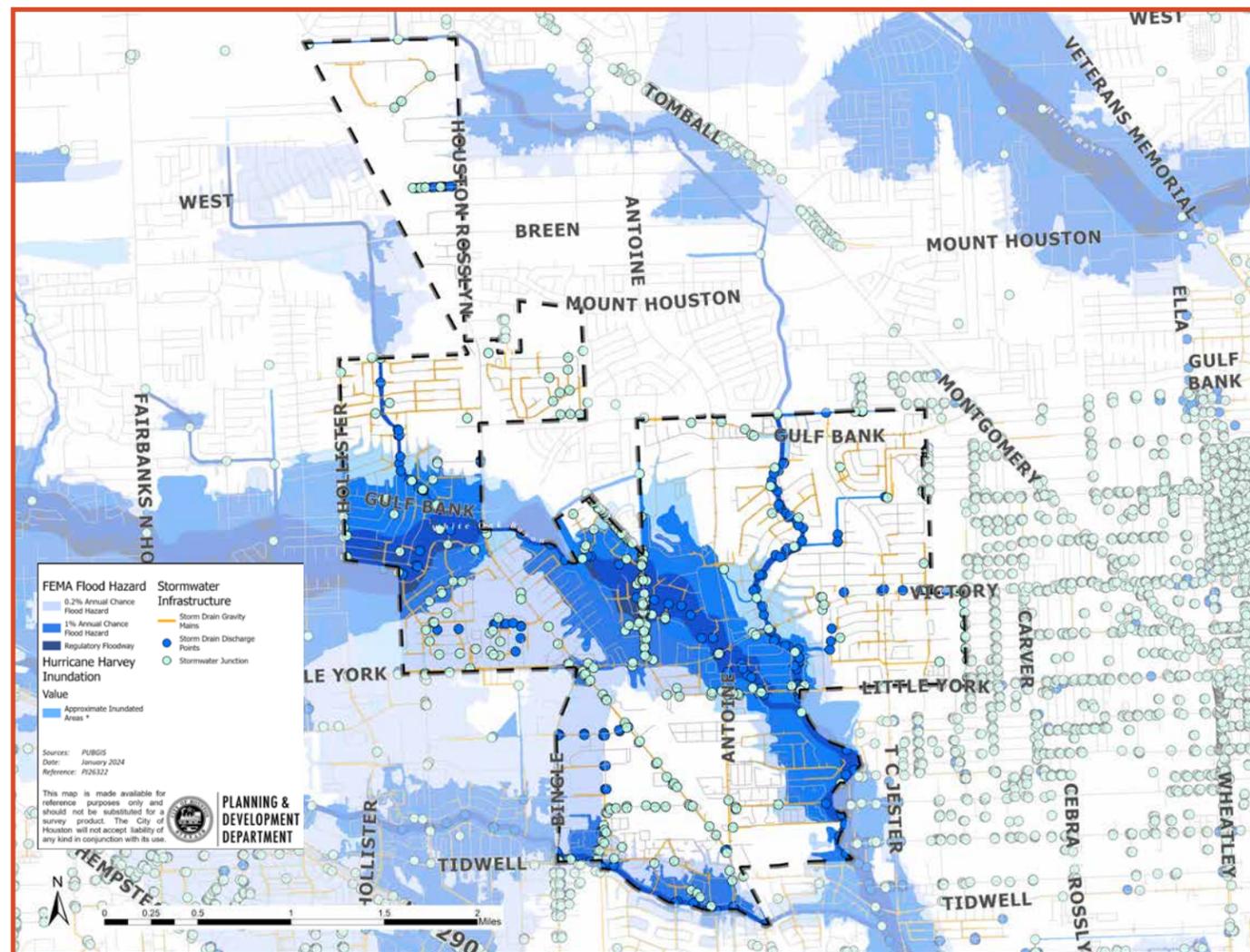
Geographical and climate-related characteristics of the neighborhood include proximity to White Oak Bayou, location downstream in the regional watershed, and low-lying land where the ground is sinking. Significant flood impacts were seen from Hurricane Harvey, with approximately 57% of the properties within or near the flood inundated areas.

Houston neighborhoods that developed before the 1990s are more susceptible to flooding from rainfall because the National Flood Insurance Act of 1968 did not lead to floodplain mapping in Houston until the late 1980s. After the adoption of flood maps in the 1990s, more stringent drainage requirements and floodplain permitting requirements were implemented.

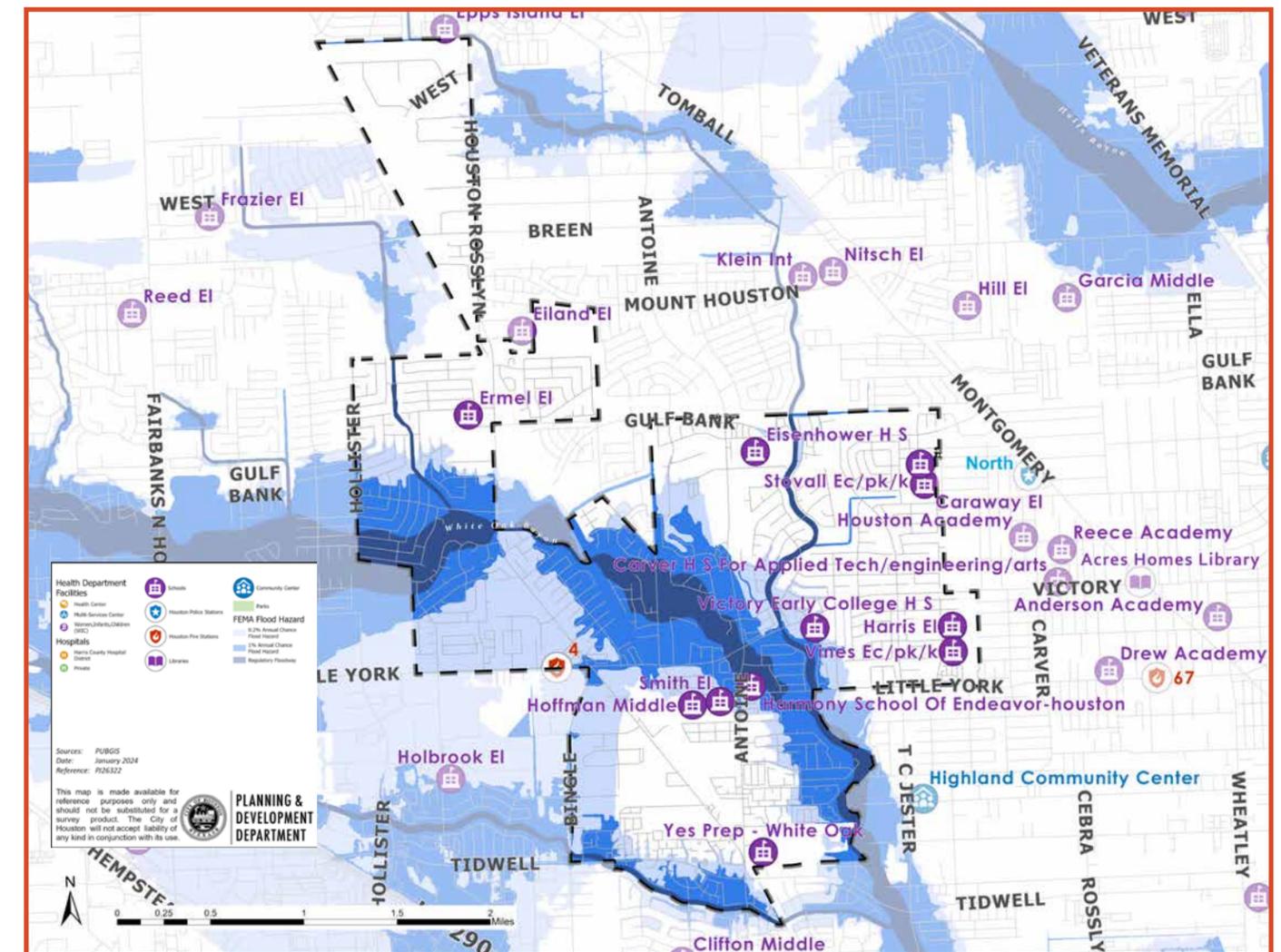
As a result of decades of development prior to today's standard restrictions:

- Buildings, roads, and other infrastructure, including drainage systems, were built to substantially lower standards than would be required today
- Homes, schools, and other critical neighborhood services have been built in the floodplain and the floodway

Given the development pattern in the neighborhood, buildings within the 100-year and possibly in the 500-year flood plain are highly susceptible to flood events, and the local drainage system capacity is highly susceptible to rain events that cause neighborhood and street flooding. Changing rules and development patterns have also resulted in a limited tree canopy. The tendency to clear properties of trees, shrubs, and other vegetation in favor of development has reduced the ability of vegetation to slow



Flood Inundation and Storm Water Infrastructure



Facilities and Flood Inundation

# ASSESSMENT & FINDINGS

water flow and increase water absorption. The high percentage of impervious surfaces creates an effect called sheet flow, where water moves quickly across impervious surfaces, and further contributes to the amount of stormwater runoff. It also contributes to increased water speed and volume during flooding events. Impervious surfaces such as concrete, asphalt, and building roofs are major contributors to creating sheet flow, which increases stormwater runoff that impacts the neighborhood.

## Housing

Approximately 85% of the properties vulnerable to flooding are residential. Highly vulnerable residential properties are predominately single-family homes, and there are over 600 multi-family housing developments also at risk. Several multi-family properties would be found south of West Little York Road on both east and west sides of Antoine Drive. On average, based on the census tracts covering the neighborhood, about 42% of the households are cost burdened as they pay over 30% of their income towards housing costs.

A driving factor of vulnerability is that about 87% of homes in the neighborhood were constructed before federal regulations came into place limiting the construction of homes and other structures in the floodplain. Today, federal regulations regularly require homes built or rebuilt on land in the floodplain to be elevated.

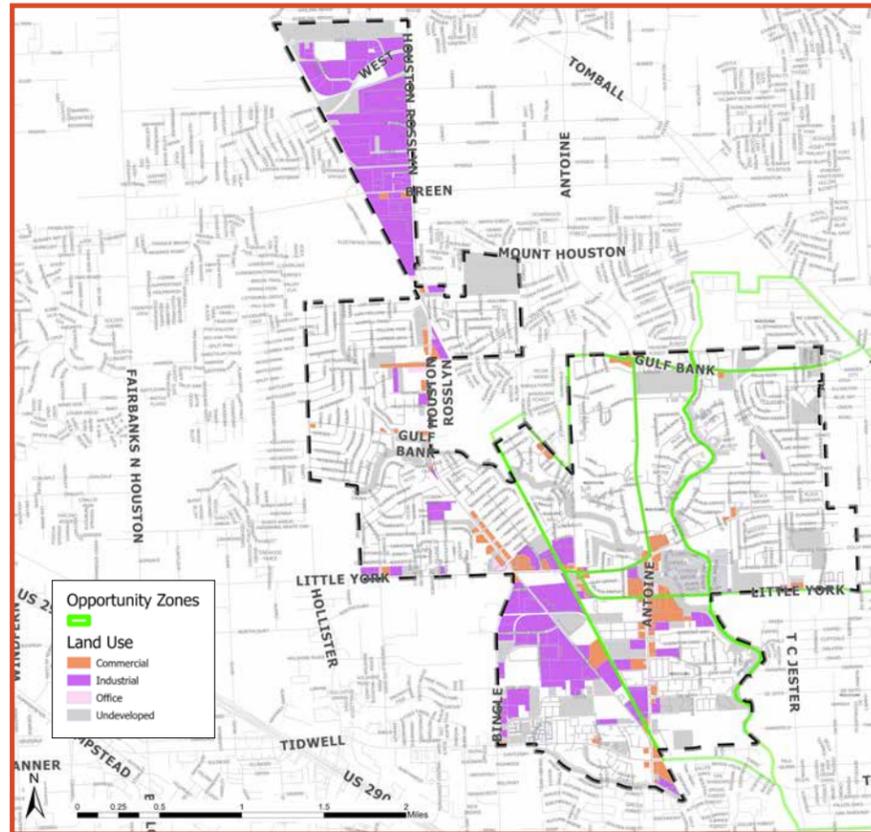
Housing vulnerability is worsened by a housing stock that is deteriorating due to slow recovery from previous disasters. Community members report barriers to accessing recovery funds, including insurance requirements and a heavy paperwork burden that can require property titles and heirship rights. Property owners are often under- or uninsured and may not have sufficient personal funds to cover the high costs of home repair. The result is

a continuation of unrepaired homes and unclaimed repair funds. However, several residential properties in Greater Inwood that were regularly flooded near White Oak Bayou have been bought out by Harris County Flood Control District and converted to open spaces to help manage floods. Arbor Oaks, in Greater Inwood Forest, was once a community with over 200 homes. Arbor

Oaks was impacted by several flood events and was gradually cleared starting with Tropical Storm Allison in 2001. After Hurricane Harvey, roughly a dozen homes were left standing. ("Flood Control buyouts creating 'Ghost Neighborhoods'", Joel Eisen Baum, Click2Houston, May 5, 2023).

**Drainage System** is infrastructure designed to drain excess rain and ground water from impervious surfaces. It includes some combination of: storm drains and sewers, surface water drains and sewers, open air ditches, bioswales, and bayous. If the rainfall intensity exceeds the capacity of the local drainage system, street and neighborhood flooding can occur.

**Storm Sewer** is grey infrastructure, or man-made infrastructure, designed to drain excess rain and ground water from impervious surfaces such as paved streets, car parks, parking lots, footpaths, sidewalks, and roofs. Storm sewers, and other grey infrastructure are typically made of concrete channels and pipes, and are often installed under ground.



Economic Development Land Use

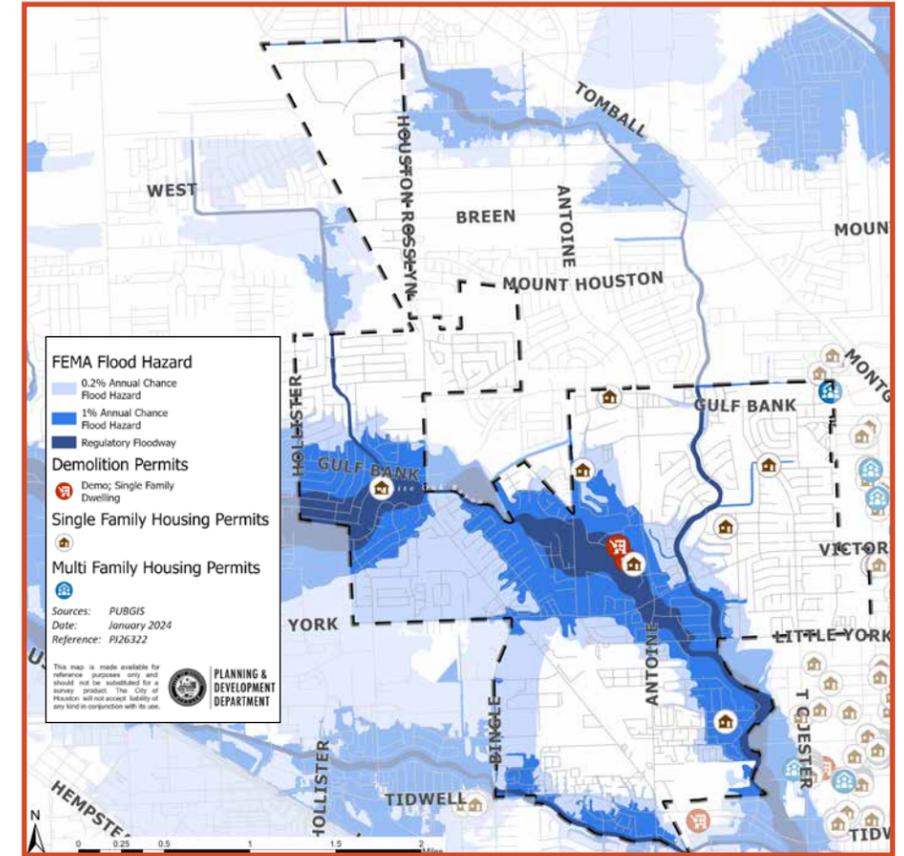
## Stormwater Infrastructure

The streets and local drainage systems were designed and installed prior to the adoption of more stringent drainage design requirements of the late 1990s. Considering the current design standards and the likelihood of extreme rainfall events, the local drainage systems are undersized and could benefit from being replaced with larger lines. Residents have noted the needed improvements on White Oak Bayou to retain more water. Like other neighborhoods in the City of Houston, Greater Inwood has a combination of opened and closed drainage systems, along with detention ponds and retention ponds adjacent to residential and commercial developments. However, there are very few segments of open ditches, which are mainly found along North Houston Rosslyn Road, Deihl Road, Alabonson Road, and Swonke Lane. The remainder of the neighborhood is installed with underground drainage pipes to carry out stormwater.

## Community Services

Four schools, two daycare centers, and one college campus in Inwood are highly vulnerable to floods. They include:

- Eisenhower High School (7922 Antoine Drive),
- Lil One's Daycare Emporium (4646 Victory Drive),
- Harmony School of Endeavor (5668 West Little York Road),
- Community Christian Academy (6700 Antoine Drive),
- Eisenhower Ninth Grade School (3550 West Gulf Bank Road),
- Hoffman Middle School and J. Ruth Smith Elementary (5815 West Little York Road), and
- Lone Star College-Houston North Victory (4141 Victory Drive).
- 



Permitting Activity and Relationship to the Floodplain

Seven churches in Greater Inwood are highly vulnerable to floods:

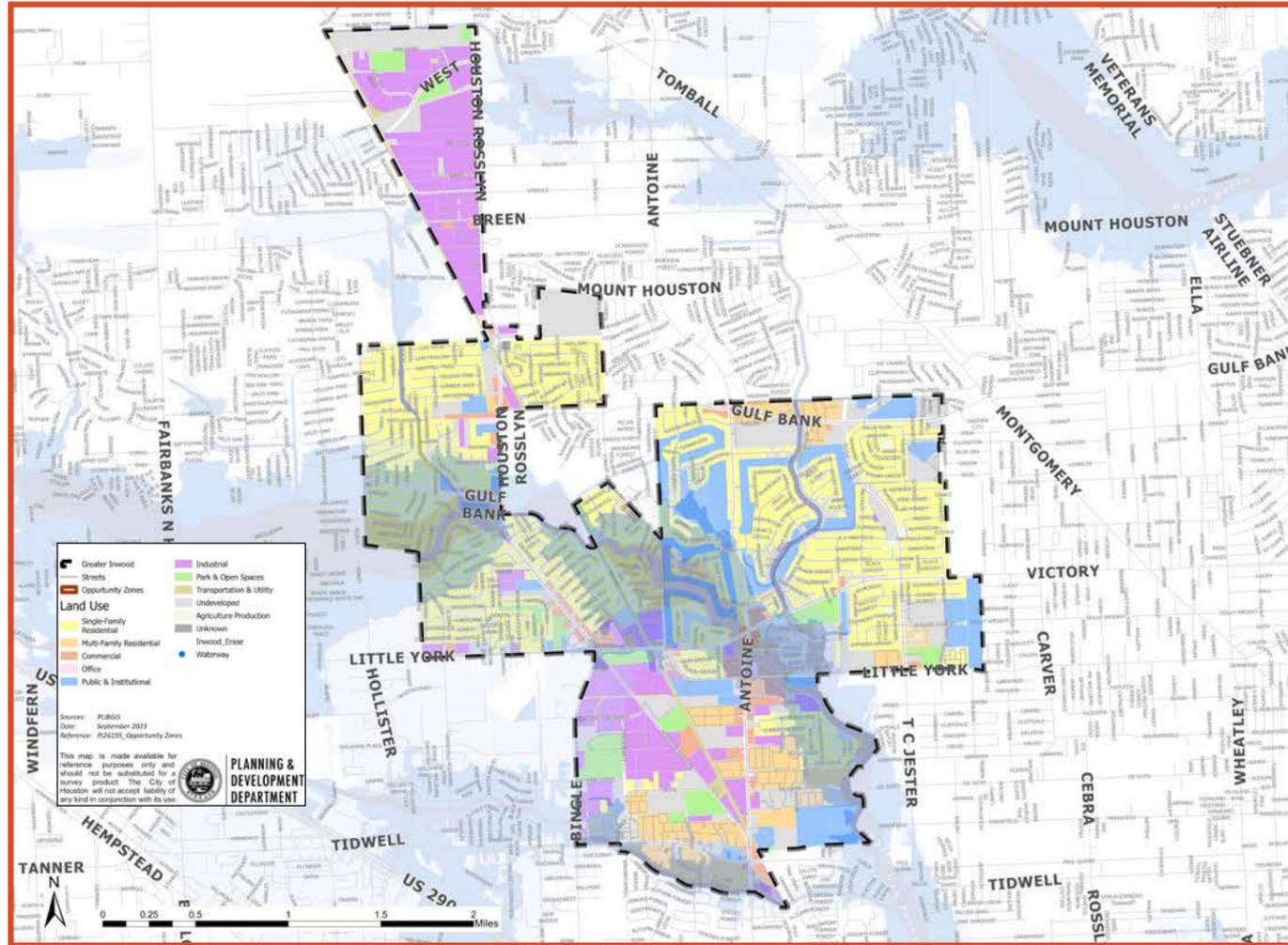
- Woodland Trails Baptist Church (9615 North Houston Rosslyn Road),
- Kingdom Hall of Jehovah's Witnesses (7240 West Gulf Bank Road),
- Living Word Christian Academy (6601 Antoine Drive),
- The Christian Outreach Center (4333 West Little York Road),
- New Jerusalem Missionary Baptist Church (9833 Bonazzi Boulevard),
- Our Savior Lutheran Church & School (5000 West Tidwell Road), and
- Shady Acres Baptist Church (7330 Vogel Road).

Two medical offices in Greater Inwood are highly vulnerable to floods:

- Mark E. Lawton, DDS (7038 Antoine Drive), and
- Harris County Public Health Clinic (5815 Antoine Drive).

Like housing, many community service facilities have been constructed before elevation regulations were first put in place in the 1980s. In addition, some community facilities are not weatherized to the extent necessary for the types of extreme heat and cold recently experienced, nor do they have backup power supplies that would allow them to operate during a power outage.

# ASSESSMENT & FINDINGS



Land Use and Relationship to the Floodplain

## Heat Vulnerability

As part of the original Greater Inwood neighborhood development, trees and vegetation were cleared to create the broad streets, such as West Little York Road/Victory Drive, Bingle Road/North Houston Rosslyn Road, West Gulf Bank Road, and West T.C. Jester Boulevard. Despite this development pattern, the neighborhood maintains a relatively high tree equity score of 91. Areas with an equity score above 90 are mainly found north of West Little York Road. This is largely attributed to existing green spaces such as Sylvester Turner Park, Inwood Forest Golf

Course, White Oak Bayou Greenway, and West Mount Houston Park. The moderate-to-high tree canopy coverage in the neighborhood is at risk from new development. Furthermore, there are former residential lots near the bayou that were bought out by the Harris County Flood Control District to help mitigate the effects of flooding.

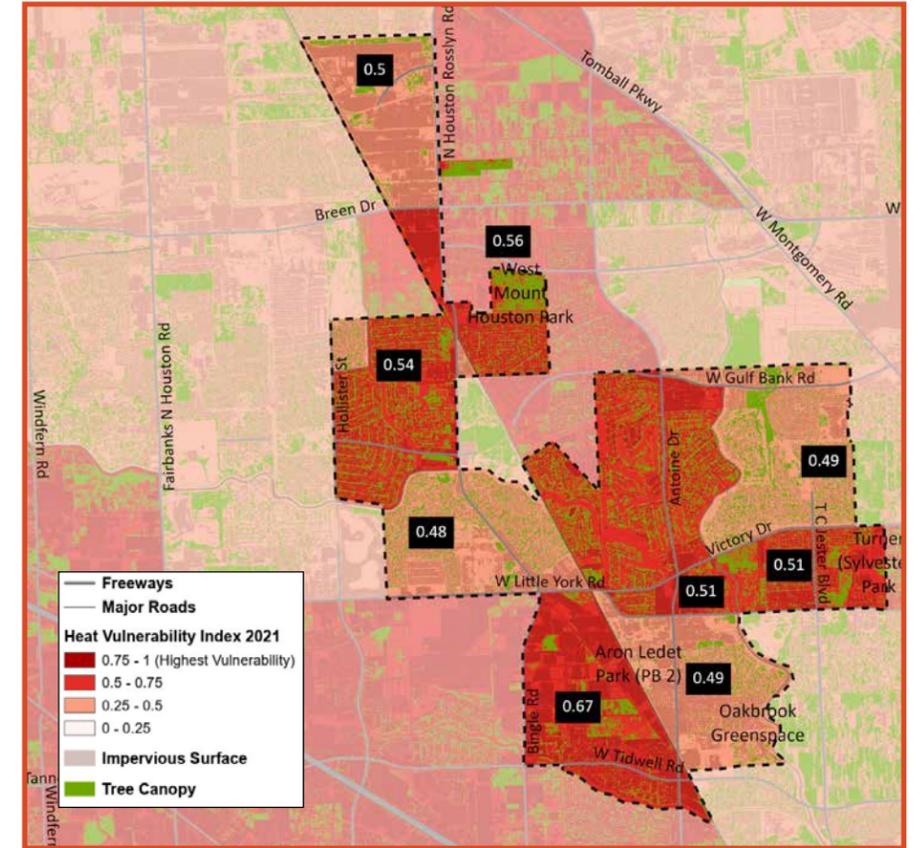
The phenomenon where developed areas exhibit higher temperatures compared to undeveloped areas is known as Urban Heat Island (UHI) effect. The effect “occur[s] when cities replace natural land cover with dense

concentrations of pavement, buildings, and other surfaces that absorb and retain heat. This effect increases energy costs (air conditioning), air pollution levels, and heat-related illness and mortality.” (United States Environmental Protection Agency, Green Infrastructure, Reduce Urban Heat Island Effect.)

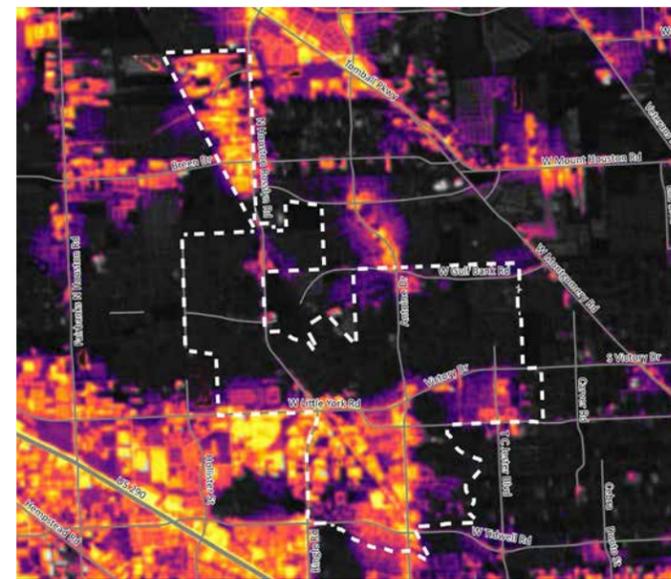
Though Houston is no stranger to hot weather, urban heat is a growing risk in a warming climate. Acute heat events are the deadliest weather-related risk and unusually hot days also impact public health, education, and quality of life.

The 2021 Harris County Extreme Heat Vulnerability Assessment takes into account numerous environmental and social factors. The findings reveal a significant percentage of the population in the neighborhood being highly vulnerable to heat-related issues. This includes individuals with limited access to air conditioning, and those with incomes below the federal poverty line, making the impact of rising energy costs more pronounced in this community. The assessment also identifies people living with health risks such as heart disease and disabilities, as well as those without health insurance.

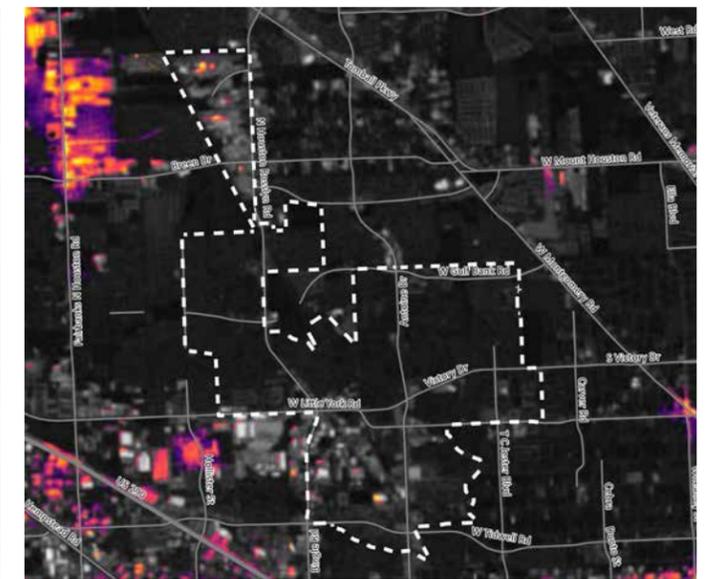
On the scale of 0 to 1, with 1 being the greatest vulnerability, Greater Inwood has on average a Heat Vulnerability Index of approximately 0.5. Indoor temperatures are well-regulated in many households in the neighborhood, but more measures need to be taken to cool outside temperatures during



Heat Vulnerability by Census Tract



Greater Inwood before Winter Storm Uri Outage



Greater Inwood after Winter Storm Uri Outage

# ASSESSMENT & FINDINGS

extreme heat events. This can be achieved by increasing tree coverage and pervious pavement materials. Community members have expressed the need to improve insulation in many homes.

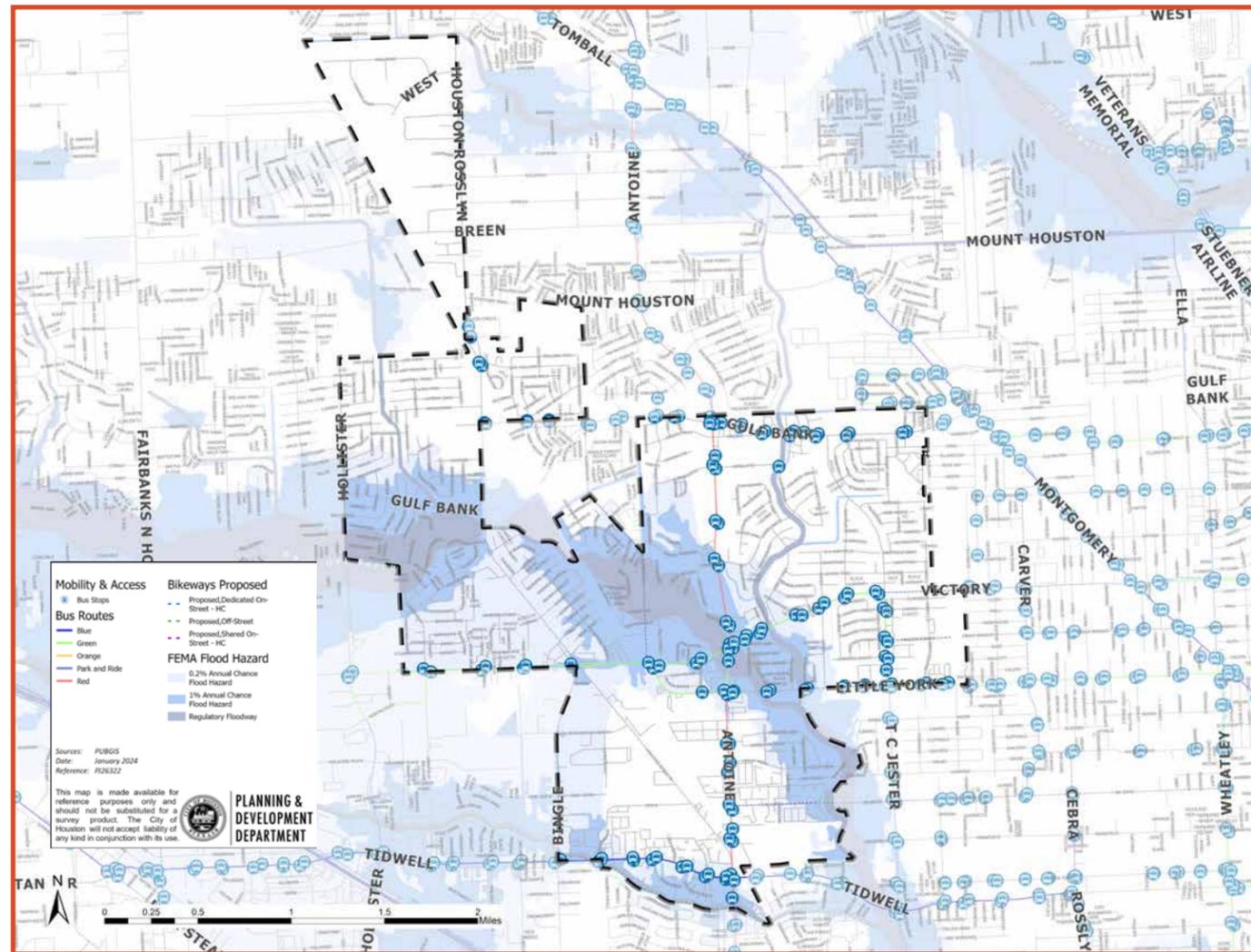
They also have reported the need for cooling stations, trees and native plants to be planted along roads, and increased areas of shade at the parks, bus stops, and on walking trails.

## Chronic Social Stresses

The community has experienced chronic stresses often related to the historic socio-economic marginalization of many community members. This is manifested in such realities as reduced food and energy security, limited or no vehicle access, limited access to higher-paying jobs, and lack of health insurance coverage. In addition to these factors,

the limited amount of core services present in the neighborhood has further exacerbated the day-to-day challenges of living in the neighborhood.

While the City is actively working to bring services to the community, large investments such as a community multi-purpose space requires substantial planning to fund, design, and construct.



Mobility and Flood Inundation



Inwood Forest Community

Community members have built strong organizations in response to the local need, and the neighborhood is working hard to improve and maintain vital social services. However, the community needs additional support from the City for existing needs and to reduce vulnerabilities to shocks that may be experienced in the future.

Community members described food insecurity as one of the chronic social stresses. The 2019 USDA Food Access Research Atlas identifies two census tracts (based on 2010 geographies) that partially overlaps with Greater Inwood as “Low-Income and Low-Access”, meaning this area has limited access to healthy food in combination with limited buying power. These households may face difficulties affording other essentials such as nutritious food and access to the Internet. Residents in Greater Inwood would like to have more healthy food options in the area. Approximately 31% of residents don’t have health insurance, making it difficult for many to receive treatment and preventative care.

One census tract in the neighborhood contains the highest percentage of households without access to a vehicle underscoring the need for improved public transportation, according to the 2020 CDC’s Social Vulnerability Index findings. Although bus routes exist on the main street corridors, there is still room to improve connectivity to employment centers and other essential services.

Nonetheless, the land development pattern in the area is low-density and predominately car-oriented. Community members report a limited and disconnected sidewalk that is in need of improvement. They specified a segment of Alabonson Road that connects apartments to parks, businesses and other destinations. Residents also expressed a desire for increased bike and walking trails connected to White Oak Bayou.



Vogel Creek Trail

# COMMUNITY ENGAGEMENT



First Greater Inwood Public Meeting

The planning process is founded on the principle of environmental justice, which demand the right of community members ‘to participate as equal partners at every level of decision making, including needs assessment, planning, implementation, enforcement, and evaluation.’\*\* Engagement strategies and participation opportunities have been designed to be equitable so that all community member and stakeholder voices are intentionally sought, listened to, affirmed, and incorporated in the development of the neighborhood plan.

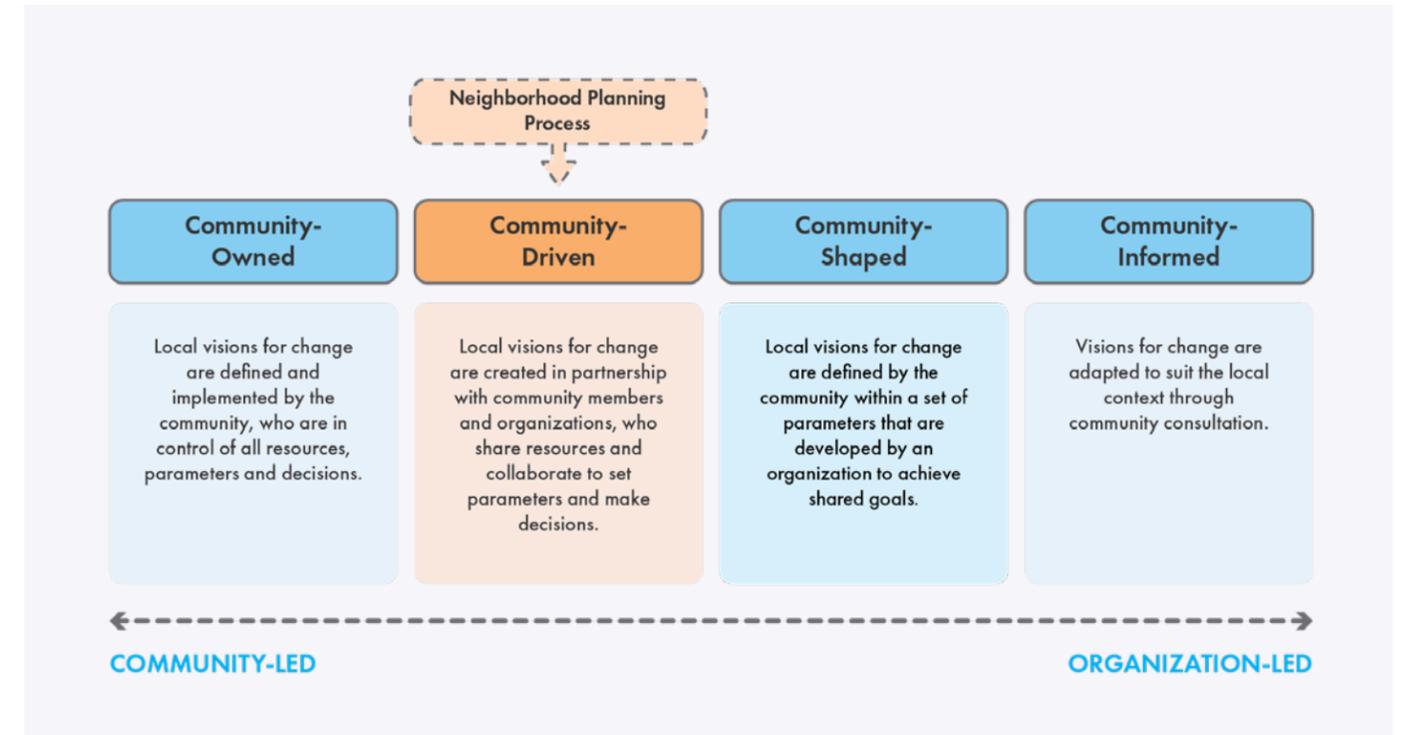
Community engagement took place between April 2023, and February 2024. Over the course of 10 months, the planning team was actively engaged with the Greater Inwood community to create the Neighborhood Resilience Plan. The effort was guided by an eight-member Neighborhood Support Team (NST) who were selected based on their willingness to serve, representation of broad community interests, and experience with community-level projects. NST members functioned as ambassadors for their community to

leverage their networks and encourage participation in the planning process. Members participated in three NST meetings, three public meetings (which included Spanish translation), three surveys, and numerous conversations with community leaders and with proactive residents. The visions and goals expressed in these meetings provided the basis of the plan’s development and recommendations.

The planning team reached out to the community through flyer distribution, social media, postings in community centers and businesses, newsletters, and online and in-person surveys on the [Let’s Talk Houston website](#). An estimated 150 people took at least one of the following actions: completed online surveys, provided project feedback on physical project boards, or attended a virtual or in-person meeting. In total, the engagement process has informed approximately a thousand or more people in Greater Inwood about the planning process.

The Near Northwest Management District has been an active and dedicated partner in the Greater Inwood community, consistently engaging with stakeholders and actively participating in community initiatives. Their tireless efforts have been instrumental in securing funding resources and identifying opportunities to minimize shocks and stressors and enhance resilience in the Greater Inwood area. Thanks to their leadership, various improvement projects have been successfully executed, resulting in a more vibrant and thriving community.

\*\*From the Principles of Environmental Justice, Delegates to the First National People of Color Environmental Leadership Summit, October 24-27, 1991, in Washington, D.C.



The Attygale community participation spectrum states that four types of community interaction be used when creating a City-adopted planning document.

## Existing Community Plans

Planning efforts for the Greater Inwood community have been developed over the past two decades and represent the significant strides made in the area. These plans serve as a tangible testament to the diligent efforts and commitment of City departments, agencies and organizations involved in the development and enhancement of the community. This progress will continue to transform the Greater Inwood area into an even more vibrant and thriving community.



## Northwest Sub-Regional Study

The plan proposes an innovative approach to developing mobility solutions that focus on improving transportation infrastructure by identifying multi-modal system enhancements to be made during development or redevelopment. The study aims to identify short and long-range projects that promote better mobility by considering the classification for streets within the study area, including pedestrian, bicycle, transit, vehicular, and other modes of transportation.



## Inwood Recreation Project

The City of Houston purchased the Inwood Golf Course to develop new storm water detention basins in partnership with the Harris County Flood Control District (HCFCD). Houston Parks Board and its partners developed a plan with input from the community that proposes trails, recreation, and landscaping components that complement the detention basins. This approach will bring multiple beneficial uses to flood control infrastructure.



### Near Northwest Management District Livable Centers Plan

The Livable Centers Study, which was conducted in the Near Northwest Management District study area, proposed several practical ways to improve the area's accessibility and create more opportunities for community activities.

The study area is roughly bounded by West Gulf Bank Road to the north, Pinemont Drive to the south, T.C. Jester Boulevard to the east, and Bingle Road to the west. The study recommended projects such as the establishment of pedestrian and biking thoroughfares, the addition of beautification elements, the revitalization of vacant shopping centers, lighting and signage concepts, and the improvement of existing parks. The development framework will aim to make all attractions accessible.

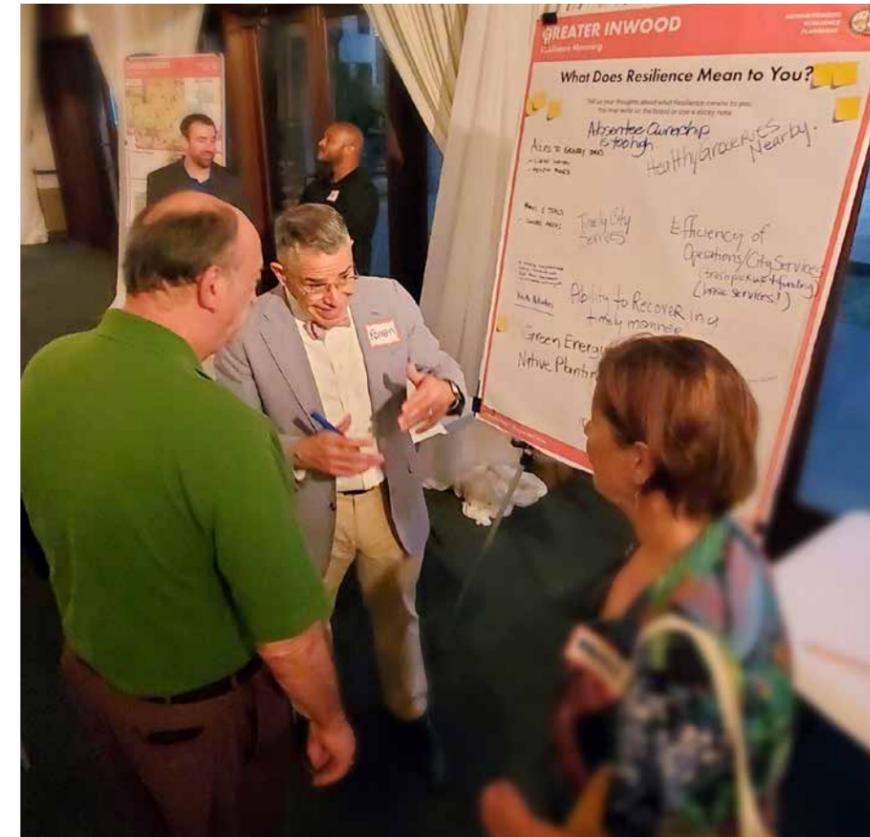


### Near Northwest Management District Capital Plan

Created in 2001, by the State of Texas Legislature, the plan aims to promote and coordinate economic growth, cultural activities, and public welfare within its boundaries. The program is bound by SH 249 (N) T C Jester Boulevard (E), Pinemont Drive (S), and Hollister Road (W). Its plans include public safety, branding, graffiti and litter abatement, economic development, and public infrastructure.



Residents Talking and Sharing Ideas



Residents Participating in Board Activities



# Engagement Activities

- 3 Neighborhood Support Team Meetings
- 6 Coffee Klatch meetings
- 3 public meetings
- 1 Sticky event

22K+ Social media postings and flyers

450+ People Involved



A "word cloud" made up of the priorities and desired improvements expressed by Inwood residents

# ACTIONS UNDERWAY

Currently, there are various studies and projects led by the City of Houston Public Works Departments, Houston Parks Board, and Harris County Flood Control District in the Greater Inwood area:

- White Oak Bayou Waterway Project, on Antoine Drive
- Greater Inwood CIP Project
- Off-street Shared-use Path, from U.S. 290 to West Mount Houston Drive

The Off-street Shared-use Path project is currently in design phase with the first segment (Victory Drive to West Mount Houston Drive) projected to start construction in fall 2025, and the second segment (U.S. 290 to Victory Drive) starting construction in fall 2026.



Inwood Recreation Project

## C-59 Inwood Forest Stormwater Detention Basin Project

The Inwood Forest Stormwater Detention Basin project encompasses property located both east and west of Antoine Drive, with a total of 12 interconnected stormwater detention basins. Construction

on the project started in May 2023 and allows for 990 calendar days with an anticipated completion in early 2026. The stormwater detention basins are being built by the Flood Control District on the former golf course property to provide flood damage reduction benefits during



Inwood Forest Stormwater Detention Project



**“I consider Greater Inwood a hidden jewel in the City of Houston.”**  
— Anonymous Inwood Resident



heavy storms, and to mitigate impacts of future public City of Houston drainage projects as appropriate.

The Flood Control District is also working with the City of Houston, to support plans to develop proposed recreational areas that could be incorporated around the stormwater detention basins once construction of the basins are complete. The Houston Parks Board is part of this City of Houston effort.

## Arbor Oaks Stormwater Detention Basin Project

This project is expected to provide stormwater storage in the Arbor Oaks & Greater Inwood neighborhoods in

the White Oak Bayou Watershed. The Flood Control District intends to construct a stormwater detention basin on property it owns south of Victory Drive, near the confluence of White Oak Bayou, and its tributary, Vogel Creek. Funding for this project is expected to include a \$10.8 million grant from the Natural Resources Conservation Service. The Arbor Oaks Stormwater Detention Basin is expected to provide more than 72,000,000 gallons of stormwater storage.

## Bike and Pedestrian Trails

Harris County Precinct 1 will build the pedestrian and bike bridge over White Oak Bayou at De Soto Street.

## New Sidewalk Installations

Starting at West Little York Road from Chateau Forest Drive to T.C. Jester Boulevard on West Little York Road, Victory Drive, and west side of T.C. Jester Boulevard. Starting at West Tidwell Road from Antoine Drive to T.C. Jester Boulevard and West Tidwell Park area enhancements and access to White Oak Bayou Trail. Funding provided by The Near Northwest Management District.

## Inwood Forest Recreation Project

The Inwood Golf Course, which is part of the neighborhood, was purchased by the City of Houston to build new storm water detention basins in partnership with the Harris County Flood Control District (HCFCD). HCFCD received federal grant funds to develop detention basins at Inwood for flood control purposes only. To supplement this project, the Houston Parks Board, along with Asakura Robinson, a landscape design firm, was tasked by the City of Houston to incorporate a recreational component. The Houston Parks Board and its partners, along with input from the community, created a plan that proposes trails, recreation, and landscaping elements that complement the detention basins. This approach will bring multiple beneficial uses to flood control infrastructure.

## Engage Houston Antoine Project (Paving and Drainage)

The project includes full reconstruction of the roadway, drainage, traffic, and utilities for approximately five miles of Antoine Drive, from U.S. 290 to West Mount Houston Drive. (Begins fall 2025).

# COMPLETED PROJECTS

The City of Houston, and the Houston Parks Board have completed projects that are a testament to the dedication of the goals of the Greater Inwood community. With each completed project, successes, no matter how big or small, can serve as a source of motivation and inspiration for further progress.

## Vogel Creek Greenway

The Vogel Creek Greenway project offers a 1 mile hike and bike trail. This is a Phase 1 of the Inwood Forest Recreation Plan proposed to connect the Vogel Creek Greenway to the White Oak Bayou Greenway.

## New Sidewalk Installation

West Little York Road from Hollister Street to Chateau Forest Drive, and at bus shelters along the METRO extended route. This project was completed in 2022.

## Tree Planting

A tree planting event held near White Oak Village, was hosted by the Houston Parks Board, in Jan. 2023.



Residents Prioritizing Projects



Greater Inwood Community Engagement and Events



# PROJECTS

Physical interventions such as completing a sidewalk network, and programmatic activities such as promoting resilience-related public art can create a tangible change within neighborhoods. By addressing both physical and social aspects of resilience, the community adopts holistic and comprehensive approaches to improve Greater Inwood.

Building upon existing planning efforts, numerous projects have been identified by the community. These projects are categorized based on the City's current capabilities, including department budgets, staffing, and capital improvement projects. Future perspectives and resilience challenges of the neighborhood are also taken into account to ensure the long-term relevance of the neighborhood plan.

Looking ahead, the community envisions forming public-private partnerships to execute the aspirational goals of the plan, which may require additional staffing, funds, or expertise. Aspirational projects, such as riparian expansion and rehabilitation or innovative urban design practices to reduce stormwater runoff, are identified to significantly mitigate the climate threat to the community's resilience. However, the implementation steps for these projects are not fully in place in the near term. While feasible, they will require ongoing collaboration between the City and the community to develop implementation pathways, particularly for funding and maintenance.

Projects will follow varying schedules and timelines depending on project complexity, funding, and staffing. For each project, necessary and recommended steps to realize resilience are outlined, City leads and critical non-governmental partners are identified, anticipated project timelines are established, funding pathways are proposed, and metrics for success are described. Work on the implementation of community identified projects should commence at plan adoption or earlier, including those requiring non-governmental partners.

The following pages outline the projects identified and prioritized by the community. Project work already programmed, currently underway, or recently completed may also be found here.



Inwood Recreation Project Groundbreaking



Greater Inwood Tree Planting Project



Current Shopping Center on Antoine Drive



Conceptual Interpretation of Renovated Shopping Center

# PROJECTS

HEALTH & SAFETY					HEALTH & SAFETY				
GUIDING PRINCIPLES	PROJECT	DESCRIPTION	TIMELINE	PRIORITY	STEPS	CITY DEPARTMENTS	PARTNERS	METRICS	
Safe in the Neighborhood	Increase Public Safety Along Trails in Greater Inwood	Promote public safety on the trails throughout the community by increasing lighting, installing emergency call boxes, security cameras or Flock camera system. Safety improvements include increasing patrol units along trails and on streets.	Short-term (1–2 Years)	High	<ol style="list-style-type: none"> <li>1. Submit a street lighting application to request poles and lights along streets</li> <li>2. Identify funding sources for emergency call boxes or Flock safety cameras along trails</li> <li>3. Stay in contact with District A Council Member for updates</li> <li>4. Identify funding source/partner and go through the permitting process for improvements such as: <ul style="list-style-type: none"> <li>- Rest zones with water and seating</li> <li>- Green spaces for gatherings, and community gardens</li> </ul> </li> <li>5. Schedule a meeting with Houston Police Department North Division Unit and Park Ranger Division to discuss increasing patrol on trails and on streets</li> </ol>	Department of Neighborhoods, Planning & Development Department	Houston Parks Board, Flock Security, City Council District A, Civic Clubs, Home Owner Associations, Acres Home Super Neighborhood Council, Greater Inwood Super Neighborhood Council	<p>Miles of completed trails</p> <p>Meets Resilient Houston goals: 3, 6, 7, &amp; 9</p>	
Safe at Home	Increase Awareness of Green Resources to Improve Resiliency	Preserve and improve the natural beauty and resilience of the neighborhood by implementing a campaign to increase awareness of green resources including installing individual do-it-yourself (DIY) Green Stormwater Infrastructure (GSI) projects. Possible projects include installing rain barrels, composting, sponge gardens, green roofs, solar, conducting home energy audits, urban greening, bioswales, constructed wetlands, and others.	Medium-term (3–5 Years)	Medium	<ol style="list-style-type: none"> <li>1. Visit <a href="http://www.codegreenhouston.org">www.codegreenhouston.org</a> for information on green projects</li> <li>2. Create a communications system to maintain and update information and outreach</li> <li>3. Form a working group to select projects of interest</li> <li>4. Implement DIY and GSI Projects</li> <li>5. Visit the Green Resource Center to select projects right for your home or neighborhood</li> <li>6. After project consideration, apply for tax credits to offset the costs at <a href="http://www.codegreenhouston.org/incentives">www.codegreenhouston.org/incentives</a></li> </ol>	Houston Public Works, Houston Green Resource Center	Greater Inwood Super Neighborhood Council, Near Northwest Partnership	<p>Number homes participating and completed projects</p> <p>Meets Resilient Houston goals: 1, 6, 10, 11, 12, &amp; 13</p>	

# PROJECTS

BEAUTIFICATION & NEIGHBORHOOD CHARACTER					BEAUTIFICATION & NEIGHBORHOOD CHARACTER				
GUIDING PRINCIPLES	PROJECT	DESCRIPTION	TIMELINE	PRIORITY	STEPS	CITY DEPARTMENTS	PARTNERS	METRICS	
Living in a Connected Community	Enhance Bridge Crossing to Celebrate the Waterways	Accent the bridge crossings with decorative poles, and "suspension bridge" strings of LED rope lights identifying the value of water within the community to bridges at 4400 Victory Drive, 4600 Victory Drive, 4400 West Little York Road, and 4300 West Little York Road. This project is derived from the Near Northwest Management District, Livable Centers Plan.	Short-term (1–2 Years)	High	<ol style="list-style-type: none"> <li>1. Meet with stakeholders to discuss historic and cultural context for artist development</li> <li>2. Incorporate bridge crossing design into HPW design and construction of Antoine Drive Rebuild Project</li> </ol>	Houston Public Works	Near Northwest Management District, Greater Inwood Super Neighborhood Association, Near Northwest Partnership	<p>LED lights are installed across the bridge</p> <p>Meets Resilient Houston goals: 3, 7, 9, &amp; 15</p>	
Safe in the Neighborhood	Implement Tree Planting Projects to Increase Resiliency	Plant native trees strategically around the neighborhood to improve community pride, reduce the impact of heat, reduce pollution concentrations, and help mitigate flooding. The community expressed a desire for Live Oaks to match existing trees.	Short-term (1–2 Years)	High	<ol style="list-style-type: none"> <li>1. Create a communications system to maintain outreach information</li> <li>2. Meet with a tree planting organization, such as Trees for Houston, to discuss their program, tree availability, scheduling and other requirements</li> <li>3. Identify areas that need more tree canopy using extreme heat data and community reporting, including near Metro Bus Shelters to maximize shade</li> <li>4. Identify the types of trees to be planted</li> <li>5. Fundraise for tree planting and continued maintenance, if necessary</li> <li>6. Organize volunteers to conduct the tree planting event borrowing tools from organizations like the Houston Tool Bank, if necessary</li> <li>7. Help raise funds for Inwood Forest area amenities</li> </ol>	Houston Parks and Recreation Department	Trees for Houston, METRO, Houston Tool Bank, The Houston Area Urban Forestry Council (HAUFC), Arbor Day Foundation	<p>Number of trees planted</p> <p>Meets Resilient Houston goals: 6, 10, 11, 12, &amp; 15</p>	
MOBILITY & INFRASTRUCTURE					MOBILITY & INFRASTRUCTURE				
GUIDING PRINCIPLES	PROJECT	DESCRIPTION	TIMELINE	PRIORITY	STEPS	CITY DEPARTMENTS	PARTNERS	METRICS	
Living in a Connected Community	Improve Hike and Bike Pedestrian Connectivity	Enhance pedestrian hike and bike trails by completing gaps in the trail network. Provide access from bridges to the creek for pedestrians and bikers. This project is derived from the Near Northwest Management District, Livable Centers Plan.	Medium-term (3–5 Years)	High	<ol style="list-style-type: none"> <li>1. Create a communications system to maintain updated information and streamline the outreach process</li> <li>2. Follow District A, Houston Public Works and Harris County Flood Control District for updates and engagement opportunities</li> </ol>	Houston Public Works, Planning & Development Department	Harris County Flood Control District	<p>Miles of connectivity installed</p> <p>Meets Resilient Houston goals: 3, 7, 9, &amp; 15</p>	

# PROJECTS

ECONOMY & JOBS					ECONOMY & JOBS				
GUIDING PRINCIPLES	PROJECT	DESCRIPTION	TIMELINE	PRIORITY	STEPS	CITY DEPARTMENTS	PARTNERS	METRICS	
Living in a Connected Community	Increase Economic Development in Shopping Centers	Promote economic development at the shopping centers along Antoine Drive, between 5600 and 8200 Antoine Drive. This project is derived from the Near Northwest Management District, Livable Centers Plan.	Long-term (6+ Years)	High	<ol style="list-style-type: none"> <li>Promote the use of NNMD’s Business Directory</li> <li>Develop a market analysis to assess strategies for retention &amp; expansion. Examine price-to-rent ratios, vacancy rates, population growth, real estate growth, available tools, and programs</li> <li>Partner with University of Houston SBA Center to connect tenants with administrative and technical educational opportunities</li> <li>Work with commercial property owners to create visually appealing storefronts</li> <li>Organize events, promotions, and activities to attract patrons, attract new small businesses, and to create a sense of community</li> <li>Seek Façade Improvement Grants with the owner’s involvement to support physical upgrades</li> </ol>	Office of Business Opportunity	Near Northwest Management District, University of Houston, Small Business Administration	<p>Increased businesses or sales volume</p> <p>Meets Resilient Houston goals: 2, 4, &amp; 9</p>	
CIVIC ENGAGEMENT					CIVIC ENGAGEMENT				
GUIDING PRINCIPLES	PROJECT	DESCRIPTION	TIMELINE	PRIORITY	STEPS	CITY DEPARTMENTS	PARTNERS	METRICS	
Living in a Connected Community	Increase Civic Engagement Across Neighborhoods	Increase community advocacy and leadership through leadership training and utilizing newsletters and other communication methods to acquire project updates. Inform residents of major project updates, including CIP.	Short-term (1–2 Years)	High	<ol style="list-style-type: none"> <li>Create a communication system to maintain updated information and streamline the outreach process</li> <li>Encourage community stakeholders to apply for Neighborhood Leadership Training or other leadership training.</li> <li>Identify all major planned and current projects occurring in the community.</li> <li>Increase methods of communication such as social media, print, organization, announcements, etc.</li> <li>Develop a communications network and share news and updates with civic clubs and organizations.</li> <li>Sign up to receive information from council district A and the HCFCF website.</li> <li>Visit <a href="http://www.engagehouston">www.engagehouston</a>, and <a href="http://www.letstalkhouston.org">www.letstalkhouston.org</a> for project updates.</li> </ol>	Department of Neighborhoods, Planning & Development, Houston Public Works	Near Northwest Management District, Harris County Flood Control District, Near Northwest Partnership, Greater Inwood Super Neighborhood Council, Super Neighborhood Alliance	<p>Increased numbers in communication network, meeting attendance, and community events</p> <p>Meets Resilient Houston goals: 1 &amp; 12</p>	

# NEXT STEPS & IMPLEMENTATION

With any plan, the work continues long after the plan is adopted. Ongoing work is carried out—by both the Greater Inwood community and the city—to implement the city-committed projects, and work toward realizing the aspirational projects proposed in this document.

## Funding + Adoption

Once a plan is adopted, existing funds are allocated and additional funds are sought to cover remaining project costs. Departmental budgets, the capital improvements project, and other internal city sources have been tentatively identified for “city committed” projects. Additional funding is necessary to implement “aspirational” projects.

The Funding Matrix, a living document provided as an addendum to this document, outlines a number of external funding sources and other funding mechanisms, like development impact fees, Tax Increment Reinvestment Zones (TIRZ) and management districts. City staff are a critical part of securing funding, but this plan will support community leaders with guidance on how to seek funding for their neighborhood projects and programs.

## Monitoring + Evaluation

After projects have been implemented, tracking progress and the impact of the projects through metrics is important. The metrics have been identified to help evaluate and monitor the efficacy of each plan’s projects in achieving the neighborhood’s vision for resilience.

Metrics can show whether the neighborhood resiliency projects are working as intended. If the metrics indicated sub-optimal progress or impact, stakeholders can change course and recalibrate project priorities.

## Living Document

This plan is designed as a living document intended to keep up with best practices and maintain relevancy to the neighborhood. Part of ensuring the continued resonance and relevance of the document is keeping the document up to date through periodic minor modifications for small and substantively inconsequential changes, or minor and major amendments for small to large content changes or additions.

There are two types of document updates. The first is a staff-initiated update, where city staff identify a need to update the plan document. The second is a community-initiated update, where a community leader or leaders propose a change to the plan. The process for carrying forward a proposed plan update is the same for both staff-initiated and community-initiated proposals. In both cases, proposals are presented to the Super Neighborhood and must receive majority recommendation to carry forward a proposed updated plan to city council for adoption. Community-initiated proposals must receive support from the Planning and Development Department and any other impacted city department or division for their proposed change prior to seeking a Super Neighborhood recommendation.

**Minor Modifications** minimally affect the plan’s vision and the associated projects, and are conducted to improve the plan’s accuracy, efficacy, and fundability.

**Major Modifications** are somewhat impactful to the overarching plan vision and projects. They are conducted to adjust the scope and type of work proposed to improve the plan’s accuracy, efficacy, and fundability.

**Minor Amendments** include minimal adjustments to the plan that impact but does not substantially alter the underlying assumptions of the community engagement findings, vulnerability assessment, resilience vision, or recommended projects, but are necessary for plan accuracy, efficacy, and fundability. An example of a minor amendment is a data update.

**Major Amendments** substantially adjust the plan that alters the underlying assumptions of the community engagement findings, vulnerability assessment, resilience vision, or recommended projects, and are necessary to carry out for plan accuracy, efficacy, and fundability. Examples can include adding or substantially changing projects based on changes in laws, unexpected disasters, or new process and technological developments.

**Supplemental Attachments** minimally affect the plan’s vision and the associated projects and are provided to add substantial new data or findings. A supplement expands the plan’s scope and will typically be accompanied by a minor or major amendment. The attachment is intended to improve the plan’s accuracy, efficacy, and fundability. Keeping the document regularly updated will support neighborhood resilience for years, even decades, to come.



# APPENDIX

## ACRONYMS

<b>AC or A/C</b>	Air Conditioning	<b>IDM</b>	Infrastructure Design Manual
<b>ACS</b>	American Community Survey	<b>LEED</b>	Leadership in Energy and Environmental Design
<b>ADA</b>	American Disabilities Act	<b>LIHTC</b>	Low-Income Housing Tax Credit
<b>ARA</b>	Administration & Regulatory Affairs	<b>LISC</b>	Local Initiatives Support Corporation
<b>CASPER</b>	Community Assessment for Public Health Emergency Response	<b>LMI</b>	Low-to-Moderate-Income
<b>CBO</b>	Community-Based Organization	<b>MOCC</b>	Mayor's Office of Complete Communities
<b>CDC</b>	Community Development Corporation	<b>MOED</b>	Mayor's Office of Economic Development
<b>CE</b>	Community Engagement	<b>MOCA</b>	Mayors Office of Cultural Affairs
<b>CEAP</b>	Comprehensive Energy Assistance Program	<b>MORS</b>	Mayor's Office of Resilience and Sustainability
<b>CHDO</b>	Community Housing Development Organization	<b>NGO</b>	Nonprofit Government Organization
<b>CIP</b>	Capital Improvements Program	<b>NOFA</b>	Notice of Funding Availability
<b>CPP</b>	Community Participation Plan	<b>NRP</b>	Neighborhood Resilience Plan
<b>CRO</b>	Chief Resilience Officer	<b>NST</b>	Neighborhood Support Team
<b>DON</b>	Department of Neighborhoods	<b>OBO</b>	Office Of Business Opportunity
<b>ECHO</b>	Elder Cottage House Opportunity	<b>OEM</b>	Office of Emergency Management
<b>GI</b>	Green Infrastructure	<b>PD</b>	Planning and Development Department
<b>GSI</b>	Green Stormwater Infrastructure	<b>PROW</b>	Public Right-of-Way
<b>HAP</b>	Homeowners Assistance Program	<b>QAP</b>	Qualified Allocation Plan
<b>HCD</b>	Housing and Community Development	<b>ROW</b>	Right-of-Way
<b>HFD</b>	Houston Fire Department	<b>SBA</b>	Small Business Administration
<b>HHD</b>	Houston Health Department	<b>SWAT</b>	Stormwater Action Team
<b>HPARD</b>	Houston Parks and Recreation Department	<b>SWD</b>	Solid Waste Department
<b>HPL</b>	Houston Public Library	<b>TAC</b>	Technical Advisory Committee
<b>HPW</b>	Houston Public Works	<b>TIRZ</b>	Tax Increment Reinvestment Zone
<b>HVAC</b>	Heating, Ventilation, and Air Conditioning	<b>VAD</b>	Vacant, Abandoned, and Deteriorated
<b>HVI</b>	Heat Vulnerability Index		
<b>ICC</b>	Increased Cost of Compliance		

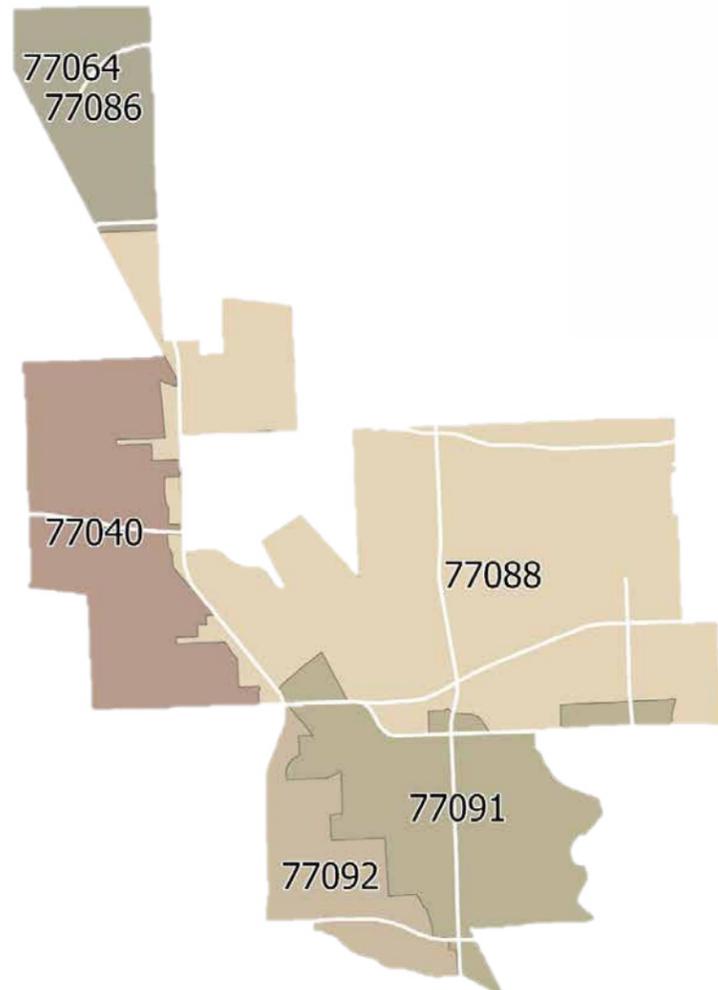
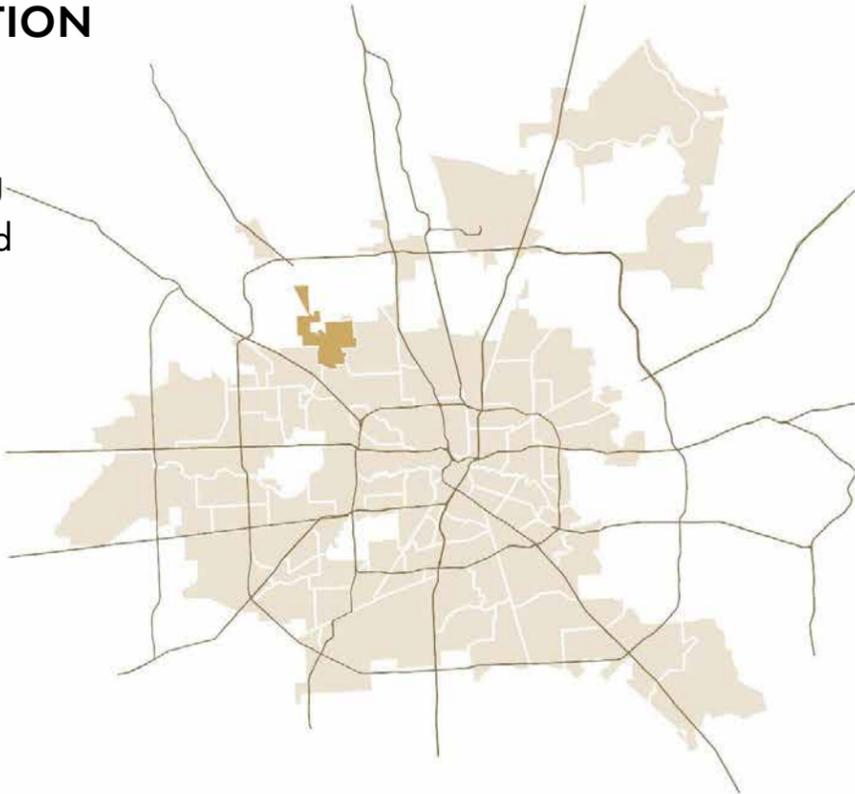
## DEPARTMENT & OFFICE ACRONYMS

<b>311</b>	Help and Information
<b>CC</b>	Civic Club
<b>CDBG</b>	Community Development Block Grant
<b>CDBG-DR</b>	Community Development Block Grant Disaster Recovery
<b>CDBG-MIT</b>	Community Development Block Grant Mitigation
<b>CFRTF</b>	Harris County Community Flood Resilience Task Force
<b>COH</b>	City of Houston
<b>DC PSC</b>	District of Columbia Public Service Commission
<b>DC SEU</b>	District of Columbia Sustainable Energy Utility
<b>DOEE</b>	Department of Energy and Environment
<b>DON</b>	Department of Neighborhoods
<b>EPA</b>	Environmental Protection Agency
<b>FEMA</b>	Federal Emergency Management Agency
<b>GCPD</b>	Gulf Coast Protection District
<b>GLO</b>	Texas General Land Office
<b>HARC</b>	Houston Advanced Research Center
<b>HCDD</b>	Housing and Community Development Department
<b>HCFCDD</b>	Harris County Flood Control District
<b>HCHA</b>	Harris County Housing Authority
<b>HEF</b>	Houston Equity Fund
<b>HHA</b>	Houston Housing Authority
<b>HHS</b>	Health and Human Services
<b>HPCD</b>	Houston Planning and Community Development
<b>HPRD</b>	Houston Parks and Recreation Department
<b>HUD</b>	Housing and Urban Development
<b>ISD or Houston ISD</b>	Houston Independent School District
<b>LTH</b>	Let's Talk Houston
<b>METRO</b>	Metropolitan Transit Authority of Harris County
<b>MOCA</b>	Mayor's Office of Cultural Affairs
<b>MOR</b>	Mayor's Office of Resilience
<b>MORS</b>	Mayor's Office of Resilience and Sustainability
<b>NHPD</b>	National Housing Preservation Database
<b>OEM</b>	Office of Emergency Management
<b>PD</b>	Planning and Development Department
<b>PW or HPW</b>	Houston Public Works
<b>SN</b>	Super Neighborhood
<b>SNC</b>	Super Neighborhood Council
<b>SWMD</b>	Solid Waste Management Department
<b>TDHCA</b>	Texas Department of Housing and Community Affairs
<b>TX-PACE</b>	Texas Property Assessed Clean Energy
<b>TxDOT</b>	Texas Department of Transportation
<b>US HUD</b>	United States Housing and Urban Development

# APPENDIX

## NEIGHBORHOOD INFORMATION

The Neighborhood Resilience Planning study for the Greater Inwood is situated in the northwest part of Houston. It is accessible via six major thoroughfares: Antoine Drive, West Little York Road, West Gulf Bank Road, Pinemont Drive, Victory Drive, and Tidwell Road. The Burlington Northern Santa Fe Railroad bisects the community.



The study area encompasses 4,269 acres (6.7 sq. miles). It is 30 minutes away from downtown Houston, the Texas Medical Center, the Galleria, and the George Bush International Airport. Data included here has been compiled from the latest American Community Survey 5-year estimates in 2022.

## DATA SNAPSHOT

	GREATER INWOOD 2022		CITY OF HOUSTON 2022	
	Number	Percentage	Number	Percentage
Total Population	40,621	2%	2,296,253	100%
Race/Ethnicity				
White Alone	3,968	10%	541,798	23%
Black or African American Alone	10,952	27%	505,308	22%
Asian Alone	1,016	3%	156,724	7%
Hispanic or Latino	24,159	59%	1,029,429	45%
Other	525	1%	62,994	3%
Age				
17 Years or Younger	11,650	29%	549,788	24%
18-64 Years Old	24,778	61%	1,480,407	64%
65 Years or Older	4,192	10%	266,058	12%
Place of Birth				
Foreign Born Residents	11,815	29%	664,495	29%
Means of Transportation to Work 16 Years +	17,506	100%	1,105,088	100%
Drove Alone/Carpooled	15,269	87%	902,593	82%
Public Transportation (excluding taxicab)	417	2%	37,336	3%
Other (Walk, Bicycle, Work at Home, etc.)	1,820	11%	165,159	15%
Educational Attainment 25 Years +	24,993	100%	1,513,104	100%
No High School Diploma	7,130	29%	308,350	20%
High School Graduate (includes equivalency)	7,035	28%	329,224	22%
Some College (no degree)	4,954	20%	254,030	17%
Associate's Degree	1,531	6%	89,537	6%
Bachelor's Degree or Higher	4,343	17%	531,963	35%
Median Household Income	\$46,663		\$60,440	
Households Below Poverty	3,357	24%	157,268	18%
Housing Units	15,481	100%	1,006,392	100%
Occupied	13,869	90%	897,510	89%
Vacant Housing Units	1,612	10%	108,882	11%
Occupied Housing (owners and renters)	13,869	100%	897,510	100%
Percent Owners	6,745	49%	376,562	42%
Percent Renters	7,124	51%	520,948	58%

# APPENDIX

## RESILIENCE DEFINITIONS & CONCEPTS

**Climate Adaptation** refers to changes in social, economic, and ecological systems in response to climatic risks and their effects.

**Climate Resilience** is the ability to anticipate, absorb, accommodate, and recover from adverse climate impacts.

### RELATED TERMS

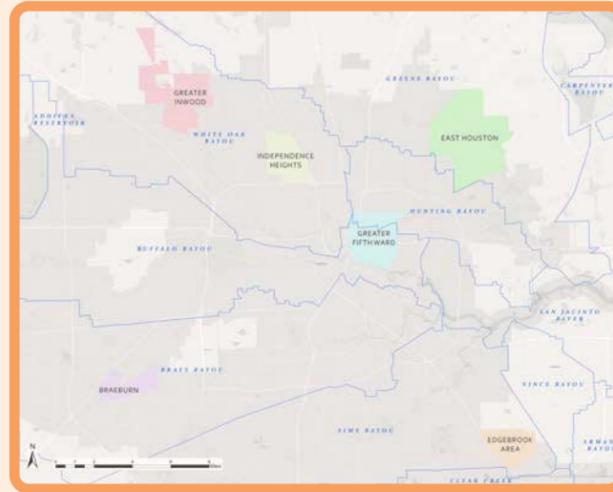
A **Climate Hazard** is a physical process or event that can harm human health, livelihoods, or natural resources. Examples are flooding, extreme heat, or hurricanes.

**Flooding** (also “Inundation”) a great flow or overflow of water, especially over land not usually submerged

A **Flash Flood** is a sudden local flood, typically due to a heavy rainfall or other cause.

**Nuisance Flooding** refers to low levels of inundation (typically due to high tides) that do not pose significant threats to public safety or cause major property damage, but can disrupt routine day-to-day activities, putting added strain on infrastructure systems such as roadways and sewers, and causing minor property damage.

**Adaptive Capacity** is the, “ability of a human or natural system to adjust to climate change (including climate variability and extremes) by moderating potential damages, taking advantage of opportunities, or coping with the consequences.” <https://www.epa.gov>



Watershed Map

**Subsidence** is the sinking of the ground because of underground material movement—it is most often caused by the removal of water, oil, natural gas, or mineral resources out of the ground by pumping, fracking, or mining activities.

**Extreme Heat** is defined as summertime temperatures that are much hotter and/or humid than average.

### SEVERE WEATHER

**Extreme Events** are occurrences of unexpected or unusually severe weather or climate conditions that can cause devastating impacts on communities and agricultural and natural ecosystems.

An **Acute Extreme Weather Event** is an extreme weather event that takes place in a relatively short period of time, such as a tropical storm or cloudburst flooding event.

A housing recovery from Hurricane Harvey involves two strategies: rehabilitation and weatherization of homes.

- **Rehabilitation** means repairing the home from damage that occurred as the result of an event. This can mean repairing or replacing the roof, removing and replacing flood damaged materials such as plasterboard and floors, and removing and replacing damaged systems such as appliances including heaters and AC units. Often rehabbing flood damaged homes requires extensive mold remediation, even in areas of the home that were not touched by floodwaters.
- **Weatherization** means improving the home’s construction and systems to improve energy efficiency by updating windows, doors, wall and attic insulation; removing the home and its critical systems from the floodplain through home elevation, flood barriers, and other strategies; adding climate adaptation solutions such as backup power supplies, green infrastructure for cooling, and others. Frequently, weatherizing home improvements are carried out at the same time as post-disaster home rehabilitation.

**Chronic Extreme Weather Event** is an extreme weather event that takes place in a relatively long period of time, such as a heat wave or drought.

### WATERSHED PLANNING & FLOODING

**Watersheds** (also called drainage basin, drainage areas, or catchments) are areas of land where all surface runoff that is created within that area drains to one common point. As water that is draining towards the ocean and is always conveying towards the lowest point in elevation, water will start in a large number of small streams at the top of watersheds (“tributaries”), and streams will continually combine and become rivers as the streams pick up more water along the way.

Watersheds are defined on the borders by “ridges” or hills where if a raindrop falls on the point, both elevations on either side are lower than the high point and water could drain to either side. Areas in the lower part of watersheds will have

larger volumes of water in higher concentrations of volume, as water accumulates as it moves toward the ocean. Watersheds are defined by the drainage area that reach one specific point, watersheds can be defined on several scales, depending on which common outlet point is picked for analysis.

**Waterway** is a river, canal, or other route for travel by water.

**Riparian Zones** or areas, are lands that occur along the edges of rivers, streams, lakes, and other water bodies.

**Floodplain** is any land area susceptible to being inundated by floodwaters from any source. This can include coastal areas impacted by storm surge, land along a river or bayou that is flooded when that waterway rises out of its banks, or low-lying land that fills with water when it rains. Flooding occurs in a wide range of landscapes due to rainfall or storm surge. The floodplain is land that has been or may be covered by floodwater during a regional flood. The floodplain includes the floodway and flood fringe areas. These areas are labeled on the Flood Insurance Rate Maps as A, AE, A1-30, AO or AH zones.

# APPENDIX

**Floodway** is the channel of a river or other water course and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. The floodway is the channel of a river or stream and those portions of the floodplain adjoining the channel required to carry the regional flood discharge. The floodway is the most dangerous part of the floodplain—it is associated with moving water.

**Base Flood Elevation** or BFE is the elevation determined by FEMA to which flood water is expected to rise during the base flood.

**Design Flood Elevation** or DFE the elevation of the highest flood that a retrofitting method is designed to protect against. Homes are elevated to the DFE for example.

**Storm sewers** are typically a connected network of subsurface concrete pipes.

## GREEN INFRASTRUCTURE & NATURAL PROCESSES

**Ecosystem Services** are the goods and services provided by ecosystems to humans. Ecosystem services make human life possible by, for example, providing nutritious food and clean water, regulating disease and climate, supporting the pollination of crops and soil formation, and providing recreational, cultural and spiritual benefits.

**Gray Stormwater Infrastructure** is a network of at-grade and below-grade drainage channels that make up a storm-water drainage system. It is referred to as “grey” infrastructure because the system is typically made out of concrete.

**Green Infrastructure** is the harnessing of ecological systems to improve urban ecology.

**Green Stormwater Infrastructure** refers to a variety of practices that restore or mimic natural hydrological processes. While “gray” stormwater infrastructure is designed to convey stormwater away from the built environment, green infrastructure uses soils, vegetation, landscape forms, and other media to manage rainwater where it falls through capture, storage, and evapotranspiration. By integrating natural processes into the built environment, green infrastructure provides a wide

**1% or 0.2% Chance of Flood** indicates there is a 1% or 0.2% chance of flood; The Federal Emergency Management Association (FEMA) maintains nation-wide floodplain maps that identify properties located in what they consider to be the floodplain. The floodplain is mapped in terms of a 100 year or 1% chance of flood every year, and a 500 year or a .2% chance of flood every year. Properties located in the 100-year and the 500-year floodplain, as identified by FEMA, are those referred to when we say, **“a home is located in the floodplain.”** The FEMA designation carries regulatory and insurance implications, as well implications for recovery funds.

**100-Year Floodplain** means there is at least a 1% chance each year that the property will flood

**500-Year Floodplain** means there is at least a .2% chance each year that the property will flood

A **Drainage System** is comprised of ditches, and traditional underground storm sewers. If the rainfall intensity exceeds the capacity of the local drainage system, street and neighborhood flooding can occur.

variety of community benefits, including reducing stormwater flooding impacts, improving water and air quality, reducing urban heat island effects, creating habitat for pollinators and other wildlife, and providing aesthetics and recreation. Evapotranspiration is the sum of all processes by which water moves from the land surface to the atmosphere via evaporation and transpiration. It is what allows trees to cool the surrounding air.

**Phytoremediation** is a plant-based approach, which involves the use of plants to extract and remove elemental pollutants or lower their bioavailability in soil.

## HEAT & ENERGY

**Brownout** is a drop in voltage in an electrical power supply system. Unintentional brownouts can be caused by excessive electricity demand, severe weather events, or a malfunction or error affecting electrical grid control or monitoring systems. Intentional brownouts are used for load reduction in an emergency, or to prevent a total grid power outage due to high demand.

**Service Network** is a structure that brings together several entities to deliver a particular service. In the context of this report, service network builds on the City’s Resilience Hubs project to extend the facilities and service network that support unique preparation, response and recovery from stresses and shocks in the specific neighborhood they serve.

**Urban Heat Island Effect** an urban or metropolitan area that is significantly warmer than its surrounding rural areas due to the lack of shade, prevalence of heat absorbing materials, and other human activities such as manufacturing.

**Weatherization** means improving a building’s energy performance primarily by reducing heat loss or heat gain due to leakage at the building envelope. It can also include other performance improvements that reduce energy demand such as upgrading appliances and systems. For example, reducing unwanted heat gain by installing a cool roof or planting trees along the southern building exposure.

**Flood Vulnerable** means properties are identified as being ‘highly vulnerable’ to flood through a neighborhood vulnerability assessment carried out as part of the neighborhood planning process. Vulnerability is assessed by considering multiple factors, such as parcel and building location relative to the geographic boundaries of the FEMA floodplain, type of property use and elevation requirements in place when the property was built.

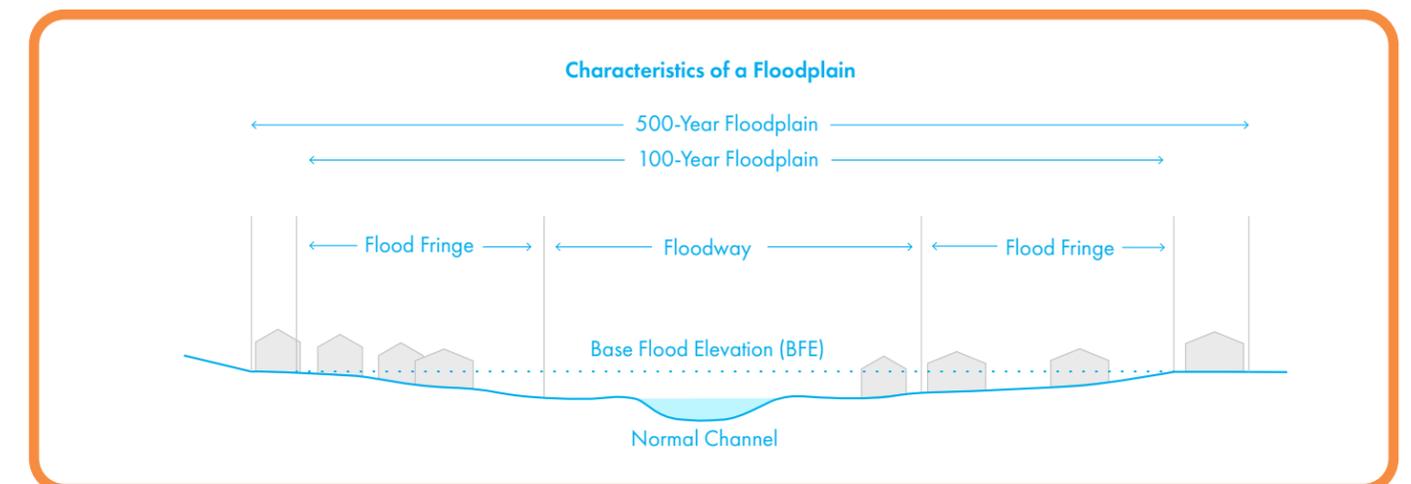


Diagram of the Floodplain

# APPENDIX

## SOCIAL JUSTICE

**Social Vulnerability** is the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood.

**Environmental Justice** is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies.

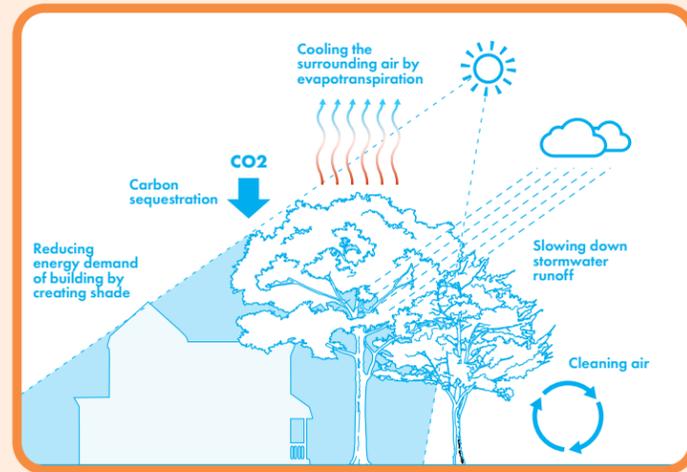
**Energy Insecurity** is a lack of access to affordable and reliable energy. In the context of this report, it is defined as the inability to meet basic household energy needs, especially caused by extreme event (for example, Winter Storm Uri).

**Procedural Justice** refers to the idea of fair processes, and how people’s perception of fairness is strongly impacted by the quality of their experiences and not only the end result of these experiences.

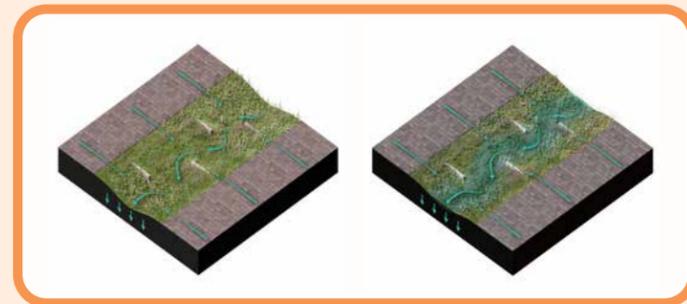
## COMMUNITY PLANNING

**The 15-Minute Neighborhood** is created by prioritizing pedestrian and cyclist mobility over vehicle mobility, and allowing for a mixture of uses such that residents can reach essential services, jobs, and other key destinations within 15 minutes of walking or biking from their home or workplace.

**Living with Water** refers to two workshops hosted by The City of Houston and partners in November 2018, and May 2019, as part of Houston’s resilience program. Living with Water Houston brought together local, national, and Dutch experts representing multiple disciplines to solve site-specific water and resilience challenges alongside local governments, state and federal agencies, and community stakeholders.



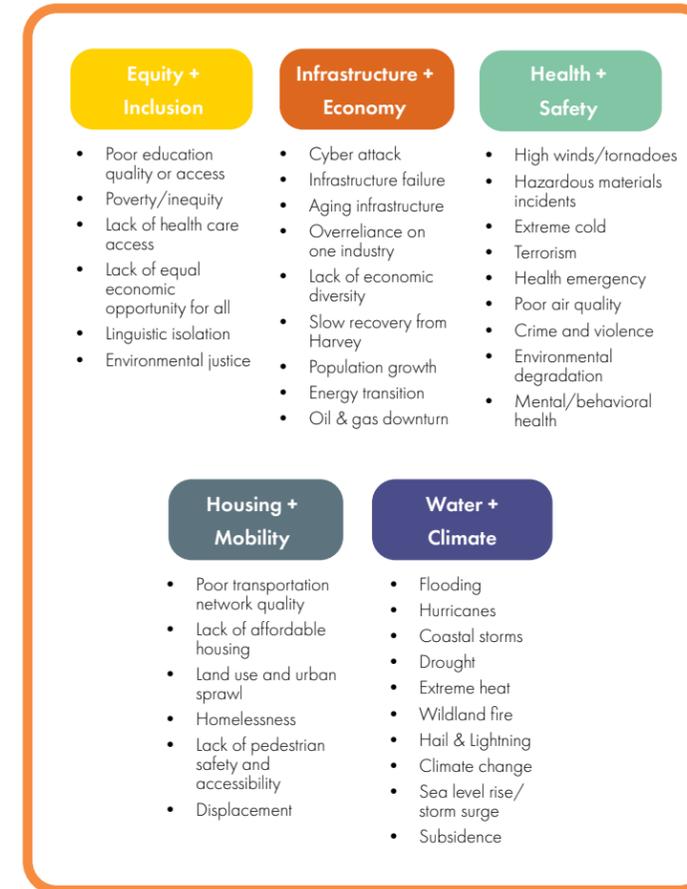
How a Tree Cools



Dry or Wet Bioswales

## HOUSTON MUNICIPAL CONTEXT

**Resilient Houston**, the City’s resilience strategy, was released on February 12, 2020. Resilient Houston provides a framework for collective action for every Houstonian. It documents actions that can be taken by our diverse neighborhoods, discusses how our watersheds work, and provides general guidance for City departments, as well as local and regional organizations. The strategy links existing efforts with new ones that will collectively work to protect Houston against future disasters, from hurricanes to extreme heat waves, and chronic stresses such as aging infrastructure, poor air quality, and flooding.



Priority Shocks and Stresses for Houston

**Houston Climate Action Plan** provides evidenced-based activities to reduce greenhouse gas emissions and preventative measures to address the negative outcomes of climate change. The plan demonstrates how Houston will adapt and improve its resilience to climate hazards today and identifies risks that may increase in the coming years.

**General Fund** refers to revenues accruing to the state from taxes, fees, interest earnings, and other sources which can be used for the general operation of state government, including the Capital Improvements Program.

**Capital Improvements Program** is a list of the budgets allocated to capital projects, and the associated funding approved by the City Council. The City of Houston has a five year plan updated annually, addressing the infrastructure needs.

## INTERVENTIONS (MISC.)

**Bioretention Planters** are stormwater infiltration cells constructed with walled vertical sides, a flat bottom area, and a large surface capacity to capture, treat, and manage stormwater runoff from the street.

**Dry or Wet Bioswales** are vegetated open channels that are designed and constructed to treat stormwater runoff within dry or wet cells formed by check dams or other structures. A dry swale is designed to prevent standing water, with or without an underdrain, while a wet swale is designed to hold water.

**Detention System** is an area that stores water temporarily and eventually drains into the sewer system, such as green roofs, green-blue roofs, park space, bioswales, berms, sunken basketball courts, and sunken playgrounds.

**Conveyance System** means that portion of a drain system that consists of a series of pipes that transport water from one area to another without providing detention.

**Rain gardens** are a depressed area in the landscape that collects rain water from a roof, driveway or street and allows it to soak into the ground.

**Reflective Roofs** reflect the sun’s energy instead of absorbing the heat. The heat absorbed by a non-reflective roof is passed to the building, which can translate to higher cooling costs.

**Multiple Benefit Strategies + Actions** refers to physical interventions, such as a street remodel, that implement a variety of different resilience solutions in a single intervention. For example, a street remodel can upgrade the stormwater drainage system, add a bike lane and traffic calming features, install ADA compliant curbs and ramps, install street trees and bioretention planters, street lighting and furniture, wayfinding and other features, all as part of a single project.

**Sticky Event** is a community engagement event that is designed to carry information of interest after the event takes place. For example, an event initializing awareness about a planning effort, public engagement opportunity, or resilience risk and resources.

# APPENDIX

## ACKNOWLEDGMENTS

### JOHN WHITMIRE, Mayor

Chris Hollins, Controller

### CITY COUNCIL

Amy Peck, District A  
Tarsha Jackson, District B  
Abbie Kamin, District C  
Carolyn Evans-Shabazz, District D  
Fred Flickinger, District E  
Tiffany D. Thomas, District F  
Mary Nan Huffman, District G  
Mario Castillo, District H  
Joaquin Martinez, District I  
Edward Pollard, District J  
Martha Castex-Tatum, District K  
Julian Ramirez, At-Large Position 1  
Willie Davis, At-Large Position 2  
Twila Carter, At-Large Position 3  
Letitia Plummer, At-Large Position 4  
Sallie Alcorn, At-Large Position 5

### PROJECT STAFF

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Russell Calhoun, GIS Analyst, PD  
Michael Griffin, GIS Analyst, PD

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Kaitlyn Higgins, Texas A&M University  
Sweta Thapa Magar, Texas A&M University  
John Monigold, Texas A&M University  
Nicolas Smothers, Texas Southern University  
Davian Thomas, Mayde Creek High School

### GREATER INWOOD NEIGHBORHOOD SUPPORT TEAM

Jeffrey Boutee  
Vicia Collins  
Ronald Delaney  
Eileen Egan  
Gary Fondel  
Julie Marinucci  
Ricky Miller  
Phillip Salerno

### TECHNICAL ADVISORY COMMITTEE

#### City of Houston Departments and Offices:

Administration & Regulatory Affairs (ARA)  
Department of Neighborhoods (DON)  
Housing and Community Development (HCD)  
Houston Fire Department (HFD)  
Houston Green Building Resource Center  
Houston Health Department (HHD)  
Houston Parks and Recreation Department (HPARD)  
Houston Public Library (HPL)  
Houston Public Works (HPW)  
Mayor's Office of Complete Communities (MOCC)  
Mayor's Office of Economic Development (MOED)  
Mayor's Office of Cultural Affairs (MOCA)  
Mayor's Office of Resilience and Sustainability (MORS)  
Office of Business Opportunity (OBO)  
Office of Emergency Management (OEM)  
Planning and Development (PD)  
Solid Waste Management Department (SWMD)

### OUTSIDE ORGANIZATIONS

Special thanks to the following organizations for their participation and guidance:  
Arbor Day Foundation  
CenterPoint Energy  
Greater Inwood Super Neighborhood Council  
Harris County Flood Control District (HCFCD)  
Houston Metropolitan Transit Authority (METRO)  
Houston Parks Board  
Harris County Precinct 1  
Near Northwest Management District  
Near Northwest Partnership  
The Houston Area Urban Forestry Council (HAUFC)  
Trees for Houston  
University of Houston, Small Business Administration

### OUR THANKS

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## **Resilience is a process.**

**In the Neighborhood Resilience Plan you will find short-term projects that will jump-start change in your community, and longer-term projects that will take more sustained efforts.**

**This document serves as a guide for learning about your neighborhood's vulnerabilities, information about the projects, developing new initiatives, and building the partnerships necessary to make improvements in your community.**



**PLANNING &  
DEVELOPMENT  
DEPARTMENT**

