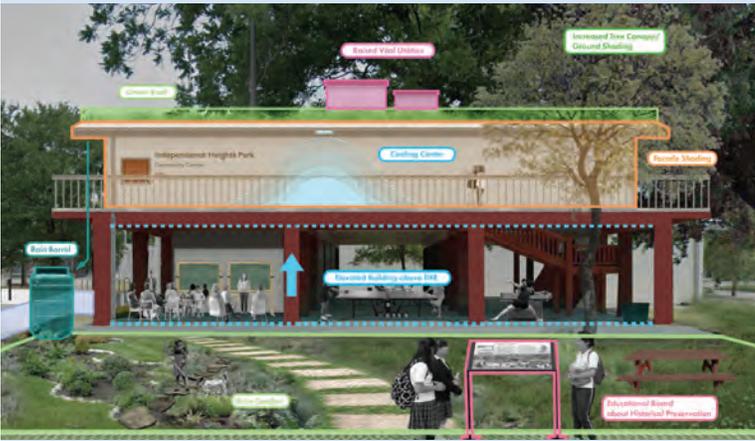
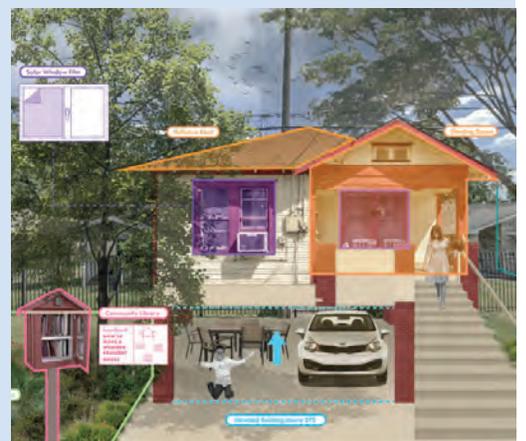
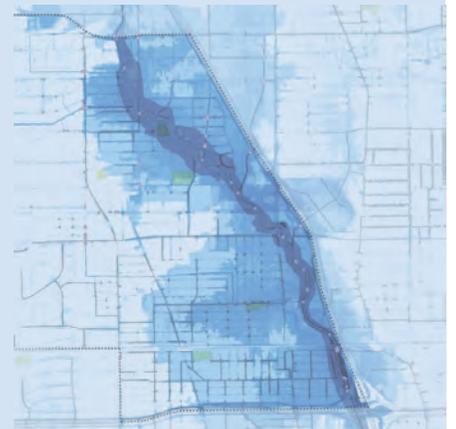


INDEPENDENCE HEIGHTS NEIGHBORHOOD RESILIENCE PLAN



CONDENSED DOCUMENT
MAY 2023



ACKNOWLEDGMENTS

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STATEMENT FROM THE MAYOR

The City of Houston has experienced seven federally declared disasters in the last seven years. Flooding from Hurricane Harvey, a historic freeze in 2021 and other recent catastrophic weather events had a devastating impact on our infrastructure, homes and our families. When the floodwaters cleared, what emerged was the strength and perseverance of the people who supported each other even when they had little to give. It is those same people who have guided our efforts to ensure greater resilience for the future. Even as we worked together to return to normalcy, we knew that recovery was a short-term goal. We knew these devastating events would not be the last. We knew we needed to learn from those experiences and have a plan in place to protect vulnerable neighborhoods and make them resilient for the future.

So, in 2022 we launched the Neighborhood Resilience Plan initiative in three pilot neighborhoods. This program provides community-driven strategies and policies to support neighborhood recovery from weather related disasters and vulnerability against multiple hazards - from hurricanes to extreme heat waves, and chronic stresses such as poor air quality, and flooding. The plans not only address risk reduction, but they also include strategies for improving infrastructure, empowering community

leaders and bolstering economic development to bring all communities to a greater level of resilience. These three neighborhoods are just a start.

Each plan is tailored to address needs identified by each community, but these initial efforts will establish an adaptable planning framework for the future. In these pages you will find a blueprint to guide neighborhoods across the city about how to overcome existing barriers to resiliency.

Join me, our partnering agencies, community leaders and residents to take a closer look at the needs expressed in this plan. Lend your support as we move forward to put this plan into action. We cannot control the weather, but we can rediscover the collective fortitude and the generosity of spirit that we forged in the aftermath of the storm. Let's not wait for another crisis to strengthen our neighborhoods and create a more resilient Houston. We will use this plan to make this community better starting today.

- Mayor Sylvester Turner





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EXECUTIVE SUMMARY

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

The *Independence Heights Neighborhood Resilience Plan* implements a key target of *Resilient Houston*, to develop 50 neighborhood plans by 2030, and is the first of its kind in Houston. It serves the purpose of providing a strategic action plan to achieve *Resilient Houston's* goals and targets at the neighborhood scale. It provides a community-based vision of neighborhood resilience, and makes recommendations for people-based and place-based strategies and actions to improve neighborhood resilience now and into the future. Independence Heights is one of the first three neighborhoods selected by the Mayor for a Neighborhood Resilience Plan, as a pilot project in a program led by the Houston Planning and Development Department.

The shared purpose of *Resilient Houston* and the *Independence Heights Neighborhood Resilience Plan* is to reduce the impacts of shocks and stresses, and to improve preparation for—and the fastest and best 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, particularly in historically disadvantaged communities like Independence Heights.

The *Independence Heights Neighborhood Resilience Plan* takes direction from *Resilient Houston* by incorporating climate adaptation

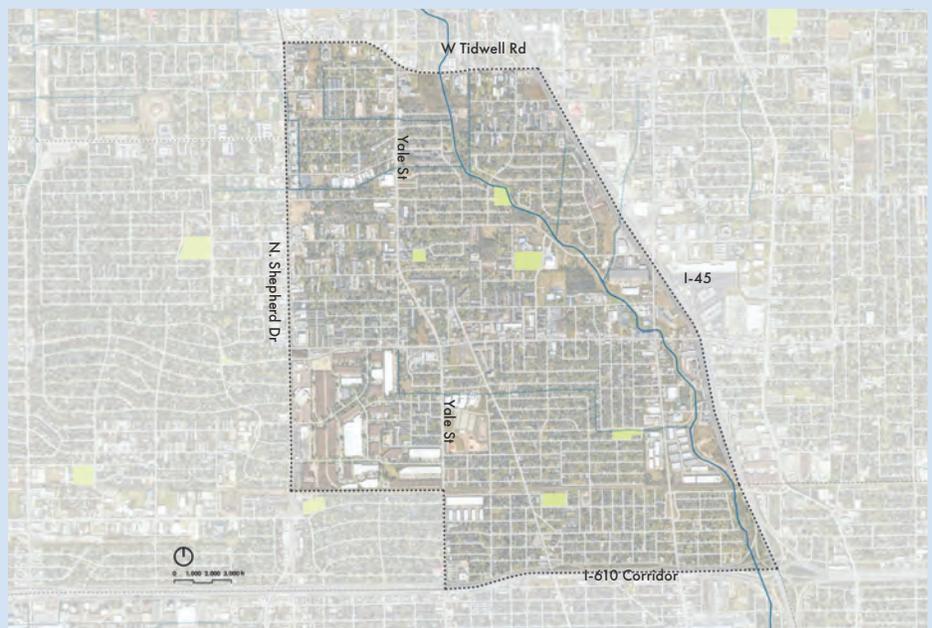
“Enshrining equity and equitable outcomes in all policies and programs is an essential step toward addressing root causes of inequity, including historical disinvestment and disproportionate negative impacts for communities of color and our most vulnerable residents”

(Resilient Houston, page 130)

and risk reduction, infrastructure modernization, housing stability and security, environmental protection, social empowerment, and economic development into place-based strategies for the community. The plan provides a

vision for doing things in neighborhoods that have not historically been done to create the safety and stability the community needs to face the challenges and uncertainties of today. The plan is a tool to direct neighborhood-based investments into practical and tangible projects to reduce flooding, manage heat, and address physical and social vulnerabilities to climate and other hazards. Simultaneously, the plan works to improve the overall quality of life and economic opportunities in the community.

The Independence Heights Super Neighborhood 13 is a historical community that consists of the historical sector of Independence Heights and the post-WWII community of Yale-Victoria, located north of Loop 610 and west of I-45. The super neighborhood boundaries include I-45 (east), Tidwell Rd. (north), N. Shepherd Dr. to the railroad track (eastward) to Yale St. (west), I-610 (south). Located in City Council District H, the Independence Heights neighborhood has been



Super Neighborhood 13



Churches serve as hubs for resource supplies by distributing goods to the community.

selected to receive one of three of the first City of Houston Resilience Plans due to the severity of flood damage from Hurricane Harvey, vulnerability to climate related hazards, watershed location, the presence of active and supportive civic organizations and other demographics.

Over the course of 15 months, the planning team has been in active dialogue with the Independence Heights community as part of the formulation of the *Independence Heights Neighborhood Resilience Plan*. The team took direction from the community through traditional public meetings and surveys, focused one-on-one conversations with community leaders, and working sessions with the Neighborhood Support Team (NST) and proactive residents. The wants and needs heard in these meetings provide the basis of the plan's development and resulting recommendations. The community's vision and goals have

been vetted and coordinated with City staff through several Technical Advisory Committee (TAC) meetings intended to examine the plan's feasibility, identify lead departments and agencies, and identify potential funds to implement projects.

Through conversations with the community, several neighborhood priorities have been identified that define the community's vision for their neighborhood:

- **Build on Independence Heights' rich history**, strong community leadership and already developed local capacity to continue its path to resilience;
- **Strengthen the 'can do' culture** that facilitates the community in its efforts to realize its vision and address its needs most efficiently and effectively;
- **Understand the relationships between disasters and**

gentrification, and mitigate the negative impacts of gentrification

- **Fully recover from Hurricane Harvey**, particularly in terms of housing rehabilitation;
- **Update neighborhood infrastructure** to reduce local flood risks;
- **Floodproof housing** to reduce the impacts of future floods;
- **Weatherize housing** to enhance energy efficiency and to reduce the impact of extreme temperatures;
- **Catalyze economic development** and support workforce development;
- **Increase sustainable mobility** and reduce traffic violence through creating complete and healthy streets, especially around Crosstimbers, Yale and N. Main St., and the historic district;
- **Mitigate the effects of heat** by increasing the tree canopy and building bus shelters, considering ways to reduce solar gain, and increasing greening projects generally, when possible including local food production; and
- **Address the flooding issues** around Little White Oak Bayou and the expansion of I-45 in a community-involved, integrated, and equitable way.

This **condensed document** provides a brief overview, highlights key points and focuses on the plan's projects. For a more comprehensive explanation and detailed information that may not be included in the summarized version, please refer to the larger neighborhood resilience plan. The original version delves deeper into the planning process, explains the **Guiding Principles, Watershed Best Practices, Baseline Analysis, Funding Matrix**, describes the **interconnectedness of projects**, includes the full appendices, and more. The full document offers a broader context, thorough analysis, additional insights, and can address any specific questions that may arise.

WHAT IS NEIGHBORHOOD RESILIENCE?

The City of Houston has experienced 18 major weather events including flooding, heat, cold, and drought since 2000, along with a major global pandemic, lives have been lost and billions-trillions of dollars lost in damage. Houston's [Climate Impact Assessment](#) projects that weather events will continue along this trajectory, or that they will continue to intensify in terms of both frequency and magnitude², and specifically for Houston these projections mean more severe droughts, sea level rise, more intense coastal flooding and increased intensity of storms. So it is imperative that the community works consistently toward reducing the impact of future events.

In terms of climate, the neighborhood is experiencing a general warming trend and changing precipitation patterns. The City'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

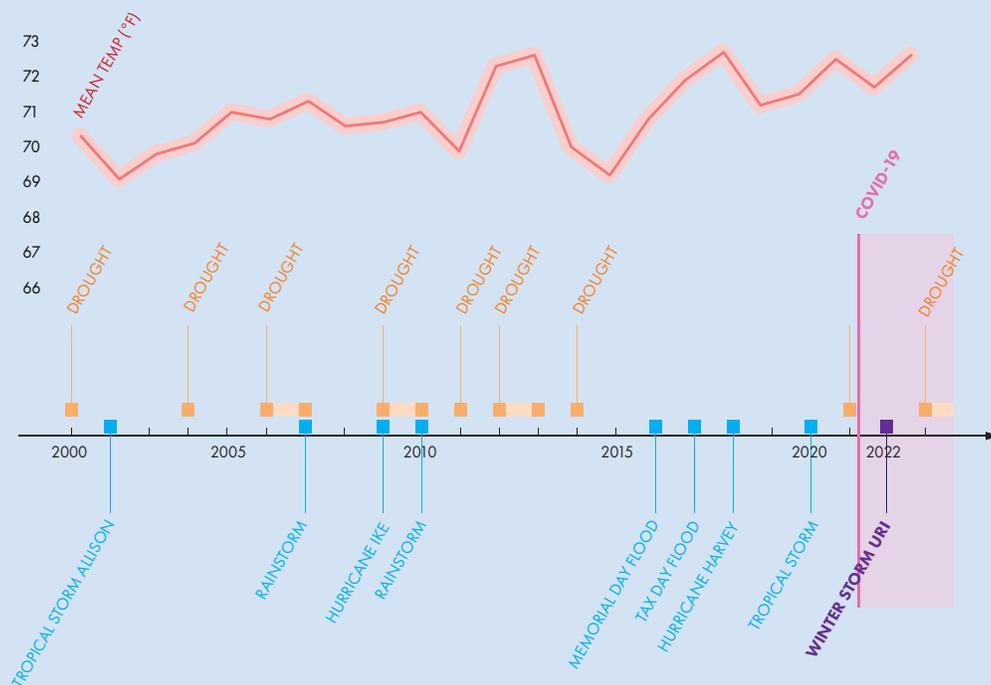
all seasons;

- 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"³

In addition to weather events, stresses and shocks can include other types of events such as public health pandemics, economic changes such as rising energy prices, sudden spikes in housing demand, and others. 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, it is imperative that tangible action be taken now to reduce the impact of events, and optimize the recovery from them. This plan is a key step in taking action to mitigate the impacts of climate change and other extreme events.



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

A *Independence Heights Neighborhood Resilience Plan* is a strategic action plan for government, community leaders and innovators looking to address core resilience issues facing a 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 Independence Heights neighborhood. The plan helps to guide the community, its leaders, and its elected representatives toward decisions that reduce and mitigate neighborhood vulnerabilities, and it provides the essential foundation for forming partnerships with local government, philanthropy, community-based organizations, and other institutions and organizations.

The plan contains Community Engagement and Vulnerability Assessment findings that inform and shape the community’s vision for resilience. Encapsulating the community’s resilience vision, the guiding principles describe the high-level actions that lay the foundation for neighborhood resilience. The Guiding Principles of the plan appear broad and widely applicable across the City of Houston but are also localized to create concrete action today. Projects and programs make the Guiding Principles

tangible and actionable through specific recommendations for people-specific and placed-based initiatives designed to achieve resilience in the Independence Heights neighborhood. To ensure that the community’s vision and ambitions laid out in this plan are realized, ambitious performance targets, implementation timelines, and feasible funding strategies are embedded in the projects and expanded on in the plan’s appendices.

The plan is designed to:

- enable the community to take ownership of their neighborhood by supporting the community to seek grants and private partnerships;
- support community advocacy in local government decision making processes; and
- make sure the community is equipped with the best knowledge, skills, and resources available surrounding resilience practices.

The *Independence Heights Neighborhood Resilience Plan* recommends action items that describe how to prepare homes and buildings to withstand flooding, heat, and power outages through innovative building technology, harnessing nature to cool

and insulate, and implementing other best building practices, while also addressing outstanding repairs from previous disasters. The plan organizes infrastructure and other major public investments across agencies and jurisdictions.

It also harnesses nature to manage heat and flooding at a neighborhood scale and recommends substantial investments in streets and the bayou through **multi-benefit** projects that result in healthy and complete streets, improved ecology and environmental health, and greater flood water capacity. It also recommends programs and projects to increase community capacity to withstand, respond to, and recover from stressors and shocks by increasing local knowledge and awareness, strengthening networks for distributing resources and other forms of support, and increasing resources in the neighborhood through economic development.

“**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 landfalling **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 projects to increase.”⁴

HOW TO USE THIS PLAN

The plan guides and supports decision-making around local investments in physical infrastructure, programs, and policies, which means it can be used to promote the interests of different stakeholder groups. The *Independence Heights Neighborhood Resilience Plan* provides the foundation for forming collaborative partnerships with local government, philanthropy, community-based organizations, and other institutions and organizations. The plan sets a clear vision that the community can organize around and creates a constructive interface through which various stakeholders can collaborate with the local community toward shared goals. It does so by defining projects and programs and is a tool for the community to guide decision-making, identify stakeholder roles and responsibilities, and forge the partnerships, relationships, and networks essential to realizing the ambitious resilience actions and activities in this plan. Community members should refer to the plan document to focus community-based resilience efforts and initiatives, and to understand which stakeholders to reach out to about which topics and when, and as a reference

for community need and consensus-informed solutions.

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 Independence Heights. 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 also identifies roles and responsibilities that sets the foundation for coordination amongst resilience efforts as well as transparency and accountability at implementation. It also allows groups, organizations, and institutions to work relatively independently by following the plan's strategies and actions yet ensures a shared understanding of the vision and goals, and accountability

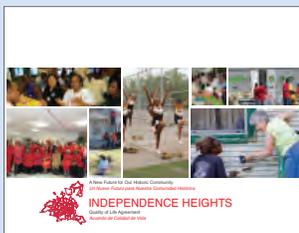
as to the who, what, when, and how.

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

The United States Department of Justice defines procedural justice in terms of four principles: "1) being fair in processes, 2) being transparent in actions, 3) providing opportunity for voice, and 4) being impartial in decision making"⁹

an agreed-on plan document such as this one, carries weight in conversations with local government and other private partners. The plan can guide decision making at Super Neighborhoods meetings, city council meetings, and other local



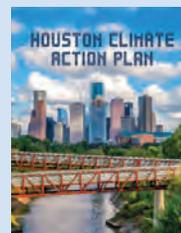
Independent Heights Quality of Life Agreement, 2010



Independence Heights - Northline Livable Centers Study, 2012



Resilient Houston, 2020



Houston Climate Action Plan, 2020



Kennedy Zone Action Plan + Toolkit, 2020



Kennedy Zone Data Book, 2020

The basis of planning for Independence Heights Neighborhood Resilience Plan



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.”⁶

“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.”⁷

government committees. It also serves as a means of constructively holding the community, 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 allocations from developing partnerships with local donors, state and federal government, developing programs, or increasing service levels from City Departments and Agencies, or prioritizing physical infrastructure investments made by Harris County Flood Control and

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.

Community Partners

Partners outside the community and local government often have aligned interests, as resilience ensures property values remain stable and businesses remain active, improves the environment and ecology, builds equity, and in some cases can serve as an economic stimulus tool. In cases where business interests and resilience plan actions and projects align, there is an existing shared interest that can be leveraged to

ensure timely implementation of the neighborhood resilience action plan.

Community partners should refer to the *Independence Heights Neighborhood Resilience Plan* as a cohesive community-driven vision of resilience for the neighborhood. The Guiding Principles lay out strategies and actions, along with key stakeholders and their responsibilities. Stakeholders, particularly private partners, can review to understand where additional support may be needed to realize the neighborhood’s vision. 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.

A RESILIENT INDEPENDENCE HEIGHTS

Independence Heights is a historic neighborhood located in Houston, Texas. The community was founded in 1908 by African American families seeking to escape the segregation and discrimination of downtown Houston. Despite facing significant challenges related to equity and environmental disasters, Independence Heights has demonstrated remarkable resilience over the years.

Throughout much of its history, Independence Heights struggled to receive equitable access to resources and services from the City of Houston. As a predominantly African American community, the neighborhood was not granted municipal services like water and sewer until the 1950s, and only after a prolonged legal battle. Even today, the neighborhood faces disparities in access

to quality education, healthcare, and affordable housing.

The community has also 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 resilience and 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 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 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 and make events less impactful on the community and help to optimize emergency response and recovery. It helps community



Community members discussing character protection tools with city staff.

The community's resilience vision for the neighborhood:

- Build on Independence Heights' rich history, strong community leadership and already developed local capacity to continue its path to resilience and a culturally sustainable future;
- Strengthen the 'can do' culture that facilitates the community in its efforts to realize its vision and address its needs most efficiently and effectively;
- Understand the relationships between disasters and gentrification, and mitigate the negative impacts of gentrification;
- Fully recover from Hurricane Harvey, particularly in terms of housing rehabilitation;
- Update neighborhood infrastructure to reduce local flood risks;
- Floodproof housing to reduce the impacts of future floods;
- Weatherize housing to enhance energy efficiency and to reduce the impact of extreme temperatures;
- Catalyze economic development and support workforce development;
- Increase sustainable mobility and reduce traffic violence through creating complete and healthy streets, especially around Crosstimbers, Yale and N. Main St., and the historic district;
- Mitigate the effects of heat by increasing the tree canopy, considering ways to reduce solar gain, and increasing greening projects generally, when possible including local food production; and
- Address the flooding issues around Little White Oak Bayou and the expansion of I-45 in a community-involved, integrated, and equitable way.

members be safer from climate risk in their homes by addressing outstanding building damage from previous flooding, elevating homes out of the floodplain, and reducing energy costs increased by extreme temperatures and other compounding factors. It helps the neighborhood to update and enhance stormwater and drainage infrastructure to address street flooding, to add shade trees and pedestrian and bicycle facilities to support community members' health and safety. It also invests in building connections between community members to help each other in times of need. These activities

encourage community leaders to continue to work closely with local government to improve their communities and make neighborhood investments go further.

Despite the challenges they face, the people of Independence Heights 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 *Independence Heights Neighborhood Resilience Plan* is a key organizing tool in preparing for the

community's future. The plan serves as a model and method for future neighborhood planning efforts that can be replicated at the community level, either independent of the City or in partnership with the City.¹

The community's resilience vision for the neighborhood:

- Build on Independence Heights' rich history, strong community leadership and already developed local capacity to continue its path to resilience and a culturally sustainable future;

A RESILIENT INDEPENDENCE HEIGHTS

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- Address the flooding issues around Little White Oak Bayou and the expansion of I-45 in a community-involved, integrated, and equitable way.

The Independence Heights community’s priorities have been consistent across several recent planning efforts. There have been drainage improvements identified for the western portion of the Little White Oak Bayou corridor, as well



Community members organizing to provide needed items to the community after disaster.

as proposals to remove homes from the floodway in this same area. These are reflected in part by the City's and Harris County Flood Control's Capital Improvements Plan that has funded two bayou projects along Little White Oak Bayou, three drainage improvement projects on the stormwater drainage system in the neighborhood, and two additional stormwater drainage system improvement projects to the southwest of the neighborhood. There are also planned thoroughfare improvements along Airline Drive, as well as the potential for improvements as part of the proposed I-45 expansion. All of

these efforts are evidence of strong community leadership and advocacy efforts across local, state and federal agencies. Efforts that will further strengthen community leadership and advocacy include proposals to expand economic development along the Crosstimbers, Yale and N. Main streets corridors, and intersection of Crosstimbers and North Main Street.



Community members organizing to provide needed items to the community after disaster.

VULNERABILITY ASSESSMENT

Neighborhood Vulnerabilities Summary

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

At the neighborhood level, Independence Heights is highly vulnerable to and at risk of floodplain inundation. Approximately sixty-three (63) percent of residential properties, thirty-seven (37) percent of City- and County-owned property, fifty (50) percent of commercial, forty-three (43) percent of industrial, and fifty-four (54) percent of community services properties have a high vulnerability to greater than 0.2% annual chance of flooding (which exceeds the current standard of care for new development and civil infrastructure).

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 others, this should not overshadow the fact that virtually all of Houston is at risk of flooding.

Of the 4,119 residential properties, there are close to 2,588 (or 62.83%) properties with high vulnerability to flooding. In addition, of the 1,290 or so residential parcels identified as "vacant", 863 are exposed to flooding (these parcels may or may not have a structure on them). Social vulnerability indicators, based on the 2020 American Community Survey 5-year Census, identify

INDEPENDENCE HEIGHTS PROPERTIES HIGHLY VULNERABLE + AT RISK OF FLOODPLAIN INUNDATION:

11 (37%) Government-owned properties + Utilities

2588 (63%) Residential

42 (54%) Community Services

1091 (68%) Undeveloped Land

82 (43%) Industrial Commercial

68 (50%) Industrial Commercial

Residential properties vulnerable to floodplain inundation

57% Multi-family

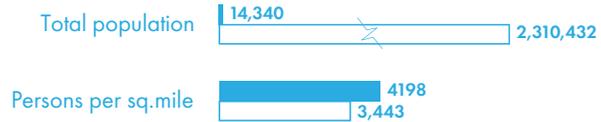
50% Assisted Living Facility

63% Single-family

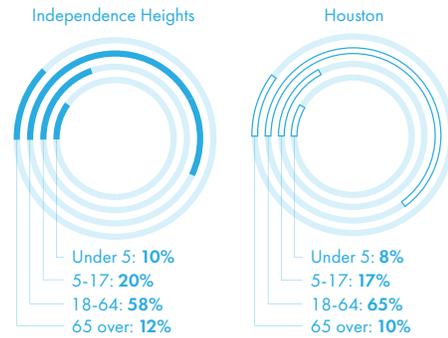
approximately 12.4 percent of residents without access to a vehicle. Median household income in the neighborhood is around \$36,638 and about 38% of households pay more than 30% of their income for housing and may have difficulty affording other necessities.

■ Independence Heights (2019 data)
 □ Houston (2019 data)

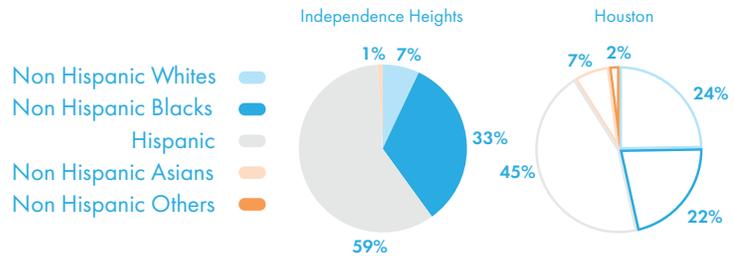
Pop. Characteristics



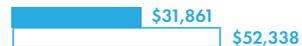
Age of Population



Ethnicity



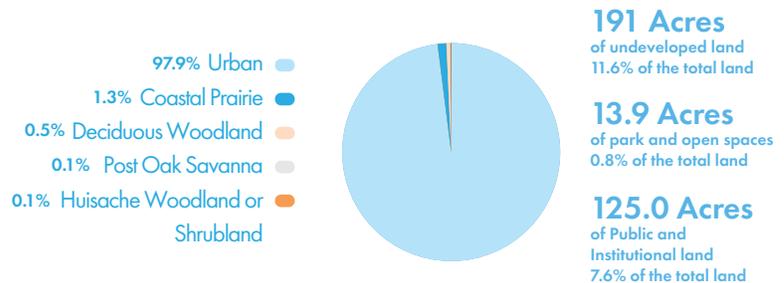
Median Household Income



Educational Status

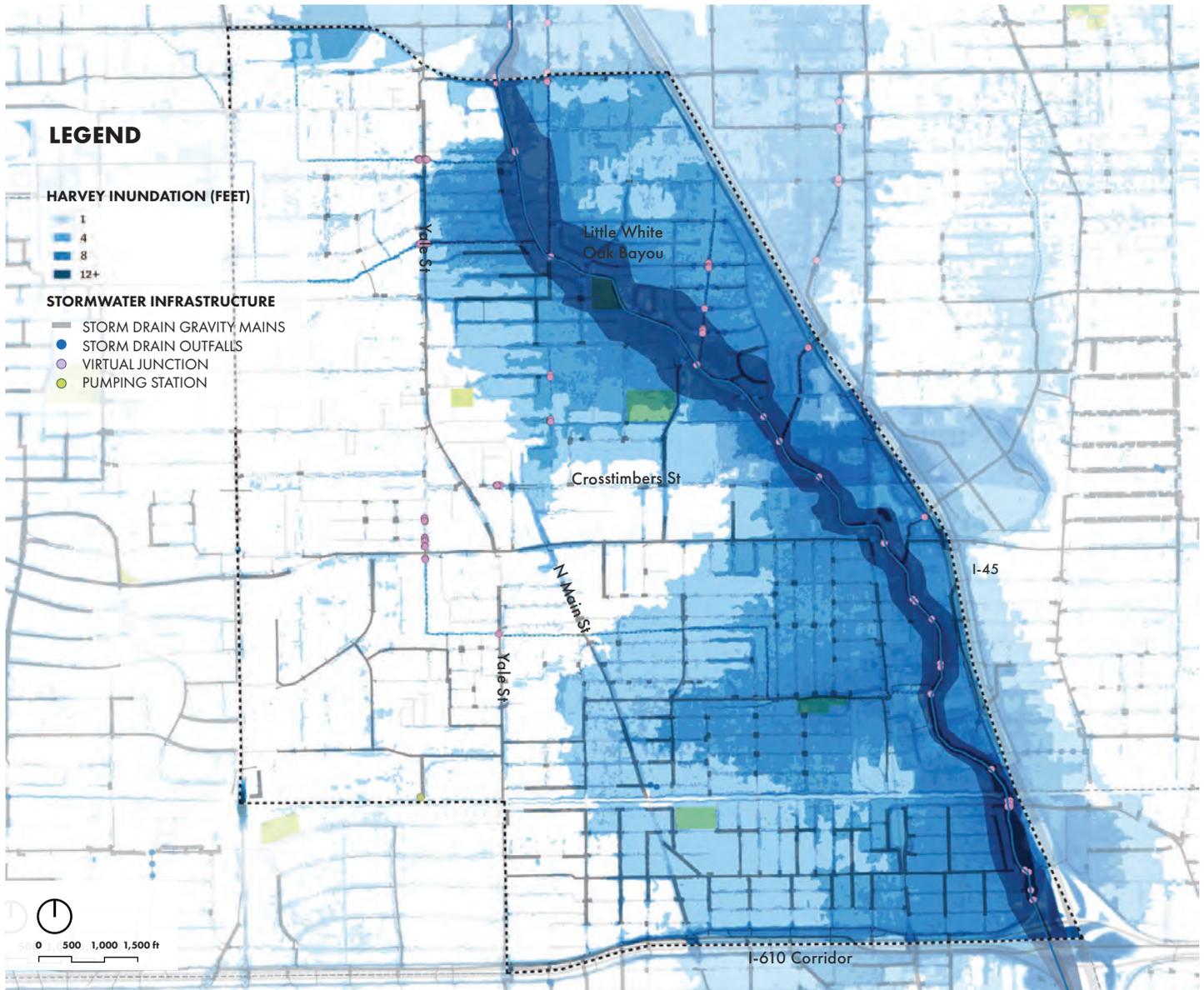


Independence Heights Ecosystems



Snapshot of the Independence Heights neighborhood demographics and key physical features of the neighborhood.

VULNERABILITY FINDINGS



Hurricane Harvey Inundation + Recovery Services.

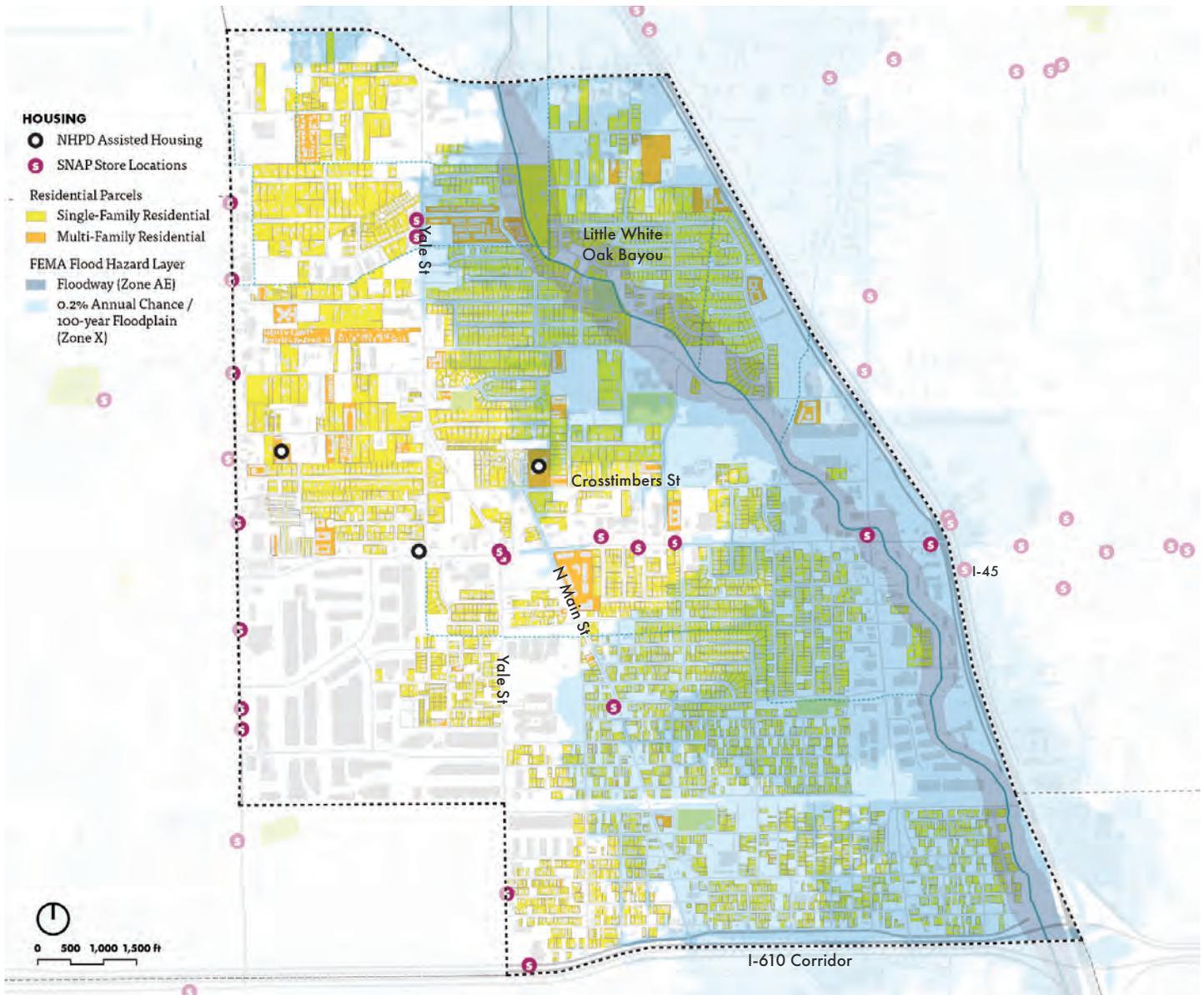
Flooding is caused by various events in the neighborhood: bayou flooding, extreme rain events, tropical storms, and hurricanes. The physical characteristics of the neighborhood in terms of geography and climate include low lying land that is experiencing subsidence, proximity to Little White Oak Bayou and location that is downstream in the regional watershed. Independence Heights faces high flood risk given that much of the neighborhood is low lying adjacent to major waterways running

through the neighborhood. Significant flood impacts were seen from Hurricane Harvey flooding. Extreme rain events, from weather systems, tropical depressions, and hurricanes can lead to both neighborhood flooding as well as bayou flooding.

The physical characteristics of the neighborhood contribute to vulnerabilities. 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 design requirements and floodplain permitting requirements were implemented. As a result of decades of development prior to today's standards:

- buildings, roads, and other infrastructure, including the neighborhood drainage system,



Housing typology and relationship to the floodplain.

were built to substantially lower drainage standards than would be required today.

- homes, schools, and other critical neighborhood services have been built in the floodplain and the floodway.

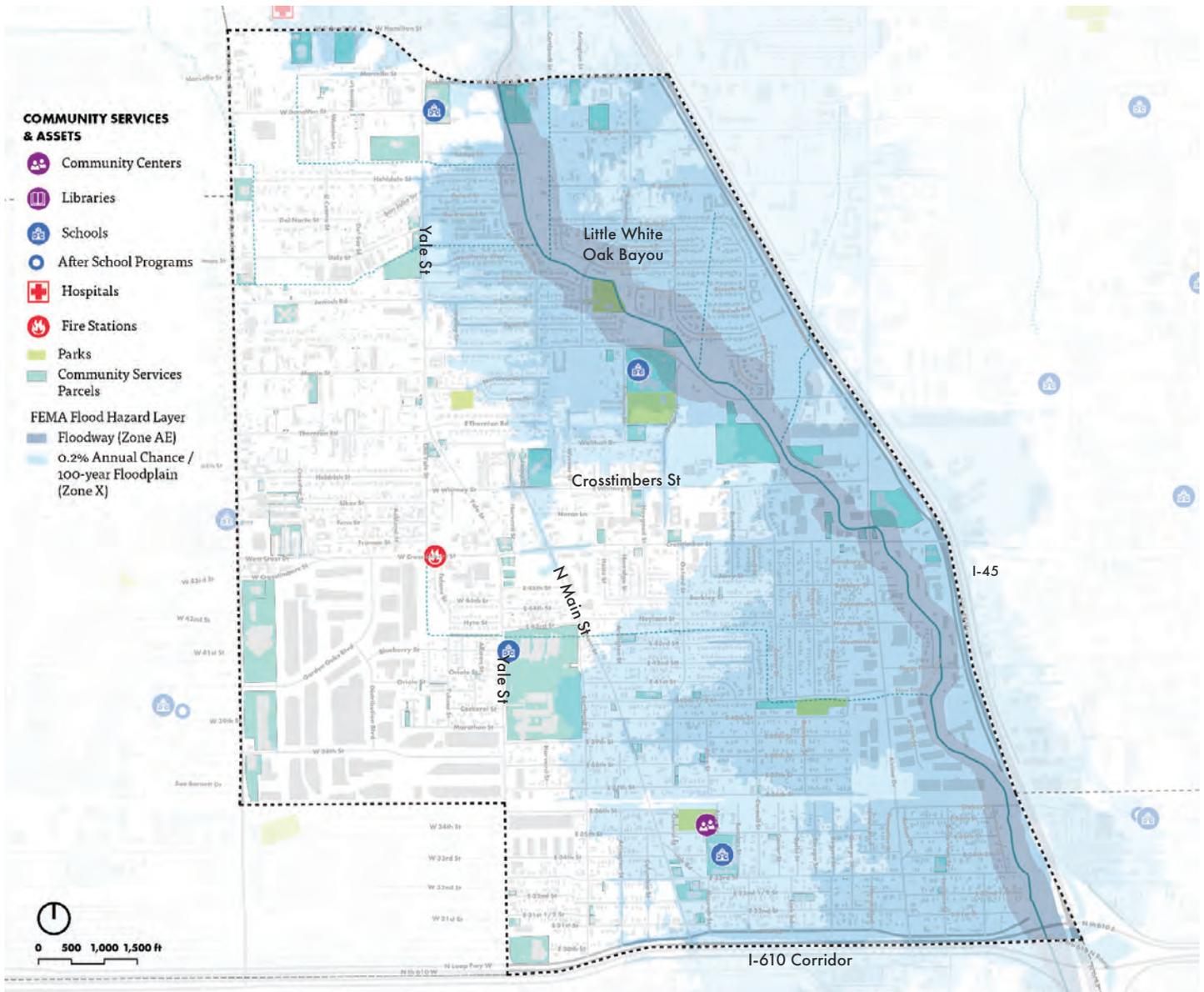
Given the development pattern in the neighborhood, buildings within the 100-year and possibly 500-year flood plain are highly susceptible to flood events, and the local drainage system capacity is highly susceptible to rain events that cause neighborhood and

street flooding.

Development patterns have also resulted in a limited tree canopy, as development has tended toward pavement or turf grass for open areas. The tendency to clear properties of trees, shrubs, and other vegetation as part of a development has reduced the ability of vegetation to slow water flow and increase water absorption. The high rate of impervious surfaces creates an effect called sheet

flow, where water moves quickly across the impervious surface, 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 the major contributors to creating sheet flow. The low amount of undeveloped land shown in this figure indicates where stormwater runoff may be higher than with undeveloped land.

VULNERABILITY FINDINGS



City facilities and relationship to the floodplain.

Housing

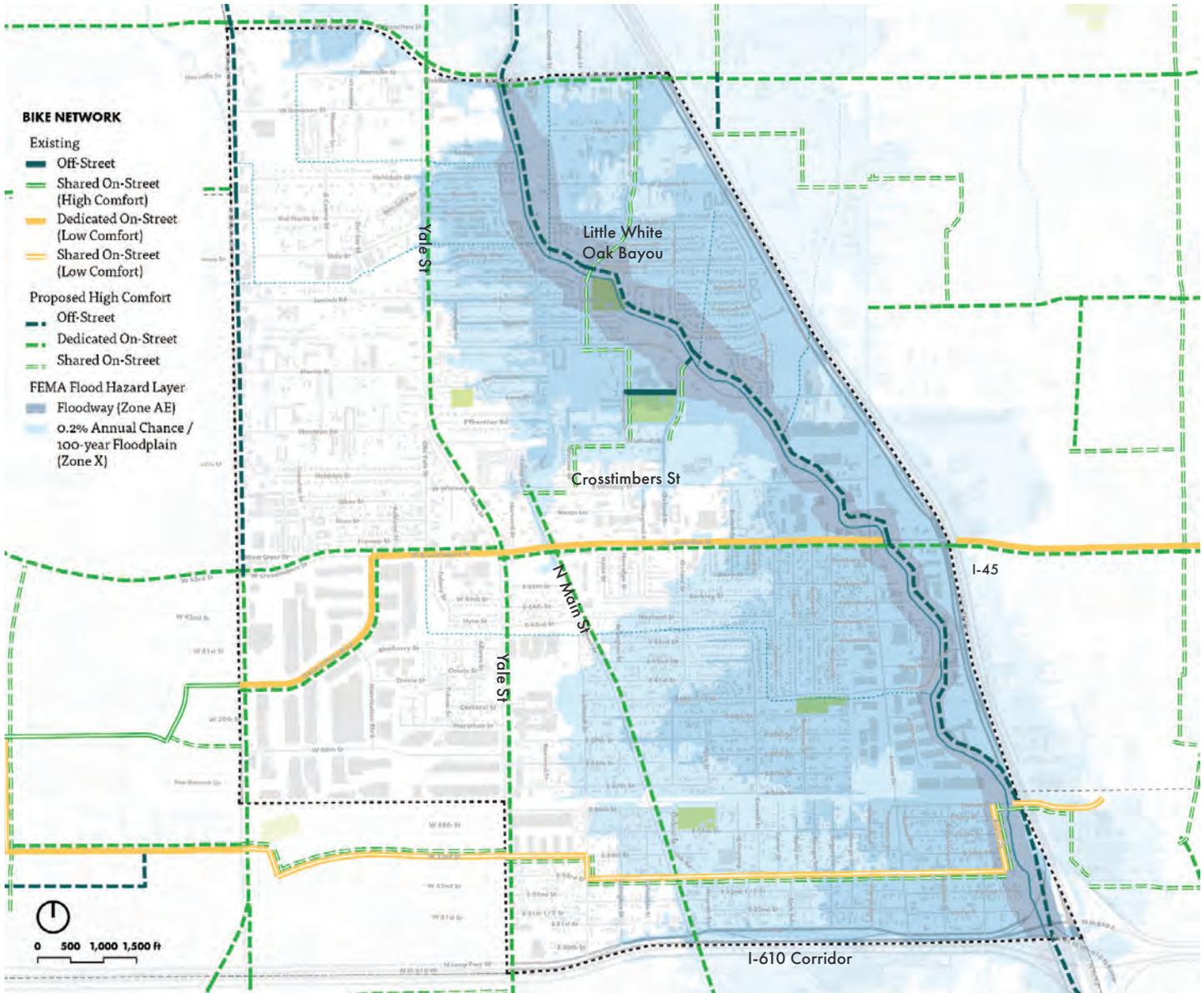
Approximately sixty-three (63) percent of residential properties in Independence Heights are classified as highly vulnerable to flooding. Highly vulnerable residential properties include twenty-four (24) multifamily developments and two assisted-living properties with the remaining properties being single-family homes. A driving factor of high vulnerability is that about three quarters of the 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 minimally require homes built or rebuilt on land in the floodplain are elevated to remove the structures from the floodplain.

Houston’s Floodplain Management Office minimum standards now require all new structures be at least two feet above the 500-year (0.2%) flood plain. (See the Floodplain Management Office for other

requirements.)

Housing vulnerability is exacerbated by a housing stock that is deteriorating due to slow recovery from previous disasters. Nearly seventy-five (75) percent, or an estimated five thousand, homes in Independence Heights sustained damage during Hurricane Harvey. Many of the structures are outside of the current FEMA floodplain, which does not account for the compound flooding seen during



Public transportation routes + services and relationship to the floodplain.

Hurricane Harvey. Community members report many 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 do not have sufficient personal funds to cover the high costs of home repair. The result is that many homes have not been repaired and the funds dedicated to their repair have remained unclaimed.

Stormwater Infrastructure

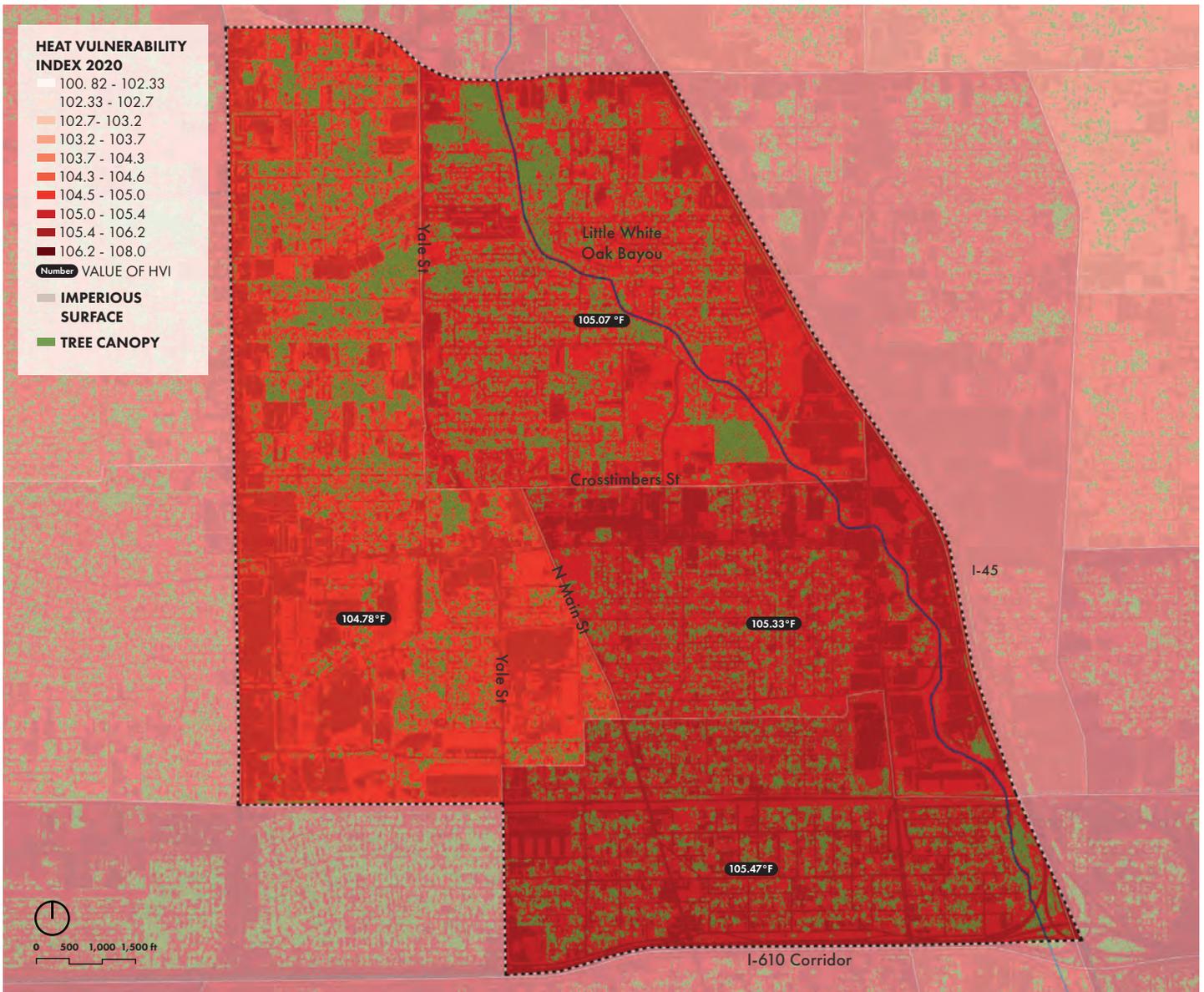
The streets and local drainage systems were designed and installed prior to the adoption of more stringent drainage design requirements of the late 1990s. Relative to current design standards and the likelihood of extreme rainfall events occurring, the local drainage systems are undersized and street flooding is likely. Furthermore, community members expressed frustration that many storm drains can be clogged by debris. One

solution is for community members or local organizations to can participate in the Adopt-A-Drain program. Participants volunteer to leaves and debris at least four times a year at each location.

Community Services

- Two (2) Houston ISD properties, twenty-four (24) church properties, and a community center in Independence Heights are highly vulnerable to floodplain inundation.

VULNERABILITY FINDINGS



Correlation between percent tree canopy and percent impervious surface as an urban heat island estimation.

- Allen Elementary School - 306 Crossstimbers St, Houston, TX 77022
- Burrus Elementary School - 701 E 33rd St, Houston, TX 77022
- Independence Heights Community Center, located at 603 E 35th St, Houston, TX 77022.

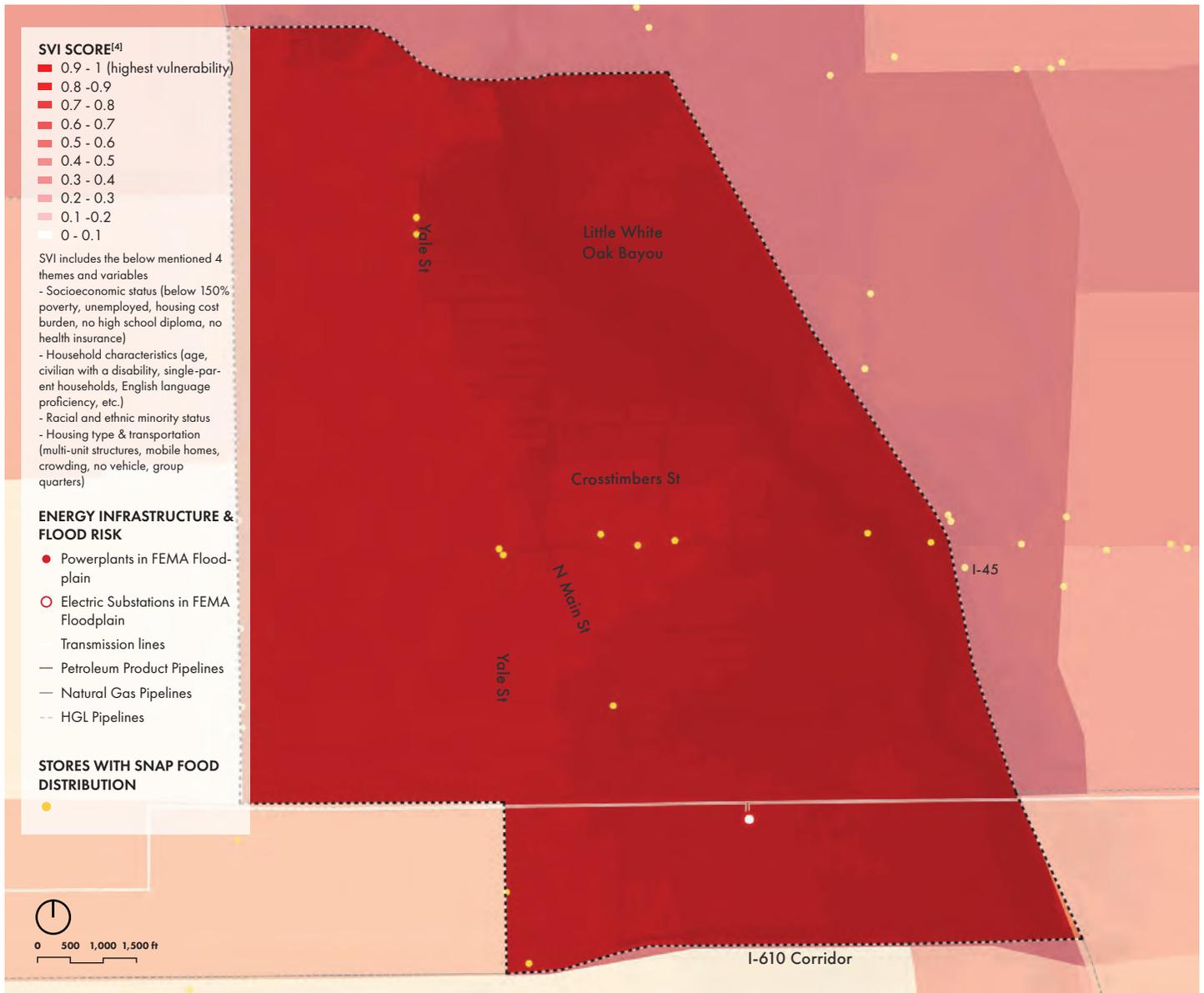
Like housing, most community service facilities have been constructed before current floodplain management requirements were in place. In addition, some community

facilities are not weatherized to the extent necessary for the types of extreme heat and cold recently experienced, or do not have backup power supplies that would allow them to operate during a power outage.

With limited public transportation options, community members commented on street layout as hindering evacuation away from floodwaters advancing through their neighborhood.

Heat Vulnerability

When natural land cover is replaced by buildings and other impervious surfaces that absorb and retain more heat, it causes dense urbanized areas to become hotter than surrounding rural areas when left unmitigated. The phenomenon that developed areas tend to be hotter than undeveloped areas is an effect known as Urban Heat Island.



Social vulnerability index as an estimation of socio-economic stress.

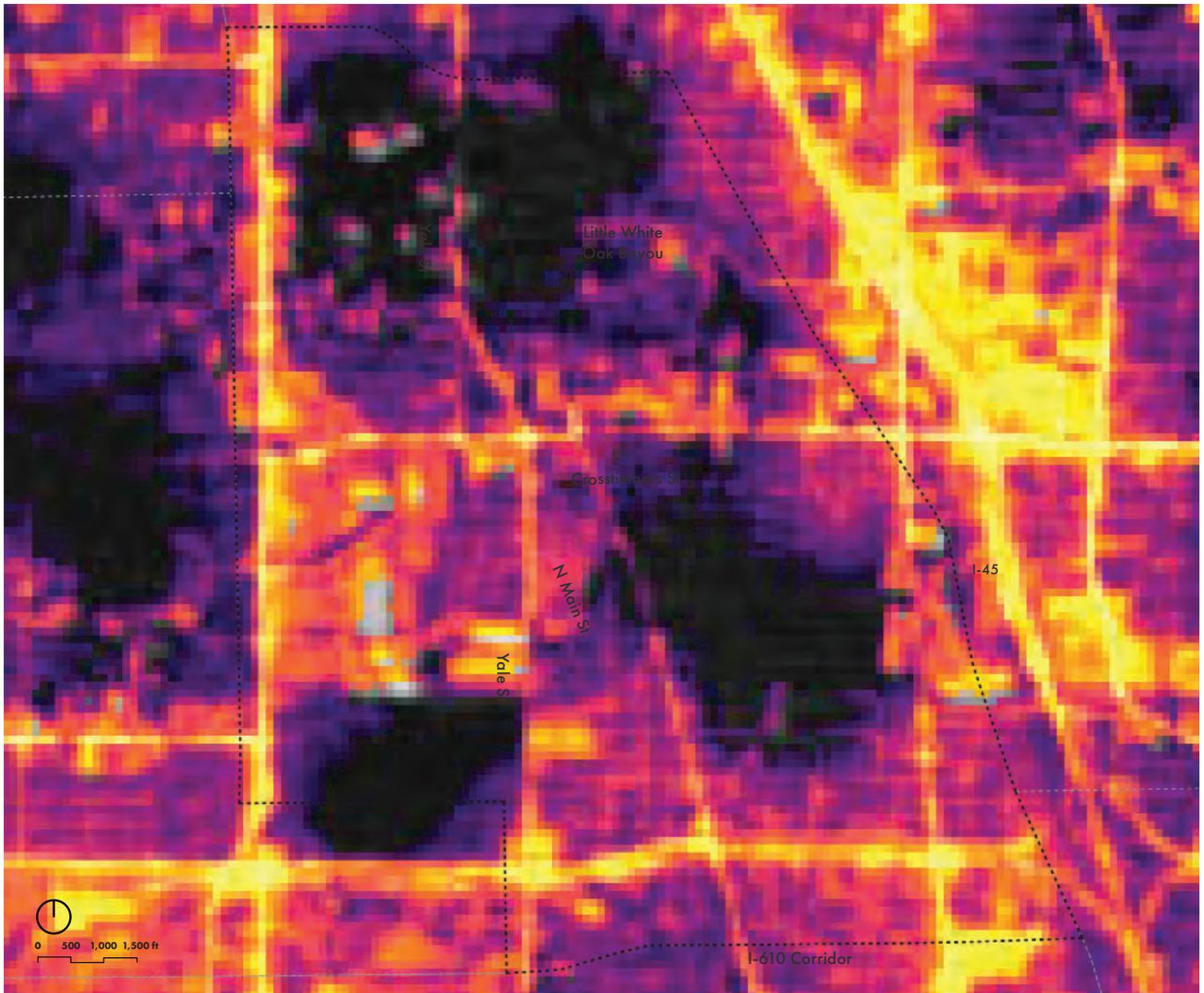
Though Houston is no stranger to hot weather, urban heat is a growing risk in a warming climate. Acute heat events are the deadliest weather-related risk and unusually hot days also impact public health, education, and quality of life. The Harris County Extreme Heat Vulnerability Assessment takes into account a number of environmental and social factors and determines the neighborhood as highly vulnerable based on a combination of factors. With less than five (5) percent tree canopy, the neighborhood has some

of the highest average heat index (a measure of temperature and humidity). The assessment shows high percentages of heat vulnerable populations, including outdoor workers, non-english speaking households, and individuals living with chronic medical conditions that make them more susceptible to heat-related illnesses (such as, diabetes, asthma, heart disease).

Public Health

Residential properties in the neighborhood are bounded by Interstate 45 (I-45) to the east and Interstate 610 (I-610) to the south, with light industrial and manufacturing uses in the areas adjacent to I-45. The proximity to two heavily trafficked roads brings particulate pollutants from vehicle exhaust and tires, as well as nitrogen oxides, carbon monoxide, and ozone. Studies show "exposure to traffic-related pollution is linked to asthma and other

VULNERABILITY FINDINGS



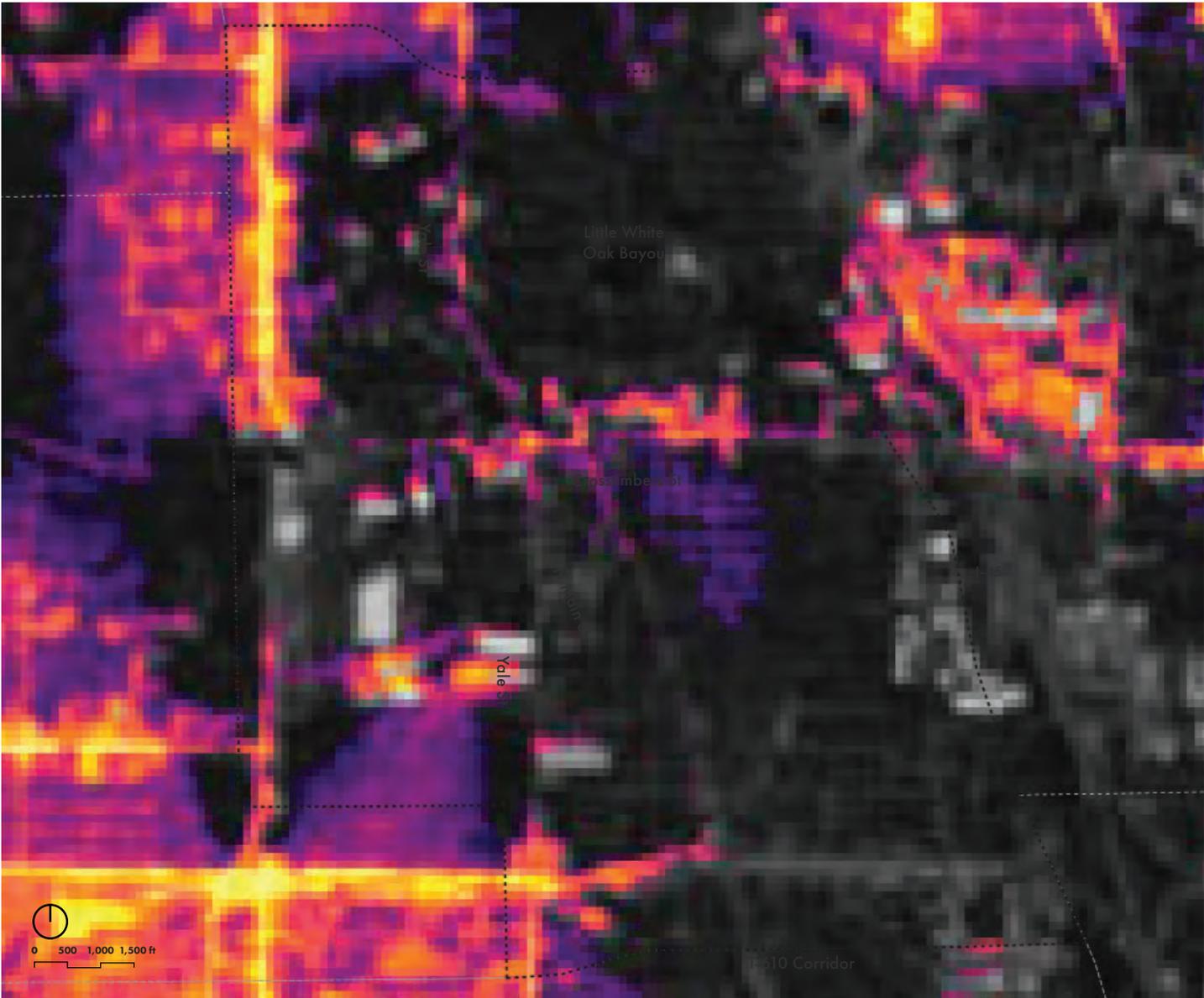
Before Winter Storm Uri power outages as visible from NASA satellites

respiratory symptoms, development of childhood asthma, and cardiovascular disease and death.” (Source: <https://www.transportation.gov/mission/health/proximity-major-roadways>). The road activity emits pollutants into the air, as well as water and soil. The extent to which these pollutants affect residents is unknown, however studies conducted in similar areas show higher rates of asthma and other respiratory health issues.

Homes that have not recovered from Harvey pose high health risks to the potential of mold infestation, leaking roofs, and lack of climate controls or heat and air conditions. Additionally, energy insecurity poses health risks for those inhabiting homes not just for those reliant on medical devices, but because it increases exposure to heat and cold.

Chronic Social Stresses

Historic disinvestment and systemic inequalities have resulted in chronic stresses such as food and energy insecurity. In addition to historic underinvestment, a limited recovery of core services assets damaged during Hurricane Harvey—such as the library and the community center—have further exacerbated the day-to-day challenges



After Winter Storm Uri power outages as visible from NASA satellites.

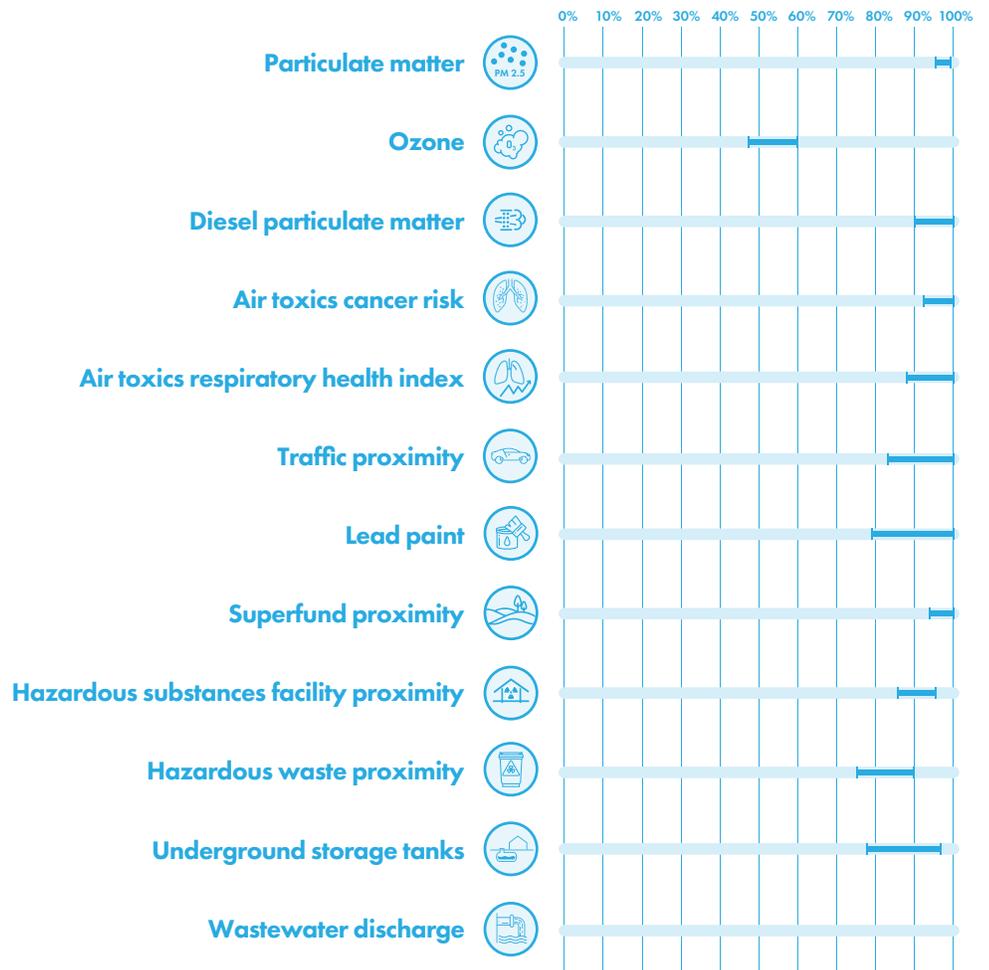
of living in the neighborhood. Community members have built strong organizations in response to the local need, and the neighborhood is recognized as an active Super Neighborhood.

The plan’s strategies and actions are based on the community-based vulnerabilities identified in the community engagement findings, and further articulated and validated by the vulnerability assessment.

VULNERABILITY FINDINGS

Environmental Justice

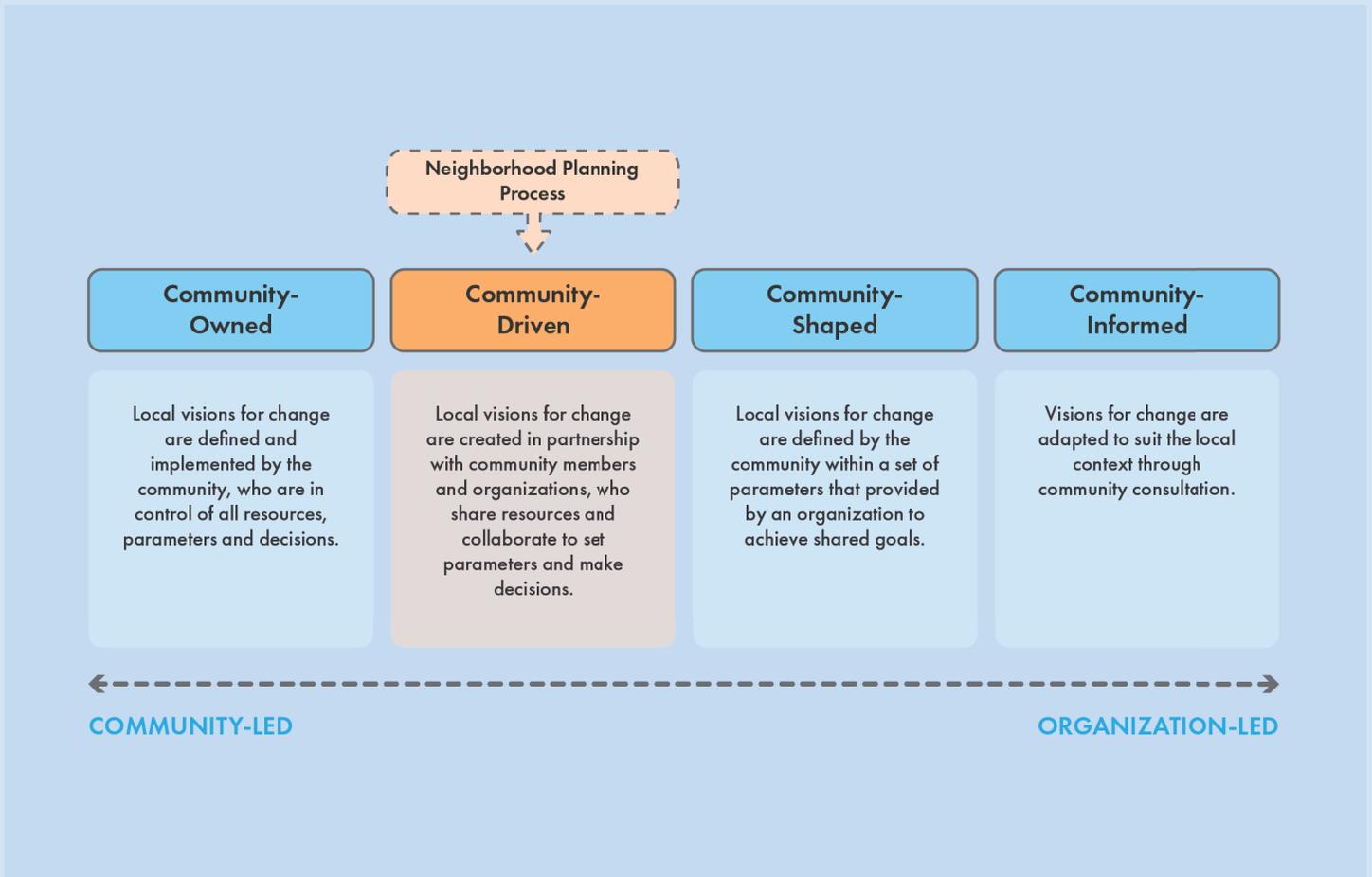
The previous sections described a variety of the resilience challenges in the neighborhood, from flood vulnerability to chronic social stresses. These vulnerabilities vary across the country, region, and city, leaving some locations with fewer challenges than others. The case of the Independence Heights neighborhood, it is clear that the neighborhood as whole faces greater challenges than other neighborhoods in the City, as well as across the State of Texas as well as the wider United States. Factors the neighborhood experiences at a higher levels include:



Environmental Justice Indicators for Independence Heights



COMMUNITY ENGAGEMENT



Community Participation Spectrum

Source: Attygalle, L. "Understanding Community-Led Approaches to Community Change." (2020) from Tamarack Institute: <https://www.tamarackcommunity.ca/hubfs/Resources/Publications/2020%20PAPER%20%7C%20Understanding%20Community-Led%20Approaches.pdf>

The planning process is founded in the principles of environmental justice, which 'demands the right of community members to participate as equal partners at every level of decision making, including needs assessment, planning, implementation, enforcement, and evaluation' (<https://www.ejnet.org/ej/principles.pdf>). 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 action plan.

Community engagement took place between March 2022 to April 2023. Guided by a NST made up of nine community members, based on their willingness to serve, representation of broad community interests, and experience with community-level projects, members served as

ambassadors to their community and encouraged community participation in the planning process through their networks. Members participated in four NSTs meetings with the planning team, three public meetings (which included Spanish translation), four interactive planning workshops, two surveys, and countless one-on-one conversations with community members on an ongoing basis.



Public art on utility boxes in the Independence Heights Neighborhood.

In total, the engagement process has informed thousands of people in Independence Heights about the planning process. The planning team reached out to the community through flyer distribution via social media, postings in community centers and businesses, Councilmember newsletters, online and in-person surveys on Let's Talk Houston, and presentations at various community meetings and events, including two Super Neighborhood 13 meetings, parents night at Burrus Elementary School, and National Night Out at the CERT command center. Ultimately, an estimated 500 people took at least one of the following actions: filled out one of two online surveys, provided project feedback on physical project boards, or attended a virtual or in-person workshop or presentation.



Key community engagement statistics measuring the extent of the community outreach.

COMMUNITY ENGAGEMENT

DATE	EVENT	DESCRIPTION AND PURPOSE	NO. OF SIGN-INS	OUTCOMES	
2022 MAR. 30-MAR	NST Meeting		7		
2022 APR. 30-APR	NST Meeting				
2022 MAY 19-MAY	Interactive Workshop		2		
2022 JUN. 2-JUN	NST Meeting		7		
	Dates Distributed Outreach	Raise awareness of event and increase participation in feedback	N/A	300 Flyers were distributed in neighborhood	
2022 JUN. 25-JUN	Public Meeting	Project Kick Off + Feedback Existing Conditions	40		
2022 JUL. 23-JUL	Public Meeting	Project Kick Off + Feedback Existing Conditions	15-20		
2022 SEP. 14-SEP	Interactive Workshop	Raise awareness of event and increase participation in feedback	30		
	15-SEP	NST Meeting	Present Projects and Collect Feedback on the Projects	6	
	20-SEP	Interactive Workshop		15	
	29-SEP	NST Meeting	Present Projects and Collect Feedback on the Projects	15	Feedback and direction on projects and approach for Public Meeting 2
	Dates Distributed Outreach	Raise awareness of event and increase participation in feedback	N/A	500 Flyers were distributed in neighborhood	
2022 OCT. 4-OCT	Interactive Workshop		40		
	18-OCT	Interactive Workshop			
	24-OCT	Public Meeting	Present Projects and Collect Feedback on the Projects	50	1000 Flyers were distributed in neighborhood
2023 JAN. 1-DEC TO 18-JAN	Outreach	Raise awareness of event and increase participation in feedback	N/A		
2023 FEB. 1-FEB	Interactive Workshop	Present Draft Plan and Collect Feedback on the Plan			
2023 MAR. TBD	Interactive Workshop	Present Draft Plan and Collect Feedback on the Plan			
	25-MAR	Public Meeting	Present Draft Plan and Collect Feedback on the Plan		

Timeline of Community Engagement Activities

Boards on Public Meeting pointing out the risks that Independence Heights is facing and what is at risk.



Planning staff was presenting the Independence Heights neighborhood resilience plan to community members at an open house.

WINTER STORM URI NEEDS ASSESSMENT

I live off south Post Oak Road South Main Street (at Krotzome).

1. HOW DID WINTER STORM URI IMPACT YOU AND YOUR FAMILY?
THREE to FOUR DAYS without ELECTRICITY

2. HOW DID YOU ADDRESS THE CHALLENGES OR IMPACTS YOU EXPERIENCED FROM WINTER STORM URI?
Invested in GENERATORS to BACK-UP outages of NIGHT

Did you receive any type of assistance to help you recover from Winter Storm Uri?
 If so, what kind?
No

3. DO YOU STILL HAVE OUTSTANDING NEEDS FROM THE IMPACTS OF WINTER STORM URI THAT NEED TO BE ADDRESSED? IF SO, WHAT?
TEXAS HAS A POSSIBLE ELECT. GRID PROB.

4. ARE THERE OUTSTANDING NEEDS IN YOUR NEIGHBORHOOD OR COMMUNITY THAT STILL NEED TO BE ADDRESSED FROM WINTER STORM URI? IF SO, WHAT TYPES?
I AM SURE THERE ARE NEEDS AROUND HOUSTON

5. WHAT WOULD HAVE HELPED YOU BETTER PREPARE FOR WINTER STORM URI OR A SIMILAR DISASTER? *I HAVE A NUMBER OF CORRECTIONS I MADE TO BE BETTER PROTECTED*

If you would like to provide more feedback or learn more about the grant process regarding Winter Storm Uri, please visit:
<https://www.letstalkhouston.org/uri-needs-assessment>

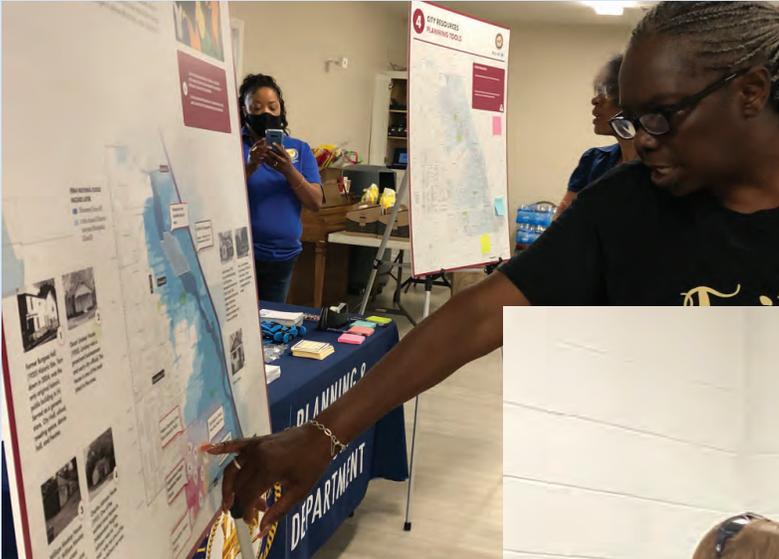
For more information
<https://www.letstalkhouston.org/uri-needs-assessment>



Public Meeting

A questionnaire being a part of Let's Talk Houston, the Planning and Development Department's new on-line engagement platform for the public to participate in decisions and provide ideas and feedback on plans and projects underway.

COMMUNITY ENGAGEMENT



A community member sharing their ideas based on floodplain maps.



The March 18th public meeting where community members discuss their wants and concerns.



Public Meeting Sign-in on March 18, 2023.



Community Emergency Response Team (CERT) training.



State of Independence Heights Community Meeting on October 24.



Council Member Karla Cisneros District H with community residents.

COMMUNITY PRIORITIES

With a community-driven neighborhood resilience action plan the strategies and actions are optimized to best address the community's resilience needs and goals and to support community advocacy and funding efforts most effectively. The community's priorities captured from the engagement process include:

Housing Security – There is a desire to both fully repair housing from previous disasters and reduce future flood risk to homes, make sure that legacy families can stay in the community, and mitigate the negative impacts from housing gentrification;

Cultural Assets Conservation – The rich history of Independence Heights and its community should provide the building blocks for a sustainable future ;

Flood Risk + Infrastructure Improvements – Flood risk was a concern, especially because of its impacts on the ability of the legacy community to continue to live in the neighborhood. The community desires substantial infrastructure improvements to address this risk;

Safer and Cooler Streets – Independence Heights streets are vital for this community's social and cultural fabric. Streets should be safer and cooler, especially along N. Main St and Yale. Crosstimbers' connectivity should be improved;

Food Access – Develop a local farm to table strategy that includes community gardens, a farmer's market, and the replacement of fruit bearing trees lost to

Harvey;

Capacity Building – From an understanding that the Independent Heights community have, by necessity, developed themselves into leaders in resilience, there need to be continued investments in the communication of risks and needs, as well as in the ability to successfully advocate in local government and bring resources to the neighborhood;

Economic Development – The community expressed a desire for better and more employment opportunities, as well as more vibrant commercial retail (Live Local Buy Local) and economic activity.

Community priorities inform the neighborhood resilience action plan. At each stage of the planning process, the NST and wider community has had an opportunity to review, comment, and direct the development of the plan.

The continued support of community-based initiatives and growing the capacity of the community to implement the projects and programs they envision needs support from outside the community. The City, non-profit, philanthropic, and other non-governmental entities are essential supports to the community. This type of co-ownership of underlying resilience strategies is not just about empowerment, it's about making sure that the neighborhood is successful in achieving resilience beyond this planning process.



Trash is blocking waterway.



Tropical storm Imelda home after pulling out soiled carpet and furniture. This home is requested to be elevated by a community member.



Winter Storm Uri Response.



Churches serve as hubs for resource supplies by distributing goods to the community.



Railway running through Independence Heights in the south of the community and its adjacent landscape.



An existing sidewalk and the adjacent drainage system embedded in the green space.



An new residential building under construction with elevated base.

COMMUNITY PRIORITIES



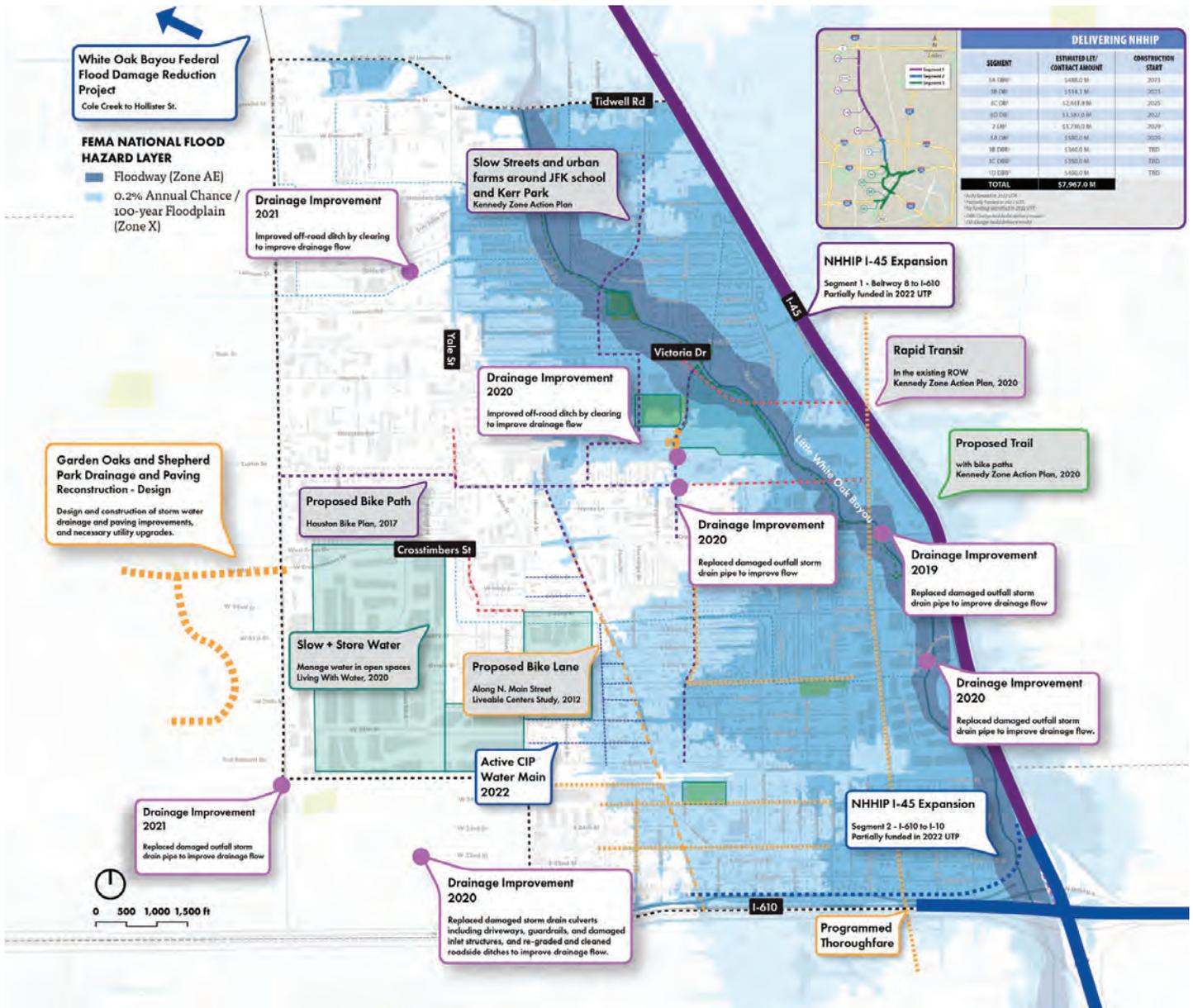
A residential building featuring historic architecture in the community.



The segment of Little Whiteoak Bayou running through Independence Heights Community.



Shopping cart and other trash dumped in the bioswale, which might impair the stormwater drainage.



Past and ongoing Independence Heights' capital improvement projects

LEGEND

CURRENT CAPITAL IMPROVEMENT PROJECTS

LEADING AGENCY

- PARKS
- BAYOU GREEN WAY
- PROPOSED CONSERVATION EASEMENTS
- PROPOSED AREAS FOR DEPAVING

PREVIOUS PLANS

- PARKS
- BAYOU GREEN WAY
- PROPOSED CONSERVATION EASEMENTS
- PROPOSED AREAS FOR DEPAVING

PROJECTS

OVERVIEW

Projects create visible change in the neighborhood. They are primarily proposed as physical interventions in the neighborhood, such as completing the sidewalk network to support walkable neighborhoods, but they also include people-based interventions, or programmatic activities, such as supporting initiatives to increase public art to improve neighborhood awareness of resilience challenges. Addressing both physical and social aspects of resilience provides for a more holistic and comprehensive approach to improving resilience.

“[A]pply a neighborhood planning approach to adapt to climate change, with place-based interventions to ensure that all Houstonians live in neighborhoods that are healthy, safe, and climate ready”

(Resilient Houston, page 79)

Multiple projects have been identified by taking input from the community and building upon existing planning efforts, such as the *Climate Impact Assessment*

and *Climate Action Plan*. These projects are categorized based on the city’s current capabilities, including department budgets and staffing, as well as the city’s capital improvement planning. Future perspectives and resilience challenges of the neighborhood are also considered to ensure the long-term relevance of the neighborhood plan.

This view to the future is largely one where public- private partnerships are formed around executing the aspirational goals of the plan that may require staffing, funds, or expertise not currently available.

Aspirational projects are those that are known to significantly reduce the risk on the community’s resilience, such as costly riparian expansion and rehabilitation, or innovative albeit proven urban design practices that reduce stormwater runoff and improve human health, but that we do not have all the implementation steps in place to guarantee implementation today. These projects are feasible, but will require that the city and community continue working toward developing implementation pathways particularly for funding and ongoing maintenance.

Implementation of this plan’s projects will occur on varying schedules

and timelines relative to the project complexity and how the project is funded and staffed. Each city committed project should start now (some have started already). Aspirational projects will start later and require that the city and the community will work toward developing the partnerships that can help realize them. For each of the projects, necessary and recommended steps to realize resilience are defined, city leads and critical non-governmental partners are identified, anticipated project timeline are laid out, funding pathways proposed, and metrics for success described.

Work on the implementation of city-committed projects should begin at plan adoption or earlier, and those aspirational projects needing non-governmental partners should begin working on forging relationships and agreements.

The projects on the following pages are linked to Resilience Houston Goals, the plan’s Guiding Principles and are grouped by overarching neighborhood resilient plan’s categories. For more information on the Guiding Principles, see the full Neighborhood Resilience Plan. The many benefits that result from these strategies are listed in the call out



“The City will work with partners to collaboratively develop and implement an education and advocacy campaign to build Houstonians’ awareness about the risks that are exacerbated by climate change and the impact they have on their health, the economy, and the built environment ”

(Resilient Houston, page 50)

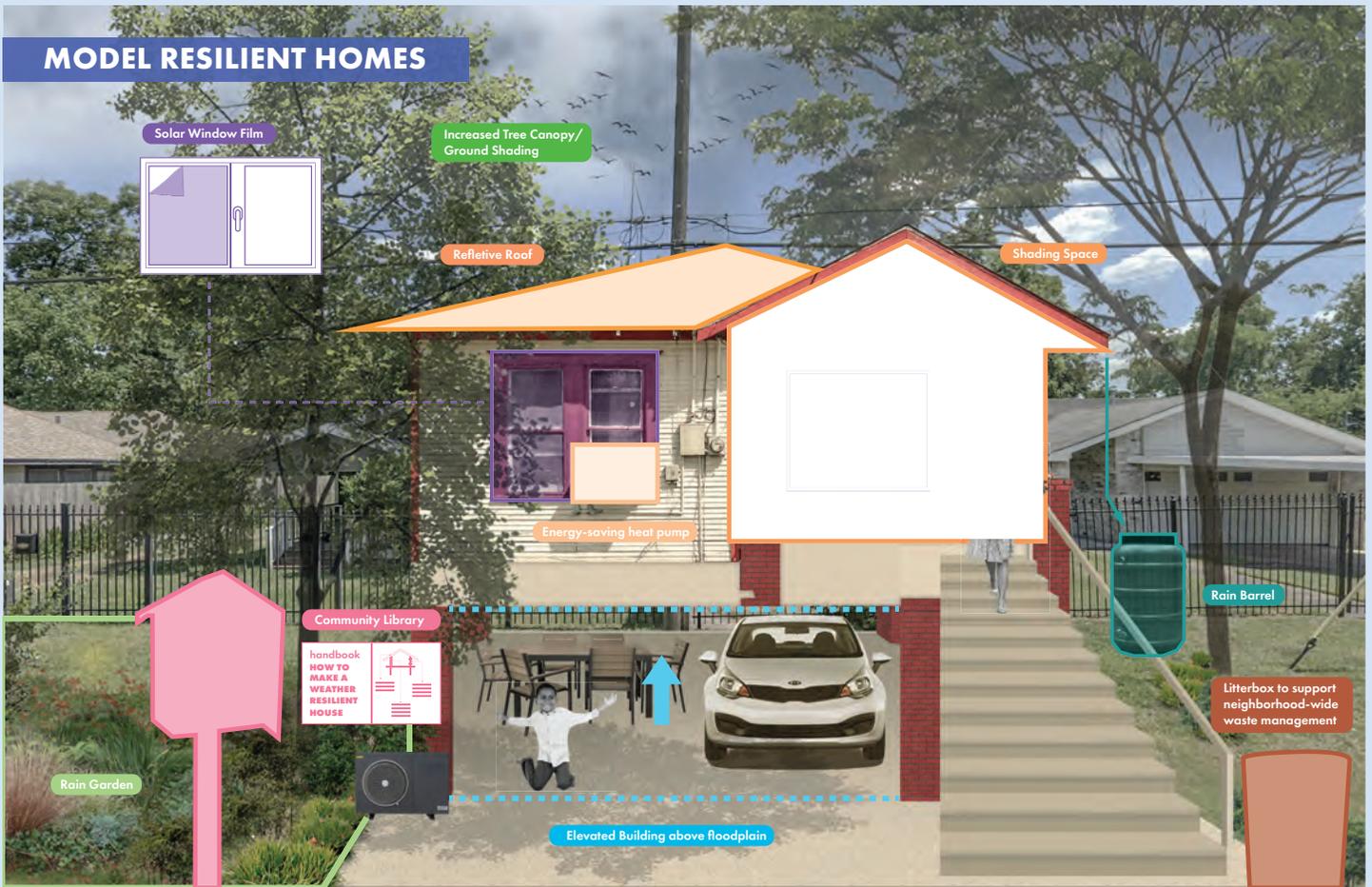
box. The overarching neighborhood resilient plan’s categories are explained here.

Cultural Assets is about preserving and conserving the history and culture of the neighborhood. These efforts are focused on protecting the physical fabric of the neighborhood primarily from the stresses and shocks of flooding and redevelopment. The buildings and building pattern that define the neighborhood in the early twentieth century and continues to today is a key part of this preservation effort, but as much is the effort to raise the community’s awareness of and appreciation for

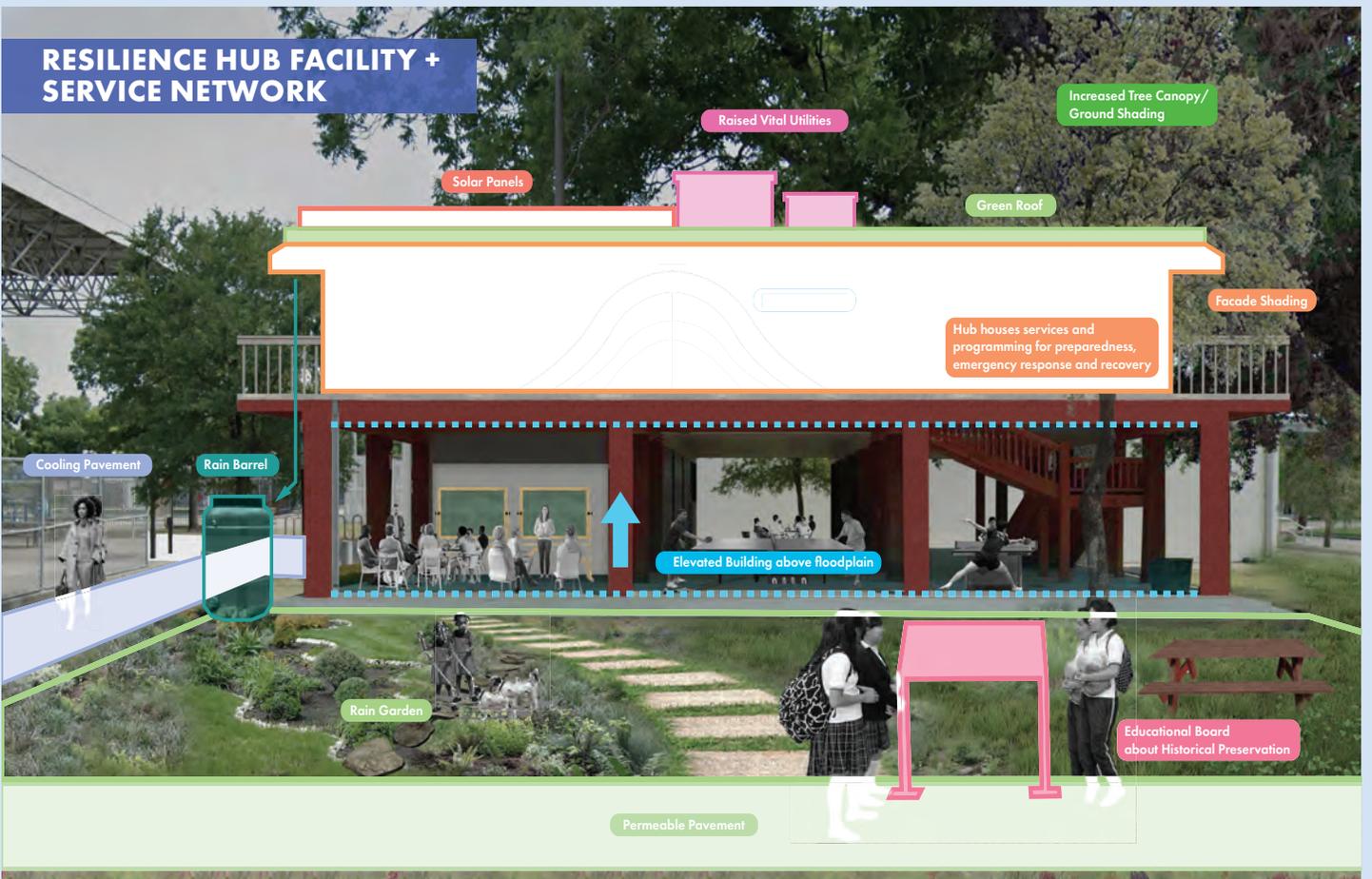
these assets so they become the next group of neighborhood advocates for Independence Heights’ unique culture, and carry on into their daily activities inspired to support neighborhood resilience.

Model Adaptive Homes addresses the lack of community-based knowledge and lack of resources for building housing resilience by creating pilot projects to rehabilitate and weatherize homes, and remove them from the floodplain. The “Model Resilient Homes” project serves as an example of what is possible to implement on the typical home in Independence Heights, and

MODEL RESILIENT HOMES



RESILIENCE HUB FACILITY + SERVICE NETWORK





provides practical tools and guides for homeowners and renters to pursue their own resilient home improvements.

Resilience Hub Facility + 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. Community-based facilities, such as churches, schools and library facilities, heighten the level of service and resources in a community. The associated programs that take place at such facilities strengthen community relationships

and form distribution networks that work to make sure community members are informed in advance of an event, and as prepared as possible for the effects of stresses and shocks.

Streetscape Improvements through improved delivery and communication of projects that address aging infrastructure through the implementation of leading-edge stormwater infrastructure practices, mobility improvements, and reduced exposure to heat in a coordinated manner.

Crosstimbers, Yale and N. Main St. Corridor Enhancements

“The City will work with partners, such as CenterPoint Energy, to grow existing weatherization education efforts and implement weatherization programs, prioritizing low- to moderate-income households and neighborhoods with repeated flooding damage” (Resilient Houston: 50).

CROSTIMBERS, N. MAIN AND YALE ST. CORRIDORS ENHANCEMENTS



looks primarily to increase the neighborhood tree canopy, particularly along N. Main St, but also in other areas such as Yale Street and around Booker T. Washington and other schools. The vision for N. Main to become the neighborhood boulevard by planting trees in the right-of-way. Increasing the urban tree canopy improves traffic safety, provides a cool corridor for safe multimodal transportation, and reduces stormwater runoff.

Green Stormwater Infrastructure can be effective in cooling and cleaning the air, providing shade, helping reduce nuisance flooding

while improving the appearance of a block or the neighborhood. Expanding the use of green infrastructure—such as trees, bioswales, bioretention planters, rain gardens and other features on private property— can be facilitated if development permitting rules are modified to incentivize their installation.

Expand Capacity of Little White Oak Bayou + I-45 Integration is critical flood infrastructure that can also be an amenity to the neighborhood. Building on plans for the Bayou and I-45, the project proposes an integrated and community-driven approach to expanding and enhancing Little White Oak Bayou to help reduce

neighborhood flood risk, enhance sustainable mobility and recreational opportunities, improve environmental health, and mitigate heat effects through urban forestry. The city's Memorandum of Agreement with the Texas Department of Transportation (TxDOT) overseeing the I-45 enhancements will be upheld through the work with the city-level and neighborhood-level work on the bayou expansion.

These projects are first and foremost championed by the Independence Heights NST and the broader community. They are also supported by the City of Houston Planning



and Development Department, additional city departments and elected representatives, and other nongovernmental partners.

See specifics on projects and program on the following pages.

“The City will work with partners, such as CenterPoint Energy, to grow existing weatherization education efforts and implement weatherization programs, prioritizing low- to moderate-income households and neighborhoods with repeated flooding damage”
(Resilient Houston: 50).

PROJECTS

INCREASE CULTURAL & HISTORIC PUBLIC ART

Engage public agencies and local artists to install public art to raise risk awareness around community history, cultural, architecture at risk due to climate change and other stresses and shocks, such as street signage, property markers, 'explore-on-your own' web tours, art at bus shelters, mini murals, murals, sculptures, crosswalk art or other types of art.

Art captures the spirit or mood of the community and conveys the

importance and significance of the neighborhood's history to generate awareness and interest in protecting it from stresses and shocks, including redevelopment pressures.

Independence Heights' unique history continues to and can be represented through new vehicles such as murals, intersection painting, sculpture in the right-of-way, posters at bus shelters, banners along roadways, and more.

CULTURAL ASSETS

Benefits Equity; adaptive capacity; public health

Timeline Short-term (1-2 years)


Category  Neighborhood Character

Resilience Houston Targets  GOAL 2  GOAL 5

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			

1 Work with City, County, and regional MOCA, PD departments along with various programs to install public art on city property and/or work with private partner to design and implement innovative and artful signage

2 Seek funding to support projects

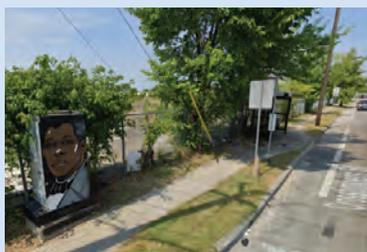
3 Work with public and/or private property owners by identifying desired locations and art projects, following City process requirements, raising required funding, installing and celebrating the final installation;

4 Create educational programs, materials, and other activities to share history and cultural of neighborhood proudly

Up Art Studio, CM Cisneros, PD, METRO, Independence Heights Super Neighborhood 13

NEA, LISC, Bloomberg Philanthropy

of art pieces installed in neighborhood



1



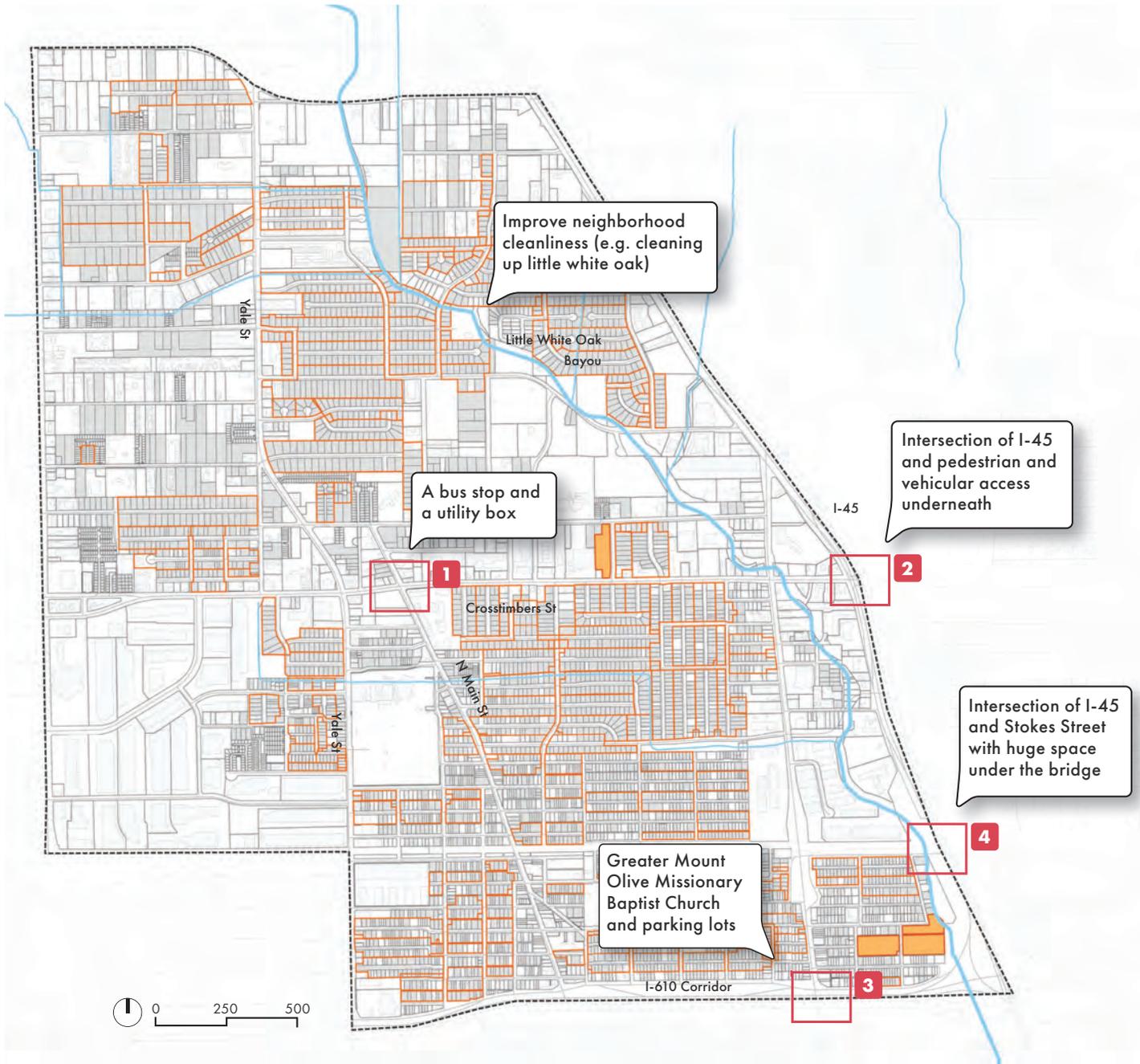
3



2



4



Minimum Lot Size and Minimum Building Line ordinances

LEGEND

- EXISTING MINIMUM LOT SIZE
- ELIGIBLE MINIMUM LOT SIZE
- SINGLE FAMILY RESIDENTIAL PARCELS
- PARCELS

PROJECTS

CONTINUE TO IMPROVE NEIGHBORHOOD CLEANLINESS

Advance neighborhood-wide collaboration around eliminating littering, illegal dumping, landscape maintenance, including tree trimming and median maintenance, to ensure the cleanest neighborhood possible.

Part of improving the streetscape involves its maintenance, and the community has been vocal about the need for improvements in cleanliness. Not only does street cleanliness affect the overall look and feel of a neighborhood, it can have negative impacts on the stormwater drainage system, ecological health, and public health. This project aims

to eliminate littering and illegal dumping, and provide regular tree trimming through neighborhood-led initiative and collaborations with City services. Of particular urgency are the areas around Little White Oak Bayou, with its issues of garbage and homelessness.

CULTURAL ASSETS

Benefits Equity, public health, flood risk

Timeline Short-term (1-2 years)

Category  Neighborhood Character

Resilience Houston Targets

-  GOAL 2
-  GOAL 3
-  GOAL 6
-  GOAL 9
-  GOAL 10
-  GOAL 11
-  GOAL 12
-  GOAL 15

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<ol style="list-style-type: none"> 1 Semi-annually conduct a community-led neighborhood-wide assessment to determine cleanup needs 2 Coordinate with City staff to capitalize on existing City programs (e.g. Adopt-a-Drain, Adopt-an-Esplanade, Adopt-a-Block, Adopt-a-Container) 3 Organize neighborhood cleanups and beautification events 4 Create an outreach campaign that includes how to report illegal dumping to 311, that distributes 'Trash Facts' within the community on disposal options 	HPARD HPW SWM	KEEP HOUSTON BEAUTIFUL	SWMD, ILLEGAL DUMPING PENALTY FEES, PHILANTHROPY	Lower frequency of 311 complaints	



CONSERVE NEIGHBORHOOD CHARACTER

CULTURAL ASSETS

Create Minimum Lot Size and Minimum Building Line ordinances to preserve neighborhood character.

we can safeguard the unique heritage while maintaining the well-being of the community.

Preserving the cultural assets of a neighborhood is an integral part of building resilience. Assets such as historic buildings and building patterns, not only serve as artifacts from previous generations but also continue to shape the current residents' way of life and community activities. It is crucial to provide enhanced protections for designated historic buildings. Key landmarks within these areas require safeguarding.

Preservation of this historical culture and architecture extends beyond mere conservation efforts. It includes implementing measures to protect them from floods, high winds, and other potential risks. By combining preservation and resilience efforts,

Benefits Equity, adaptive capacity

Timeline Short-term (1-2 years)


Category  Cultural Assets



STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<ol style="list-style-type: none"> Increase Minimum Lot Size and Minimum Building Line ordinances Work with the Planning Department to identify boundaries and file applications Submit applications to PD 	PD		Independence Heights Super Neighborhood 13, civic clubs, home owners	COH GENERAL FUND	# of properties protected from infill development

PROJECTS

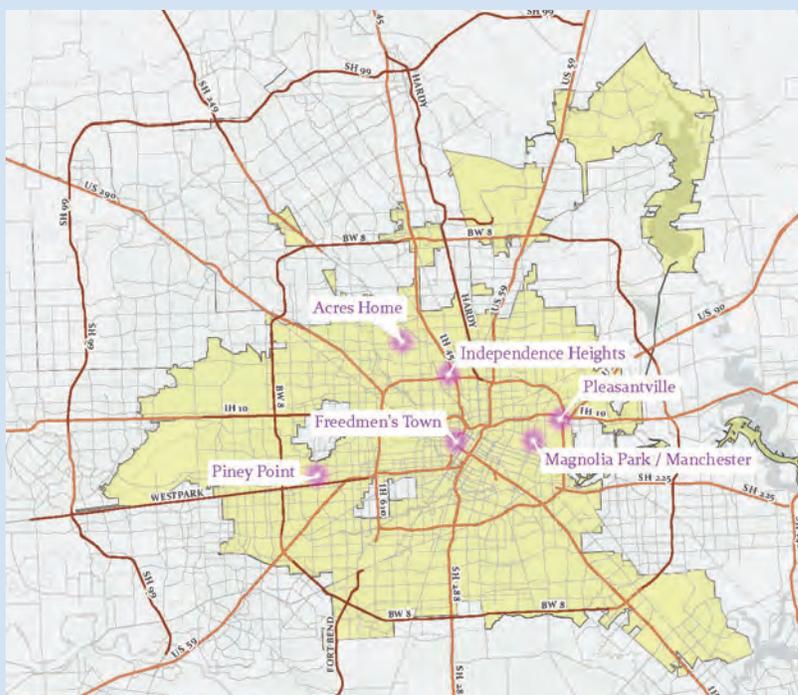
CONSERVE HISTORIC CULTURAL AND ARCHITECTURAL SIGNIFICANCE

Establish one or more Conservation Districts to mitigate negative development impacts on neighborhood cultural assets, particularly a portion of North Main Street between I-610 and the rail road tracks.

The neighborhood has a well-defined character that roots back to its early settlement in the late 9th and early 20th century. This character is at risk of being lost as a result development pressures (stressors) and as well as flooding events that damage buildings and displace current long-time residents (shocks). Protecting this heritage is not simply about protecting the physical assets, it also about raising awareness in the community that the neighborhood culture is at risk. Another key goal is to connect newer residents to this cultural legacy.

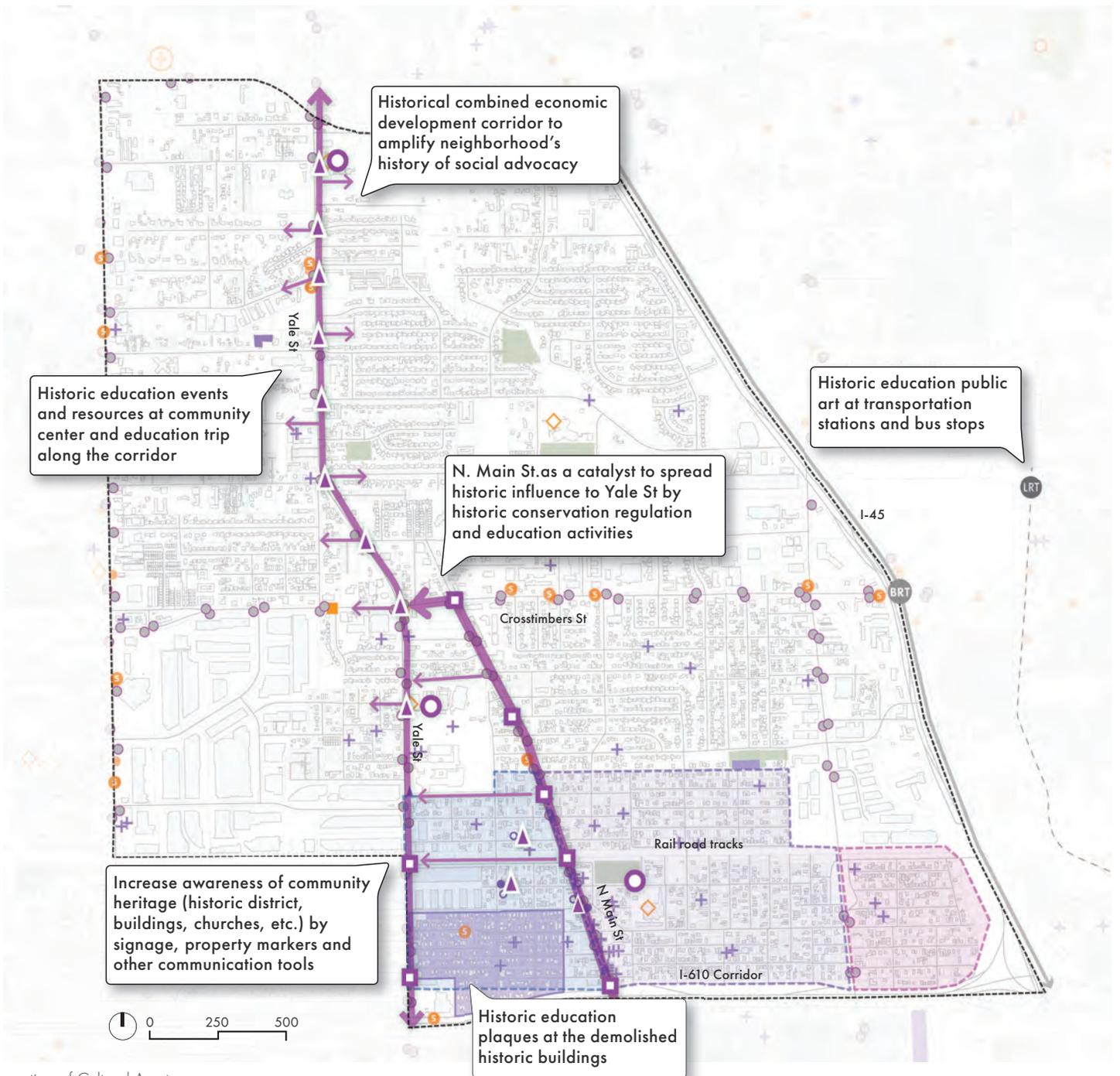
CULTURAL ASSETS

Benefits	Equity, adaptive capacity
Timeline	Short-term (1-2 years) 
Category	 Neighborhood Character



City of Houston's Conservation District pilot areas

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<ol style="list-style-type: none"> 1 Establish a Conservation District pilot area(s) 2 Work with the Planning Department to identify boundaries and criteria 3 Submit to city council for establishment of an ordinance 	CITY	NEIGHBORHOOD	Independence Heights Super Neighborhood 13, civic clubs, residents	COH General Fund	# of properties protected from infill development



Location of Cultural Assets

LEGEND

HISTORIC PRESERVATION

- NATIONAL REGISTER HISTORIC PRESERVATION DISTRICT
- ▨ WEST INDEPENDENCE HEIGHTS CONSERVATION DISTRICT
- ▨ CENTRAL INDEPENDENCE HEIGHTS CONSERVATION DISTRICT
- ▨ EAST INDEPENDENCE HEIGHTS CONSERVATION DISTRICT
- + CHURCHES
- ▲ HISTORICAL MARKERS
- EXISTING HISTORIC BUILDINGS
- DEMOLISHED HISTORIC BUILDINGS
- CEMETERIES

← PROPOSED EXTENDED HISTORIC CORRIDOR

- PROPOSED STREET SIGN TOPPERS
- ▲ PROPOSED PLAQUES
- PROPOSED COMMUNITY HUBS
- PROPOSED BUS STOP WITH HISTORIC EDUCATION BOARDS

TRANSPORTATION STATION

- BUS STOPS
- LRT STATIONS
- BRT STATIONS

COMMUNITY ASSETS

- ◇ SCHOOLS
- ⊕ COMMUNITY CENTERS
- STORES WITH SNAP FOOD DISTRIBUTION
- STORES
- ⊕ HOSPITALS
- FIRE STATIONS
- PARKS

PROJECTS

CONSERVE HISTORIC, CULTURAL AND ARCHITECTURAL SIGNIFICANCE

Establish programs and activities to build adaptive capacity, specifically oriented toward strengthening civic organizations and creating community leaders, by sustaining community-based dialogue around resilience.

It is essential to prioritize social resilience through the funding of strong social connections. This enables communities to effectively prepare for, withstand, and recover from shocks like extreme weather events. Building a connected community relies on establishing a robust network of community organizations, public spaces, and facilities.

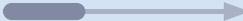
To enhance social resilience, it is recommended to establish programs and activities that promote community-based dialogue and build capacity around resilience. A community resilience conference or workshops provide an excellent opportunity

to showcase progress, celebrate partnerships, and engage new stakeholders in the conversation.

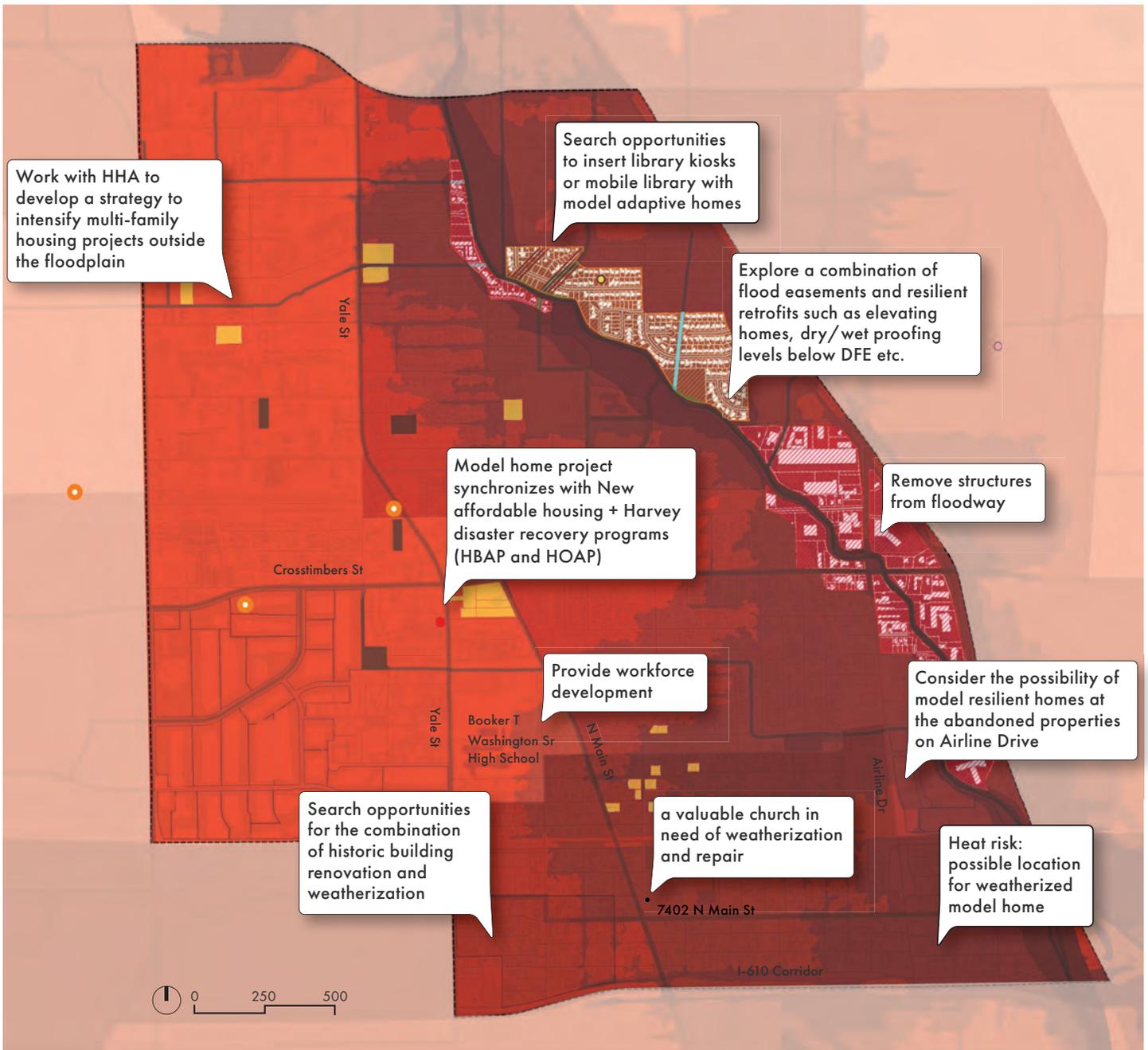
Participatory activities, such as the development of a resilience certificate, home energy audits, or a resilience tradeshow, can further foster engagement.



CULTURAL ASSETS

- Benefits** Equity; adaptive capacity; public health
- Timeline** Short-term (1-2 years)

- Category**  Neighborhood Character

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<p>1 Work with various partners to establish year-round programs, activities, and a regular resilience fair, conference or educational sessions</p>	DON		<p>MORS, OEM, PD, SN Alliance, ULI, CERT</p>	OEM, OED	<p># of individuals + businesses reached</p>
<p>2 Work with community on providing information to them, whether online, in seminars and classes, or other formats</p>			<p>HARC, United Way, Red Cross, Salvation Army, and AARP</p>		
<p>3 Periodically review and update programs and activities</p>					



Housing Resilience

LEGEND

HOUSING RESILIENCE

- PROPOSED BUYOUT / EASEMENT AREA
- RETROFITS FOR RESILIENT STRUCTURES
- POTENTIAL IN-FILL DEVELOPMENT AREAS
- NHPD ASSISTED HOUSING
- AFFORDABLE HOUSING
- HARVEY DISASTER RECOVERY (DR-17)**
- HOMEBUYER ASSISTANCE PROGRAM (HBAP) COMPLETED PROJECTS (MARCH 2022)
- HOMEOWNER ASSISTANCE PROGRAM (HOAP) COMPLETED PROJECTS (MARCH 2022)

FEMA FLOOD HAZARD LAYER

- FLOWWAY (ZONE AE)
- 1% ANNUAL CHANCE/ 100 YEAR FLOODPLAIN(ZONE A, AE, AO)
- 0.2% ANNUAL CHANCE/ 500 YEAR FLOODPLAIN(ZONE X)

HISTORICAL PRESERVATION

- NATIONAL REGISTER HISTORIC PRESERVATION DISTRICT

HEAT VULNERABILITY INDEX 2020

- 100.82 - 102.33
- 102.33 - 102.7
- 102.7 - 103.2
- 103.2 - 103.7
- 103.7 - 104.3
- 104.3 - 104.6
- 104.5 - 105.0
- 105.0 - 105.4
- 105.4 - 106.2
- 106.2 - 108.0

PROJECTS

REHAB & WEATHERIZE HOMES STILL AFFECTED BY FLOODING

Establish programs and activities to define pathways to funding, services, and other resources. Create courses and materials that disseminate best practices and pathways to floodplain removal, weatherization, rehabilitation. Showcase and demonstrate optimized pathways for homeowners and business owners to safe guard their individual assets.

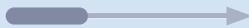
Rehabilitation and weatherization should include outstanding home repairs from Hurricane Harvey and other damage from storms. Develop a program to ensure that the most vulnerable residents have adequate air conditioning and heating, backup

energy supplies, and other features to improve health and safety at home. Remove homes from the floodplain or raise homes above the floodplain above the minimum requirements set by ordinance and the Houston Floodplain Management Office.

The roll-out of the “Model Resilient Homes” program is an opportunity to support workforce development by offering neighborhood residents training to elevate, weatherize and rehabilitate homes, and potentially the work of creating educational programs to support promotion of, or to implement, home rehabilitation and weatherization..

MODEL RESILIENT HOMES

Benefits Equity, adaptive capacity, public health

Timeline Short-term (1-2 years)


Category  Neighborhood Character

Resilience Houston Targets

 GOAL 1  GOAL 2  GOAL 8

 GOAL 10  GOAL 11  GOAL 12

 GOAL 18

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
1 Find funding source(s)	HCD		HARC, Private Developer/ Corporation	TBD	# of assets prepared and/or recovered

- 1 Find funding source(s)
- 2 Work with Houston Land Bank and other property owners to find sites
- 3 Establish selection criteria + find willing property owners
- 4 Design and plan weatherization of home or business
- 5 Weatherize home or business
- 6 Conduct associated educational activities, whether online, in seminars and classes, or other formats
- 7 Periodically review and update practices, programs and activities



ESTABLISH BUILDING PREPARATION AND RECOVERY BEST PRACTICES

Build on Living with Water findings report to create floodplain removal, weatherization, and rehabilitation best practices for Independence Heights to showcase and demonstrate best practices to homes and businesses.

The homes that are updated as part of the “Model Resilient Homes” project will become part of a community education program, including designated home tours and hands-on demonstrations during the rehabilitation process. Following completion, the homes will serve as examples for others to follow. These

will be part of a broader rebuilding program including trainings at local community events and will include education materials explaining how to apply a series of techniques to other structures. Providing an example of rehabilitation, weatherization, floodplain removal in the neighborhood ensures that techniques used are applicable to the local building stock, and that residents have ready access to professionally vetted examples of how to approach work on their own homes. By including improvements in the yard, such as green infrastructure, rainwater harvesting and urban farming, wider benefits can be demonstrated.

MODEL RESILIENT HOMES

Benefits Equity, public health, flood risk

Timeline Near-term (3-5 years)


Category  Neighborhood Character

Resilience Houston Targets

 GOAL 1  GOAL 2  GOAL 8

 GOAL 10  GOAL 11  GOAL 12



STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<p>1 Work with various partners to establish year-round programs and activities</p> <p>2 Work with community on providing information to them, whether online, in seminars and classes, or other formats</p> <p>3 Periodically review and update programs and activities</p>	HCD		HPW/Green Resource Center, Parks and Recreation Green Space, GSD	DOE, US-HUD, IRS, US-EPA, HCD, TDHCA, TX-PACE, CenterPoint Energy, FEMA, Private Developers, Philanthropy, CDBG, Justice 40, Texas Housing	# of assets prepared and/or recovered



A home elevation pilot project to demonstrate how improvements can be done

PROJECTS

ESTABLISH NEIGHBORHOOD RESILIENCE HUB FACILITY NETWORK

Establish a resilience hub network to support community resilience preparedness and to plan for and assist with recovery following events, specifically through the establishment of a community center facility designated as a Resilience Hub. Such hubs would centrally house services and programming for preparedness, emergency response, and recovery in the neighborhood, and can include existing community facilities such as Booker T. Washington High School.

Potential hubs include the

Independence Heights Community Center on E. 35th St. (which is in need of upgrades), Harris County Precinct One Community Emergency Response Team (C.E.R.T.) Center (where a number of emergency operations already reside) or the Community Recycling Center at Whitney and N. Main (which offers some educational activities). The city is currently studying the building and property assets in the neighborhood in an effort to identify a dedicated building to support neighborhood resilience.



RESILIENCE HUB FACILITY + SERVICE NETWORK

Benefits Equity, adaptive capacity, public health

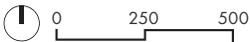
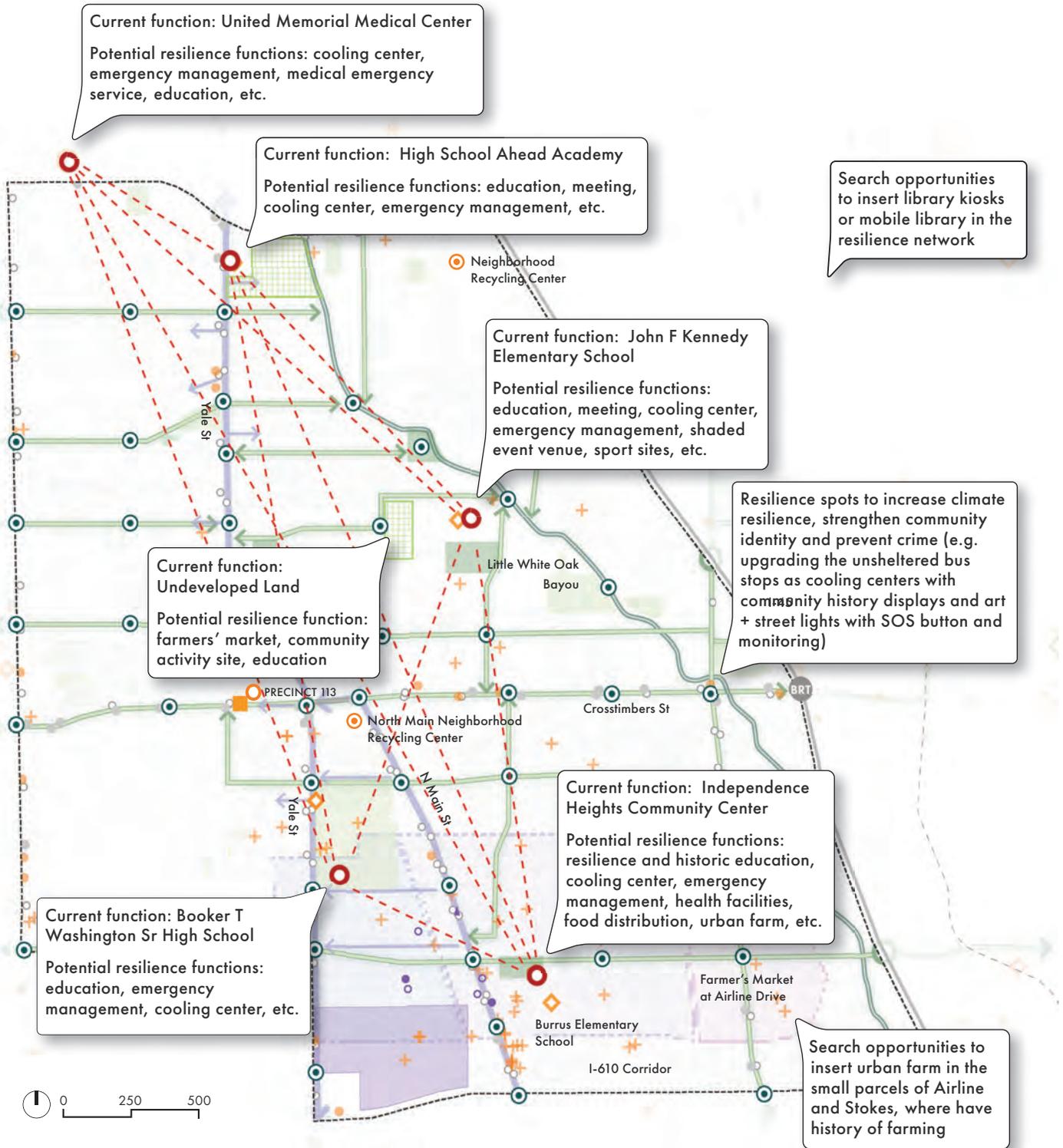
Timeline Near-term (3-5 years)

Category Safe in the Neighborhood

Resilience Houston Targets

- GOAL 1
- GOAL 2
- GOAL 8
- GOAL 10
- GOAL 11
- GOAL 12
- GOAL 18

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<p>1 Follow guidelines established by MORS for both public- and privately-owned facilities to create new facilities and designate existing facilities</p>	MORS		<p>HPD, PK HPL, HPARD, HFD, Habitat for Humanity, CBOs, CDCs</p>	<p>US-EPA, MORS, Houston Library, State and Federal funds, et al</p>	<p>Percentage of neighborhood within a defined service boundary (e.g. 1000 feet)</p>



LEGEND

CAPACITY BUILDING

- RESILIENCE HUBS CANDIDATES
- RESILIENCE SPOTS CANDIDATES

EXISTING COMMUNITY ASSETS

- ◇ SCHOOLS
- ⊕ COMMUNITY CENTERS
- STORES WITH SNAP FOOD DISTRIBUTION
- STORES
- ⊕ HOSPITALS
- FIRE STATIONS
- RECYCLING CENTER
- FIRE STATION

- BUS STOPS WITH SHELTERS
- BUS STOPS WITHOUT SHELTERS
- Ⓛ LRT STATIONS
- Ⓡ BRT STATIONS

Location of Resilience Hub Facility + Service Network

ESTABLISH NEIGHBORHOOD RESILIENCE PROGRAMS AND SERVICES NETWORK

RESILIENCE HUB FACILITY + SERVICE NETWORK

Establish a resilience hub programs and services network to help build community’s adaptive capacity, specifically to improve resilience preparedness and to plan for and assist with recovery following events. Such a services network would provide support services and programming for preparedness, emergency response, and recovery; include the promotion of services to assist seniors with combating extreme cold, extreme heat, and

increased medical needs; provide programs and education to assist income eligible customers to reduce energy costs; and, include existing community programs and services such as those provided by Booker T. Washington High School or library kiosks at the Community Center.

Expanded services can also be brought into the neighborhood to meet today’s service needs in line with the goals of building adaptive capacity, generally improving overall neighborhood resilience through education and resource distribution, economic development by providing business development resources for local entrepreneurs and classes on starting or operating successful businesses, and civic engagement and community agency by providing leadership training for community members.

“Neighborhood Resilience Hubs are physical spaces, hosted within trusted spaces in neighborhoods, that facilitate social, climate, and economic resilience along with disaster preparedness”
(Resilient Houston, page 81)

Benefits Equity, adaptive capacity, public health

Timeline Short-term (1-2 years)

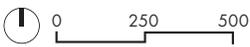
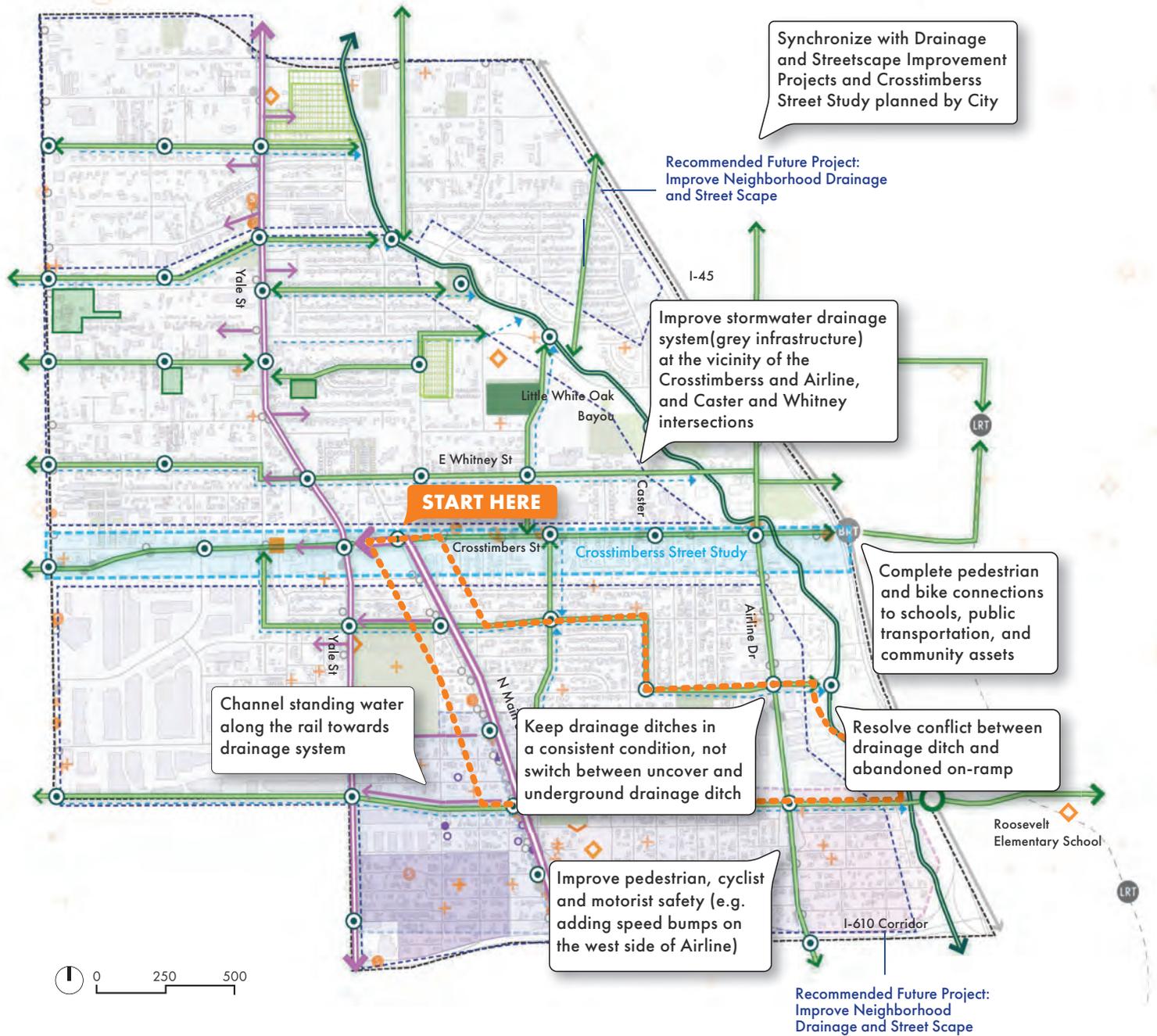
Category Safe in the Neighborhood

Resilience Houston Targets

- GOAL 1
- GOAL 2
- GOAL 10
- GOAL 11
- GOAL 12
- GOAL 17
- GOAL 18

“Create safe places of refuge in communities that also build neighborhood resilience between disruptions and disasters”
(Resilient Houston, page 81)

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<p>1 Follow guidelines established by MORS for essential services</p> <p>2 Work with neighborhood leaders to create neighborhood specific programs and services</p>		MORS	OEM, HPL, Habitat for Humanity, Parks, MSC, HHD, Faith-based organizations, Area Schools, Area Fire Station, Council Member Office	TBD	Quantifiable risk reduction (e.g. fewer heat strokes, fewer cases of diabetes, fewer homes without AC, etc)



LEGEND

BASIC INFRASTRUCTURE UPGRADES

- PROPOSED MULTI-MODAL TRANSIT - PRIMARY
- PROPOSED GREENWAY
- GREENWAY ALONG BAYOU
- SHADED PARKS
- URBAN FARMS
- DRAINAGE LINES
- RESILIENCE SPOTS CANDIDATES (proposed cooling bus stops)
- RECOMMENDED FUTURE PROJECT: IMPROVE NEIGHBORHOOD DRAINAGE AND STREET SCOPE

EXISTING COMMUNITY ASSETS

- SCHOOLS
- COMMUNITY CENTERS
- STORES WITH SNAP FOOD DISTRIBUTION
- STORES
- HOSPITALS
- FIRE STATIONS

HISTORIC PRESERVATION

- PROPOSED EXTENDED HISTORIC CORRIDOR
- WEST INDEPENDENCE HEIGHTS CONSERVATION DISTRICT
- CENTRAL INDEPENDENCE HEIGHTS CONSERVATION DISTRICT
- EAST INDEPENDENCE HEIGHTS CONSERVATION DISTRICT
- NATIONAL REGISTER HISTORIC PRESERVATION DISTRICT

PROJECTS

IMPROVE NEIGHBORHOOD STREET AND SIDEWALK NETWORK

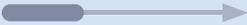
Improving the sidewalk conditions and sidewalk network is needed to allow for safe multi-modal transportation options. This effort should include complete gaps between sidewalks, or making sure that sidewalks do not abruptly end, provide panel improvements and replacements, curb replacements and improvements, install ADA compliant curbs particularly along key pedestrian routes to transit and retail services, repair inlets to improve drainage, repair cracks and potholes. This work should be focused along Crosstimbers Street, Yale Street, and

North Main Street.

Expand the tree canopy and green corridor network to improve the performance, safety and appearance of the neighborhood's streets, street trees. Trees beautify the neighborhood, reduce nuisance flooding, slow stormwater runoff, improve air and water quality, provide cooling through vegetative shading and evapotranspiration, increase biodiversity, as well as provide recreational opportunities, and traffic calming.

STREETSCAPE IMPROVEMENTS

Benefits Equity, public health, road safety

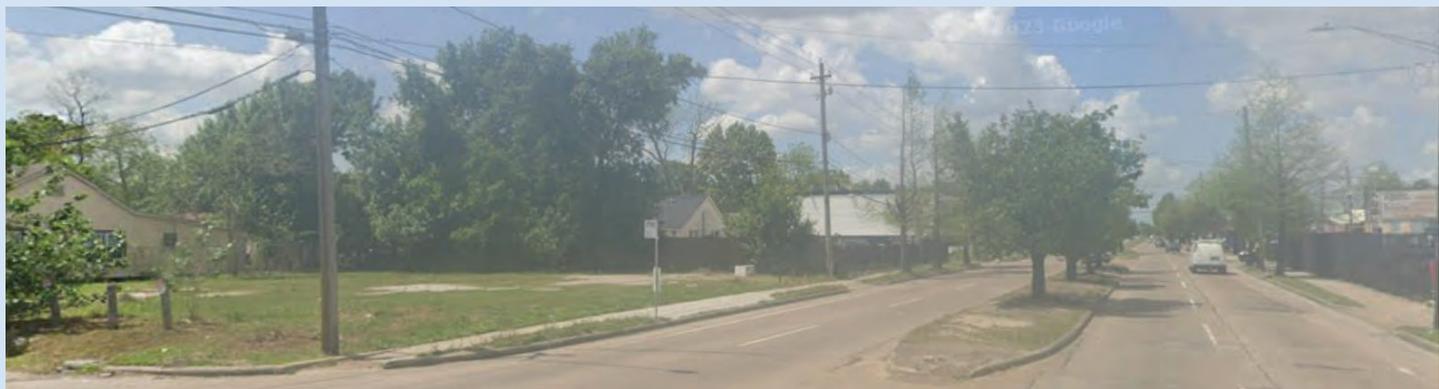
Timeline Short-term (1-2 years)


Category  Safe in the Neighborhood

Resilience Houston Targets

 GOAL 3  GOAL 9  GOAL 10

 GOAL 11  GOAL 12  GOAL 15



STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<p>1 Conduct neighborhood-wide assessment of existing sidewalks, bike lanes, intersections, stormdrains, and other features to identify network gaps and areas for improvement</p> <p>2 Conduct community preference survey on the expansion and improvement of mobility network and drainage system</p> <p>3 Coordinate HGAC and private partner-led improvements</p>		HPW	PD, HISD, Safe Routes to School, TXDOT	SWAT, City council members budget CIP	Higher walkscore

IMPROVE STORMWATER DRAINAGE SYSTEM

Address aging infrastructure, by executing upgrades of all drainage system components to reduce nuisance flooding, increase stormwater capacity, improve stormwater drainage system, and support the protection of the Conservation District and identified cultural assets, specifically at North Main Street, Crosstimbers and Airline intersection, along 39th Street, Yale Drive and Crosstimbers, and along the railroad on both sides.

The neighborhood’s stormwater infrastructure would benefit from

remodel. The costs for updating the system are not just prohibitively expensive, the construction itself would take years and have a negative impact on the livability for current residents. Nevertheless, it remains a shared goal to update what can be updated, when it can be updated, so that the system reaches higher performance standards and as a result reduces the flood risk in the neighborhood.

STREETSCAPE IMPROVEMENTS

Benefits Equity, flood risk reduction, public health, microclimate regulation, ecological health

Timeline Near-term (3-5 years)


Category  Safe in the Neighborhood

Resilience Houston Targets

-  GOAL 3
-  GOAL 6
-  GOAL 9
-  GOAL 10
-  GOAL 11
-  GOAL 12
-  GOAL 15

“[S]hift the focus to people-centric neighborhoods and away from car-centric ones”
(Resilient Houston, page 121)

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<ol style="list-style-type: none"> 1 Conduct neighborhood-wide assessment to determine necessary drainage system improvements 2 Work with HPW and private partners to design and implement improvements 3 Incorporate into CIP plan and/or create partnerships 4 Assess drainage system performance every 5-10 years 	HPW		PRIVATE DEVELOPER/ CORPORATION	COH GENERAL FUND, STORMWATER UTILITY FEES	# of improvement projects constructed and or programmed, funding secured

PROJECTS

EXPAND TREE CANOPY AND CREATE GREEN CORRIDOR NETWORK

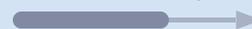
CROSSTIMBERS, N. MAIN AND YALE ST. CORRIDORS ENHANCEMENTS

Plant trees to increase beautification, reduce heat stress and improve energy security through microclimate regulation, reduce air pollution, increase water infiltration, and reduce and run-off, particularly along Crosstimbers Street and Yale Street, and to expand green corridor network along neighborhood streets and strengthen connection to the City's bayou greenway network, specifically Little White Oak Bayou.

During Winter Storm Uri many fruit trees in the neighborhood died. Bringing back these trees and expanding the tree canopy in the neighborhood measurably contributes to mitigating the urban heat island effect by providing shade and increasing vegetative cooling.

Benefits Equity, flood risk reduction, public health, microclimate regulation, ecological health

Timeline Near-term (3-5 years)



Category  Safe in the Neighborhood

Resilience Houston Targets



GOAL 6



GOAL 10



GOAL 11



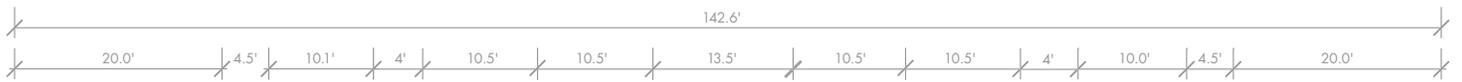
GOAL 12



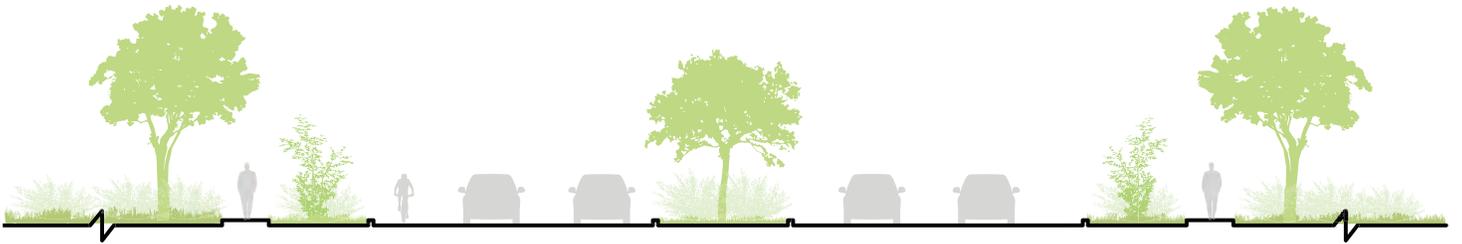
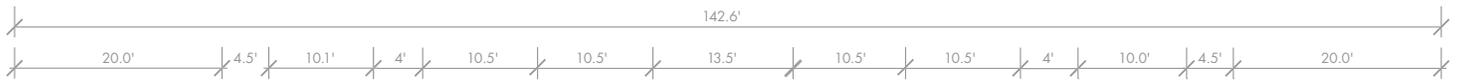
GOAL 15

“By focusing on planting trees and vegetation in areas with minimal green space and improving shade in areas without it, Houston can also address environmental injustice and improve neighborhood equity” *(Resilient Houston, page 80)*

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<ol style="list-style-type: none"> 1 Conduct feasibility study to determine optimal planting plan for increasing tree canopy in tandem with optimal street design 2 Conduct community preference survey on the expansion of the tree canopy and street design options 3 Coordinate community-led tree planting 4 Work with private partner to implement street design improvements 	PD	Independence Heights Super Neighborhood 13	HPW, Trees for Houston, Houston Wilderness, METRO, Private Developer/ Corporation	PD, COH General Fund, Stormwater Utility Fee	Percent increase in neighborhood tree canopy; linear feet of shading provided along pedestrian corridors; # of bus stops and shelters shaded

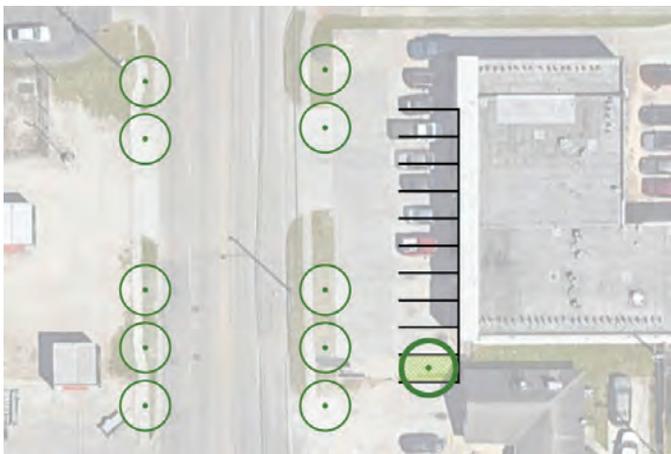


Existing condition



Adding tree corridor

Crosstimmer Street Sections



An example of taking 10% parking space at commercial area



Expand City-proposed bike lanes into multi-modal greenways with continuous and shaded sidewalks

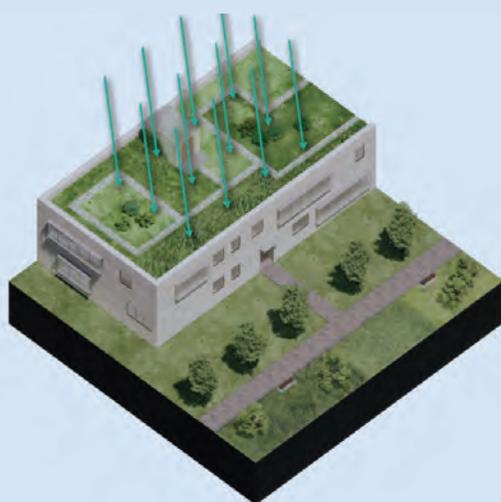
PROJECTS

PILOT SMALL-SCALE GSI PROJECTS

Demonstrate small-scale (GSI) outside on private property focusing on teaching the community how raingardens, bioswales, and other GSI features can be constructed and maintained on their property.

Part of increasing the community's knowledge and awareness of GSI as an affordable and effective tool to improve both their property and their neighborhood is to pilot demonstration projects across the neighborhood. Demonstration projects help remind people of GSI when they go to make changes to their property, it shows how GSI works to not just give it credibility as a solution to many resilience challenges but also generates buy-in to the method as a whole, and shows a few ways of installing GSI features at home. The locations for these pilot projects can be either at

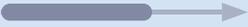
residential properties or at community properties, such as a church or the neighborhood's community center, but they should have fun and engaging signage to compel passersby to stop and learn about what they are experiencing. Create and Disseminate Educational Material on GSI Best Practices:



Example of a green roof.

GREEN STORMWATER INFRASTRUCTURE

Benefits Equity, flood risk reduction, public health, microclimate regulation, ecological health

Timeline Near-term (3-5 years)


Category  Safe in the Neighborhood

Resilience Houston Targets

-  GOAL 6
-  GOAL 10
-  GOAL 11
-  GOAL 12

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<p>1 Work with private partner to implement small-scale GSI best practices for Houston</p>	HPW		PD, Private Developer/ Corporation	Depends on land ownership Private land - Private charitable organizations, US-DOT, TxDOT, US-FS; Public land - Stormwater Enterprise Fund, TIRZ General Revenue, COH Council District Funds, COH CIP.	Higher rate of permeable paving and tree canopy
<p>2 Create educational programs, materials, and other activities to disseminate best practices through the community</p>					
<p>3 Identify CBO to host educational events and activities</p>					



Street	Proposed Street Trees	Proposed trees in the existing median	Trees added in parking lot
Crosstimbers St.	726	218	157
North part of Yale St.	488	115	28
South part of Yale St.	394	68	131
Main St.	404	0	16
Sum	2012	401	332

LEGEND

- POTENTIAL IN-FILL DEVELOPMENT AREAS
- PARKING LOT ADJACENT TO PROPOSED STREETS

Location of Crosstimbers, N. Main and Yale St. Corridors Enhancements

PROJECTS

ESTABLISH AND MAINTAIN GSI BEST PRACTICES

Create GSI best practices for Independence Heights to showcase and demonstrate best practices for the use of GSI on private property to increase awareness of how GSI as a resilience tool and provide education on how to install GSI for DIY-ers. At the neighborhood level in Independence Heights, it is

proposed to implement development best practices for designing and implementing GSI in Houston in order to foster implementation of green stormwater infrastructure (GSI) in the neighborhood. Once best practices have been established, creating demonstration installations in the neighborhood of bioretention planters, rain gardens, and other features.



Bioswales and water detention example.

GREEN STORMWATER INFRASTRUCTURE

Benefits Equity, flood risk reduction, public health, microclimate regulation, ecological health

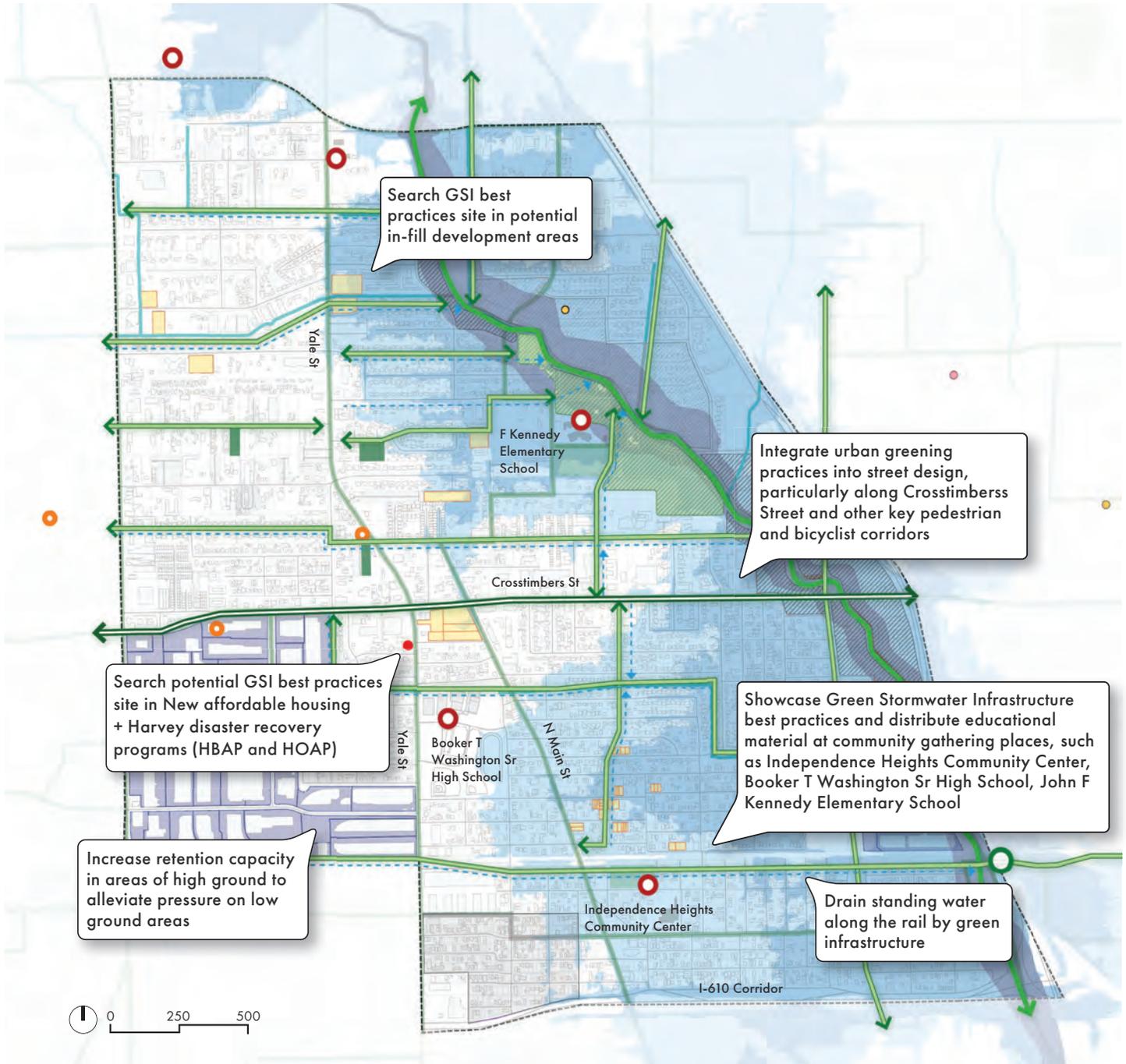
Timeline Near-term (3-5 years)


Category  Safe in the Neighborhood

Resilience Houston Targets

-  GOAL 6
-  GOAL 10
-  GOAL 11
-  GOAL 12

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<ol style="list-style-type: none"> 1 Find demonstration site, such as Booker T Washington High School 2 Work with private partner to design and implement demonstration, and support ongoing biannual maintenance requirement 3 Identify CBO to host educational events and activities 	HPV	Independence Heights Super Neighborhood 13	PD, Private Developer/ Corporation	TBD	Higher rate of permeable paving and tree canopy



LEGEND

HOUSING RESILIENCE

- POTENTIAL IN-FILL DEVELOPMENT AREAS
- NHPD ASSISTED HOUSING
- AFFORDABLE HOUSING
- HARVEY DISASTER RECOVERY (DR-17)**
- HOMEBUYER ASSISTANCE PROGRAM (HBAP) COMPLETED PROJECTS (MARCH 2022)
- HOMEOWNER ASSISTANCE PROGRAM (HOAP) COMPLETED PROJECTS (MARCH 2022)

BASIC INFRASTRUCTURE UPGRADES

- PROPOSED MULTI-MODAL TRANSIT - PRIMARY
- PROPOSED GREENWAY
- GREENWAY ALONG BAYOU

CAPACITY BUILDING

- RESILIENCE HUBS CANDIDATES

FLOOD RISKS REDUCTION

- PROPOSED AREAS FOR DEPAVING
- PROPOSED CONSERVATION EASEMENTS

Location of Potential GSI on Residential Properties

PROJECTS

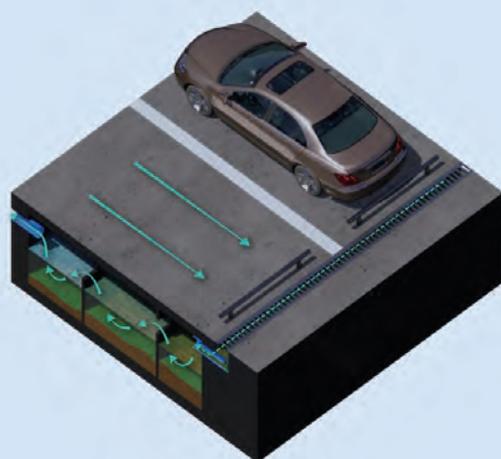
CREATE AND DISSEMINATE GSI EDUCATIONAL MATERIALS

GREEN STORMWATER INFRASTRUCTURE

Create GSI educational material to showcase and demonstrate best practices for the use of GSI in Houston on for homeowners and business owners to increase awareness of how GSI as a resilience tool and provide education on how to install GSI for DIY-ers.

Once best practices have been established, sharing the practices information with the community to

increase awareness and develop local knowledge on how and why to install GSI is recommended. Creating programs around demonstration gardens, providing signage for self-guided tours, and other hands-on materials for the community to self-educate about what GSI is and how it best works in their neighborhood is recommended.



Capturing rain water in below the surface parking.

“Property owners and developers have a significant role in embracing greener practices for stormwater infrastructure if provided with alternatives on how best to use and incorporate them”
(Resilient Houston, page 50)

Benefits Equity, flood risk reduction, public health, microclimate regulation, ecological health

Timeline Near-term (3-5 years)

Category Safe in the Neighborhood

Resilience Houston Targets GOAL 1, GOAL 6, GOAL 10, GOAL 11, GOAL 12

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<ol style="list-style-type: none"> 1 Work with private partner to develop GSI best practices for Houston 2 Create educational programs, materials, and other activities to disseminate best practices through the community 3 Identify CBO to host educational events and activities 	HPW	Independence Heights Super Neighborhood 13	PD, Private Developer/ Corporation	TBD	# of individuals + businesses reached; # of GSI projects installed

EXPAND FLOODWATER CAPACITY AND GREENWAY NETWORK ALONG BAYOUS

EXPAND CAPACITY OF LITTLE WHITE OAK BAYOU + I-45 INTEGRATION

According to *Living with Water* report findings harness Little White Oak Bayou as a flood management tool, greenway, and multiuse path to reduce flood risk, improve ecological health and natural cooling, and provide multimodal connection through the neighborhood; and coordinate I-45 expansion to support and implement the bayou expansion and improvements, and to mitigate negative impacts on the neighborhood and harness the development to achieve positive impacts including the protection of the Conservation District and identified cultural assets.

Benefits Equity, flood risk reduction, public health, microclimate regulation, ecological health

Timeline Long-term (6+ years) 

Category  Safe in the Neighborhood

Resilience Houston Targets

-  GOAL 3
-  GOAL 6
-  GOAL 9
-  GOAL 10
-  GOAL 11
-  GOAL 12
-  GOAL 16
-  GOAL 18

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<ol style="list-style-type: none"> 1 Improve Little White Oak Bayou channel conveyance and resolve conflicts with roads and bridges 2 Support ongoing HCFCD projects; 3 Work with community to submit Citizen’s Request Service to HCFCD for the planting of trees along the Bayou 4 Work with private partners to conduct assessment of the bayou for expanded detention capacity for floodwater runoff, design and implement bayou detention expansion and redesign so that Little White Oak Bayou becomes part of Houston’s growing network of bayou greenways 	HPW + HCFCD		Private Developer/ Corporation, UD-DOT, TxDOT	FEMA Hazard Mitigation Grants, HUD CDBG-DR, HUD CDBGMIT, USACE, HCFCD partnership funding, General Revenue, Stormwater Utility Fees	FEMA flood mapping update removes areas of the neighborhood from floodplain; Purple air quality measures improvements; Water quality improves; HVI is reduced

PROJECTS

ADVOCATE FOR AMENITIES ACCOMPANYING BAYOU CONSTRUCTION

EXPAND CAPACITY OF LITTLE WHITE OAK BAYOU + I-45 INTEGRATION

Expand neighborhood stormwater detention basins at the existing Riggs and Yale basins and coordinate I-45 expansion to complement and enhance the expansion and protect the Conservation District and identified cultural assets. HCFCD has plans to improve water flow along the bayous in Independence Heights, funded by a 2018 bond initiative (F-09 Little White Oak Bayou Channel Conveyance Improvements). The project is to design and construct a new stormwater detention basin in the Little White Oak watershed to capture stormwater near the southbound entrance of I-45 between Riggs Road and Stokes Street.

by working with local, State and Federal agencies to coordinate the expansion and redesign of I-45 in the neighborhood. Community leaders reached a memorandum of agreement between the City and TxDOT detailing how the decision-making process, namely the public participation component, will inform the design of and integration into of the I-45 changes in the neighborhood. The community can follow project updates through HCFCD public outreach.

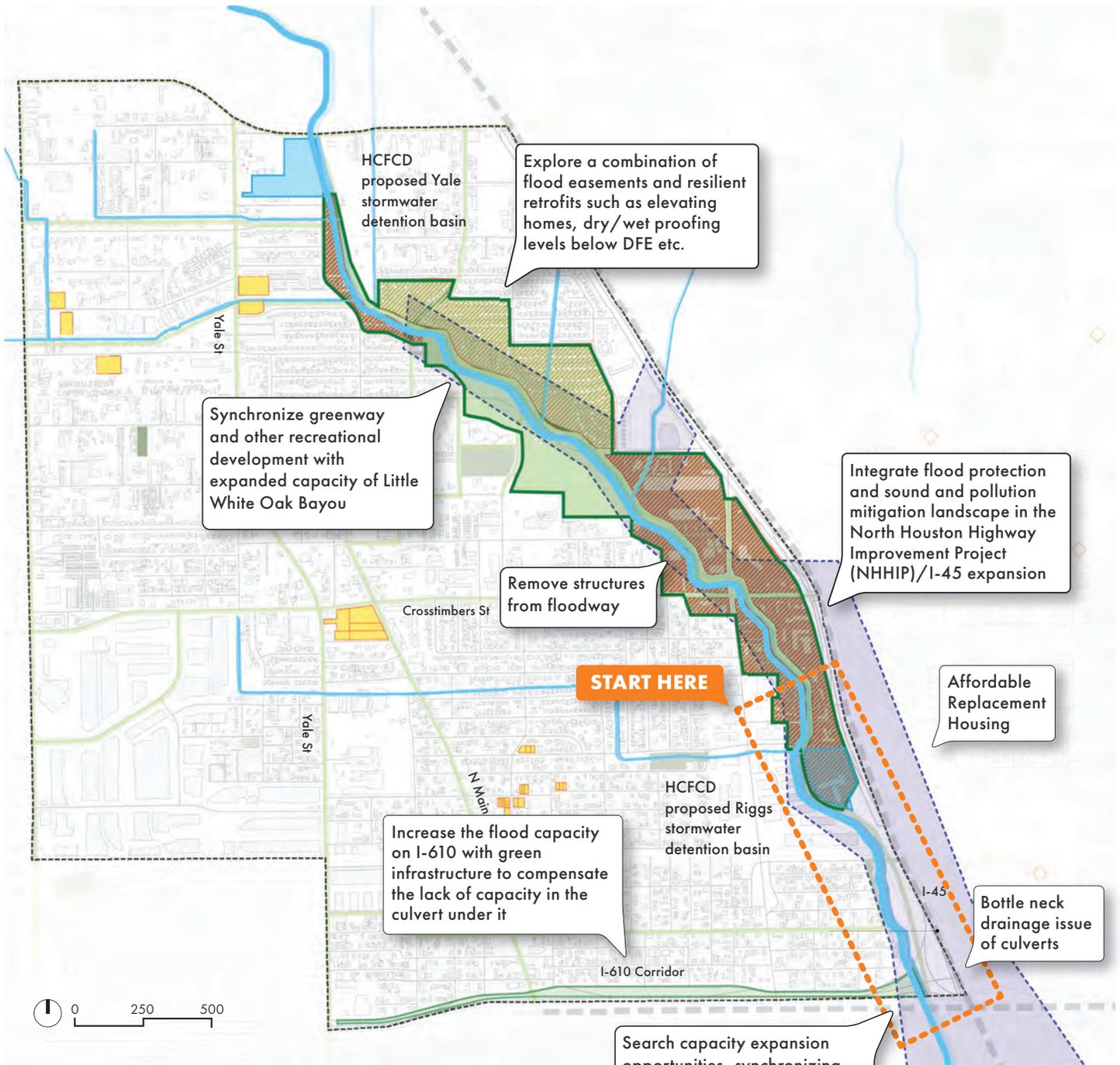
The community has demonstrated incredible advocacy and leadership

Benefits Equity, flood risk reduction, public health, microclimate regulation, ecological health

Timeline Long-term (6+ years)


Category  Safe in the Neighborhood

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<ol style="list-style-type: none"> 1 Support ongoing HCFCD projects 2 Work with community to submit Citizen’s Request Service to HCFCD for the planting of trees along the Bayou 3 Work with private partners to conduct assessment of the bayou for expanded detention capacity for floodwater runoff, opportunities for the integration of recreational uses, such as a playground or basketball court, and opportunities for additional vegetation such as native trees and shrubs 4 Design and implement bayou detention expansion and redesign 	HCFCD,	HPW	Independence Heights Super Neighborhood 13	2018 BOND	FEMA flood mapping update removes areas of the neighborhood from floodplain; Purple air quality measures improvements; Water quality improves; HVI is reduced



LEGEND

FLOOD RISKS REDUCTION

- PROPOSED CONSERVATION EASEMENTS
- PROPOSED BUYOUT / EASEMENT AREA
- RETROFITS FOR RESILIENT STRUCTURES
- RECOMMENDED DRAINAGE AND FLOOD RISK MANAGEMENT PROJECT AREA

Location of Drainage Improvements

PROJECTS

REDUCE SOUND POLLUTION

EXPAND CAPACITY OF LITTLE WHITE OAK BAYOU + I-45 INTEGRATION

Continue to balance the I-45 road improvements with neighborhood resilience goals, while also seeking opportunities to harness the I-45 improvements for positive changes in the neighborhood including the protection of the Conservation District and identified cultural assets as described in the *Living with Water* report findings. Specifically explore methods to reduce sound pollution along IH-45 and portions of I-610, such as sound barrier berm, wall, and/or trees and shrubs

Benefits Equity, flood risk reduction, public health, microclimate regulation, ecological health

Timeline Long-term (6+ years)

Category  Safe in the Neighborhood

“All of the elements of a resilient city come together along our bayous: flood risk reduction and climate adaptation measures meet healthy ecosystems and healthy communities; safe and high-quality trails provide new ways to get around the city and drive economic development; arts and cultural practices lift up the Bayou City identity; and neighborhood connections to and along our bayous provide equitable access to these amenities”

(Resilient Houston, page 104)

STEPS	LEAD		PARTNERS	FUNDING	METRICS
	CITY	NEIGHBORHOOD			
<ol style="list-style-type: none"> 1 Support ongoing HCFCFCD projects 2 Work with private partners to conduct assessment of the bayou for soundproofing purposes 	HPW, TxDOT		Independence Heights Super Neighborhood 13	TBD	80 dba or less achieved at majority of residential properties



NEXT STEPS & IMPLEMENTATION

With any plan, the planning work continues past plan adoption. Ongoing work is carried out—by both the 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, the work really begins to allocate existing funds, and secure additional funds to execute the projects and programs included in the plan. Departmental budgets, the capital improvements plan, and other sources internal to the city have been tentatively identified for “city committed” projects. Additional funding is necessary to implement “aspirational” projects. The Funding Matrix, a living document attached as an addendum to this document, outlines a number of external funding sources as well as a number of funding mechanisms, like development impact fees, TIRZ and management districts. And while City Staff are a critical part in securing funding, this plan has been written to support the community and its leaders in seeking out funding for projects and programs in their neighborhoods as well.

Monitoring + Evaluation

The metrics established are designed to assess each of the plan’s projects efficacy in achieving the Independence Heights neighborhood’s vision for resilience, or what is also known as monitoring and evaluation.

The purpose of metrics is to tell us whether the projects and programs to improve neighborhood resiliency are working as intended. If the metrics show that progress is slower than desired or that the project is not as impactful as intended, there is an opportunity to change course and make the necessary adjustments to calibrate the projects and programs so that they will better and more quickly realize Independence Heights’s vision for neighborhood resilience.

Generally there are two types of metrics, those that track progress toward a goal or objective, and those that measure outcomes and performance of a strategy or action. For Independence Heights, the plan’s success is tracked according to the

following metrics:

- # of art pieces installed in neighborhood
- # of individuals + businesses reached
- # of structures weatherized and/or removed from floodplain; # of individuals reached through educational outreach; # of neighborhood residents trained and employed
- # of residents within 1000 feet of resilience hub; # of resilience hubs secured from stressors and shocks (e.g. floodproofed); # of resilience hubs providing programming and other services
- percent increase in neighborhood tree canopy; linear feet of shading provided; # of bus stops and shelters shaded; economic improvements
- # of improvement projects constructed and or programmed, \$ spent on improvements
- # of receptacles, # of solid waste-related complaints
- # of people reached with educational materials; # of DIY rain gardens constructed
- # of improvements, miles of

METRIC 1



of art pieces installed in neighborhood

METRIC 2



of individuals + businesses reached

METRIC 3



of structures **weatherized** and/or removed from floodplain;



of individuals reached through

educational outreach;



of neighborhood residents **trained and employed**

METRIC 4



of residents within **1000 feet of resilience hub**



of resilience hubs secured from stressors and shocks (e.g. floodproofed)



of resilience hubs providing programming and other services

improvements, \$ spent and/or obligated.

Living Document

The plan is designed as a living document, or a document that is periodically updated to maintain its relevancy to the neighborhood and community, and to keep up with best practices in resilience over the document’s lifespan. 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 proposal 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 Modification minimally affects the plan’s vision and the associated projects, and is conducted to improve the plan’s accuracy, efficacy, and fundability.

Major Modification is somewhat impactful to the overarching plan vision and projects, and is conducted to adjust the scope and type of work proposed so as to improve the plan’s accuracy, efficacy, and fundability.

Minor Amendment is a minimal adjustment to the plan, such as a data update, that impacts but does not substantially alter the underlying assumptions of the community engagement findings, vulnerability

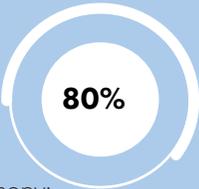
assessment, resilience vision, or recommended projects, but is necessary to carry out for plan accuracy, efficacy, and fundability.

Major Amendment substantially adjusts the plan, such as a data update, that alters the underlying assumptions of the community engagement findings, vulnerability assessment, resilience vision, or recommended projects, and is necessary to carry out for plan accuracy, efficacy, and fundability.

Supplemental Attachment minimally affects the plan’s vision and the associated projects, and is conducted to add substantially new data, findings, or projects. 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.

METRIC 5

percent  **80%**

increase in neighborhood tree canopy;

linear feet of shading provided;

of bus stops and shelters shaded; economic improvements

METRIC 6

of improvement projects constructed and or programmed,

\$ spent on improvements

METRIC 7

of receptacles,

of solid waste complaints

METRIC 8

of people reached with **educational materials**;

of DIY

METRIC 9

miles of improvements,

\$ spent and/or obligated.

APPENDIX

ACRONYMS

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

DEPARTMENT & OFFICE ACRONYMS

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

APPENDIX

ENDNOTES

EXECUTIVE SUMMARY

1 *Resilient Houston*: 130

THE PROCESS

2 *Climate Impact Assessment*: 9

3 *Ibid*: 7

4 NOAA National Centers for Environmental Information State Climate Summaries 2022 Texas: <https://statesummaries.ncics.org/chapter/tx/> (Accessed: 26 Feb 2023).

5 It is recommended that the community work in partnership with the City where funding and staffing permits. Doing so establishes buy-in with a wider group of stakeholders and creates greater credibility when the City stands behind the plan.

6 Stockholm Resilience Centre www.stockholmresilience.org/research/research-news/2015-02-19-what-is-resilience.html

7 National Academies of Sciences, Engineering, and Medicine www.nationalacademies.org/topics/resilience/

8 *Resilient Houston* (targets and goals table).

9 https://cops.usdoj.gov/html/dispatch/04-2015/a_new_procedural_justice_course.asp

THE NEIGHBORHOOD

10 <https://www.ejnet.org/ej/principles.pdf>

11 Quotation from anonymous resident at a Neighborhood Resilience Planning public engagement event.

12 AccelAdapt, 2023.

13 Houston Galveston Area Council Basin Highlights Report: <https://datalab.h-gac.com/BHR2017/index.html>

14 Community members voiced concern about the stormwater impacts of new development, so it's important to highlight that new development is being built to substantially higher requirements than original development, so should not have the same neighborhood wide effects that previous development activity has had. The Robin's Landing is designed to meet the City's low impact development requirements and Harris County Flood Control's Atlas 14 standards, which means the development is designed not to exacerbate stormwater flooding through design features such as on-site detention ponds and stormwater system upgrades.

15 Tree Equity Score: <https://treeequityscore.org/map/#11.06/29.7811/-95.286>

16 Environmental Protection Agency: <https://www.epa.gov/green-infrastructure/reduce-urban-heat-island-effect>

17 CDC Social Vulnerability Index (SVI 2020) dataset based on the American Community Survey (ACS)

THE PLAN

Resilient Houston: 72

18 Crimmins, A., et al., Executive Summary, in *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. 2016, U.S. Global Change Research Program: Washington, DC. p. 1–24.

19 *Resilient Houston*: 141

20 *Ibid*: 50

21 Green infrastructure varies greatly in type, and with it the associated maintenance requirements. Generally, GSI has lower maintenance costs because GSI uses natural systems that are fundamentally self-regulating or self-sustaining.

The City of Portland, for example, reports a biannual maintenance requirement for the City's urban bioretention planters in the public right-of-way. Additionally, since GSI tends not to use turf grass, the associated mowing, weeding, aeration, watering, and fertilization requirements of maintaining turf grass are eliminated.

21 *Resilient Houston:* 108

22 *Ibid:* 79

23 <https://www.epa.gov/climate-adaptation/climate-adaptation-and-epas-role#:~:text=Adaptive%20capacity%20is%20the%20ability,or%20coping%20with%20the%20consequences.>)

24 *Resilient Houston:* 50

25 *Ibid:* 77

26 <https://www.energy.gov/energysaver/do-it-yourself-home-energy-assessments>

27 *Resilient Houston:* 50

28 *Ibid:* 81

29 Houston Public Library has partnered with Habitat for Humanity to bring a new library to the Robin's Landing. The proposed location is outside of the floodplain and more centrally within the neighborhood, and will be in a newly constructed building. The re-establishment of a neighborhood library brings back a critical public space and facility into the neighborhood, and may service some passive resilience functions such as a cooling or heating center, charging center, internet cafe, job center, and others, but cannot serve as a resilience hub. The Robin's Landing is designed to meet the City's low impact development requirements and Harris County Flood Control's Atlas 14 standards, which means the development is designed not to exacerbate stormwater flooding through design features such as on-site detention ponds and stormwater system upgrades.

30 *Resilient Houston:* 81

31 *Ibid:* 121

32 *Ibid:* 50

33 *Ibid:* 63

34 *Ibid:* 97

35 City of Houston's Tree Planting Guidebook: https://www.houstontx.gov/parks/pdfs/2015/TreePlantingGuideBooklet_Eng.pdf

36 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 destination within fifteen minutes of walking or biking from their home or workplace.

37 *Resilient Houston:* 80

38 *Ibid:* 96

38 *Ibid:* 104

APPENDIX

RESILIENCE DEFINITIONS AND 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.

Adaptive Capacity is the, “ability of a human or natural systems to adjust to climate change (including climate variability and extremes) by moderating potential damages, taking advantage of opportunities, or coping with the consequences.”²³

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.

Remove from the floodplain means many things. It can mean:

- Relocating residents, demolishing buildings, and maintaining new open space;
- Elevation of the structures on the property above the floodplain elevation;
- Changing topography, providing flood barriers, and other physical barriers that remove a property from the floodplain;
- Expansion and enhancement of stormwater infrastructure that removes property from the floodplain

Flooding (also “Inundation”)

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, put added strain on infrastructure systems such as roadways and sewers, and cause minor property damage.

Subsidence is the sinking of the ground because of underground material movement—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.



Map of the Sims Bayou watershed

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 ecosystem.

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.

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.

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.

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. As 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.

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

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 the 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

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: typically a connected network of subsurface concrete pipes

Green Infrastructure & Nature-based 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 stormwater 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 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 aesthetic and recreation.

Evapotranspiration is the sum of all processes by which

1% or 0.2% chance of flood: 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

Drainage system: 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.

water moves from the land surface to the atmosphere via evaporation and transpiration, through in this way, trees can effectively 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

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.

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.

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.

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, reducing unwanted heat gain by installing a cool roof or planting trees along the southern building exposure, and many more.

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. This is an important consideration when assessing risk in Edgebrook, whose flooding has historically been far more extensive than the FEMA floodplains indicate.

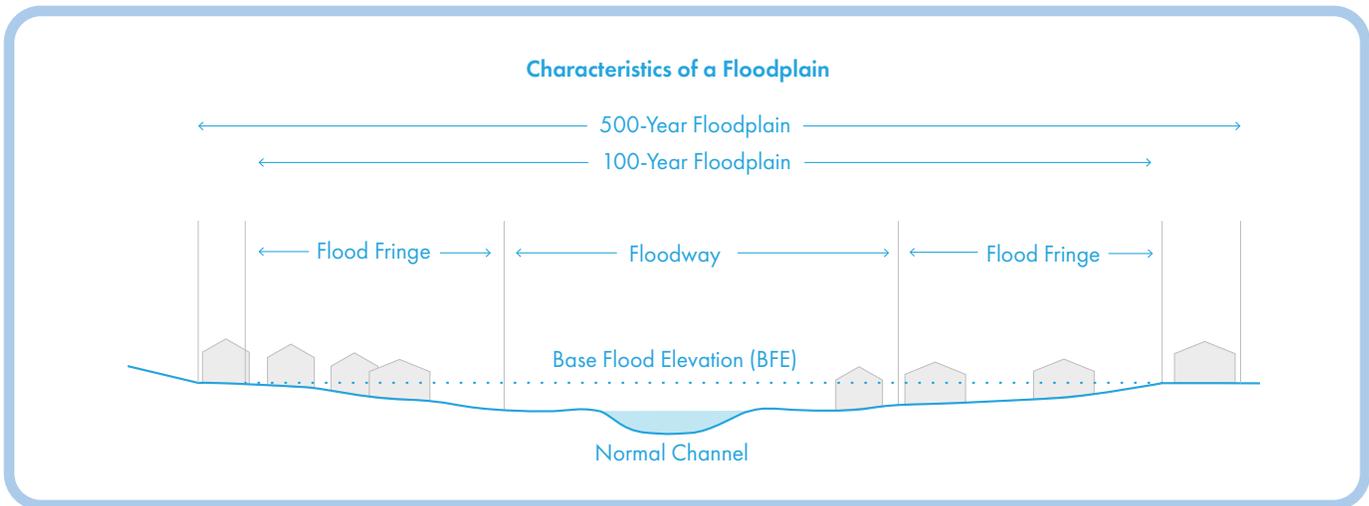


Diagram of the floodplain

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 (e.g. Winter Storm Uri).

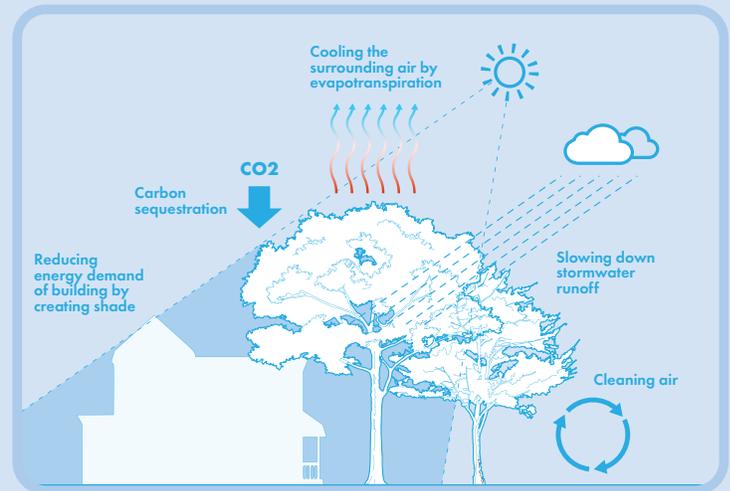
Procedural justice refers to the idea of fair processes, and how people's perception of fairness is strongly impacted by the quality of their experiences and not only the end result of these experiences.

Community Planning

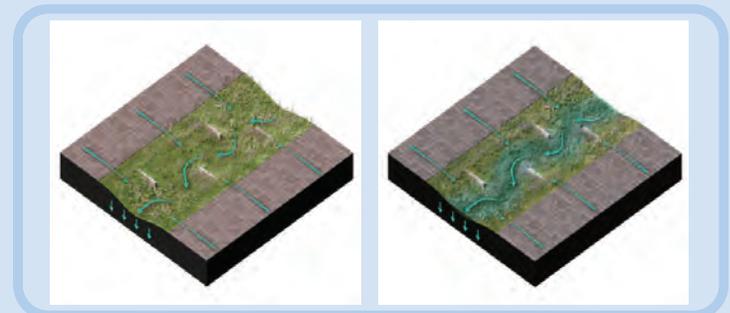
Complete Communities is to build one complete city from recovery to resilience by championing the voices of residents that have been ignored for far too long and offering every Houston resident the foundational resources needed to thrive. We work across private, public, and nonprofit sectors to collectively overcome economic, environmental, and equity challenges to transform Houston's legacy into one everyone can be proud of.

The Fifteen 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 destination within fifteen minutes of walking or biking from their home or workplace.

Living with Water: The City of Houston and partners hosted two Living with Water workshops 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



How a tree cools



Dry or wet bioswales

federal agencies, and community stakeholders.

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; our diverse neighborhoods and watersheds; City departments; and local, regional, and partners. 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.

Houston Climate Action Plan provides evidenced-based



Priority Shocks and Stresses for Houston

measures to reduce greenhouse gas emissions and preventative measures to address the negative outcomes of climate change. The plan will demonstrate how the City will adapt and improve its resilience to climate hazards that impact the city today as well as 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 (5) 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 are roofs that reflect the sun's energy back instead of absorbing the heat. The heat absorbed is passed to the building, which translates as 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.

Resilience is a process.

**In the Independence Heights
Neighborhood Resilience Plan
you will find short-term projects
that will start to create change
soon, but also longer-term
projects that will still take work.**

**Use this document to learn
about your vulnerabilities, read
about the projects, be inspired
to develop new initiatives,
and build the partnerships
necessary to continue creating
change in the community.**



**PLANNING &
DEVELOPMENT
DEPARTMENT**



one architecture

