CITY OF HOUSTON | HOUSING AND COMMUNITY DEVELOPMENT DEPARTMENT

DRAFT ACTION PLAN

FOR DISASTER RECOVERY

2021 WINTER STORM

SUBSTANTIAL AMENDMENT #1

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A. Amendment 1 Summary of Changes

Overview. The plan has been updated to reflect the changes made to the list of programs and the associated budget proposed by this Amendment. Using the same amount of funding, this Amendment proposes to replace the Public Services program. The entirety of the $550,000 proposed to fund the Public Services program will be used to fund the Neighborhood Facilities Resilience Program.

Section B. Executive Summary

Table 1 was amended to reflect the proposed budget changes, and the narrative was updated to reflect these proposed changes.

Section C. Unmet Needs Assessment

Subsection 1.c. Summary of Disaster Impacts was amended to include a discussion on disasters that occurred since the submission of the original Plan, as well as changes to improve wording and readability.

Subsection 2.a. *Disaster Damage and Impacts-Housing* was amended to improve wording and readability.

Subsection 4. Economic Revitalization Unmet Need a. Disaster Damage and Impacts – Economic Revitalization was amended to improve grammar.

Section D. General Requirements

Subsection 1. Citizen Participation b. Public hearings were amended to change to the past tense when discussing the public hearings that have already taken place.

Subsection 4. Displacement of Persons and Other Entities was amended to add clarity by giving examples of public uses under which eminent domain would be allowable under CDBG-DR guidelines.

Subsection 5. Protection of People and Property, including a. Elevation Standards and b. Flood Insurance Requirements, were amended to add the clarifying language.

Section E. Grantee Proposed Use of Funds

Subsection 2. The Program Budget was amended to include the proposed budget changes. Goals were reduced for the Winter Storm Home Repair Program to reflect the increase in the maximum award amount for the Reimbursement Pathway.

Subsection 7. Program Details of the Winter Storm Home Repair Program were amended to adjust the application priority phases, add clarifying language to the selection/criteria/award methodology, and increase the “Max Award” amount from $6,000 to $10,000 for the Reimbursement pathway.

Section F. Appendix

Subsection 3. Summary and Response of Public Comments was amended to add a new section “a. Amendment 1”, which will include the summary of public comments received during the comment period for this draft Amendment after the end of the comment period.

Subsection 7. Projections were updated.

B. Executive Summary

Overview. The U.S. Department of Housing and Urban Development (HUD) announced that the *City of Houston* will receive *$50,095,000* in funding to support long-term recovery efforts following the *2021 Winter Storm (the 2021 Winter Storm)* through the *Office of the Assistant Secretary for Community Planning and Development, HUD*. Community Development Block Grant-Disaster Recovery (CDBG-DR) funding is designed to address remaining needs after all other assistance has been exhausted. This plan details how funds will be allocated to address these remaining unmet needs.

To meet disaster recovery needs, the statutes making CDBG-DR funds available have imposed additional requirements and authorized HUD to modify the rules that apply to the annual CDBG program to enhance flexibility and allow quicker recovery. HUD has allocated *$50,095,000* in CDBG-DR funds to the *City of Houston* in response to the *2021 Winter Storm (2021 Freeze) (FEMA DR-4586)* through the publication of the Federal Registers, *Vol. 87, No. 100, Tuesday, May 24, 2022 (*https://www.hud.gov/sites/dfiles/CPD/documents/CDBG-DR/87_FR_31636.pdf*)* and *Vol. 88, No.11, January 18, 2023* (https://www.govinfo.gov/content/pkg/FR-2023-01-18/pdf/2023-00721.pdf). This allocation was made available through *the Disaster Relief Supplemental Appropriations Act, 2022 (Pub. L. 117-43) approved September 30, 2021, and Continuing Appropriations and Ukraine Supplemental Appropriations Act, 2023 (Pub L. 117, 180 approved September 30, 2022*.

1. Disaster Specific Overview

In February 2021, severe winter storms plagued the State of Texas for almost a week. The 2021 Winter Storm (Winter Storm Uri or the 2021 Freeze) was a severe weather event in which a record amount of snow and ice impacted the entire State of Texas, including the City of Houston. The 2021 Winter Storm lasted for 5 days, February 13 -17, 2021, and on February 20, 2021, the President of the United States approved a Texas Disaster Declaration. With the State's power grid unable to produce electricity, an estimated 70% of Texans lost power and almost 50% did not have access to water.[1] The record snow and ice created hazardous travel conditions, restricting access to shelters, grocery stores, hospitals, and other services. Because of these conditions, over 200 people perished, and the estimated direct and indirect financial loss ranges from $80 to $130 billion[2], with an insured loss estimated at $10 - $20 billion[3].

With extremely low temperatures, including a low of 13 degrees on Tuesday, February 16, 2021, many Houstonians lost power and water. The *Winter Storm Uri Survey* conducted by the University of Houston estimated that 91% of Houston area residents lost power, which is significantly higher than in other counties. Houston area residents also seemed to experience a disproportionate water loss compared to other Texas counties, with 65% of the population without water during the storm. Because of the freezing temperature, about 38% of Houstonians experienced bursting pipes and suffered water damage, and despite the risk of carbon monoxide poisoning and other hazards, many Houstonians took extreme measures to stay warm

- 34% of Houstonians used natural gas ovens or cooktops
- 9% used a grill or smoker indoors
- 8% used an outdoor propane heater indoors[4]

[1] *The Winter Storm of 2021 Survey*, University of Houston, March 19, 2021. Available at https://uh.edu/hobby/winter2021/.
[2] Brian K. Sullivan, Texas Deep Freeze Could Cost $90 Billion in Losses, Bloomberg, February 24, 2021.Available at https://www.bloomberg.com/news/articles.
[3] Garrett Golding, Anil Kumar, and Karel Mertens, *Cost of Texas' 2021 Deep Freeze Justifies Weatherization*, Federal Reserve of Dallas, April 15, 2021. Available at https://www.dallasfed.org/research/economics/2021/0415.aspx
[4] *The Winter Storm of 2021 Survey – Harris County*, University of Houston, March 19, 2021. Available at https://uh.edu/hobby/winter2021/ .

Given the severe conditions, the State of Texas' 87th Legislature took action to mitigate extreme power outages; however, some residents have yet to recover, both physically and financially, from the impacts of the 2021 Winter Storm. While many residents have recovered, they may not be prepared for another freeze. With rapid climate change, a freeze may be likely to occur again, and many homes are not weatherized and cannot withstand such extreme temperatures and weather conditions.

On March 22, 2022, HUD allocated nearly $3 billion in Community Development Block Grant Disaster Recovery (CDBG–DR) funds appropriated through the Disaster Relief Supplemental Appropriations Act, 2022 for major disasters occurring in 2020 and 2021, which includes the 2021 Winter Storm. On May 24, 2022, HUD published a Federal Register notice titled *Allocations for Community Development Block Grant Disaster Recovery and Implementation of the CDBG–DR Consolidated Waivers and Alternative Requirements Notice*, 87 Fed. Reg. 100, 31636 ("87 FR 31636") about the $2.2 billion in CDBG-DR funds allocated to grantees recovering from qualifying disasters in 2021 such as the 2021 Winter Storm. This, and any subsequent notices, describe grant requirements and procedures applicable to CDBG-DR funds.

These funds have been allocated to help communities with long-term recovery and restoration from disasters like the 2021 Winter Storm and to implement mitigation activities that reduce risks in the most impacted and distressed (MID) areas in future disasters. This Action Plan will provide a framework for how CDBG-DR funds will be utilized to achieve these goals, and it will include a needs assessment that will review unmet housing, infrastructure, and economic recovery needs along with the estimated damage and impacts. The needs assessment will guide the development and prioritization of planned recovery and mitigation activities, particularly in MID areas.

2. Summary

Given the disruption and damage caused by the 2021 Winter Storm and the compounding impacts from previous disasters, unmet needs in the City of Houston remain significant. The City is committed to addressing these needs and supporting an equitable disaster recovery process that leverages other resources to support the recovery effort.

The City of Houston Housing and Community Development Department (HCD) used available data and conducted resident and stakeholder engagement to produce an unmet needs assessment. The resident and stakeholder engagement included a resident survey, a stakeholder survey, stakeholder interviews, a public hearing, and two 30-day comment periods. The public hearing was recorded and made available to the public following the meeting on HCD's Long-Term Disaster Recovery website (https://houstontx.gov/housing/dr.html#uri).

The unmet needs assessment and public engagement directly informed the strategies and funding decisions for the City's Community Development Block Grant Disaster Recovery for the 2021 Winter Storm (CDBG-DR21). Approximately, 102,783 households were impacted by the 2021 Winter Storm, and FEMA estimated $39,306,713 in verified residential loss.

The following table summarizes disaster impacts from the 2021 Winter Storm (FEMA DR-4586) with the program allocation amounts.

Table 1: Unmet Need and Proposed Allocation

Category	Remaining Unmet Need	% of Unmet Need**	Program	Program Allocation Amount	% of Program Allocation
Housing	$44,795,354	39%	Winter Storm Home Repair	$40,106,250	80.1%
Infrastructure	$2,000,000	2%		-	
Economic Revitalization	$5,738,372	5%		-	
Mitigation	$61,321,085	54%	Neighborhood Facilities Resilience	$7,284,000	14.5%
			Planning	$200,000	0.4%
			Administration	$2,504,750	5.0%

Source: HCD

The primary objectives of CDBG-DR21 are to assist Houston residents by repairing and reconstructing storm-damaged homes, reimbursing homeowners for eligible repairs to their homes, and creating more resilient neighborhood facilities that can support residents before, during, and after a disaster. The following activities will be funded using CDBG-DR21, Winter Storm Home Repair Program, Neighborhood Facilities Resilience Program, Planning, and Administration.

C. Unmet Needs Assessment

1. Overview

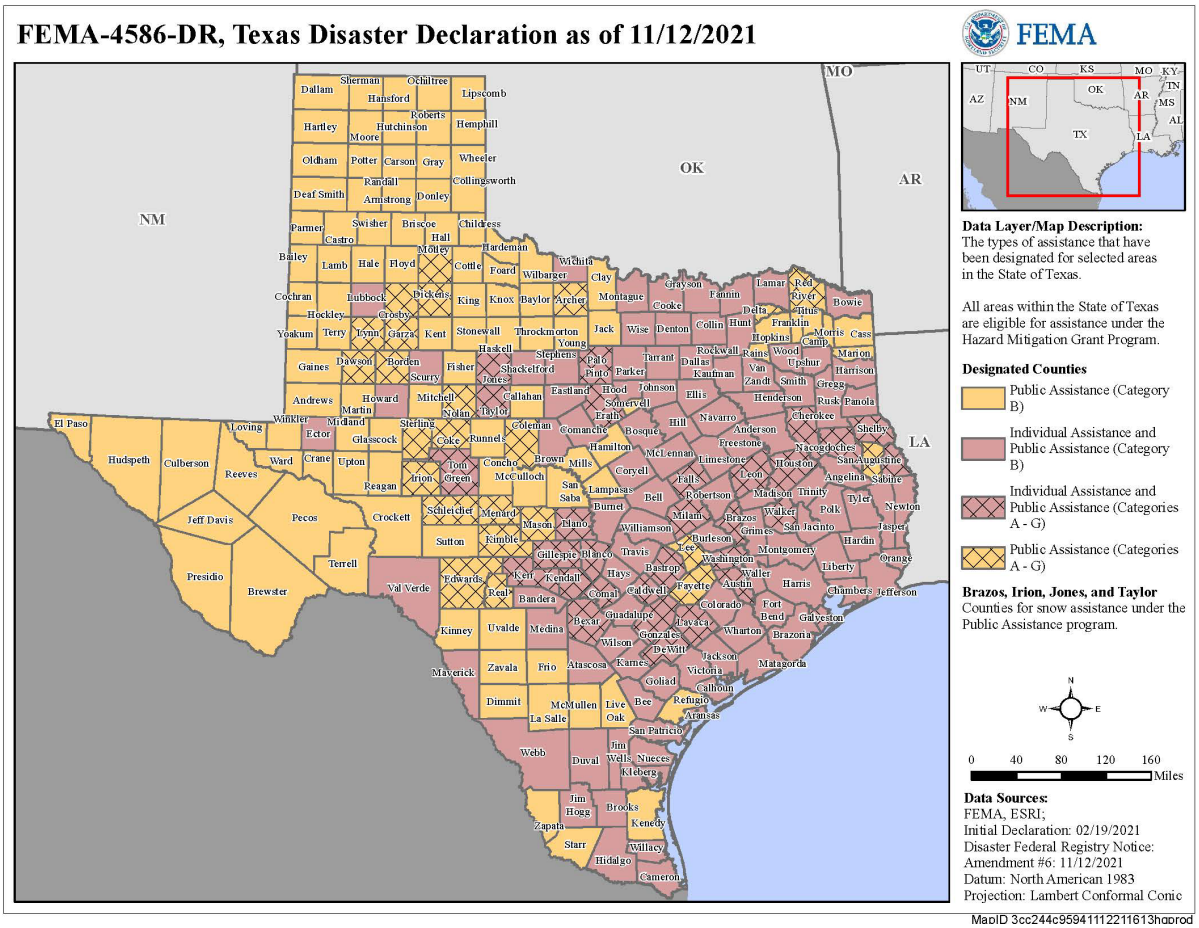
The City of Houston performed a needs assessment to identify the effects, long-term needs, and priorities for CDBG-DR funding.

The needs assessment includes specific details about unmet needs within the City of Houston. This includes details for housing, infrastructure, and economic revitalization. This assessment looks at pre-disaster needs and unmet recovery needs from the 2021 Winter Storm. It discusses additional assistance available to affected communities and individuals, such as insurance, or other assistance. New data may become available and adjustments or amendments to the Action Plan may be needed to incorporate this data.

a. Background

The following Federal Emergency Management Agency (FEMA) map illustrates the federally declared disaster areas and the type of FEMA funding approved for each impacted county from the 2021 Winter Storm. The entire City of Houston is within counties designated for FEMA Individual Assistance (FEMA IA). FEMA IA designation allows the individuals and households in these counties to apply for financial and direct services after a federally declared disaster.

Figure *1*: Map of DR-4586 Disaster Declaration Areas



Source: FEMA

b. HUD Designated Most Impacted and Distressed Areas

HUD has designated the entire City of Houston as a "Most Impacted and Distressed" area (MID area). The City will spend 100 percent of the CDBG-DR funds in the City of Houston.

c. Summary of Disaster Impacts

In mid-February 2021, a severe winter storm hit Texas leaving millions of people without power. The freezing temperatures caused disruptions in electricity and natural gas services, resulting in issues for Houstonians, including the loss of drinking water, chemical exposure from inside the home, and damage to buildings, including burst pipes causing additional damage to building interiors and personal property.

The 2021 Winter Storm hit Texas while residents continued to live under pandemic conditions wrought by the COVID-19 pandemic. Houstonians are also recovering from six flooding disasters preceding the 2021 Winter Storm beginning in 2015, including the largest disaster, Hurricane Harvey. After the 2021 Winter Storm, Houston was hit by two other disasters, a severe windstorm in May 2024 and Hurricane Beryl in July 2024. Multiple disasters have left Houstonians with compounding impacts including no financial savings, increased debt, continued deferred home maintenance, and other resilience challenges. These disasters have highlighted the need for continued disaster recovery, mitigation efforts, resilience planning, and programs in impacted and vulnerable areas.

Impacts from recent disasters have further exacerbated housing affordability in Houston, limiting housing options for low- and moderate-income (LMI) residents. Overall market conditions in the United States and the world show higher inflation and have limited the availability of building materials further causing housing construction and repair work to continue to increase in price. In addition, these repeated disasters have left many with unrepaired homes or worsened deferred maintenance issues, causing many homes to be more vulnerable to future disasters.

Although it may be costly to incorporate hazard mitigation or adaptation measures to protect against future extreme weather events and other natural hazards, it is necessary as more extreme weather events compound issues with existing infrastructure as described in the *U.S. Global Change Research Program Fourth National Climate Assessment*. However, the Department of Energy describes how weatherization reduces energy costs for low-income households by increasing the energy efficiency of their homes while ensuring their health and safety. The average weatherization of $4,695 of a home can save $283 in annual energy costs while protecting the home from future disaster damages.[5]

2. Housing Unmet Need

a. Disaster Damage and Impacts - Housing

As the City of Houston was recovering from FEMA-declared damage resulting from the floods in 2015 and 2016, Hurricane Harvey, and Tropical Storm Imelda, the city's housing stock was still rebounding. The 2021 Winter Storm has exposed new challenges to the City's approach to preparing for disaster events and reducing risk for all residents.

Overview of Data Sources

This section examines the data available to understand the impact the 2021 Winter Storm had on housing in Houston. Sources include FEMA Individual Assistance, Small Business Administration (SBA), the Texas Department of Insurance, and non-profit organizations, like Connective.

[5] U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy: https://www.energy.gov/sites/prod/files/2018/03/f49/WAP-fact-sheet_final.pdf

Limitations of Data

This section presents an analysis of data to reflect the damage caused by the 2021 Winter Storm in Houston and to demonstrate the ongoing unmet recovery needs of residents impacted by the 2021 Winter Storm. Ultimately, no single data source accurately captures all populations impacted by the 2021 Winter Storm. This Action Plan and unmet needs analysis capture a point in time and reflect the best available data at publication. In addition to using the methodology outlined by HUD to calculate housing unmet needs, other data and information are also used to validate the FEMA IA data and to get a more complete assessment of impacts and unmet needs.

- **FEMA Individual Assistance (IA)** – The Federal Emergency Management Agency (FEMA) Individual Assistance Program is the primary basis for establishing housing unmet recovery needs for CDBG-DR grantees. Residents register voluntarily for FEMA IA, and eligible applicants include renters and owners. FEMA Verified Loss awards only aid with repair and replacement to make the home habitable. Because of this, the full damage and recovery assistance needed for full recovery may not be documented through this program. In addition, there may be a gap between what the FEMA data indicates, and the true disaster impacts as it may not capture households that did not register for assistance due to a lack of knowledge of the program or certain immigrant resident's fear of applying for government assistance. However, it does provide data at the household level, including income and damage, needed to perform the calculation of unmet needs outlined in the Federal Register Notice.
- **Small Business Administration** – Similar to FEMA IA, the SBA Disaster Loan Program is a voluntary program that is made available to impacted households. As a loan program, SBA residential loan registrations skew towards homeowners. However, compared to FEMA Verified Loss inspections, which only cover the cost of repair and replacement, SBA loan amounts are based on an inspection that covers the full cost of restoring a home.
- **American Community Survey 2020 (ACS-5 Year) and Decennial Census (DEC 2020)** – The American Community Survey (ACS) is updated annually and is based on a sample of United States residents (3.5 million) in the 50 states. The ACS asks more comprehensive questions than the ten-year census to make this information available to communities each year. The census, on the other hand, is conducted every ten years and counts every person living in the United States. The census asks a shorter set of questions concerning age, sex, race, Hispanic origin, and owner/renter status. The goal of the decennial census is to provide an official count of the population. The relevant ACS and DEC data are used in this report...
- **Center for Disease Control (CDC) / Agency for Toxic Substances and Disease Registry Social Vulnerability Data (ATSDR)** – The CDC/ATSDR Social Vulnerability Index was created as a geographic database to help emergency response planners and public health officials identify and map communities to prepare and respond to disaster events. The index ranks each census tract in the United States (and aggregates into the county level) on 15 social factors, including socioeconomic status – below poverty, unemployment rate, income, no high school diploma, household composition, and disability – age 65 or older, age 17 or younger, civilian with a disability, single-parent households, minority status and language – minority and speaks English "less than well", and housing type and transportation – multi-unit structures, mobile homes, crowding, no vehicle, group quarters. The benefit of this data is that it provides an aggregate score to better understand holistic vulnerabilities compared to similar geographies around the United States. The limitation of this data is that it was last updated in 2018 and may be outdated.
- **Homeless Point-In-Time Count** – The Point-In-Time (PIT) Count is an annual count conducted by every Continuum of Care (CoC) in the country throughout a single night in January. It counts the number of people housed in emergency shelters, transitional housing, and Safe Havens, and the number of unsheltered people. Because the count only takes place one day, it is a static count and may not reflect annual numbers. Because point-in-time counts include the number of people sleeping outside and in shelters, they often undercount the "hidden homeless" – people experiencing homelessness who are sleeping in motels, on friends' couches, in cars, etc. This count underestimates children and families experiencing homelessness.
- **Low- and Moderate-Income Data** – This data is available on HUD Exchange at the block group, census tract, and county levels. The limitation of this data is that the LMI calculations come from the 2011-2015

ACS data and may be outdated. According to the description of the LMI data provided, the statistical information used in the calculation of estimates identified in the data sets comes from two sources: 1) the 2011-2015 American Community Survey (ACS), and 2) the Income Limits for Metropolitan Areas and Non-Metropolitan Counties. The data necessary to determine an LMI percentage for an area is not published in the ACS data tables. Therefore, the Bureau of Census matches the family size, income, and income limits in a special tabulation to produce the estimates.

Disaster Survey

Immediately after the 2021 Winter Storm, Connective, an organization that works with funders and service providers to implement technology tools for human-centered social service programs, deployed a needs assessment survey to community partners and the community. This survey was developed in partnership with the Kinder Institute (https://harveyhomeconnect.tfaforms.net/186). The data collected from the survey was given to nonprofit and philanthropic partners to inform pending recovery programming. This survey also captures contact information so that Connective could connect residents to services that they expressed a need for when those services became available.

According to the Kinder Institute's analysis of the Connective Disaster Survey findings in the *Harris County Winter Storm Uri Resilience Assessment*, the most common damages to homes reported by survey respondents included interior and exterior burst pipes, power loss for 4+ days, roof leaks, electrical systems, and heating system. When asked what needs they still lacked 2-3 months after the 2021 Winter Storm, survey respondents indicated that basic needs, such as food, water, and shelter, were still most needed, as many residents were still in crisis following the disaster. This may show that because of compounding damage from other disasters, residents lack financial means and are first concerned with finding necessities. After basic needs, the next highest household need cited by survey respondents was emergency home repair.

Table 2: Household Needs 2-3 Months After Storm

Needs	Number of Households
Food Assistance	3,890
Utility Assistance	3,602
Rent / Mortgage Assistance	3,399
Drinking Water	3,386
Emergency Home Repairs	2,157
Other Supplies	1,639
Mental Health Counseling	1,310
Temporary Relocation Assistance	888
Transportation Assistance	648
Other Services	350
Legal Aid	248

Source: *Harris County Winter Storm Uri Resilience Assessment*, Kinder Institute (2022) and Connective Disaster Survey 2021

Houston Harris County Winter Storm Relief Fund

In February 2021, Houston Mayor Sylvester Turner and Harris County Judge Lina Hidalgo established the Houston Harris County Winter Storm Relief Fund to help the region's most vulnerable residents after the 2021 Winter Storm. The Greater Houston Community Foundation (GHCF) and United Way of Greater Houston oversaw and administered the grant distribution process. The fund raised $17 million in donations and disbursed all available funds through six rounds of funding to 58 nonprofit partners providing critical resources and recovery services to vulnerable families impacted by the winter storm throughout the City of Houston and Harris County.

Table 3: Houston Harris County Winter Storm Relief Fund

Service Area	Amount Dispersed	Individuals Served	Households Served
Emergency Financial Assistance	$5,832,500	23,411	7,141
Home Repair	$10,175,000	3,682	1,252
Systems Coordination	$739,626	NA	NA
Total	**$16,747,126**	**27,093**	**8,393**

Source: Houston Harris County Winter Storm Relief Fund Interim Impact – One Year Later, February 15, 2022 (https://winterstormrelieffund.org/wp-content/uploads/2022/02/2021_HHC-WSRF_Interim-Impact-Report-2.18.22.pdf)
Note: Some individuals and households receive both Emergency Financial Assistance and Home Repair Services.

The Emergency Financial Assistance program was administered by the United Way of Greater Houston and used nonprofit partners to provide financial assistance directly to those in need. The households served were almost all (98%) low- and moderate-income with 88% of households earning 60% of the area median income or less. Almost half (48%) of all people served were Hispanic / Latino and 37% were African American / Black. Over two-thirds (68%) were renters and 27% were homeowners.

In partnership with Connective,15 partners provided home repair services for low-income communities in the Houston area to address impacts of the 2021 Winter Storm also funded by the Houston Harris County Winter Storm Relief Fund. In addition, Connective provided reimbursement assistance directly to Houston area residents by reimbursing homeowners who had paid for their repairs out of pocket. The cap of reimbursement assistance per household was $5,000 with some exceptional cases being allowed up to $10,000. As of February 2022, the program had completed 1,252 home repairs for homeowners with the average repair cost at $4,200 in Tier 1 and $4,000 in Tier 2, and 152 households received reimbursement. All households assisted with home repair services were low- and moderate-income with the majority (81%) earning 60% or less of the area median income. All households receiving reimbursement earned 120% or less than the area median income with the majority (88%) of households earning below 80% of the area median income. Almost all (94%) households assisted lived in single-family homes. Almost half (47%) of the homeowners served had insurance, but 83% could not afford the deductible. As of June 2022, Connective reported serving 152 households with reimbursement and 2,243 households with home repair.

Project Snapshot

Well into the implementation of their home repair program addressing the impacts of the 2021 Winter Storm, in August 2021, Connective began to require agencies to complete an additional form to close out home repair cases. This form was introduced to gather data about deferred maintenance of homes. Many home repair agencies had to repair deferred maintenance issues to make disaster-affected homes habitable again. Deferred maintenance needs may not have been directly caused by the storm but are often not planned for in disaster recovery home repair funding, even though they are a consistent, necessary cost. The data gathered from the form is called Project Snapshot and attempts to quantify outstanding repair needs, which are the repairs a home needs after the home repair agency completes repairs. Project Snapshot represents repairs that the homes assisted with home repair through the Houston Harris County Winter Storm Relief Fund likely still need but fell outside of the winter storm funding scope of repairs.

Approximately half of the completed home repair projects have completed Project Snapshot forms. Of 262 homes that were estimated to have deferred maintenance and are still in need of repair, the total estimated cost to make full repairs is $2,637,822. Project Snapshot included assessments of the home's envelope, including roofing, siding, windows, interior repairs, mechanical, electrical, and plumbing repairs, as well as structural costs. Homes with deferred maintenance issues are less resilient and more vulnerable to damage in future storms.

Insurance

Insurance is one way that can significantly assist residents after a disaster. However, as described earlier, most homeowners with unmet needs do not have homeowners' insurance. The Texas Department of Insurance summarizes the insurance data for property insurance, automobile insurance, and all other lines of insurance, which make up almost all the insurance markets in Texas.

As of December 31, 2021, about 96% of the residential property claims related to the 2021 Winter Storm was closed, but insurers are still investigating and adjusting commercial property claims. The average case incurred loss for residential property was $17.2 thousand and for commercial property it was $145.6 thousand in Texas. Approximately 85.1% of claims in Texas were residential property; 10.1% were commercial property; and 3.9% were automobile claims. Harris County had the most reported claims (111,705), the most total paid losses ($1,568.8 million), and the most total case-incurred losses ($1,982.1 million). City of Houston applicants made up 10.8% of all applicants in Texas. About 9.7% of all case-incurred losses in the state were in Houston, and 10.5% of the paid losses in Texas were in Houston. Almost $200 million, or 20%. of the case-incurred losses are left outstanding in Houston.

Table 4: Insurance

Area	Reported Claims	Paid Losses	Case Incurred Losses
City of Houston	54,970	796,100,000	$989,200,000
State of Texas	508,529	7,573,900,000	$10,163,200,000

Source: *Insured Losses Resulting from the February 2021 Texas Winter Weather Event*, data as of December 31, 2021, Texas Department of Insurance

FEMA Individual Assistance (FEMA IA)

The Federal Emergency Management Agency (FEMA) Individual Assistance (IA) Program is direct assistance provided through grant payments made directly to the disaster survivor and will supplement disaster damages not covered under insurance. For the 2021 Winter Storm, FEMA IA made several programs available, including

- Other Needs Assistance (ONA) provides financial assistance for medical and dental, funeral costs, repair/replacement of personal items, and other expenses.
- Housing Assistance provides financial assistance for temporary housing, repair, replacement, and semi-permanent or permanent housing construction
- Disaster Unemployment Assistance (DUA) provides unemployment benefits and re-employment services to individuals who have become unemployed because of a major disaster and who are not eligible for regular State unemployment insurance
- Disaster Legal Assistance (DLS) provides legal assistance to low-income individuals who, before or because of the disaster, are unable to secure legal services adequate to meet their disaster-related needs.
- Other programs like the Crisis Counseling Assistance and Training Program (CCP) and Disaster Case Management (DCM)

FEMA IA is the primary basis for establishing housing unmet recovery needs for CDBG-DR grantees. Despite the limitations of FEMA IA data, which likely undercounts and undervalues the true impacts of the disaster, the following section provides an overview of the housing impacts for FEMA DR-4586 Texas Severe Winter Storms. The following FEMA IA data is from FEMA data obtained through HUD (HUD FEMA data) FEMA IA claims in the city limits of Houston.

72,144 applicants registered for FEMA IA assistance in Houston, including 27,424 homeowner applicants and 44,661 rental applicants. After FEMA inspections occurred, 11,801 were determined to have FEMA Verified Loss due to the 2021 Winter Storm. The total FEMA-verified loss according to HUD FEMA data is $26,114,534. Although there were more applicants from rental homes, there were more homeowner applicants with FEMA verified loss over $0 with 58% homeowner applicants and 42% rental home applicants.

Several zip codes in Houston had severe impacts from the Winter Storm. Zip codes with the most FEMA IA applicants with FVL over $0 include 77016 (East Little York and Trinity Gardens), 77072 (Alief), 77026 (Kashmere Gardens), 77033 (South Park), and 77028 (Settegast).

Table 5: Total FEMA IA Applications in the City of Houston

Occupancy Type	Total Applications	FEMA Verified Loss Over $0
Owner	27,424	6,865
Rental	44,661	4,936
N/A (Not Applicable)	59	0
Total	**72,144**	**11,801**

Source: HUD: FEMA IA for City of Houston, September 2022

Although the OpenFEMA data and the HUD FEMA data represent slightly different geographic areas and the HUD FEMA data includes a higher proportion of rental applicants, the proportion of homeowners and renters with FEMA verified loss over $0 was very similar in both data sets with 58% homeowners and 42% renters in Houston.

FEMA Applications by Tenure and Housing Type

FEMA applications can be categorized in different ways, including by housing type and tenure, which is illustrated in the table below. The number of applications for rental homes far exceeded the number of homeowner applications, and the number of inspections performed for rental homes was slightly less than the number of inspections performed for homeowners. The number of homeowners receiving assistance is almost twice the number of renters or rental homes assisted, and the total FEMA-verified loss for homeowners was over four times the loss amount for rental homes.

Almost all homeowner applicants lived in a single-family home. Although more applications were submitted for renters living in multifamily developments, most applications that were approved for assistance were for renters living in single-family homes.

Table 6: *FEMA IA Applications in the City of Houston by Tenure and Housing Type*

Occupancy Type	Number of Applications	Number of Inspections	Number Inspected with Damage	# Received Assistance	Total FEMA Verified Loss	Average FEMA Verified Loss
Owner	**27,424**	**7,066**	**6,865**	**5,213**	**$20,790,152**	**$3,028**
Single-Family	25,788	6,837	6,647	5,073	$20,153,294	**$3,032**
Multifamily	570	113	106	70	$324,061.9	**$3,057**
Other*	1,066	116	112	70	$312,797	**$2,793**
Rental	**44,661**	**6,186**	**4,936**	**2,390**	**$5,324,382**	**$1,079**
Single-Family	15,556	3,701	2,809	1,346	$2,949,206	**$1,050**
Multifamily	27,775	2,461	2,111	1,033	$2,361,276	**$1,119**
Other*	1,330	24	16	11	$13,901	**$869**
N/A (Not Applicable)	**59**	**0**	**0**	**0**	**0**	**0**
Single-Family	51	0	0	0	0	0
Multifamily	4	0	0	0	0	0
Other*	4	0	0	0	0	0
Total	**72,144**	**13,252**	**11,801**	**7,603**	**26,114,534**	**$2,213**

Source: HUD: FEMA IA for City of Houston, September 2022
**Other includes Assisted Living Facility, Boat, College Dorm, Correction Facility, Military Housing, Mobile Home, Other, and Travel Trailer*.

When reviewing FEMA IA applications in terms of income, 44% of applicants were from households earning $30,000 or under, with 35% of owner applicants and 50% of renter applicants in this income category. Lower-income applicants are presumed to have fewer resources to recover from a disaster, and therefore, government assistance may be critical for their recovery.

Table 7: FEMA IA Applicants in the City of Houston by Tenure and Income

Occupancy Type	Number of Applications	Number of Inspections	Number Inspected with Damage	# Received Assistance	Total FEMA Verified Loss	Average FEMA Verified Loss
Owner	**27,424**	**7,066**	**6,865**	**5,213**	**$20,790,152**	**$3,028**
$30,000 or under	9,511	3,363	3,336	2,707	$10,108,739	**$3,030**
$30,001-$60,000	6,510	1,489	1,473	1,048	$4,417,060	**$2,999**
$60,001-$120,000	3,120	494	487	332	$1,487,361	**$3,054**
Over $120,000	1,121	93	93	61	$283,300	**$3,046**
N/A (Not Applicable)	7,162	1,627	1,476	1,065	$4,493,692	**$3,045**
Rental	**44,661**	**6,186**	**4,936**	**2,390**	**$5,324,382**	**$1,079**
$30,000 or under	22,223	3,359	2,700	1,978	$2,871,516	**$1,064**
$30,001-$60,000	8,982	935	731	149	$827,981	**$1,133**
$60,001-$120,000	1,472	146	119	17	$136,938	**$1,151**
Over $120,000	147	16	13	1	$11,066	**$851**
N/A (Not Applicable)	11,837	1,730	1,373	245	$1,476,881	**$1,076**
N/A (Not Applicable)	**59**	**0**	**0**	**0**	**$0**	**$0**
Total	**72,144**	**13,252**	**11,801**	**7,603**	**$26,114,534**	**$2,213**

Source: HUD: FEMA IA for City of Houston, September 2022

Approved FEMA IA applicants received $13,973,118 in housing repair assistance and $3,446,026 in personal property assistance. Applicants earning under $30,000 and receiving assistance received approximately half of the total housing assistance funds dispersed. Almost all housing repair assistance funding went to homeowners, and 74%, or $2,544,797, of the personal property assistance amount went to renters. Although FEMA provided $13.9 million for housing repair assistance, the goal of these funds is to make a home livable, and these funds do not cover all costs related to repairing all damage resulting from the 2021 Winter Storm.

Small Business Administration – Housing

Eligible FEMA IA applicants who have outstanding repairs or needs can apply through the Small Business Administration (SBA) for a disaster loan. In Houston, as of February 2023, SBA had 5,598 applicants for disaster loans, and 953 of the applicants were approved for assistance. Those approved for assistance had an SBA calculated loss of $29,969,446.87 of which $17,470,654.83 was for loss estimates related to real estate repair or reconstruction. On average approved SBA applicants had $18,332.27 in estimated home repair needs.

SBA provides loan assistance for physical damage, such as damage to a home, and for economic injury (working capital). SBA has disbursed $17,502,100 in loans to applicants, to assist them in the recovery from the 2021 Winter Storm.

Housing Unmet Needs

The Federal Register Notice outlines the following damage categories by owner-occupied and rental units.

FEMA Inspected Owner Units

- **Minor-Low:** Less than $3,000 of FEMA-inspected real property damage.
- **Minor-High:** $3,000 to $7,999 of FEMA-inspected real property damage.
- **Major-Low:** $8,000 to $14,999 of FEMA-inspected real property damage and/or 1 to 3.9 feet of flooding on the first floor.
- **Major-High:** $15,000 to $28,800 of FEMA-inspected real property damage and/or 4 to 5.9 feet of flooding on the first floor.
- **Severe:** Greater than $28,800 of FEMA-inspected real property damage or determined destroyed and/or 6 or more feet of flooding on the first floor.

FEMA Inspected Owner Units – Personal Property

- **Minor-Low:** Less than $2,500 of FEMA-inspected personal property damage.
- **Minor-High:** $2,500 to $3,499 of FEMA-inspected personal property damage.
- **Major-Low:** $3,500 to $4,999 of FEMA-inspected personal property damage or 1 to 3.9 feet of flooding on the first floor.
- **Major-High:** $5,000 to $9,000 of FEMA-inspected personal property damage or 4 to 5.9 feet of flooding on the first floor.
- **Severe:** Greater than $9,000 of FEMA inspected personal property damage or determined destroyed and/or 6 or more feet of flooding on the first floor.

FEMA Inspected Rental Units

- **Minor-Low:** Less than $1,000 of FEMA-inspected personal property damage.
- **Minor-High:** $1,000 to $1,999 of FEMA-inspected personal property damage or determination of ‘‘Moderate’’ damage by the FEMA inspector.
- **Major-Low:** $2,000 to $3,499 of FEMA-inspected personal property damage or 1 to 3.9 feet of flooding on the first floor or determination of ‘‘Major’’ damage by the FEMA inspector.
- **Major-High:** $3,500 to $7,500 of FEMA-inspected personal property damage or 4 to 5.9 feet of flooding on the first floor.
- **Severe:** Greater than $7,500 of FEMA inspected personal property damage or determined destroyed and/or 6 or more feet of flooding on the first floor or determination of ‘‘Destroyed’’ by the FEMA inspector.

According to HUD, only the most impacted homes are to be included in calculations for unmet housing needs. Owner-occupied homes are determined to be most impacted if they have real property damage of $8,000 or more. Furthermore, homeowners without hazard insurance with income below the greater of national median or 120 percent of Area Median Income are included as having unmet housing need. Rental homes are determined to be most impacted if they have personal property damage of $2,000 or more. Furthermore, landlords are presumed to have adequate insurance coverage unless the rental home is occupied by a renter with an income less than 50% of Area Median Income. Units occupied by a tenant with income less than 50% of Area Median Income are used to calculate likely housing unmet needs.

As stated in the Federal Register Notice, HUD notes:

> “The average cost to fully repair a home for a specific disaster to code within each of the damage categories noted above is calculated using the median real property damage repair costs determined by the SBA for its disaster loan program based on a match comparing FEMA and SBA inspections by each of the FEMA damage categories described above.” (87 FR 31636)[6]

[6] https://www.hud.gov/sites/dfiles/CPD/documents/CDBG-DR/87_FR_31636.pdf

HCD intended to use HUD's methodology described above to calculate the unmet housing needs. However, the data provided by HUD was insufficient to conduct this analysis and calculation. The requested data has not yet been provided to HCD by HUD, which would enable the City to use this methodology. Therefore, HCD used HUD's methodology to the extent possible with the data available. Using the most recent HUD *Serious Unmet Housing Need Multipliers* published in 83 FR 40314[7], HCD calculated the amount of unmet need for each household determined to have serious unmet housing needs (as described above and as available data allowed) less assistance from FEMA and SBA provided for repair to homes.

As described in 83 FR 40314, the estimated unmet housing need for each household, also referred to as *Serious Unmet Housing Need Multipliers,* for Texas is $56,342 for the major-low damage category, $75,414 for the major-high damage category, and $101,390 for the severe damage category. Using these amounts, the unmet need in the three damage categories was calculated based on the number of homes with FEMA FVL; then, the amount of FEMA and SBA assistance distributed by damage category was subtracted. This resulted in the estimated Total Remaining Unmet Need, as shown below.

Table 8: Remaining Housing Unmet Need

Occupancy Type	Count of Homes	Amount of Serious Need	Amount of FEMA/SBA Assistance for Housing Repair	Total Remaining Unmet Need
Minor-Low	5,794	-	-	-
Minor-High	5,276	-	-	-
Major-Low ($56,342)	536	$30,030,286	$90,054	$29,940,232
Major-High ($75,414)	185	$13,951,590	$70,845	$13,880,745
Severe ($101,390)	10	$1,013,900	$39,523	$974,377
Total	11,801	$44,995,776	$200,422	$44,795,354

This is an estimate of the total remaining unmet need for housing. The estimate only uses the top three damage categories to determine need; however, even HUD notes that the FEMA IA estimates for repair are much lower than the amount that is needed to make full repairs to a home. In addition, no mitigation or adaptation factors are considered in this methodology, which would add significantly to the estimated amount of unmet need and may be necessary to protect families from future extreme weather or other disaster events.

1. Single Family v. Multi-Family Needs; Owner Occupied v. Tenant

Information about impacts to single-family, multifamily, owner, and renter homes can be found in a previous section titled *FEMA Applications by Tenure and Housing Type*.

Definition of Affordable Rents, Income Limits, for Tenants, and Minimum Affordability Periods

The City of Houston will not use CDBG-DR related to this Action Plan to assist with the rehabilitation, reconstruction, or new construction of rental housing. Therefore, the following are currently not specified for CDBG-DR21 activities related to rental housing: definition of affordable rents, income limits for tenants of rental housing that is rehabilitation, reconstructed, or constructed with CDBG-DR funds, and minimum affordability periods.

[7] https://www.govinfo.gov/content/pkg/FR-2018-08-14/pdf/2018-17365.pdf

2. Public Housing and Affordable Housing

The following table shows the HUD multifamily-assisted properties in the City of Houston. These include, but are not limited to, properties funded with Federal Housing Administration (FHA) mortgage insurance, Section 202 Supportive Housing for the Elderly, and Section 811 Supportive Housing for Persons with Disabilities. According to HUD, all Houston area HUD multifamily assisted properties that have reported any needed repairs from the 2021 Winter Storm have been completed. There were no displaced tenants resulting from the 2021 Winter Storm reported at any of these properties.

Table 9: Multifamily Assisted Housing

Type of Damage	# of Properties	# of Units	# of Units Assisted	# of Units Waiting Assistance	Remaining Unmet Need
Minor-Low	44	5,263	4,345	0	0
Minor-High	0	0	0	0	0
Major-Low	0	0	0	0	0
Major-High	0	0	0	0	0
Severe	0	0	0	0	0
Total	0	0	0	0	0

Source: U.S. Housing and Urban Development, Multifamily Housing – Southwest Region
FEMA does not inspect rental units for real property damage so personal property damage is used as a proxy for unit damage.

The Houston Housing Authority (HHA) serves low-income families by providing housing and services. According to HHA, one public housing community sustained damage from the 2021 Winter Storm, and 19 homes in this community were damaged. The estimated cost of repairs was $445,000 and included repairs to electrical, plumbing, insulation, sheetrock, flooring, appliances, and electric fixtures. These homes became uninhabitable, and the families had to be relocated due to the damage. A significant challenge was the relocation of these families due to the small number of homes available at affordable rent.

Table 10: Public Housing Authorities Damaged

County / Municipality	Total # PHAs Developments	Total PHAs Damaged	Total PHA Developments Damaged	# of Units Damaged	Remaining Unmet Need
City of Houston / Houston Housing Authority	18	3,135	1	19	$445,000

Source: Houston Housing Authority

HCD will continue working with the Houston Housing Authority and other affordable housing providers to address unmet needs that have been exacerbated by compounding disasters. HCD continues to address the needs of public housing residents and the rehabilitation or new construction of affordable rental homes through other funding sources.

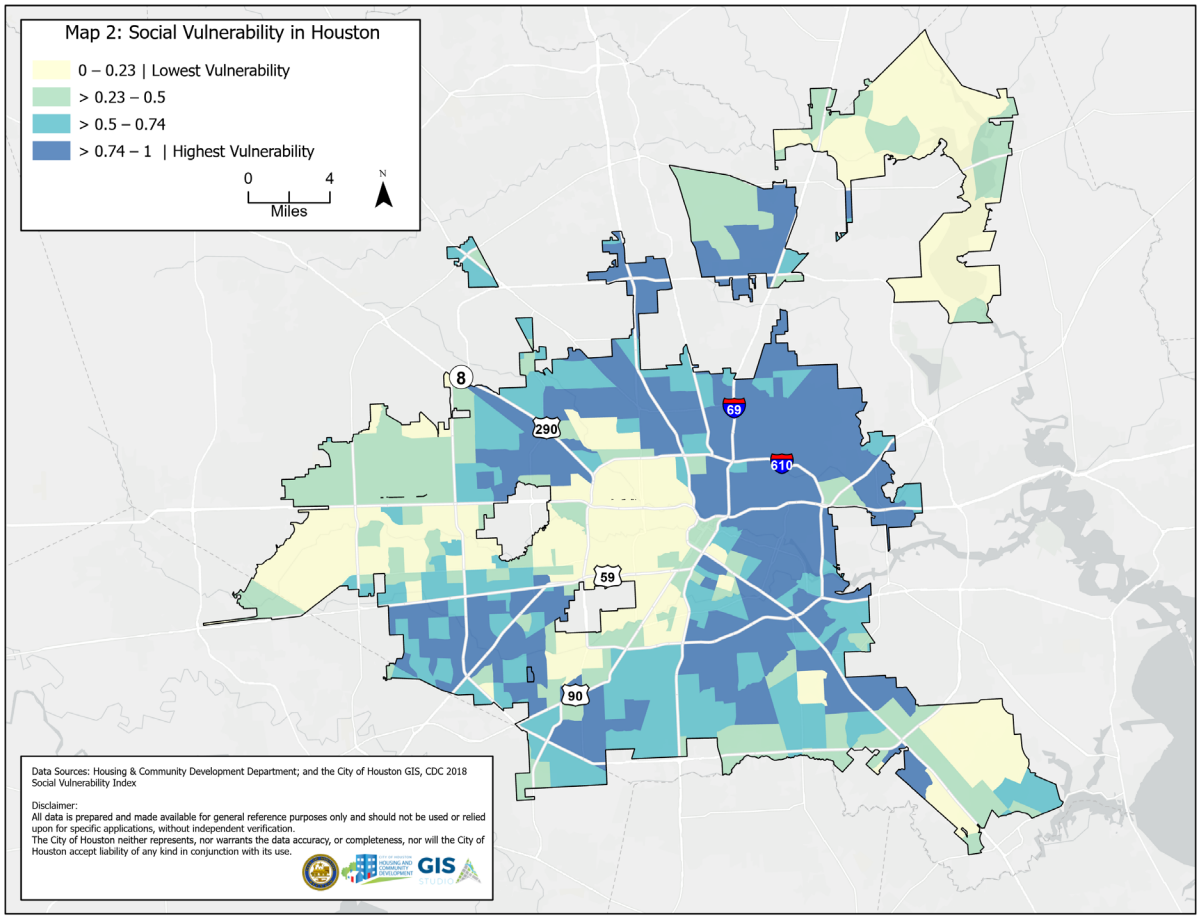
3. Social Equity, Fair Housing and Civil Rights

Disaster-related risk often corresponds with a high level of social vulnerability, compounding the impact of disaster events with the challenges of poverty for many affected residents. The following section will review the City's general demographics and disaster impacts related to the 2021 Winter Storm. HUD defines vulnerable populations as a group or community whose circumstances present barriers to obtaining or understanding information or accessing resources. This will include reviewing social vulnerability and the state of different groups of Houstonians including protected classes and homeless individuals, which may be considered vulnerable populations.

Social Vulnerability

According to the Centers for Disease Control and Prevention (CDC), "social vulnerability refers to the resilience of communities when confronted by external stresses on human health, stresses such as natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss. The CDC's Social Vulnerability Index (SVI) uses 15 U.S. census variables at the tract level to help local officials identify communities that need support in preparing for hazards or recovering from disaster.[8] Social Vulnerability Index themes include socioeconomic status, household composition, language, and transportation/housing status. It is important to note that this index does not include environmental hazards or possible environmental hazards in an area. The following map shows the overall Social Vulnerability Index for the City of Houston.

Figure 2: Map of Social Vulnerability in Houston



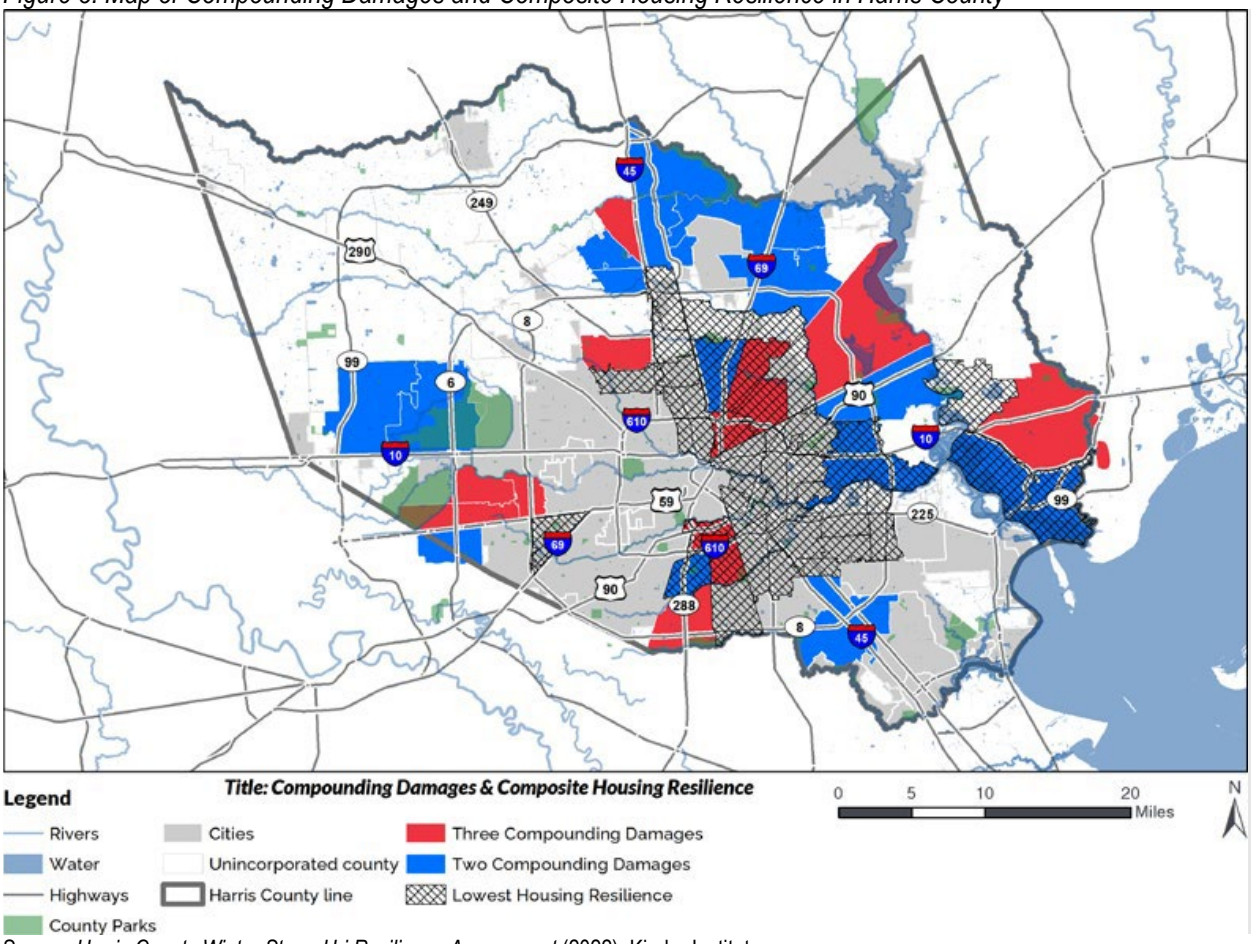
In the *Harris County Winter Storm Uri Resilience Assessment*, the Kinder Institute analyzed the following housing factors at the zip code level to determine where housing stock is most vulnerable to the effects of a disaster event.

- Median age of housing
- Share of owner-occupied units under $100,000 in home value
- Median gross rent
- Share of low-quality housing as defined by the appraisal district

[8] https://www.atsdr.cdc.gov/placeandhealth/svi/index.html

Most zip codes with substantial vulnerable housing are located on the east side of Houston, inside Beltway 8 and between Interstate 45 and Highway 288. Areas with low housing resilience representing the most vulnerable housing stock were then compared to areas hardest hit by prior events in which housing suffered compounding damages from Hurricane Harvey, the 2021 Winter Storm, and COVID-19. Not every area with housing vulnerability suffered from compounding damages from disasters, several areas do have vulnerable housing stock and face compounding damages, including Kashmere Gardens, South Park/Sunnyside, Cloverleaf, and East Aldine. Additionally, according to the report, zip codes that were predominately renter-occupied were harder hit by the Winter Storm than predominantly owner-occupied zip codes.

Figure 3: Map of Compounding Damages and Composite Housing Resilience in Harris County



Source: *Harris County Winter Storm Uri Resilience Assessment* (2022), Kinder Institute

Race and Ethnicity

The Fair Housing Act prohibits discrimination based on race, color, and national origin. Information collected by the U.S. Census does not specifically address the protected class of color. Instead, data and information based on race and ethnicity, and sometimes national origin, can serve as a proxy for color. When determining impacts based on color, race information will also be used to describe color.

Houston is a majority-minority city with more than three-quarters (75.9%) of its population identifying as minority including nearly half of Houston residents (44.5%)[9] identifying as Hispanic/Latino of any race. All disaster programs implemented by the City of Houston must evaluate equity and the impact on protected classes, including vulnerable people, and consider their needs during the planning process. Due to historic housing patterns that reinforced discrimination through segregation, community isolation, and inequitable access to resources, disaster impacts vulnerable populations disproportionately and exacerbates already existing inequities.[10] Further, immigrant communities also need special consideration due to language barriers and fear in Hispanic or Latino communities that seeking assistance after disasters will lead to detention and deportation.[11]

The Kinder Institute's report *Harris County Winter Storm Uri Resilience Assessment* confirms the impacts from the 2021 Winter Storm followed previous patterns of inequity by determining that the highest share of households that had outstanding needs not covered by insurance were in majority-Black zip codes, followed by majority-Hispanic zip codes. The report determined this by cataloging households eligible for the FEMA Individual and Households Program (IHP) from the 2021 Winter Storm by ZIP code and then categorized those zip codes by respective racial/ethnic majority.

As defined in the 2020-2024 City of Houston Consolidated Plan, a neighborhood with a racial or ethnic concentration is one in which the percentage of persons of a racial or ethnic group is at least 20 points higher than that group's percentage in the city. A minority-concentrated neighborhood is one in which the total percentage of minority persons is at least 20 points higher than the total percentage of minorities in the city. To determine racial and Hispanic concentrations in Houston, census tracts were used as a proxy for neighborhoods. In addition, racial groups were categorized as non-Hispanic and Hispanic, with the Hispanic group including persons of Hispanic or Latino origin of any race.

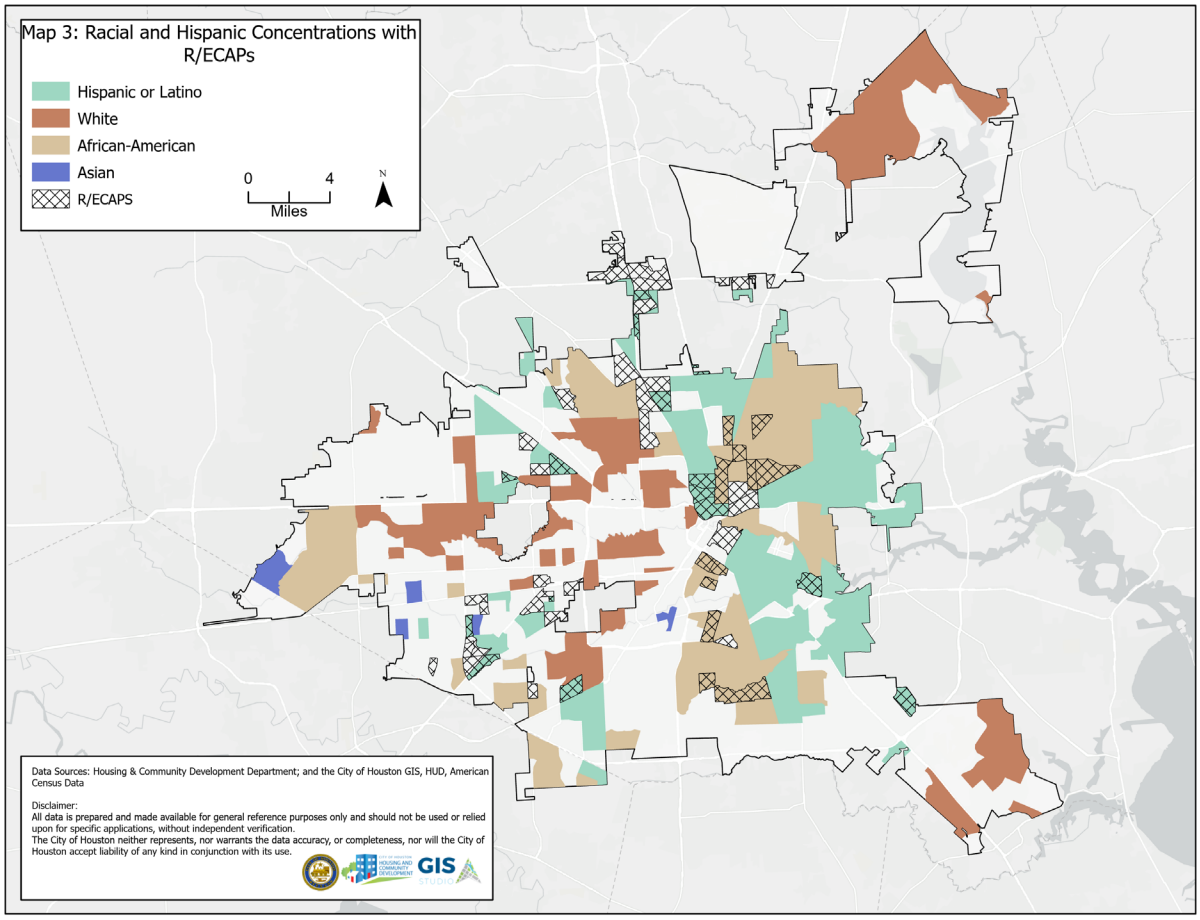
The following map illustrates these minority-concentrated areas in the city. It demonstrates Houston's status as a majority-minority city where 75.9% of the population is the minority. It also shows the racially/ethnically areas of poverty (R/ECAP), which are census tracts where more than half the population is non-white and 40% or more of the population is in poverty or where the poverty rate is greater than three times the average poverty rate in the area. R/ECAP areas represent areas that may show areas of entrenched patterns of segregation.

[9] 2016-2020 ACS DP05

[10] Howell, J. and Elliott, J. R. "Damages Done: The longitudinal impacts of natural hazards on wealth inequality in the United States." *Social Problems,* Volume 66, Issue 3, August 2019, pg 448-467.

[11] Mendez, M., Flores-Haro, G., and Zucker, L. *The (In)visible Victims of Disaster: Understanding the vulnerability of undocumented Latino/a and indigenous immigrants.* Retrieved from https://orfaleacenter.ucsb.edu/wp-content/uploads/2020/12/1-s2.0-S0016718520301925-main.pdf

Figure 4: Map of Racial, Hispanic, and Minority Concentrations by Census Tract in Houston with R/ECAPs



Source: *U.S. Census*

The following table further breaks down the demographics and disaster-impacted populations of Houston. Because the City of Houston is in a MID, the Area-Wide Estimates, Disaster Declaration Estimate, and MID Estimate represent the City of Houston's population.

Table 11: Grantee Demographics and Disaster Impacted Populations

Demographic	Area-Wide Estimate	Area-Wide Percent	Disaster Declaration Estimate	Disaster Declaration Percent	MID Estimate	MID Percent
Total Population	2,304,580		2,304,580		2,304,580	
Under 5 years	172,727	7.5	172,727	7.5	172,727	7.5
65 years and over	217,596	11	217,596	11	217,596	11
Population with a Disability	224,151	9.8	224,151	9.8	224,151	9.8
White or Caucasian	1,192,226	51.7	1,192,226	51.7	1,192,226	51.7
Black or African American	888,431	38.6	888,431	38.6	888,431	38.6
American Indian and Alaska Native	8,012	0.4	8,012	0.4	8,012	0.4
Asian	158,853	6.9	158,853	6.9	158,853	6.9
Native Hawaiian and Other Pacific Islander	1,088	0.05	1,088	0.05	1,088	0.05
Other	262,512	11.4	262,512	11.4	262,512	11.4
Population with two or more races	162,402	7	162,402	7	162,402	7

Source: 2016-2020 American Community Survey (ACS) DP05, S1810, and S0101

The following table shows the Houston's race and Hispanic demographics together.

Table 12: Houston Race and Ethnicity

Demographic	Number	Percent
Total Population	2,304,580	100.0
White or Caucasian, Non-Hispanic	558,561	24.1
Black or African American, Non-Hispanic	515,956	22.3
American Indian and Alaska Native, Non-Hispanic	2,895	0.1
Asian, Non-Hispanic	157,230	6.8
Native Hawaiian and Other Pacific Islander, Non-Hispanic	668	0.0
Other, Non-Hispanic	6,165	0.3
Population with two or more races, Non-Hispanic	43,021	1.9
Hispanic of any race	1,028,742	44.5

Source: 2016-2020 American Community Survey (ACS) DP05, S1810, and S0101

Income

Income affects a household's disaster recovery and resilience; this is significant in that a person's earning potential may be influenced by their association with one or more protected classes. Households with low income often lack adequate savings to spend on evacuation, shelter, or recovery from disaster scenarios. Due to financial insecurity, these households are often less able to recover or bounce back quickly after a disaster. Further, there is a strong relationship between household income, household type, race/ethnicity, and other factors. These relationships often create misconceptions and biases that could raise equitable recovery concerns. The geographic division by income further exacerbates these inequities and can reinforce discrimination and inequitable outcomes in recovery. These factors must be considered when planning for disaster recovery activities, and planning must include those from communities that experience concentrated areas of poverty.

Table 13: Income Demographics

Income/Economic Demographics	Statewide	Areas Impacted by Disaster	HUD MIDs
Median Household Income	$63,826	$53,600	$53,600
Per Capita Income	$32,177	$33,626	$33,626

Source: 2016-2020 ACS S1901; 2016-2020 ACS B19301

Table 14: Income Demographics – Low Income

Income/Economic Demographics	Statewide	Areas Impacted by Disaster	HUD MIDs
Income in the past 12 months below poverty level	3,984,260	447,326	447,326

Source: 2016-2020 ACS S1701

Table 15: LMI Analysis - Overall

Category	Total LMI Persons	Total Population	Percent LMI
Area wide (City of Houston)	1,321,486	2,279,732	58

Source: 2016-2020 ACS S1701; U.S. Treasury. *SLFRF LMI Tool.* Retrieved from: https://home.treasury.gov/system/files/136/SLFRF-LMI-tool.xlsx

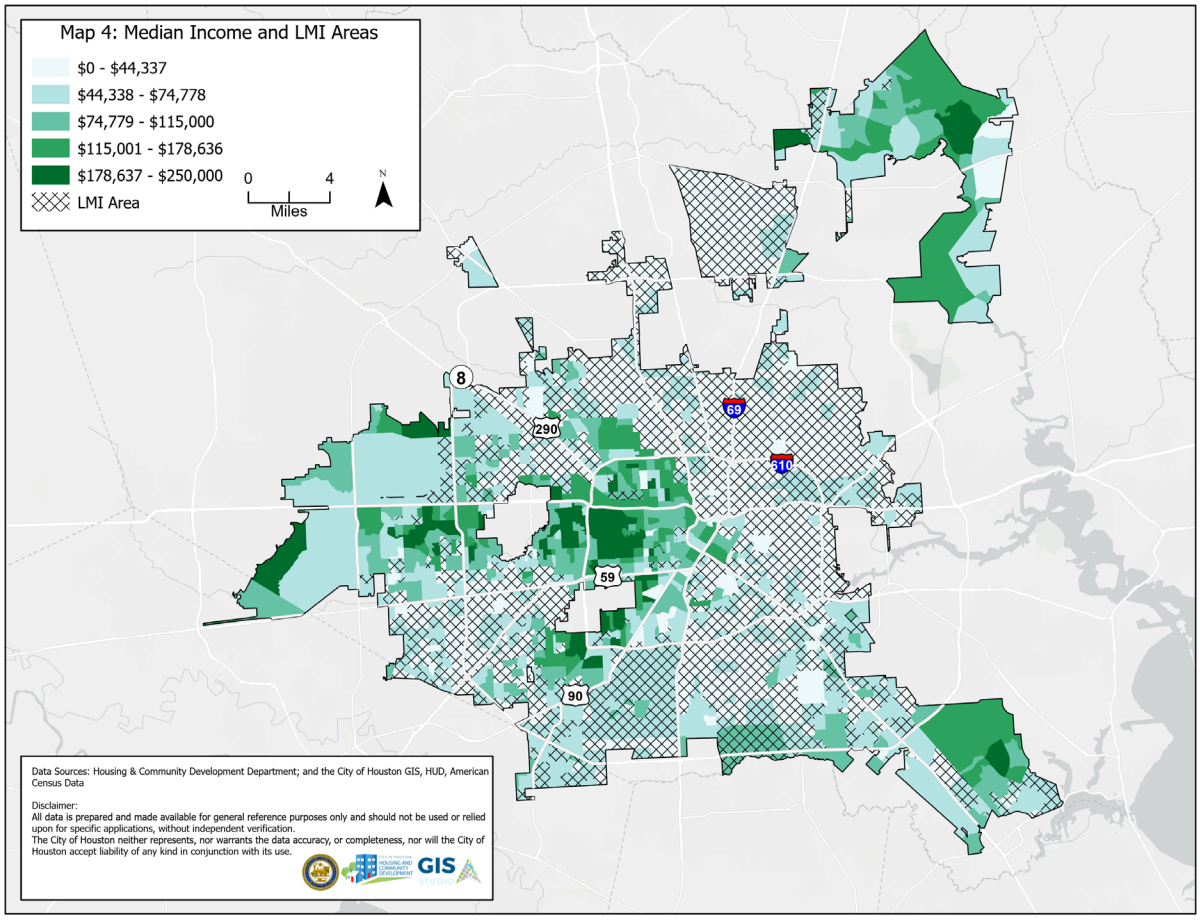
Table 16: LMI Analysis-Federally Declared Disaster Areas

County / Municipality	Non-MID-Total LMI Persons	Non-MID-Total Population	Non-MID Percentage LMI	MID-Total LMI Persons	MID-Total Population	MID Percentage LMI
City of Houston	0	0	0	1,321,486	1,321,486	58

Source: 2016-2020 ACS S1701; U.S. Treasury. *SLFRF LMI Tool.* Retrieved from: https://home.treasury.gov/system/files/136/SLFRF-LMI-tool.xlsx

The map below shows locations of median income by census block groups. Most areas that are comparable to the city's median income or below are located on the east side. Many of the areas in Houston that are below the median income are also areas with a high percentage of minority populations.

Figure 5: Map of Median Income and LMI Areas



Source: U.S. Census, 2016-2020 ACS

Manufactured Housing

One low-cost housing option for very low-income residents is manufactured homes. However, within the Houston city limits, there are very few manufactured homes, making up .9% of all homes. Manufactured homes are vulnerable to temperature extremes, such as the cold weather during the 2021 Winter Storm.

Table 17: Manufactured Housing Units Impacted by Disaster

County/Municipality	Number of Units	% of Total Units in County / Municipality	Remaining Unmet Need*
City of Houston	9,150	0.9	$130,138

Source: 2016-2020 ACS DP04; HUD FEMA IA, September 2022

*Remaining unmet need is calculated as FEMA verified loss of manufactured homes ($257,045) less FEMA IA assistance disbursed for repair or replacement ($126,907).

Persons with Disabilities

All CDBG-DR programs must comply with relevant federal laws that prohibit discrimination based on disability and to require physical accessibility and the provision of reasonable accommodations and reasonable modifications, including the Fair Housing Act, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act.

The Fair Housing Act defines disability to a person as:

- A physical or mental impairment that substantially limits one or more of such a person's major life activities
- A record of having such an impairment, or
- Being regarded as having such an impairment.

In 2020, an estimated 224,151 Houston residents had sensory, physical, mental, work, mobility, and/or self-care limitations, representing approximately 9.8% of the city's civilian, non-institutionalized population. Currently, 116,945 (5.5%) of persons with disabilities in Houston reported having ambulatory difficulty. About 92,156 (4.3%) of people with disabilities reported having cognitive difficulty and approximately 82,398 (4.8%) reported having independent living difficulty.[12]

People with disabilities are disproportionately impacted by disasters because of disruptions to support systems and medical care, which exacerbate barriers already present in daily life. Due to impairment or limited physical or cognitive abilities, individuals may be unable to evacuate safely or easily, create or maintain a preparedness plan, advocate fully for their needs, or seek out or access necessary care while displaced. After disasters, people with disabilities face significant barriers in finding and securing appropriate housing, transportation, employment, services, and other supports critical to long-term recovery.[13]

At least 15% of the population in the heavily disaster-impacted neighborhoods of northeast Harris County have a disability, including high concentrations in Little York/Homestead, Trinity/Houston Gardens, Settegast, Kashmere Gardens, and Fifth Ward neighborhoods.

Table 18: Disability Type

Disability Type	Houston	
	#	%
Hearing Difficulty	53,748	2.3%
Vision Difficulty	46,204	2.0%
Cognitive Difficulty	92,156	4.3%
Ambulatory Difficulty	116,945	5.5%
Self-care Difficulty	50,301	2.4%
Independent Living Difficulty	82,398	4.8%

Source: 2016-2020 ACS S1810

Families with Children

Familial status is protected by the Fair Housing Act and is defined as having one or more individuals under 18 years of age who reside with a parent or another person with care and legal custody of the child. Familial status also includes a pregnant person or a person who is in the process of adopting or otherwise securing legal custody of any individual under 18 years of age.

According to the CDC, "children and elders are the most vulnerable groups in disaster events."[14] Households with children under 18 are more likely to require assistance with finances, transportation, medical care, and childcare during the disaster event and recovery.[15]

[12] 2016-2020 ACS S1810

[13] Stough, L. M., Sharp, A. N., Resch, J. A., Decker, C., and Wilker, N. *Barriers to the long-term recovery of individuals with disabilities following a disaster.* Retrieved from https://onlinelibrary.wiley.com/doi/10.1111/disa.12161

[14] Centers for Disease Control. *CDC SVI Documentation 2018*. Retrieved from https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/SVI_documentation_2018.html

[15] Flanagan, Barry E., Gregory, Edward W., Hallisey, Elaine J, Heitgerd, Janet L. and Lewis, Brian. "A Social Vulnerability Index for Disaster Management" *Journal of Homeland Security and Emergency Management* 8, no. 1 (2011): 000010220215477355 1792. https://doi.org/10.2202/1547-7355.1792

Population 65 and Older

Age is not a protected class covered by the Fair Housing Act, but because of its correlation to a disability, it is important to consider the needs of seniors when planning disaster recovery and resilience efforts. Senior households are disproportionately affected by disasters and face special challenges in recovery: mobility or cognitive impairments may hinder safe evacuations, income is limited and/or fixed and unable to adjust to the added pressure of recovery expenses, and owner-occupied households may have limited to no insurance due to household budget or lack of mortgage, and individuals may be unable to access medication or care when medical systems are disrupted.

Limited English Proficiency

Fair Housing laws protect individuals based on their national origin. Discrimination on national origin can include an individual's ability to read, write, speak, or understand English. Houston is a diverse community with many foreign-born residents living in the city and the region. The total number of foreign-born residents in Houston was 668,490 (28.9%) according to the 2020 American Community Survey.

Many Houstonians, whose first language is not English, may have a limited ability to read, write, speak, or understand English and are considered limited English proficient (LEP). More than one in five Houstonians, 5 years and older, speak English "less than very well." Those with limited English proficiency living in Houston frequently speak Spanish, Vietnamese, Chinese, Arabic, or French.[16] The Civil Rights Act of 1964 prohibits discrimination based on national origin requiring that government entities ensure that persons with LEP have access to the same benefits, services, and information as English-speaking residents.

The Kinder Institute found that areas with high shares of non-English-speaking residents were more likely to have difficulty accessing FEMA assistance because of issues with applications. These areas also lacked grassroots organizations that could support residents with damage assessments and applications. The communities must be given special consideration in the disaster recovery planning process to achieve equitable outcomes including providing translations and opportunities for interpretation when needed.

Table 19: Limited English Proficiency Breakdown of Disaster-Related Areas

County/Municipality	Estimate Speak English Less than 'Very Well'	Percent Speak English Less than 'Very Well'
City of Houston	474,920	22.2

Source: 2016-2020 ACS DP05

Persons Experiencing Homelessness

Persons experiencing homelessness are especially vulnerable during disasters and require additional support during disaster recovery. For those already experiencing housing and resource instability, disaster and subsequent displacement can be disproportionately consequential. The lack of a permanent address or limited digital communications access makes locating and evacuating people experiencing homelessness very difficult, and the effects of experiencing disaster can exacerbate existing physical and/or mental health challenges.

The Point-in-Time Count table below represents a one-night count of persons experiencing homelessness in Houston. Over the last ten years, homelessness has been decreasing in the Houston area because of a concerted and coordinated effort to provide supportive housing opportunities streamline the intake process, and the Coordinated Access System. The Coalition for the Homeless reports that more than 25,000 people have been placed on The Way Home's permanent housing programs. In 2011, the Point-in-Time count revealed 8,471 people experiencing homelessness, which is almost three times higher than the most recent count of 3,223 experiencing homelessness in 2022.

[16] Source: 2011-2015 American Community Survey

Table 20: Point-in-Time Count – Type of Shelter

Geography	Emergency Shelter*	Transitional Housing	Unsheltered Homeless	Total Known Homeless
Area wide / FEMA Declared / MID	1,212	509	1,502	3,223

Source: The Way Home Continuum of Care 2022 Homeless Count and Survey Analysis, March 2022
*Includes Safe Havens

As the winter weather was first forecasted, staff from the Coalition for the Homeless met with City and County representatives to coordinate a plan for responding to the incoming cold weather. The City and Harris County opened facilities as shelters and warming centers a few days before the storm hit. On February 13 and 14, 2021, Houston METRO, the Houston Police Department, Sheriff Homeless Outreach team, and agency partners transported people willing to seek shelter to designated shelters and warming centers.

The next table shows those impacted by the 2021 Winter Storm as defined by The Way Home Continuum of Care, which included 190 homeless individuals who took shelter at the George R. Brown Convention Center and were assessed through the Coordinated Access System and referred to services. This table does not account for other unsheltered homeless individuals who may have been subject to the elements, including at least two people experiencing homelessness in the Houston area who died because of the 2021 Winter Storm.[17] Although shelters and transitional housing were occupied and likely individuals staying there were impacted by the loss of electricity and water, The Way Home did not consider these individuals as having been impacted by the disaster in the table below.

Table 21: Point-in-Time Count – Impacted by Disaster

Geography	Emergency Shelter	Transitional Housing	Unsheltered Homeless	Total Known Homeless
Area wide / FEMA Declared / MID	-	-	190	190

Source: Coalition for the Homeless, Lead Agency to The Way Home Continuum of Care

Assisted Housing Impacted by the Disaster

There are a few main categories of programs that support assisted housing in Houston that serve low- and moderate-income households. These include the Houston Housing Authority's Housing Choice Voucher Program of 19,788 vouchers, including 17,699 regular vouchers, 2,089 special vouchers, and 3,136 homes in the Public Housing Program. The State of Texas Department of Housing and Community Affairs funds the development of affordable homes through the Low-Income Housing Tax Credit Program (LIHTC). In Houston, 42,810 affordable homes are designated as LIHTC. The following table shows the total number of assisted homes and the number of homes impacted by the 2021 Winter Storm.

Table 22: Assisted Housing Impacted by the Disaster

County / Municipality	Total Housing Choice Vouchers	Total Impacted Housing Choice Voucher Units	Total LIHTC Units	Total Impacted LIHTC Units	Total Public Housing Dwelling Units	Total Impacted Public Housing Dwelling Units	Remaining Unmet Need
City of Houston	19,788*	205	42,810	Unavailable	3,136	56	Unavailable

Source: Houston Housing Authority; Texas Department of Housing and Community Affairs, Multifamily Finance Division
*17,699 regular vouchers and 2,089 special purpose vouchers

[17] "At least six people experiencing homelessness died during the winter storm." *Texas Tribune.* February 22, 2021.

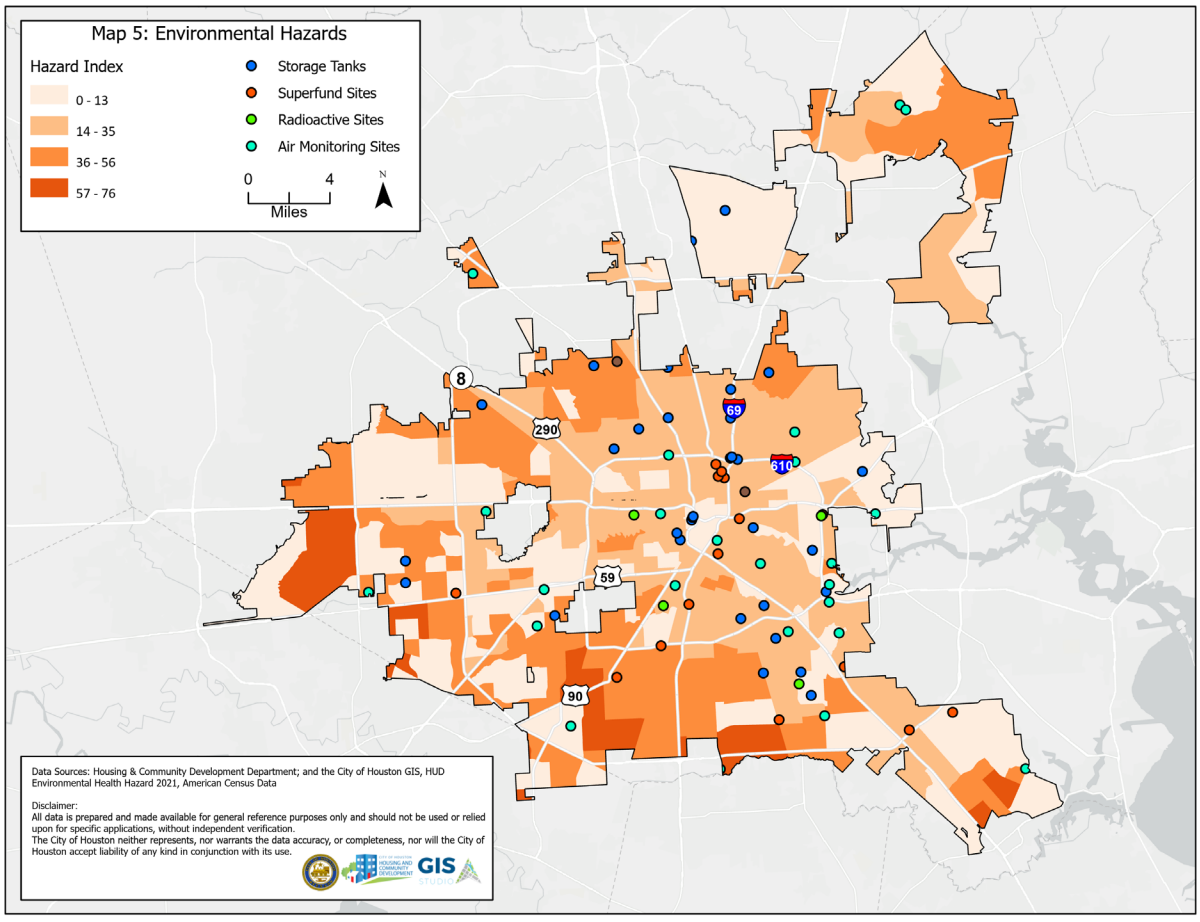
Proximity to Natural and Environmental Hazards

Housing and health are linked; a home is one of many social determinants of health. The affordability, safety, and quality of a home may spur detrimental conditions inside the home and may inhibit medical care or treatment for those who are strained financially by housing costs. Environmental and social characteristics of neighborhoods can also impact health, positively or negatively.

East Houston has been identified by the EPA as being exposed to a multitude of pollutants due to its proximity to industrial and chemical plants east of Houston. As illustrated in the following map, most health hazards are located east of the central business district in Houston and are near the Port of Houston. The map summarizes potential exposure to harmful toxins at a neighborhood level, which disproportionately affects areas with more people of color who live in east Houston. Another area of note is Kashmere Gardens, a historically black neighborhood that is experiencing a concentration of cancer-related deaths and other medical issues due to toxic chemical waste and emissions. In addition, natural disasters such as flooding are known to exacerbate such concerns.

The City's disaster recovery activities may mitigate environmental concerns and increase resilience among affected populations to protect against the effects of extreme weather events and other natural hazards. Home repair activities can help remove indoor air hazards, such as mold, and protect families from such hazards.

Figure 6: Map of Environmental Hazards



Affirmatively Furthering Fair Housing

The City of Houston is obligated to affirmatively further fair housing (AFFH). HUD regulations at 24 CFR 5.151 provide that affirmatively furthering fair housing means taking meaningful actions, in addition to combating discrimination, overcoming patterns of segregation, and fostering inclusive communities free from barriers that restrict access to opportunity based on protected characteristics. Specifically, affirmatively furthering fair housing means taking meaningful actions that, taken together, address significant disparities in housing needs and access to opportunity, replacing segregated living patterns with truly integrated and balanced living patterns, transforming racially or ethnically concentrated areas of poverty into areas of opportunity, and fostering and maintaining compliance with civil rights and fair housing laws. All planned disaster programs implemented by the City of Houston for recovery and resilience must take into consideration this obligation to AFFH.

Housing and Services for Vulnerable Populations

The City of Houston and HCD will continue to reach out and promote housing for vulnerable populations through CDBG-DR and other funding sources. As documented in the City's Consolidated Plan and other consolidated planning documents, HCD will continue to partner with the Coalition for the Homeless of Houston/Harris County and other organizations that provide housing and services to persons experiencing homelessness or who are at risk of becoming homeless. In early 2023, the City of Houston opened the Navigation Center to assist homeless individuals find services and housing assistance. HCD also provides rental assistance through various funding sources to prevent low- and moderate-income individuals and families with children from becoming homeless. HCD will also continue funding agencies and services that assist populations with special needs who are not experiencing homelessness but require supportive housing, including victims of domestic violence, persons with HIV/AIDS and their families, public housing residents, and seniors. This assessment also reflects a need for assistance to those impacted most by the Winter Storm and other recent disasters and those least likely to quickly recover from disaster events. This includes low-income residents, residents with little resources, and vulnerable populations.

3. Infrastructure Unmet Need

a. Disaster Damage and Impacts - Infrastructure

There have been 8 major disaster declarations in Houston since 2015. The most common natural disasters that result in a federal disaster declaration are floods and hurricanes. The City of Houston is still rebuilding from previous disasters, including Hurricane Harvey. Most damage from recent disasters includes damage to buildings and infrastructure like water system facilities, roads, and bridges due to flooding. In addition to direct damage to infrastructure caused by flooding, infrastructure that is aging or under-sized can also lead to flooding in residential homes and other buildings.

Different from previous disasters, the 2021 Winter Storm's electricity loss led to much of the subsequent damage or infrastructure systems failures, like the loss of drinking water. The City's preparation and post-disaster assistance for any disaster relies heavily on electricity that is subject to outages during a disaster. The loss of power can potentially leave residents stranded or in unsafe conditions in their homes, but it can also impact emergency responders and the City's ability to provide critical safety services and other general services that are necessary before, during, and after a disaster. During the 2021 Winter Storm, the critical infrastructure across the city experienced challenges in power generation reliability.

FEMA Public Assistance

Initially, FEMA approved only assistance for emergency protective measures (Category B) in all 254 Texas counties. In September 2021, FEMA approved an additional 44 counties for all categories (A-G) of FEMA Public Assistance; however, counties in and around the Houston area were not part of the expansion. Therefore, the City of Houston only has information for FEMA Public Assistance Category B, which are actions taken by the City before, during, and after a disaster to save lives, protect public health and safety, and prevent damage to improved public and private

property. Generally, these are actions taken by the City to warn residents, reduce the disaster damage, ensure the continuation of essential public services, and protect lives and public health or safety. The table below shows the estimated FEMA PA Cost by the one category made available to the City of Houston through the program.

Table 23: Total Cost and Need by PA Category

PA Category	Estimated PA Cost	Local Match	15% Resiliency	Total Need (Match + Resiliency)
A – Debris	-	-	-	-
B – Emergency Measures	$12,600,000	$1,400,000	$1,890,000	$3,290,000
C – Roads and Bridges	-	-	-	-
D – Water Control Facilities	-	-	-	-
E – Building and Equipment	-	-	-	-
F – Utilities	-	-	-	-
G - Other	-	-	-	-
Total	**$12,600,000**	**$1,400,000**	**$1,890,000**	**$3,290,000**

Source: City of Houston

Although the City was only allowed to submit for assistance for one FEMA public assistance category, this does not mean that there weren't other impacts to infrastructure from the 2021 Winter Storm. After the 2021 Winter Storm, the City of Houston assessed damage to City-owned buildings and facilities. The estimated damage was $4 million, and the City will make an insurance claim of this amount for citywide insured property damages related to the 2021 Winter Storm, which include City-owned buildings/structures, contents within the buildings, and plant facilities (wastewater and drinking water. The City's deductible is approximately $2 million, which also represents an unmet need.

Hazard Mitigation Grant Program

The FEMA Hazard Mitigation Grant Program (HMGP) serves as a resource to fund programs that reduce the risk of loss of life and property and is activated following a presidential major disaster declaration. HMGP funds, provided at the amount of FEMA disaster recovery assistance under the presidential disaster declaration, are allocated on a sliding scale formula based on an appropriate percentage of the estimated total of federal assistance (less administrative costs) wherein each activity is required to have at least a 25 percent non-federal cost share.

The next table shows the HMGP applications submitted from DR-4586. The City of Houston requested $7.6 million in funding, which requires a $2.4 million local match. The local match represents an unmet need for infrastructure.

Table 24: Hazard Mitigation Grant Program Applications for DR-4586

Application Description	HMGP Request (Federal)	Total Local Match Needed (Unmet Need)	Total Project Cost
Generators for Lift Station and Wastewater	$5,889,000	$1,837,500	$7,717,500
Generators for Emergency Services (Police/Fire)	$1,732,837	$577,612	$2,310,450
Total	**$7,621,837**	**$2,415,112**	**$10,036,950**

Source: City of Houston

Infrastructure Mitigation

The *Resilient Houston* plan outlines the types of consequences likely to affect the City in a landscape of changing climate and describes the steps necessary to better combat those consequences. Among them is a subset of goals, under the heading of leveraging disaster recovery resources, which includes steps like prioritizing and investing in

resilient infrastructure and transforming City assets. The plan also cites the identification of additional critical and essential facilities for fortification in City efforts to modernize building codes and standards. Additionally, the City's Hazard Mitigation Plan identifies critical facilities as subject to hazards in winter storms, including 111 Law Enforcement Facilities; 110 Fire, Rescue, and Emergency Services Facilities; 3 Airports with Support Facilities; 14 Healthcare/Public Health Facilities; and 24 Hospitals.

During the 2021 Winter Storm, much of Houston's service area experienced power failures that partially contributed to the City-wide boil water notice. As the largest regional water provider in the greater Houston metropolitan area, over 4 million people rely on the City's drinking water system for their potable water. The City has identified a need for additional reliable sources of backup power generation by increasing and hardening emergency power production as a way to increase drinking water resilience. The current unmet need for improving electricity generation to keep drinking water facilities online during a disaster is over $20 million.

Similar issues can occur due to loss of power for other critical infrastructure, including wastewater operations, traffic and drainage operations, and emergency services. The City is working to provide backup power through the placement or upgrade of emergency generators at police and fire facilities and has applied for funding through the Hazard Mitigation Grant Program to support these efforts. These critical City facilities support a wide range of first responders, such as SWAT, Fire, and Police. These facilities hold tactical equipment, some of which cannot work without power. Without backup power, communication is also lost which immediately hinders rescue operations, which could be even more devastating in a disaster. The total estimated cost to upgrade generators through the Emergency Services Generator Project is $36,283,875.

Table 25: Hazard Mitigation Needs per County or Known Project (as applicable)

Project	Cost	Funding Source	Unmet Need
Drinking Water Generator Improvement	$20,708,536	$0	$20,708,536
Wastewater Operations Generator Improvement	$2,514,337	$0	$2,514,337
Traffic and Drainage Operations Generator Improvement	$1,814,337	$0	$1,814,337
Emergency Services Generator Project	$36,283,875	$0	$36,283,875
Total	**$61,321,085**	**$0**	**$61,321,085**

Source: City of Houston Office of Emergency Management and Houston Public Works

Summary of Infrastructure Unmet Need

HUD's method to calculate 2021 unmet needs for infrastructure projects uses the expected local cost share to repair permanent public infrastructure (FEMA Categories C to G) to their pre-storm conditions. As only FEMA Category B of Public Assistance was available to the City of Houston, there are no unmet needs for infrastructure using this calculation. However, if an alternative method is used to include local costs to restore buildings and equipment, and the estimated cost to add or enhance generators for critical infrastructure and emergency services, the City's infrastructure unmet need is $2,000,000 and the mitigation unmet need related to infrastructure is $61,321,085.

4. Economic Revitalization Unmet Need

a. Disaster Damage and Impacts – Economic Revitalization

At the beginning of February 2021, the United States had optimism about the vaccine rollout with new COVID-19 cases plummeting and fewer hospitalizations. Like other places around the world, the economic toll of COVID-19 was immense. The economic conditions before the 2021 Winter Storm mainly included addressing issues of COVID-19 and its impacts.

Houston's economy is the 7th largest in the country. In January 2021, the Texas Workforce Commission reported that the unemployment rate for the United States was 6.8%, Texas was 7%, and the Houston metro area was 7.9%. A year later in January 2022, there was a significant decrease in unemployment with the Houston area unemployment rate decreasing to 5.5%.[18] Houston's economy is diverse with the health, education, business, and professional services industries accounting for nearly 1 out of 3 jobs in the area.[19] The Texas Medical Center, the world's largest medical complex, and the Johnson Space Center are in Houston. Digital technology and innovation continue to grow with over 60 organizations supporting tech start-ups in Houston.

Small Business Administration

The SBA offers Business Physical Disaster Loans and Economic Injury Disaster Loans (EIDL) to businesses to repair or replace disaster-damaged property, including real estate, inventories, supplies, machinery, equipment, and working capital until normal operations resume. Businesses of all sizes as well as private, nonprofit organizations are eligible for SBA business disaster loans. There were 361 SBA applicants, and the 34 approved applicants had $2,551,165 in Current Total Verified Loss and have received $2,367,600 in funds disbursed by the SBA. Based on HUD's methodology the remaining unmet need for economic revitalization in Houston is $5,738,372.

HUD estimates the unmet need for small businesses by multiplying the median damage estimates for Categories 3-5 by the number of small businesses denied an SBA loan.

- Category 1: Real estate + content loss = below $12,000
- Category 2: Real estate + content loss = $12,000–$29,999
- Category 3: Real estate + content loss = $30,000–$64,999
- Category 4: Real estate + content loss = $65,000–$149,999
- Category 5: Real estate + content loss = $150,000 and above

This estimate assumes that damage among those denied at pre-inspection has the same distribution of damage as those denied after inspection.

Table 26: SBA Applicants Approved and Denied and Unmet Need

Category	Number of Applicants	Amount Disbursed	Unmet Need
Approved	**32**	**$2,367,600**	**-**
Denied	**166**	**-**	**$5,738,372**
Auto Decline – Credit	30	-	-
Declined	136	-	-
Duplicate	**8**	-	-
In Approval	**0**	-	-

[18] *State Continues Streak of Positive Job Gains in First Month of 2022* Greater Houston Partnership, March 11, 2022. Available at https://www.twc.texas.gov/news/texas-unemployment-rate-48-percent-state-adds-29000-jobs-january

[19] *Talking Points;* Greater Houston Partnership, January 24, 2022. Available at https://www.twc.texas.gov/news/texas-unemployment-rate-48-percent-state-adds-29000-jobs-january

Late Filing – Not Accepted	**2**	-	-
Withdrawn	**151**	-	-

Source: *Small Business Administration*, February 2023

Summary of Economic Unmet Need

Overall, the Houston economy continues to strengthen even following disaster declarations for COVID-19 and the 2021 Winter Storm. Economic recovery differs by neighborhood and can also look different from household to household. Individuals with lower educational attainment or employment skills may be less resilient than others to recover from a major disaster event. So, although the economy is improving at a macro level, many households have struggled to recover from the multiple disaster events impacting Houston residents since 2015.

5. Mitigation Needs Assessment

As required by HUD, the City of Houston developed a mitigation needs assessment based in part on the *City of Houston Hazard Mitigation Plan*. To develop the mitigation needs assessment, the City reviewed: the FEMA Local Mitigation Plan Handbook, the Department of Homeland Security (DHS) Office of Infrastructure Protection, the National Association of Counties Improving Lifelines (2014), resources about wildfires from the U.S. Forest Service, the National Interagency Coordination Center (NICC), the CDBG-MIT Action Plan, and HUD's CPD mapping tool. This assessment addresses current and future risks, including hazards, vulnerability, and impacts of disasters, and identifies appropriate mitigation actions to reduce the highest risks that Houston faces. This mitigation needs assessment informs the use of the 15% CDBG-DR mitigation set-aside and helps to build resilience and mitigation measures into recovery programs and projects.

Overview of the City of Houston Hazard Mitigation Plan

The goal of the *Hazard Mitigation Plan* is to minimize or eliminate long-term risks to human life and property from known hazards by identifying and implementing cost-effective hazard mitigation actions. The participatory planning process is an opportunity for the City of Houston, other government and business stakeholders, and the general public to evaluate and develop successful hazard mitigation actions and reduce the future risk of fatalities and property damage resulting from a disaster in the City of Houston.

The mission statement of the Hazard Mitigation Plan is: "Maintaining a secure and sustainable future through the revision and development of targeted hazard mitigation actions to protect life and property." Hazard mitigation activities are an investment in a community's safety and sustainability. It is widely accepted that the most effective hazard mitigation measures are implemented at the local government level, where decisions on the regulation and control of development are ultimately made. Throughout the planning process, which was guided by the Texas Division of Emergency Management, members of community groups, local businesses, neighboring jurisdictions, schools, and hospitals were invited to participate in the City of Houston's Office of Emergency Management's (OEM) development of the Plan. Elements of the Hazard Mitigation Plan have been used to inform this assessment, including hazard identification, risk assessment, and the identification of potential projects.

Hazard Analysis and Lifeline Assessment

The most recent comprehensive hazard identification and risk assessment for mitigation planning was completed in 2018. Upon a review of the full range of natural hazards suggested under the FEMA planning guidance, the City of Houston identified 12 hazard types, 11 natural hazards, and 1 quasi-technological hazard (dam failure), as significant enough to include in the *City of Houston Hazard Mitigation Plan*. This data is presented in the table below titled "Hazard Risk Ranking." Potential severity categories are defined in the table titled "Impact Statements."

Table 27: Hazard Risk Ranking

Hazard	Frequency of Occurrence	Potential Severity	Ranking
Flood	Highly Likely	Substantial	High
Hurricane	Highly Likely	Major	High
Extreme Heat	Highly Likely	Substantial	High
Thunderstorm Wind	Highly Likely	Substantial	High
Lightning	Highly Likely	Substantial	Moderate
Tornado	Likely	Substantial	Moderate
Expansive Soils	Likely	Limited	Low
Hail	Highly Likely	Limited	Low
Wildfire	Highly Likely	Minor	Low
Drought	Highly Likely	Limited	Low
Dam Failure	Unlikely	Substantial	Low
Winter Storm	Likely	Limited	Low

Source: *City of Houston Hazard Mitigation Plan Update 2018*

Table 28: Impact Statements

Potential Severity	Description
Substantial	Multiple deaths. Complete shutdown of facilities for 30 days or more. More than 50 percent of property destroyed or with major damage.
Major	Injuries and illnesses result in permanent disability. Complete shutdown of critical facilities for at least 2 weeks. More than 25 percent of property was destroyed or with major damage.
Minor	Injuries and illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than 1 week. More than 10 percent of property was destroyed or with major damage.
Limited	Injuries and illnesses are treatable with first aid. Shutdown of critical facilities and services for 24 hours or less. Less than 10 percent of property is destroyed or with major damage.

Source: *City of Houston Hazard Mitigation Plan Update 2018*

This mitigation risk assessment addresses all hazards identified in the *City of Houston Hazard Mitigation Plan* and the CDBG-MIT Action Plan. More detailed analyses are provided on hazards that have significantly impacted Houston in recent years as well as sea level rise. These risks are considered the highest likelihood for the City of Houston.

FEMA defined Community Lifelines for incident response allowing the federal government a better understanding of the impacts of hazards and disasters in state and local jurisdictions. Although the *City of Houston Hazard Mitigation Plan* does not currently evaluate hazards using these lifelines, future risk assessments and plans will include lifeline assessments to align with this federal initiative. The lifelines assessed and their components are shown in the following table.

Table 29: Community Lifeline Components

Safety & Security	Food, Water, Sheltering	Communications
Law Enforcement/Security	Food	Infrastructure
Fire Service	Water	Responder Communications
Search and Rescue	Shelter	Alerts, Warnings, Messages
Government Service	Agriculture	Finance
Community Safety		911 and Dispatch
Transportation	**Health and Medical**	**Hazardous Material (Mgmt)**
Highway/Roadway/Motor Vehicle	Medical Care	Facilities
Mass Transit	Public Health	HAZMAT, Pollutants, Contaminants
Railway	Patient Movement	**Energy**
Aviation	Medical Supply Chain	Power Grid
Maritime	Fatality Management	Fuel

Source: FEMA Community Lifelines Toolkit 2.0

Ensuring the resilience of Community Lifelines is an important concept in all phases of emergency management. To quantitatively assess lifelines, the City of Houston is evaluating known facilities and infrastructure to support each lifeline and conducting geographic assessments of each with known hazard zones. The quantitative assessment is limited to flood risks (both inland and coastal). A preliminary assessment of each lifeline by hazard is provided in this section using vulnerability and consequence/impact assessments for each of the seven community lifelines. The classifications of vulnerability and consequences are shown in the following tables "Vulnerability Classifications" and "Consequence Classifications." These assessments are presented at the end of each hazard section. Consequence analysis may include all components of a lifeline or be isolated to one or two components or subcomponents that are critical in each hazard condition.

Table 30: Vulnerability Classifications

Vulnerability	Description
High Vulnerability	Geographically widespread exposure of facilities and systems to the damaging effects of a hazard AND the lifeline has low resilience to a hazard.
Moderate Vulnerability	The geographic exposure of facilities and systems to a hazard is widespread OR the lifeline has low resilience to a hazard and the hazard is geographically isolated.
Low Vulnerability	Exposure of facilities and systems related to a community lifeline is geographically isolated OR the system itself has significant resilience to the hazard.

Source: City of Houston OEM

Table 31: Consequence Classifications

Consequence	Description
Significant Impact to Lifeline/Services	In the worst, most probable hazard situation, services and infrastructure are fully functioning within weeks of onset of the hazard condition.
Moderate Impact to Lifeline/Services	In the worst, most probable hazard situation, services and infrastructure are fully functioning within days of onset of the hazard condition.
Low Impact to Lifeline/Services	In the worst, most probable hazard situation, services and infrastructure are fully functioning within hours of onset of the hazard condition.

Source: City of Houston OEM

The sections below provide an overview of the hazards affecting Houston, including information related to previous occurrences and their magnitude and impacts, as well as the probability of future hazard events.

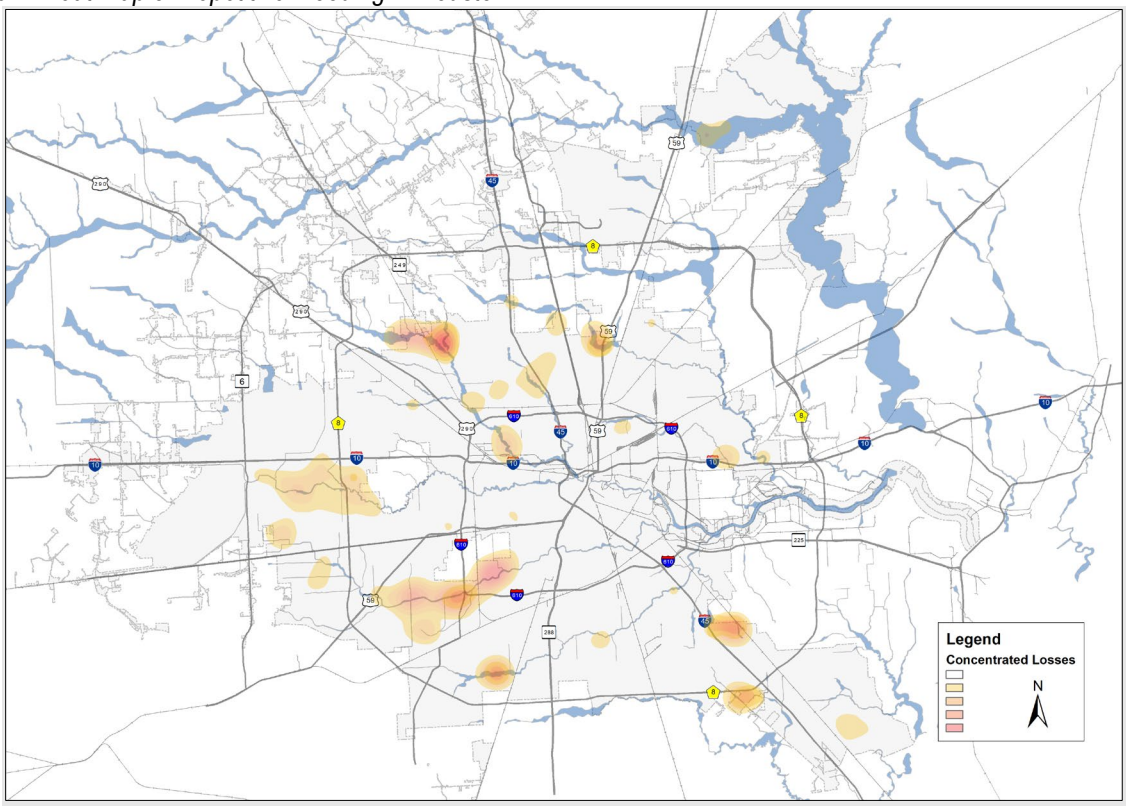
a. Flood

Flooding is the foremost hazard that threatens the City of Houston. The severity of a flood event is determined by a combination of several major factors including stream and river basin topography and physiography, precipitation and weather patterns, moisture conditions of the watershed, recent soil moisture conditions, the degree of vegetative clearing and impervious surfaces, and drainage system capacity and condition of infrastructure. Floods can be short-term or long-term in duration, ranging from several hours to several days.

The Harris County Flood Control District (HCFCD) and FEMA are currently partnering on a flood hazard assessment project to produce a comprehensive set of maps that will include previously unmapped urban flood hazards. Current maps do not account for all the complexities of drainage patterns in a rapidly developing environment and are an incomplete snapshot of flood risk in the Houston area. This assessment will incorporate the National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 results, which include increased estimates of the precipitation amounts in a standard return period (i.e., 100-year interval).[20] HCFCD's project will culminate in the development of new FEMA Flood Insurance Rate Maps (FIRMs), which are used to regulate new development and to control the improvement and repair of substantially-damaged buildings, and other flood risk projects.

HCFCD has reviewed recent storms within the new parameters outlined by the Atlas 14 study. Since 2016 Houston has experienced a 50-year storm, two 100-year storms, and a 500-year storm. If the timeline is extended to twenty years and includes Tropical Storm Allison, Houston has experienced two storms with a 500-year probability of recurrence. Data for the Houston area indicates a 30 percent increase in estimated rainfall during extreme events. Flood risks are likely to be greater than previously thought. The figure below shows the intensity of repetitive flood losses in Houston.

Figure 7: Heat Map of Repetitive Flooding in Houston



Source: Houston Public Works

[20] Source: Harris County Modeling Assessment and Awareness Project. http://www.maapnext.org/

Flooding is the deadliest natural disaster that occurs in the U.S. each year, and it poses a constant and significant threat to the health and safety of the people in the City of Houston. Flooding impacts to the community can include:

- Flood-related rescues may be necessary due to swift water and low water crossings, or in flooded neighborhoods where roads have become impassable, which places first responders and residents in harm's way. This increases the risk to first responders.
- Evacuations may be required for entire neighborhoods because of rising floodwaters, further taxing limited response capabilities, and increasing sheltering needs for displaced residents.
- Health risks and threats to residents are elevated after flood waters have receded due to contamination (untreated sewage and hazardous chemicals) and mold growth typical in flooded buildings and homes.
- Significant flood events often result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outages can also result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternative, unsafe cooking or heating devices, such as grills.
- Floods can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.
- First responders are exposed to downed power lines, contaminated and potentially unstable debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Emergency operations and services may be significantly impacted due to damaged facilities.
- Significant flooding can result in the inability of emergency response vehicles to access areas of the community.
- Critical staff may suffer personal losses or otherwise be impacted by a flood event and be unable to report for duty, limiting response capabilities.
- City or county departments may be flooded, delaying response and recovery efforts for the entire community.
- Private sector entities that the City and its residents rely on, such as utility providers, financial institutions, and medical care providers, may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- Some businesses not directly damaged by the flood may be negatively impacted while utilities are being restored or water recedes, further slowing economic recovery.
- When the community is affected by significant property damage it is anticipated that funding would be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures substantially damaged by a flood may not be rebuilt for years and uninsured or underinsured residential structures may never be rebuilt, reducing the tax base for the community.
- Large floods may result in dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Flooding may cause significant disruptions to clean water and sewer services, elevating health risks and delaying recovery efforts.
- The psychosocial effects on flood victims and their families can traumatize them for long periods, creating long-term increases in medical treatment and services.
- Extensive or repetitive flooding can lead to decreases in property value for the affected community.

- Flood poses a potentially catastrophic risk to annual and perennial crop production and overall crop quality, leading to higher food costs.
- Flood-related declines in production may lead to an increase in unemployment.
- The City of Houston includes 52,912 acres of total park space. Recreation activities throughout the City's parks may be unavailable, and tourism can be unappealing for years following a large flood event, devastating directly-related local businesses and negatively impacting economic recovery.
- Flooding exacerbates the housing inequality crisis and further reduces the City's accessibility to affordable housing structures.
- Significant sediment redeposition throughout the community alters the natural waterways, increases erosion, and impairs the Houston Ship Channel.
- Flooding increases pollutants and toxicants in the local waterways, affecting the ecosystem, residential use, and quality of life in the community.

A summary assessment of flood hazard vulnerability and impacts on the community lifelines is presented in the following table.

Table 32: Flood Vulnerability and Consequence Summary by Lifeline

Flood	Vulnerability	Consequence
Safety and Security	High Vulnerability	Moderate Impact on Lifeline/Services
Food, Water, Sheltering	High Vulnerability	Significant Impact on Lifeline/Services
Communications	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Transportation	High Vulnerability	Significant Impact on Lifeline/Services
Health and Medical	Moderate Vulnerability	Significant Impact on Lifeline/Services
Hazardous Material (Mgmt)	High Vulnerability	Significant Impact on Lifeline/Services
Energy (Power and Fuel)	High Vulnerability	Significant Impact on Lifeline/Services

Source: Houston Public Works, *Hazard Mitigation Plan*

b. Hurricane

The location of the City of Houston near the Gulf Coast increases vulnerability to direct and indirect factors related to a hurricane event, such as high-force winds, storm surge, and flooding. Hurricanes and/or tropical storms can impact Houston during the official Atlantic U.S. hurricane season, which occurs between June 1 and November 30 each year. The City of Houston is in a moderate- to high-risk area for hurricane wind speeds up to 155 miles per hour (mph). Forty-three tropical cyclones have occurred within 50 miles of the City of Houston since 1871.

Hurricanes are categorized according to the strength and intensity of their winds using the Saffir-Simpson Hurricane Scale, as shown in the following table. A Category 1 storm has the lowest wind speeds, while a Category 5 hurricane has the highest. However, a lower category storm may inflict greater damage than higher category storms depending on location, storm surge, regional weather patterns, and speed.

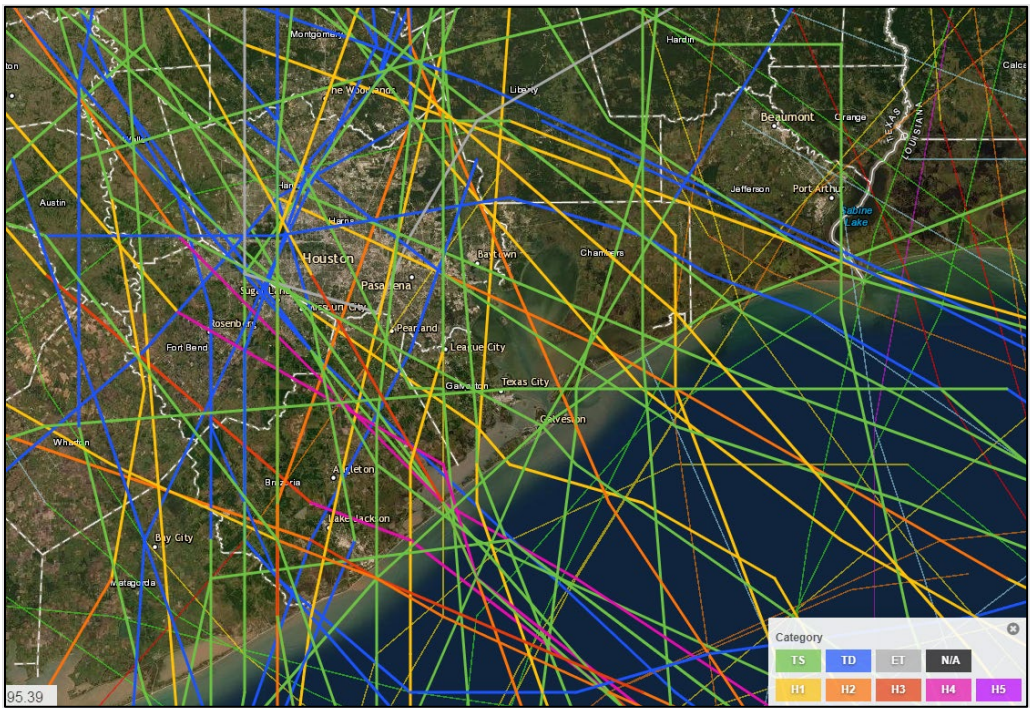
Table 33: Saffir-Simpson Scale

Category	Maximum Sustained Wind Speed (mph)	Minimum Surface Pressure (millibars)	Storm Surge (feet)
1	74 – 95	Greater than 980	3 – 5
2	96 – 110	979 – 965	6 – 8
3	111 – 130	964 – 945	9 – 12
4	131 – 155	944 – 920	13 – 18
5	155 +	Less than 920	19+

Source: https://www.nhc.noaa.gov/aboutsshws.php

The following figure presents historical tracking of tropical storms and hurricanes that have impacted the City of Houston.

Figure 8: Historical Hurricane Tracks near Houston



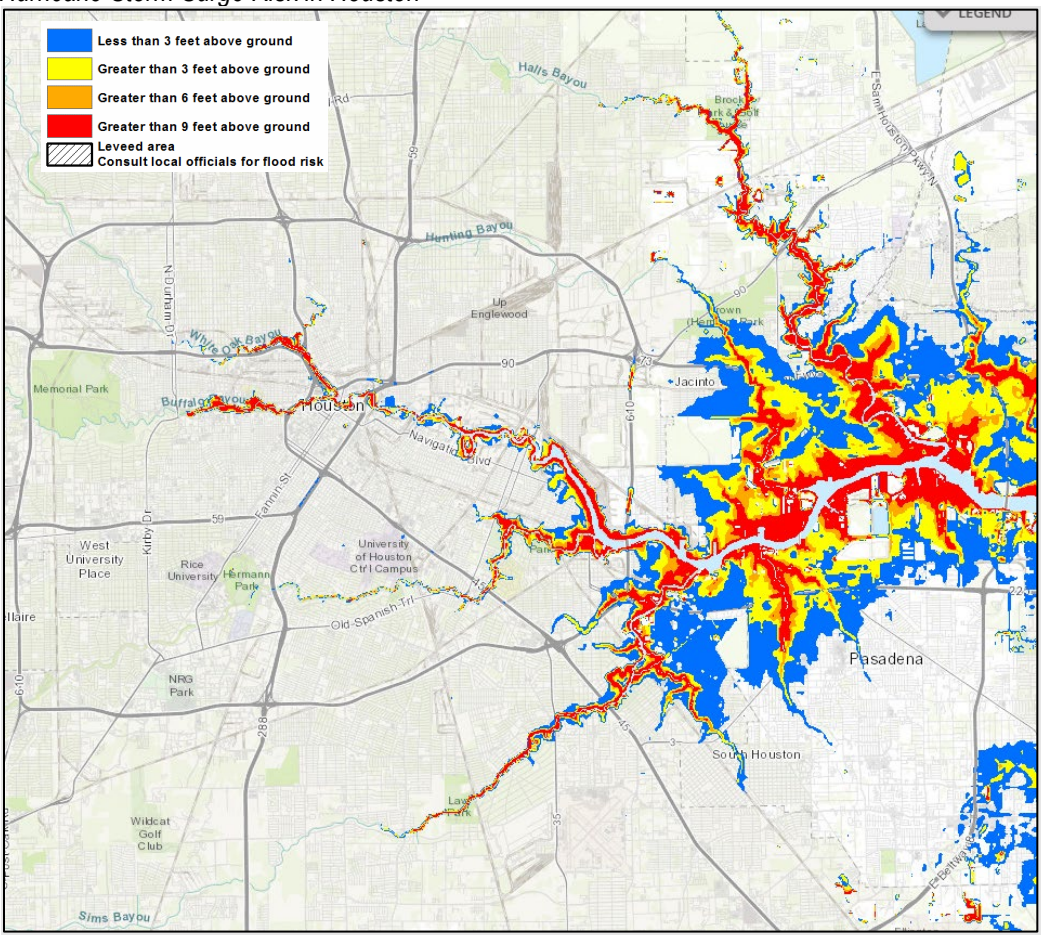
Source: https://coast.noaa.gov/hurricanes/

Hurricanes and Tropical Storms can cause major damage, all existing buildings, facilities, and populations are equally exposed and vulnerable to this hazard and could potentially be impacted. Approximately 52 percent of single-family residential homes, representing about 514,077 structures in the city, were built before 1980.[21] These structures are more susceptible to storm damage due to outdated and less stringent construction standards and building codes.

Houston also has multiple mobile or manufactured home parks. These parks are more vulnerable to hurricane events than typical site-built structures if they are not properly anchored or properly maintained. The 2016-2020 American Community Survey indicates a total of 9,150 manufactured homes located in the City of Houston.

[21] Source: U.S. Census Bureau 5-year American Community Survey 2016-2020.

Figure 9: Hurricane Storm Surge Risk in Houston



Source: NOAA, National Storm Surge Hazard Maps: https://noaa.maps.arcgis.com/home/index.html

The previous figure presents the risk associated with a storm surge produced by a hurricane. It should be noted that storm surge is not entirely dependent on the strength of the storm but can vary depending on the size or speed of the storm.

Hurricane events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. In addition to the effects of widespread flooding previously described, the impacts of hurricanes on the Houston community can include:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Driving conditions may be dangerous during a hurricane event, especially over elevated bridges, increasing the risk of injury and accidents during evacuations if not timed properly.
- Emergency evacuations may be necessary before a hurricane makes landfall, requiring emergency responders, evacuation routing, and temporary shelters.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.

- During hurricane landfall, first responders may be prevented from responding to calls as the winds may reach a speed at which their vehicles and equipment are unsafe to operate.
- Hurricane events often result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outages can also increase structure fires and carbon monoxide poisoning as individuals attempt to cook or heat their homes with alternative, unsafe cooking or heating devices, such as grills.
- Extreme hurricane events may rupture gas lines and down trees and power lines, increasing the risk of structure fires during and after a storm event.
- Extreme hurricane events may lead to prolonged evacuations during search and rescue, and immediate recovery efforts requiring additional emergency personnel and resources to prevent entry, protect citizens, and protect property.
- First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions.
- Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications.
- Critical staff may be unable to report for duty, limiting response capabilities.
- City or county departments may be damaged, delaying response and recovery efforts for the entire community.
- Private sector entities that the City and its residents rely on, such as utility providers, financial institutions, and medical care providers, may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses not directly damaged by the hurricane may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Older structures built to less stringent building codes may suffer greater damage as they are typically more vulnerable to hurricane damage.
- Large-scale hurricanes can have a significant economic impact on the affected area, as it must now fund expenses such as infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damage without a backup power source.

The economic and financial impacts of a hurricane will depend entirely on the scale of the event, an inventory of damage, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning performed by the counties, communities, local businesses, and residents will also contribute to the overall economic and financial conditions in the aftermath of any hurricane event.

Based on historical occurrences of significant hurricane events, the probability of future events is highly likely with the frequency of occurrence of one event, every year for the City of Houston. A summary assessment of hurricane hazard vulnerability and impacts on the community lifelines is presented in the table below.

Table 34: Hurricane Vulnerability and Consequence Summary by Lifeline

Hurricane	Vulnerability	Consequence
Safety and Security	High Vulnerability	Significant Impact on Lifeline/Services
Food, Water, Sheltering	High Vulnerability	Significant Impact on Lifeline/Services
Communications	High Vulnerability	Significant Impact on Lifeline/Services
Transportation	High Vulnerability	Significant Impact on Lifeline/Services
Health and Medical	Moderate Vulnerability	Significant Impact on Lifeline/Services
Hazardous Material (Mgmt)	High Vulnerability	Significant Impact on Lifeline/Services
Energy (Power and Fuel)	High Vulnerability	Significant Impact on Lifeline/Services

c. Extreme Heat

Extreme heat occurs when temperatures hover ten degrees or more above the average temperature in a region for an extended period. Extreme heat is often associated with conditions of high humidity. When these conditions persist over a long period of time, it is defined as a heat wave. Extreme heat during the summer months is a common occurrence throughout the State of Texas, and the City of Houston is no exception. In addition, the City of Houston experiences urban heat islands, primarily in downtown areas, due to an increase in asphalt and concrete.

The greatest risk from extreme heat is to public health and safety. Potential impacts to the community may include:

- Vulnerable populations, particularly the elderly and children under 5, can face serious or life-threatening health problems from exposure to extreme heat including hyperthermia; heat cramps; heat exhaustion; and heat stroke (or sunstroke).
- Response personnel including utility workers, public works personnel, and any other professions where individuals are required to work outside, are more subject to extreme heat-related illnesses since their exposure would typically be greater.
- High energy demand periods can outpace the supply of energy, potentially creating the need for rolling brownouts, which would elevate the risk of illness to vulnerable residents.
- Highways and roads may be damaged by excessive heat causing asphalt roads to soften and concrete roads to shift or buckle.
- Vehicle engines and cooling systems typically run harder during extreme heat events, resulting in increases in mechanical failures.
- Extreme heat events during times of drought can exacerbate the environmental impacts associated with drought, decreasing water and air quality, and further degrading wildlife habitat.
- Extreme heat increases ground-level ozone (smog), increasing the risk of respiratory illnesses.
- Tourism and recreational activities predominant in the City of Houston may be negatively impacted during extreme heat events, reducing seasonal revenue.
- Food suppliers can anticipate an increase in food costs due to increases in production costs and crop and livestock losses.
- Fisheries may be negatively impacted by extreme heat, suffering damage to fish habitats (either natural or man-made), and a loss of fish and/or other aquatic organisms due to decreased water flows or availability.
- Negatively impacted water suppliers may face increased costs resulting from the transport of water or developing supplemental water resources.
- Outdoor activities may see an increase in school injury or illness during extreme heat events.

The economic and financial impacts of extreme heat will depend on the duration of the event, demand for energy, drought associated with extreme heat, and many other factors. The level of preparedness and the amount of planning done by the jurisdiction, local businesses, and citizens will impact the overall economic and financial conditions before, during, and after an extreme heat event.

According to historical records, the City of Houston has experienced 63 events in a 21-year reporting period. This provides a frequency of occurrence of approximately 3 events every year. This frequency supports a highly likely probability of future events. A summary assessment of extreme heat hazard vulnerability and impacts on the community lifelines is presented in the following table.

Table 35: Extreme Heat Vulnerability and Consequence Summary by Lifeline

Extreme Heat	Vulnerability	Consequence
Safety and Security	Moderate Vulnerability	Low Impact to Lifeline/Services
Food, Water, Sheltering	Moderate Vulnerability	Low Impact to Lifeline/Services
Communications	Moderate Vulnerability	Low Impact to Lifeline/Services
Transportation	Low Vulnerability	Low Impact to Lifeline/Services
Health and Medical	Low Vulnerability	Low Impact to Lifeline/Services
Hazardous Material (Mgmt)	Moderate Vulnerability	Low Impact to Lifeline/Services
Energy (Power and Fuel)	High Vulnerability	Moderate Impact to Lifeline/Services

d. Thunderstorm Wind

Thunderstorms create extreme wind events including straight-line winds. Wind is the horizontal motion of the air past a given point, beginning with differences in air pressures. Pressure that is higher at one place than another sets up a force pushing from the high toward the low pressure: the greater the difference in pressures, the stronger the force. The distance between the area of high pressure and the area of low pressure also determines how fast the moving air is accelerated.

Straight-line winds are responsible for most thunderstorm wind damages. One type of straight-line wind, the downburst, is a small area of rapidly descending air beneath a thunderstorm. A downburst can cause damage equivalent to a strong tornado and make air travel extremely hazardous.

Thunderstorm wind events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. Impacts to the City of Houston can include:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees, causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- During exceptionally heavy wind events, first responders may be prevented from responding to calls, as the winds may reach a speed in which their vehicles and equipment are unsafe to operate.
- Thunderstorm wind events often result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outages often increase structure fires and carbon monoxide poisoning, as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions.
- Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications.
- Critical staff may be unable to report for duty, limiting response capabilities.

- City or county departments may be damaged, delaying response and recovery efforts for the entire community.
- Private sector entities that the City and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses not directly damaged by thunderstorm wind events may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Older structures built to less stringent building codes may suffer greater damage as they are typically more vulnerable to thunderstorm winds.
- Large-scale wind events can have a significant economic impact on the affected area, as it must now fund expenses such as infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damage without a backup power source.
- A large thunderstorm wind event could impact recreational activities, placing visitors and residents in imminent danger, and potentially requiring emergency services or evacuation. Recreational areas and parks may be damaged or inaccessible due to downed trees or debris, causing temporary impacts to area businesses.

The economic and financial impacts of thunderstorm winds will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses, and citizens will also contribute to the overall economic and financial conditions in the aftermath of any thunderstorm wind event.

Most thunderstorm winds occur during the spring, in March, April, and May, and in the fall, during September. Based on available records of historic events, 170 events, including those since the last update of the plan, in a 22-year reporting period provide a frequency of occurrence of 7 to 8 events every year. Even though the intensity of thunderstorm wind events is not always damaging for the City of Houston, the frequency of occurrence for a thunderstorm wind event is highly likely, meaning that an event is probable within the next year for the City of Houston A summary assessment of thunderstorm wind hazard vulnerability and impacts to the community lifelines is presented in the following table.

Table 36: Thunderstorm Wind Vulnerability and Consequence Summary by Lifeline

Thunderstorm Wind	Vulnerability	Consequence
Safety and Security	Low Vulnerability	Low Impact to Lifeline/Services
Food, Water, Sheltering	Moderate Vulnerability	Low Impact to Lifeline/Services
Communications	High Vulnerability	Moderate Impact to Lifeline/Services
Transportation	Low Vulnerability	Moderate Impact to Lifeline/Services
Health and Medical	Low Vulnerability	Low Impact to Lifeline/Services
Hazardous Material (Mgmt)	Moderate Vulnerability	Moderate Impact to Lifeline/Services
Energy (Power and Fuel)	Moderate Vulnerability	Significant Impact to Lifeline/Services

e. Lightning

Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a "bolt" when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes thunder which often accompanies lightning strikes. While most often affiliated with severe thunderstorms, lightning often strikes outside of heavy rain and might occur as far as 10 miles away from any rainfall.

According to the Federal Emergency Management Agency (FEMA), an average of 300 people are injured and 80 people are killed in the United States each year by lightning. Direct lightning strikes also can cause significant damage to buildings, critical facilities, and infrastructure. Lightning is also responsible for igniting wildfires that can result in widespread damage to property before firefighters can contain and suppress the resultant fire.

Based on historical records, the U.S. National Lightning Detection Network, and input from the City of Houston, the probability of occurrence for future lightning events in the City of Houston is considered highly likely, or an event probable in the next year. According to the National Oceanic and Atmospheric Administration (NOAA), the City of Houston is in a part of the country that experiences 12 to 28 lightning flashes per square mile per year (approximately 7,524 to 17,556 flashes per year). Given this estimated frequency of occurrence, it can be expected that future lightning events will continue to threaten life and cause minor property damage throughout the City of Houston.

Lightning events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. Impacts to the City of Houston can include:

- Lightning events could impact recreational activities, placing residents and visitors in imminent danger, and potentially requiring emergency services or park evacuation.
- Individuals exposed to the storm can be directly struck, posing significant health risks and potential death.
- Structures can be damaged or crushed by falling trees damaged by lightning, which can result in physical harm to the occupants.
- Lightning strikes can result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outages often increase structure fires and carbon monoxide poisoning, as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- Lightning strikes can be associated with structure fires and wildfires, creating additional risk to residents and first responders.
- Emergency operations and services may be significantly impacted due to power outages and/or loss of communications.
- City departments may be damaged, delaying response and recovery efforts for the entire community.
- Economic disruption due to power outages and fires negatively impacts the programs and services provided by the community due to short and long-term loss in revenue.
- Some businesses not directly damaged by lightning events may be negatively impacted while utilities are being restored, further slowing economic recovery.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damage without a backup power source.

The economic and financial impacts of lightning will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses, and citizens will also contribute to the overall economic and financial conditions in the aftermath of any lightning event.

A summary assessment of lightning hazard vulnerability and impacts to the community lifelines is presented in the following table.

Table 37: Lightning Vulnerability and Consequence Summary by Lifeline

Lightning	Vulnerability	Consequence
Safety and Security	Moderate Vulnerability	Low Impact to Lifeline/Services
Food, Water, Sheltering	Moderate Vulnerability	Low Impact to Lifeline/Services
Communications	Moderate Vulnerability	Moderate Impact to Lifeline/Services
Transportation	Low Vulnerability	Low Impact to Lifeline/Services
Health and Medical	Moderate Vulnerability	Low Impact to Lifeline/Services
Hazardous Material (Mgmt)	Moderate Vulnerability	Moderate Impact to Lifeline/Services
Energy (Power and Fuel)	High Vulnerability	Moderate Impact to Lifeline/Services

f. Tornado

A tornado is a rapidly rotating column of air extending between and in contact with, a cloud and the surface of the earth. [22] Tornadoes are among the most violent storms on the planet; the most violent tornadoes are capable of tremendous destruction, with wind speeds of 250 miles per hour (mph) or more. In extreme cases, winds may approach 300 mph. Damage paths can be over one mile wide and 50 miles long.

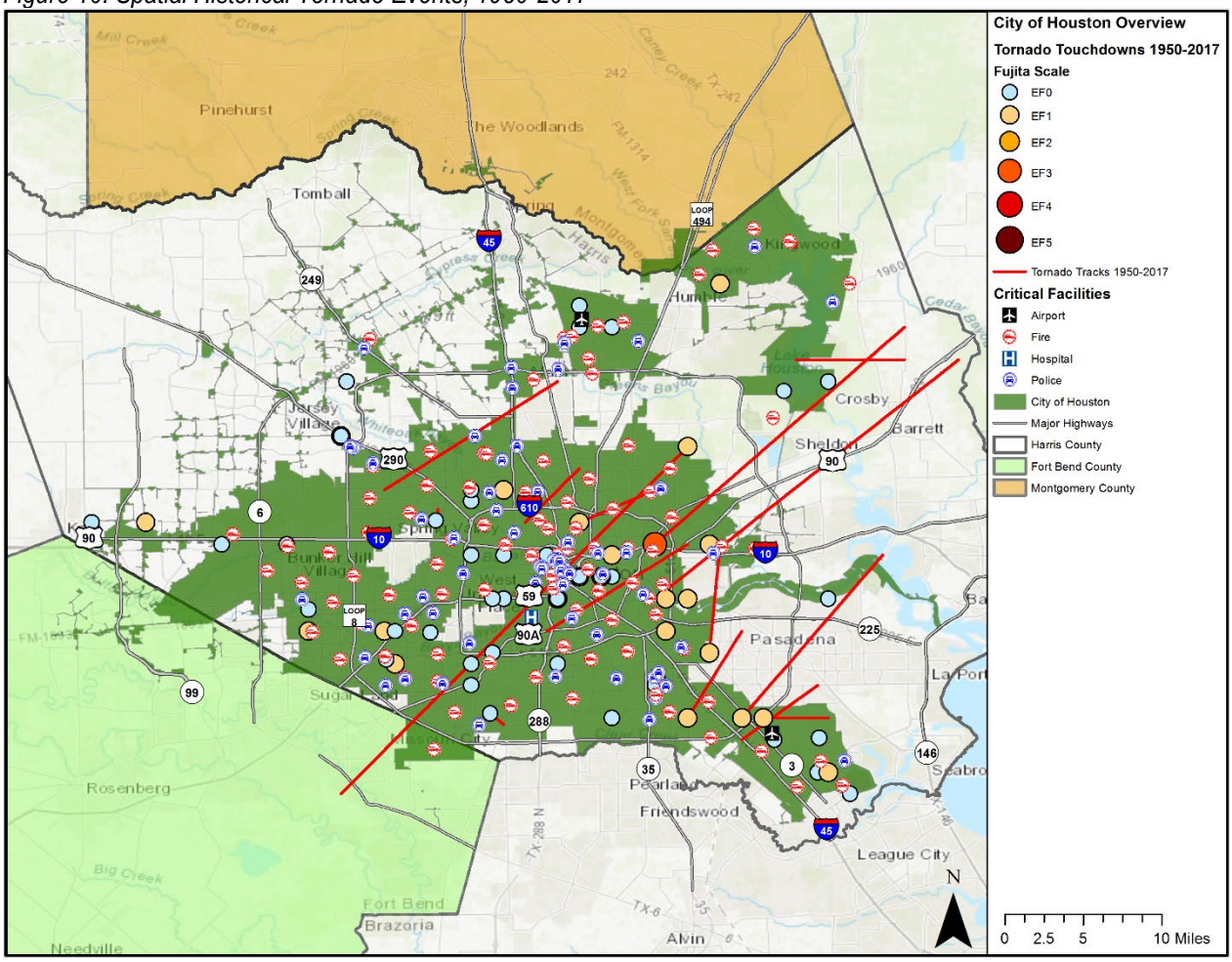
The most powerful tornadoes are produced by "supercell thunderstorms." Supercell thunderstorms are created when horizontal wind shears (winds moving in different directions at different altitudes) begin to rotate the storm. This horizontal rotation can be tilted vertically by violent updrafts, and the rotation radius can shrink, forming a vertical column of very quickly swirling air. This rotating air can eventually reach the ground, forming a tornado.

Tornado magnitudes before 2005 were determined using the traditional version of the Fujita Scale. Since February 2007, the Fujita Scale has been replaced by the Enhanced Fujita Scale, which retains the same basic design and six strength categories as the previous scale. The newer scale reflects more refined assessments of tornado damage surveys, standardization, and damage consideration to a wider range of structures. For this plan, those tornadoes that occurred prior to the adoption of the EF scale will still be mentioned in the Fujita Scale for historical reference.

Both the Fujita Scale and Enhanced Fujita Scale should be referenced in reviewing previous occurrences since tornado events before 2007 will follow the original Fujita Scale. The largest magnitude reported within the City of Houston is F2 on the Fujita Scale, a "Significant Tornado." Based on the City of Houston's location within wind risk rating zones, the City of Houston could experience anywhere from an EF0 to an EF4 depending on the wind speed. An EF4 is the worst, most probable tornado type for the City of Houston. Historical tornado tracks are presented in the following figure.

[22] Source: https://www.weather.gov/phi/TornadoDefinition

Figure 10: Spatial Historical Tornado Events, 1950-2017



Source: *City of Houston Hazard Mitigation Plan Update 2018*

Tornadoes have the potential to pose a significant risk to the population and can create dangerous situations. Often providing and preserving public health and safety is difficult. Impacts to the City of Houston can include:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees, causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Manufactured homes may suffer substantial damage as they would be more vulnerable than typical site-built structures.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- Tornadoes often result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outages can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Tornadoes can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.

- First responders must enter the damaged area shortly after the tornado passes to begin rescue operations and to organize cleanup and assessment efforts. Therefore, they are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Emergency operations and services may be significantly impacted due to damaged facilities, loss of communications, and damaged emergency vehicles and equipment.
- City or county departments may be damaged or destroyed, delaying response and recovery efforts for the entire community.
- Private sector entities that jurisdictions rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short and long-term loss in revenue.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- Some businesses not directly damaged by the tornado may be negatively impacted while roads and utilities are being restored, further slowing economic recovery.
- When the community is affected by significant property damage it is anticipated that funding would be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures destroyed by a tornado may not be rebuilt for years, reducing the tax base for the community.
- Large or intense tornadoes may result in dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Recreation activities may be unavailable, and tourism can be unappealing for years following a large tornado, devastating directly related local businesses.

The economic and financial impacts of a tornado event will depend on the scale of the event, what is damaged, costs of repair or replacement, lost business days in impacted areas, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a tornado event.

Tornadoes can occur at any time of year and at any time of day, but they are typically more common in the spring months during the late afternoon and evening hours. A smaller, high-frequency period can emerge in the fall during the brief transition between the warm and cold seasons. According to historical records, 16 events in a 67-year reporting period for the City of Houston provide a probability of occurrence of approximately one every three years. This frequency supports a likely probability of future events for the City of Houston. A summary assessment of tornado hazard vulnerability and impacts on the community lifelines is presented in the following table.

Table 38: Tornado Vulnerability and Consequence Summary by Lifeline

Tornado	Vulnerability	Consequence
Safety and Security	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Food, Water, Sheltering	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Communications	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Transportation	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Health and Medical	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Hazardous Material (Mgmt)	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Energy (Power and Fuel)	High Vulnerability	Significant Impact on Lifeline/Services

g. Expansive Soils

Expansive soils are soils and soft rocks with a relatively high percentage of clay minerals that are subject to changes in volume as they swell and shrink with changing moisture conditions. Drought conditions can cause soil to contract in response to a loss of soil moisture.

Expansive soils contain minerals such as smectite clays that are capable of absorbing water. When these clays absorb water, they increase in volume and expand. Expansions in soil of 10 percent or more are not uncommon in the City of Houston. The change in soil volume and resulting expansion can exert enough force on a building or other structure to cause damage.

Expansive soil will also lose volume and shrink when it dries. A reduction in soil volume can affect the support of buildings or other structures and result in damage. Fissures in the soil can also develop and facilitate the deep penetration of water when moist conditions or runoff occur. This produces a cycle of shrinkage and swelling that places repetitive stress on structures.

The amount and depth of potential swelling that can occur in a clay material are, to some extent, functions of the cyclical moisture content in the soil. In drier climates where the moisture content in the soil near the ground surface is low because of evaporation, there is a greater potential for extensive swelling than in the same soil in wetter climates where the variations of moisture content are not as severe. Volume changes in highly expansive soils range between 7 and 10 percent, however, under abnormal conditions, they can reach as high as 25 percent.

Homeowners and public agencies that assume they cannot afford preventative measures such as more costly foundations and floor systems often incur the largest percentage of damage and costly repairs from expanding soil. No figures are available for the total damage to homes in the City of Houston from expansive clays. For the City of Houston, the most extensive damage from expansive soil can occur to bridges, highways, streets, and parking lots. The greatest damage occurs when structures are constructed when clays are dry (such as during a drought) and then subsequent soaking rains swell the clay.

The impact of expansive soils experienced in the City of Houston has resulted in no injuries and fatalities, supporting a limited severity of impact meaning injuries and/or illnesses are treatable with first aid, a shutdown of facilities and services for 24 hours or less, and less than 10 percent of property is destroyed or with major damage.

Damages from expansive soils are typically associated with droughts, previous occurrences of expansive soils can be correlated with previous occurrences of drought, which are typically negligible. The City of Houston has experienced two known events. In the summer of 2011, a drought caused the ground to contract, leading to hundreds of broken pipes. The second event occurred in the summer of 2012, during a wet period, the ground expanded and led to cracks in the streets. A summary assessment of expansive soil hazard vulnerability and impacts on the community lifelines is presented in the following table.

Table 39: Expansive Soils Vulnerability and Consequence Summary by Lifeline

Expansive Soils	Vulnerability	Consequence
Safety and Security	Low Vulnerability	Low Impact to Lifeline/Services
Food, Water, Sheltering	Moderate Vulnerability	Low Impact to Lifeline/Services
Communications	Low Vulnerability	Low Impact to Lifeline/Services
Transportation	Moderate Vulnerability	Low Impact to Lifeline/Services
Health and Medical	Moderate Vulnerability	Low Impact to Lifeline/Services
Hazardous Material (Mgmt)	Low Vulnerability	Low Impact to Lifeline/Services
Energy (Power and Fuel)	Low Vulnerability	Low Impact to Lifeline/Services

h. Hail

Hailstorm events are a potentially damaging outgrowth of severe thunderstorms. During the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rise of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate into ice crystals until they fall as frozen masses of round or irregularly shaped ice typically greater than 0.75 inches in diameter. The size of hailstones is a direct result of the size and severity of the storm. High-velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a by-product of heating on the Earth's surface. Higher temperature gradients above the Earth's surface result in increased suspension time and hailstone size.
The National Weather Service (NWS) classifies a storm as "severe" if there is hail 3/4 of an inch in diameter (approximately the size of a penny) or greater, based on radar intensity or as seen by observers. The intensity category of a hailstorm depends on hail size and the potential damage it could cause,

In April 2001, numerous reports of hail were reported on the west side of Houston in the afternoon. Hail sizes from 0.75 inches to 1.5 inches were reported along I-10 between Hunters Creek Village and the West Loop. Hail measures 1 to 1.5 inches near South Braeswood and Fondren Road and accumulates up to several inches deep. The hail was still on the ground 24 hours after the storm. There were numerous reports of windows broken and trees and shrubs stripped of their leaves. Damage estimates exceeded $27 million (2017) dollars.

Hail events have the potential to pose a significant risk to people and can create dangerous situations. Impacts to the City of Houston can include:

- Hail may create hazardous road conditions during and immediately following an event, delaying first responders from providing for or preserving public health and safety.
- Individuals and first responders who are exposed to the storm may be struck by hail, falling branches, or downed trees resulting in injuries or possible fatalities.
- Residential structures can be damaged by falling trees, which can result in physical harm to occupants.
- Large hail events will likely cause extensive roof damage to residential structures along with siding damage and broken windows, creating a spike in insurance claims and a rise in premiums.
- Automobile damage may be extensive depending on the size of the hail and the length of the storm.
- Hail events can result in power outages over widespread areas, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outages can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- First responders are exposed to downed power lines, damaged structures, hazardous spills, and debris that often accompany hail events, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.

- Downed power lines and large debris, such as downed trees, can result in the inability of emergency response vehicles to access areas of the community.
- Hazardous road conditions may prevent critical staff from reporting for duty, limiting response capabilities.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses that are not directly damaged by the hail may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damage without a backup power source.
- Hazardous road conditions will likely lead to increases in automobile accidents, further straining emergency response capabilities.
- Depending on the severity and scale of damage caused by large hail events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- A significant hail event could significantly damage crops, resulting in extensive economic losses for the community and surrounding area.
- Hail events may injure or kill livestock and wildlife.
- A large hail event could impact the accessibility of recreational areas and parks due to extended power outages or debris-clogged access roads.

The economic and financial impacts of hail will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning conducted by the community, local businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of any hail event. The frequency of historic events supports a highly likely probability of future events in the Houston area.

A summary assessment of hail hazard vulnerability and impacts on the community lifelines is presented in the following table.

Table 40: Hail Vulnerability and Consequence Summary by Lifeline

Hail	Vulnerability	Consequence
Safety and Security	Moderate Vulnerability	Low Impact to Lifeline/Services
Food, Water, Sheltering	Moderate Vulnerability	Low Impact to Lifeline/Services
Communications	Moderate Vulnerability	Moderate Impact to Lifeline/Services
Transportation	Low Vulnerability	Low Impact to Lifeline/Services
Health and Medical	Moderate Vulnerability	Low Impact to Lifeline/Services
Hazardous Material (Mgmt)	Moderate Vulnerability	Low Impact to Lifeline/Services
Energy (Power and Fuel)	Moderate Vulnerability	Low Impact to Lifeline/Services

i. Wildfire

A wildfire event occurs most often in the summer when the brush is dry, and flames can move unchecked through a highly vegetative area. Wildfires can start as a slow-burning fire along the forest floor killing and damaging trees. The fires often spread more rapidly as they reach the tops of trees with wind carrying the flames from tree to tree. Dense smoke is usually the first indication of wildfire.

A wildfire event often begins unnoticed and spreads quickly, lighting brush, trees, and homes on fire. A wildfire may be started by a campfire that was not doused properly, a tossed cigarette, burning debris, or arson. Texas has seen a significant increase in the number of wildfires in the past 30 years, which included wildland, interface, or intermix

fires. Wildland Urban Interface or Intermix (WUI) fires occur in areas where structures and other human improvements meet or intermingle with undeveloped wildland or vegetative fuels. Wildland fires are fueled almost exclusively by natural vegetation while interface or intermix fires are urban/wildland fires in which vegetation and the built environment provide the fuel.

A wildfire can be a potentially damaging consequence of drought. Wildfires can vary greatly in terms of size, location, intensity, and duration. While wildfires are not confined to any specific geographic location, they are most likely to occur in open grasslands. The threat to people and property from a wildfire event is greater in the fringe areas where developed areas meet open grasslands, such as the WUI. It is estimated that 14.3 percent of the total population in the City of Houston lives within the WUI. However, the entire City of Houston is at risk of wildfires.

The Texas Forest Service reported 43 wildfire events between 2005 and 2015. The National Centers for Environmental Information (NCEI) did not include any wildfire events from 1996 through August 1, 2017. The Texas Forest Service (TFS) and volunteer fire departments started fully reporting events in 2005. Due to a lack of recorded data for wildfire events before 2005 and after 2015, frequency calculations are based on eleven years, using only data from recorded years.

A wildfire event poses a potentially significant risk to public health and safety, particularly if the wildfire is initially unnoticed and spreads quickly. The impacts associated with a wildfire are not limited to the direct damages. Potential impacts for the City of Houston include:

- Persons in the area at the time of the fire are at risk for injury or death from burns and/or smoke inhalation.
- First responders are at greater risk of physical injury since they are near the hazard while extinguishing flames, protecting property, or evacuating residents in the area.
- First responders can experience heart disease, respiratory problems, and other long-term related illnesses from prolonged exposure to smoke, chemicals, and heat.
- Emergency services may be disrupted during a wildfire if facilities are impacted, roadways are inaccessible, or personnel are unable to report for duty.
- Critical city and/or county departments may not be able to function and provide necessary services depending on the location of the fire and the structures or personnel impacted.
- Non-critical businesses may be directly damaged, suffer loss of utility services, or be otherwise inaccessible, delaying normal operations and slowing the recovery process.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Roadways in or near the WUI could be damaged or closed due to smoke and limited visibility.
- Older homes are generally exempt from modern building code requirements, which may require fire suppression equipment in the structure.
- Some high-density neighborhoods feature small lots with structures close together, increasing the potential for fire to spread rapidly.
- Air pollution from smoke may exacerbate respiratory problems of vulnerable residents.
- Charred ground after a wildfire cannot easily absorb rainwater, increasing the risk of flooding and potential mudflows.
- Wildfires can cause erosion, degrading stream water quality.
- Wildlife may be displaced or destroyed.
- Historical or cultural resources may be damaged or destroyed.
- Tourism can be significantly disrupted, further delaying economic recovery for the area.
- Economic disruption negatively impacts the programs and services provided by the community due to short and long-term loss in revenue.
- Fire suppression costs can be substantial, exhausting the financial resources of the community.
- Residential structures lost in wildfires may not be rebuilt for years, reducing the tax base for the community.

- Direct impacts to municipal water supply may occur through contamination of ash and debris during the fire, destruction of aboveground delivery lines, and soil erosion or debris deposits into waterways after the fire.
- Recreation activities throughout the city's parks may be unavailable and tourism can be unappealing for years following a large wildfire event, devastating directly related local businesses and negatively impacting economic recovery.

The economic and financial impacts of a wildfire event will depend on the scale of the event, what is damaged, costs of repair or replacement, lost business days in impacted areas, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a wildfire event.

A summary assessment of wildfire hazard vulnerability and impacts on the community lifelines is presented in the following table.

Table 41: Wildfire Vulnerability and Consequence Summary by Lifeline

Wildfire	Vulnerability	Consequence
Safety and Security	Low Vulnerability	Moderate Impact on Lifeline/Services
Food, Water, Sheltering	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Communications	Low Vulnerability	Significant Impact on Lifeline/Services
Transportation	Low Vulnerability	Significant Impact on Lifeline/Services
Health and Medical	Low Vulnerability	Moderate Impact on Lifeline/Services
Hazardous Material (Mgmt)	Low Vulnerability	Moderate Impact on Lifeline/Services
Energy (Power and Fuel)	Moderate Vulnerability	Moderate Impact on Lifeline/Services

j. Drought

Drought is a period of substantially lower rainfall than the region average causing a serious hydrologic imbalance. Drought is the consequence of anticipated natural precipitation not being met over an extended period, usually a season or more in length. Droughts can become very prolonged and persist from one year to the next. Drought is a normal part of virtually all climatic regions including areas with high and low average rainfall**.** Droughts can be classified as meteorological, hydrologic, agricultural, and socioeconomic. The following table presents definitions for these different types of droughts.

Table 42: Drought Classification Definitions[23]

Meteorological Drought	The degree of dryness, as measured as the departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
Hydrologic Drought	The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
Agricultural Drought	Soil moisture deficiencies are relative to the water demands of plant life, usually crops.
Socioeconomic Drought	The effect of water demands exceeds the supply because of a weather-related supply shortfall.

Droughts occur regularly throughout Texas and the City of Houston and are in normal conditions. However, they can vary greatly in terms of their intensity and duration. There is no distinct geographic boundary to drought; therefore, it can occur throughout the City of Houston equally.

[23] Source: Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy, Federal Emergency Management Agency (FEMA).

Based on available records of historic events, there have been 18 extended periods of drought (ranging in length from approximately 30 days to over 420 days) within a 21-year reporting period. The probability of future events is 0.86 per year, or an event probable in the next year. This frequency supports a highly likely probability of future events.

Drought impacts large areas and crosses jurisdictional boundaries. All existing and future buildings, facilities, and populations are exposed to this hazard and could potentially be impacted. However, drought impacts are mostly experienced in water shortages and crop/livestock losses on agricultural lands and typically have no impact on buildings.

Houston's Drinking Water Operations (DWO) is responsible for operating and maintaining three water purification plants and 56 groundwater plants. Houston's water system serves approximately 2.2 million citizens each day and spans over 600 square miles serving four counties making it one of the most complex water systems in the nation. Local lakes and rivers supply the City of Houston's surface water resources. Eighty-seven percent of the City of Houston's water supply flows from the Trinity River into Lake Livingston, and from the San Jacinto River into Lake Conroe and Lake Houston. Deep underground wells drilled into the Evangeline and Chicot aquifers currently provide the other 13 percent of the City's water supply. While the City of Houston relies on multiple water resources, high demand can deplete these resources during extreme drought conditions. As resources are depleted, potable water is in short supply and overall water quality can suffer, elevating health concerns for all residents but especially vulnerable populations – typically children, the elderly, and the ill. In addition, potable water is used for drinking, sanitation, patient care, sterilization, equipment, heating and cooling systems, and many other essential functions in medical facilities.

Drought has the potential to impact people in the City of Houston. While it is rare that drought, in and of itself, leads to a direct risk to the health and safety of people in the U.S., severe water shortages could result in inadequate supply for human needs. Drought is frequently associated with a variety of impacts, including:

- The number of health-related low-flow issues (e.g., diminished sewage flows, increased pollution concentrations, reduced firefighting capacity, cross-connection contamination) will increase as the drought intensifies.
- Public safety issues from forest/range wildfires will increase as water availability and/or pressure decreases.
- Respiratory ailments may increase as the air quality decreases.
- There may be an increase in disease due to wildlife concentrations (e.g., rabies, Rocky Mountain spotted fever, Lyme disease).
- Jurisdictions and residents may disagree over water use/water rights, creating conflict.
- Political conflicts may increase between municipalities, counties, states, and regions.
- Water management conflicts may arise between competing interests.
- Increased law enforcement activities may be required to enforce water restrictions.
- Severe water shortages could result in inadequate supply for human needs as well as lower quality of water for consumption.
- Firefighters may have limited water resources to aid in firefighting and suppression activities, increasing risk to lives and property.
- During drought, there is an increased risk of wildfires and dust storms.
- The community may need increased operational costs to enforce water restrictions or rationing.
- Prolonged drought can lead to increases in illness and disease related to drought.
- Utility providers can see decreases in revenue as water supplies diminish.
- Utilities providers may cut back energy generation and service to their customers to prioritize critical service needs.

- Hydroelectric power generation facilities and infrastructure would have significantly diminished generation capability. Dams simply cannot produce as much electricity from low water levels as they can from high water levels.
- Fish and wildlife food and habitat will be reduced or degraded over time during a drought and disease will increase, especially for aquatic life.
- Wildlife will move to more sustainable locations, creating higher concentrations of wildlife in smaller areas, increasing vulnerability and further depleting limited natural resources.
- Severe and prolonged drought can result in the reduction of a species or cause the extinction of a species altogether.
- Plant life will suffer from long-term drought. Wind and erosion will also pose a threat to plant life as soil quality will decline.
- Dry and dead vegetation will increase the risk of wildfire.
- Recreational activities that rely on water may be curtailed, such as canoeing at the Armand Bayou Nature Center, resulting in fewer tourists and lower revenue.
- Drought poses a significant risk to annual and perennial crop production and overall crop quality, leading to higher food costs.
- Drought-related declines in production may lead to an increase in unemployment.
- Drought may limit livestock grazing resulting in decreased livestock weight, potential increased livestock mortality, and increased cost for feed.
- Negatively impacted water suppliers may face increased costs resulting from the transport of water or developing supplemental water resources.
- Long-term drought may negatively impact future economic development.

The overall extent of damage caused by periods of drought is dependent on its extent and duration. The level of preparedness and pre-event planning done by the government, businesses, and citizens will contribute to the overall economic and financial situation in the aftermath of a drought event.

A summary assessment of drought hazard vulnerability and impacts on the community lifelines is presented in the following table.

Table 43: Drought Vulnerability and Consequence Summary by Lifeline

Drought	Vulnerability	Consequence
Safety and Security	High Vulnerability	Low Impact on Lifeline/Services
Food, Water, Sheltering	High Vulnerability	Low Impact on Lifeline/Services
Communications	Low Vulnerability	Low Impact on Lifeline/Services
Transportation	Low Vulnerability	Low Impact on Lifeline/Services
Health and Medical	Moderate Vulnerability	Low Impact on Lifeline/Services
Hazardous Material (Mgmt)	Low Vulnerability	Low Impact on Lifeline/Services
Energy (Power and Fuel)	High Vulnerability	Low Impact on Lifeline/Services

k. Dam-Related Hazards

While dam failures are possible, no probability of occurrence can be calculated for the area since there are no historical records of dam failures in the City of Houston. Although the probability is low, the consequences of a dam failure would be significant.

Table 44: Dam Hazards in the City of Houston

Jurisdiction	Dam Name	Height (Ft.)	Storage (Acre Ft.)	Condition	Profiled
Houston	Barker Dam	42	209,000	Unsatisfactory	Yes
Houston	Addicks Dam	52	200,800	Unsatisfactory	Yes
Magnolia Gardens (Owned by City of Houston)	Lake Houston Dam	66	281,800	Satisfactory	Yes

Source: City of Houston Office of Emergency Management

In the aftermath of Hurricane Harvey, the decision was made to allow a controlled release of both the Addicks and Barker Dams, both of which are owned and operated by the U.S. Army Corps of Engineers. Water was released in a controlled, combined manner of 4,000 cfs into concrete-armored spillways, which is preferable to overtopping the dams. Neighborhoods downstream experienced flooding or additional flooding because of the controlled release and neighborhoods upstream experienced flooding from the reservoir itself. Upstream neighborhoods experienced flooding because of the overflow in the reservoirs backing up behind the dams. Downstream, the water was released into Buffalo Bayou, which was already experiencing flooding before the release.[24]

The *Texas Tribune* states that the Army Corps of Engineers believed the failure of these dams would have resulted in damage exceeding $60 billion and impacting nearly 1 million residents. While homes and businesses were flooded due to the release, the damage sustained was less than what an overtopped dam would have ultimately cost the Houston community. Evacuations were considered voluntary and were not mandated during the controlled release. Approximately 53 neighborhoods are located within the Addicks Watershed and 40 within Barker Dam Reservoir area.[25]

Any individual dam has a very specific area that will be impacted by a catastrophic failure. Dams identified with potential risk can directly threaten the lives of individuals living or working in the inundation zone below the dam. The impact from any catastrophic failure would be like that of a flash flood. Potential impacts for the City of Houston include:

- Lives could be lost.
- There could be injuries from impacts with debris carried by the flood.
- Swift-water rescue of individuals trapped by the water puts the immediate responders at risk for their own lives.
- Individuals involved in the cleanup may be at risk from the debris and contaminants.
- Continuity of operations for any jurisdiction outside the direct impact area could be very limited.
- Roads and bridges could be destroyed.
- Homes and businesses could be damaged or destroyed.
- Emergency services may be temporarily unavailable.
- Disruption of operations and the delivery of services in the impacted area.
- A large dam with a high head of water could effectively scour the terrain below it for miles, taking out all buildings, and other infrastructure.
- Scouring force could erode soil and buried pipelines.
- The scouring action of a large dam will destroy all vegetation in its path.
- Wildlife and wildlife habitats caught in the flow will likely be destroyed.
- Fish habitat will likely be destroyed.
- Topsoil will erode, slowing the return of natural vegetation.

[24] Source: Harris County Flood Control District https://www.hcfcd.org/hurricane-harvey/flooding-impacts-in-connection-with-the-reservoirs/
[25] Source: Texas Tribune: https://www.texastribune.org/2017/08/29/q-why-houstons-reservoirs-arent-going-fail/

- The destructive high-velocity water flow may include substantial debris and hazardous materials, significantly increasing the risks to life and property in its path.
- Debris and hazardous material deposited downstream may cause further pollution of areas far greater than the inundation zone.
- Destroyed businesses and homes may not be rebuilt, reducing the tax base and impacting long-term economic recovery.
- Historical or cultural resources may be damaged or destroyed.
- Recreational activities and tourism may be temporarily unavailable or unappealing, slowing economic recovery.
- The Downtown business district could be devastated, and the Houston Ship Channel could be severely damaged, causing a catastrophic economic loss for the region.

The economic and financial impacts of dam failure on the area will depend entirely on the location of the dam, the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the government, community, local businesses, and residents will also contribute to the overall economic and financial conditions in the aftermath of any dam failure event.

A summary assessment of dam failure hazard vulnerability and impacts on the community lifelines is presented in the following table.

Table 45: Dam Failure Vulnerability and Consequence Summary by Lifeline

Dam Failure	Vulnerability	Consequence
Safety and Security	Moderate Vulnerability	Significant Impact on Lifeline/Services
Food, Water, Sheltering	Moderate Vulnerability	Significant Impact on Lifeline/Services
Communications	Moderate Vulnerability	Significant Impact on Lifeline/Services
Transportation	Moderate Vulnerability	Significant Impact on Lifeline/Services
Health and Medical	Moderate Vulnerability	Significant Impact on Lifeline/Services
Hazardous Material (Mgmt)	Moderate Vulnerability	Significant Impact on Lifeline/Services
Energy (Power and Fuel)	Moderate Vulnerability	Significant Impact on Lifeline/Services

I. Winter Storms

A winter storm event is identified as a storm with primarily snow, ice, or freezing rain.[26] Winter storms are associated with the combined effects of winter precipitation and strong winds creating a dangerous wind chill, or perceived air temperature. This type of storm can cause significant problems for area residents due to snow, ice hazards, and cold temperatures. The wind chill is a function of temperature and wind. Low wind chills are a product of high winds and freezing temperatures.

The greatest risk from a winter storm hazard is public health and safety. Potential impacts for the City of Houston may include:

- Vulnerable populations, particularly the elderly and infants, can face serious or life-threatening health problems from exposure to extreme colds including hypothermia and frostbite. Houston residents are located far south in Texas and therefore may be even more vulnerable than the general population of the United States based on not having proper outwear and warm weather accessories needed to be in the cold.
- Loss of electric power or other heat sources can result in increased potential for fire injuries or hazardous gas inhalation because residents burn candles for light and use fires or generators to stay warm.

[26] Source: http://www.nssl.noaa.gov/education/svrwx101/winter/

- Response personnel, including utility workers, public works personnel, debris removal staff, tow truck operators, and other first responders are vulnerable to injury or illness resulting from exposure to extreme cold temperatures.
- Response personnel would be required to travel in potentially hazardous conditions, elevating the life safety risk due to accidents, and potential contact with downed power lines.
- Operations or service delivery may experience impacts from electricity blackouts due to winter storms.
- Power outages are possible throughout the City of Houston due to downed trees and power lines and/or rolling blackouts.
- Critical facilities without emergency backup power may not be operational during power outages.
- Emergency response and service operations may be impacted by limitations on access and mobility if roadways are closed, unsafe, or obstructed.
- Hazardous road conditions will likely lead to increases in automobile accidents, further straining emergency response capabilities.
- Depending on the severity and scale of damage caused by ice and snow events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- A winter storm event could lead to tree, shrub, and plant damage or death.
- Severe cold and ice could significantly damage crops.
- Schools may be forced to shut early due to treacherous driving conditions.
- Exposed water pipes may be damaged by severe or late-season winter storms at both residential and commercial structures, causing significant damage.
- Cities located in the north have a higher frequency and therefore have more resources allocated yearly to fight and mitigate the impacts of winter storms. The resources here, while abundant, may not be primarily focused on mitigating this risk and therefore do not have the resources prepared and staged like cities in the northern United States.

The economic and financial impacts of winter weather on the community will depend on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by government, businesses, and citizens will also contribute to the overall economic and financial conditions in the aftermath of a winter storm event.

A summary assessment of winter storm hazard vulnerability and impacts on the community lifelines is presented in the table below.

Table 46: Winter Storm Vulnerability and Consequence Summary by Lifeline

Winter Storm	Vulnerability	Consequence
Safety and Security	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Food, Water, Sheltering	Moderate Vulnerability	Significant Impact on Lifeline/Services
Communications	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Transportation	High Vulnerability	Significant Impact on Lifeline/Services
Health and Medical	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Hazardous Material (Mgmt)	Moderate Vulnerability	Moderate Impact on Lifeline/Services
Energy (Power and Fuel)	High Vulnerability	Significant Impact on Lifeline/Services

m. Sea Level Rise

According to NOAA, the sea level around Galveston, Texas has risen 18 inches since 1950. The speed of rise has accelerated over the last 10 years and is now rising by nearly 1 inch every year. Scientists have determined these figures by measuring the sea level every 6 minutes using equipment like satellites, floating buoys off the coast, and tidal gauges to accurately measure the local sea level as it accelerates and changes.

By 2050, the Galveston Pleasure Pier can expect to see up to 22 inches of additional rise. The NOAA Sea Level Rise Viewer, a web-mapping tool designed to view potential impacts from coastal flooding or sea level rise, provides a range of local scenarios. One of these scenarios is an intermediate-high scenario for Galveston that shows increased water levels in the San Jacinto River and Buffalo Bayou watersheds, as well as severe impacts in the far southeastern reaches of Houston.

The City of Houston considers sea level rise in climate action planning as well as mitigation planning, though it often appears in conjunction with hurricane and flood hazard mitigation due to the inland nature of most of the City.

A summary assessment of hazard vulnerability and impacts on the community lifelines related to sea level rise is presented in the table below.

Table 47: Sea Level Rise Vulnerability and Consequence Summary by Lifeline

Sea Level Rise	Vulnerability	Consequence
Safety and Security	Low Vulnerability	Significant Impact on Lifeline/Services
Food, Water, Sheltering	Low Vulnerability	Significant Impact on Lifeline/Services
Communications	Low Vulnerability	Low Impact on Lifeline/Services
Transportation	Low Vulnerability	Moderate Impact on Lifeline/Services
Health and Medical	Low Vulnerability	Significant Impact on Lifeline/Services
Hazardous Material (Mgmt)	Low Vulnerability	Significant Impact on Lifeline/Services
Energy (Power and Fuel)	Low Vulnerability	Significant Impact on Lifeline/Services

Mitigation Needs Assessment Conclusion

This mitigation needs assessment to assess the characteristics and impacts of current and future hazards. Although the risk of winter storms in Houston is likely the potential severity of the risk is limited meaning injuries can be treated with first aid and critical services and facilities are shut down for less than 24 hours.

Unfortunately, this was not the case in the 2021 Winter Storm. In the 2021 Winter Storm, the loss of electricity led to lifelines, such as housing and drinking water being impacted or even becoming non-operable for a while. Addressing lifelines like electricity and housing can help mitigate compounding damages in multiple types of future disasters.

6. Mitigation Only Activities

Mitigation activities are defined as those that increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship, by lessening the impact of future disasters. The mitigation funding set aside within the CDBG-DR grant for the 2021 Winter Storm represents an opportunity to build on current strategic efforts and mitigation activities the City developed under *Resilient Houston* and continue progress to become more resilient as continued with the CDBG-MIT funding.

The City of Houston has experienced eight presidentially declared disasters from 2015 to 2021: the Memorial Day and Halloween floods in 2015, Tax Day and the May/June floods in 2016, Hurricane Harvey in 2017, Tropical Storm Imelda in 2019, COVID-19 beginning in 2020, and a winter storm in 2021. The CDBG-DR funding from the 2021 Winter Storm presents an opportunity to address the existing need to better prepare the City's residents and infrastructure against extreme weather – winter, heat, storm, or flooding – through efforts in weatherization and infrastructure fortification. Extended exposure to cold is a risk the City intends to mitigate with weatherization and adapting critical infrastructure and community resources to maintain more reliable energy generation for the provision of services. Mitigation-only activities will meet the definition of mitigation activities, address identified risks in Houston and direct or indirect impact from the 2021 Winter Storm, and meet a CDBG National Objective.

The City of Houston will undertake the mitigation-only activity under the Neighborhood Facility Resilience Program. This Program addresses the current and future risk of power outages as identified in the mitigation needs assessment. Ensuring electricity is available at neighborhood facilities during and after a disaster can help residents find and access resources close to where they live. Two goals of this program include providing resilience during power or grid outages and providing stronger disaster response capacity.

In addition, the Winter Storm Home Repair Program will also incorporate mitigation measures into its implementation so that residents are better prepared for future disaster events.

D. General Requirements

1. Citizen Participation

a. Outreach and Engagement

In the development of this disaster recovery action plan, the *City of Houston* consulted with disaster-affected citizens, stakeholders, local governments, public housing authorities, and other affected parties in the surrounding geographic area to ensure consistency of disaster impacts identified in the plan, and that the plan and planning process was comprehensive and inclusive. The City of Houston consulted with a variety of stakeholders and communities including Federal partners (HUD), City and other governmental partners (Houston Housing Authority, Office of Emergency Management, Office of Recovery, Office of Resilience and Sustainability), nongovernmental organizations (service providers and housing advocates, including those that provide services for vulnerable populations like LEP individuals), and the private sector (housing developers). A full list of organizations consulted is located in the appendix.

City of Houston recognizes that affected stakeholders are the center of, and partners in, the development and implementation of this plan. Opportunities for citizen input were provided throughout the planning process through *interviews, agency and community meetings, surveys, emails/electronic notifications, and publications/postings.*

In addition to the activities above, *City of Houston* published this action plan on https://houstontx.gov/housing/dr.html#uri for two 30-day public comment periods. Citizens were notified through *public notices in the Houston Chronicle and other community newspapers including in other languages like Spanish and Chinese, stakeholder and community listservs, and social media.* The Draft Action Plan with a link was also on the City's main website (www.houstontx.gov*). There was a Spanish translator available at all three public hearings and CART services for persons who are deaf or hard of hearing. Accommodation information was published with all outreach communications.* The City of Houston will ensure that all citizens have equal access to information, including persons with disabilities (vision and hearing impaired) and limited English proficiency (LEP).

A summary of citizen comments on this action plan, along with City of Houston responses, is in the appendix of this document.

For more information, citizens can refer to the *CDBG-DR21* citizen participation plan that can be found at https://houstontx.gov/housing/dr.html#uri.

A more detailed description of the outreach and feedback received in the development of this plan is included in the appendix.

b. Public hearings

CDBG-DR21 grantees are required to convene at least one public hearing on the proposed action plan after it has been published on its website to solicit public comment and before submitting the action plan to HUD. The City hosted a virtual public hearing that was open to all residents and stakeholders on August 9, 2022, and March 30, 2023, and an in-person hearing on March 28, 2023. At all public hearings, a Spanish translator provided live translations, and live CART services were also provided for those who were deaf or hard of hearing. As listed in the public notice and advertisements, the City makes necessary special arrangements for those who request such arrangements in advance.

The public hearings were advertised in a variety of ways. Public notices were published in the *Houston Chronicle* in English and *La Voz* in Spanish. The Constant Contact email campaign reached over 8,500 residents and stakeholders, and the CitizensNet email campaign reached over 31,200 residents and stakeholders. Additionally,

the City requested that the Mayor's Offices and City Council members not only attend, but also share information about the public hearings with their constituents and networks.

Public hearing attendees could join the virtual meetings using multiple streaming and broadcasting platforms like Microsoft Teams and Facebook Live or by calling the dedicated English or Spanish audio lines. During the public hearing, City staff presented information about the CDBG-DR21 grant, requirements, and goals. Attendees were able to engage with City staff in multiple ways during and after the presentation. Residents participated in live polls, gave input through the online chat function, and could also provide a 3-minute comment. Attendees were allowed to ask questions in real-time with City staff responding. The engagement methods allowed attendees several opportunities to share their needs, priorities, and views on addressing recovery from the 2021 Winter Storm with CDBG-DR21 grant funds.

Following the public hearings, interested persons also had opportunities to review information, engage, and give input on the proposed action plan. Recordings, transcripts, and presentation slides will be made available for review on the City's Long-Term Disaster Recovery webpage: https://houstontx.gov/housing/dr.html. The public hearing was rebroadcast on HTV and available to watch on several platforms including HCD's Facebook Live, HCD's YouTube, and HTV's webpage. Since the public hearing was held during the 30-day comment period on the action plan, residents and stakeholders were also able to give input through written comments via postal mail and email or comments left via voicemail.

During the term of the CDBG-DR21 grant, the City will provide residents and other interested parties with reasonable and timely access to information and records relating to this plan and the use of grant funds. This Action Plan and associated amendments and performance reports will be made available on HCD's website, and upon request, from HCD. In addition, these documents are available in a form accessible to persons with disabilities and those with limited English proficiency, upon request.

c. Complaints

Complaints alleging violation of fair housing laws will be directed to HUD for immediate review. Complaints regarding fraud, waste, or abuse of funds will be forwarded to the HUD OIG Fraud Hotline (phone: 1-800-347-3735 or email: hotline@hudoig.gov). *The City of Houston* will make available to HUD detailed Fraud, Waste, and Abuse Policies and Procedures at https://houstontx.gov/housing/dr.html#uri to demonstrate adequate procedures are in place to prevent fraud, waste, and abuse.

To promote transparency and partnership with communities where HCD operates, HCD responds to all complaints and appeals in a timely and equitable manner consistent with HUD requirements. An appeal is a communication from an applicant of any of HCD's programs who wishes to overturn a decision made regarding either the applicant's application or the resulting case.

A complaint is communication from a member of the public to a City official or employee that includes a concern or grievance regarding the operations of the City or any party acting on behalf of the City. There are two types of complaints, informal and formal. An informal complaint is made through verbal discussion (either through telephone calls or in person) and is intended to resolve concerns at the earliest stage possible. Formal complaints are any written statement of grievance – including emails, faxes, letters, or those complaints filed via Formal Complaint Submission Form – that provide a contact(s) with which HCD staff can communicate the results of an investigation or request additional information. Formal complaints are also those that were not able to be resolved informally and need an additional level of review.

Written complaints from the public related to this Action Plan (or its amendments), QPRs, or the City's activities or programs funded with CDBG-DR21, will receive careful consideration and will be answered in writing, or other effective methods of communication, within 15 business days, where practicable.

Written complaints should be sent to:

Attn: Planning and Grants Reporting
City of Houston Housing and Community Development Department
2100 Travis Street, 9th Floor
Houston, TX 77002

Email: HCDDComplaintsAppeals@houstontx.gov
Phone: 832.394.6200

Complaints regarding fraud, waste, or abuse of government funds will be forwarded to the City of Houston Office of Inspector General or the Department of Housing and Urban Development Office of Inspector General (Phone: 1-800-347-3735 or Email: hotline@hudoig.gov).

2. Public Website

The City of Houston will maintain a public website that provides information accounting for how all grant funds are used, managed, and administered, including links to all disaster recovery action plans, action plan amendments, program policies and procedures, performance reports, citizen participation requirements, and activity and program information described in this plan, and details of all contracts and ongoing procurement processes.

These items are made available through https://houstontx.gov/housing/dr.html#uri. Specifically, *the City of Houston* will make the following items available:

- the action plan created using DRGR (including all amendments);
- each QPR (as created using the DRGR system);
- citizen participation plan; procurement policies and procedures;
- all executed contracts that will be paid with CDBG-DR funds as defined in 2 CFR 200.22 (including subrecipients contracts); and
- a summary including the description and status of services or goods currently being procured by the grantee or the subrecipient (e.g., phase of the procurement, requirements for proposals, etc.).

Contracts and procurement actions that do not exceed the micro-purchase threshold, as defined in 2 CFR 200.67, are not required to be posted to a grantee's website.

In addition, *the City of Houston* will maintain a comprehensive website regarding all disaster recovery activities assisted with these funds.

The website will be updated promptly to reflect the most up-to-date information about the use of funds and any changes in policies and procedures, as necessary. At a minimum, updates will be made monthly.

3. Amendments

Over time, recovery needs will change. Thus, *the City of Houston* will amend the disaster recovery action plan as often as necessary to best address our long-term recovery needs and goals. This plan describes proposed programs and activities. As programs and activities develop over time an amendment may not be triggered if the program or activity is consistent with the descriptions provided in this plan.

Amendments to this Action Plan are divided into two categories: Substantial amendments and non-substantial Amendments. As amendments occur, both types of amendments are numbered sequentially and posted on HCD's

Disaster Recovery webpage, www.houstontx.gov/housing/dr.html. Copies of amendments are available upon request to: hcdd@houstontx.gov or 832.394.6200. Changes in amendments will be identified at the beginning of each amendment.

The most current version of the entire Action Plan will be accessible for viewing as a single document. Each amendment will have highlighted changes, and the beginning of amendments will include:

- Section identifying exactly what content is added, deleted, or changed
- Revised budget allocation table that reflects all funds and illustrates where funds are coming from and moving to, as amended and applicable
- Description of how the amendment is consistent with the mitigation needs assessment

a. Substantial Amendment

A change to this action plan is a substantial amendment if it meets the following criteria:

- A change in program benefit or eligibility criteria,
- The addition or deletion of an activity, or
- The allocation or reallocation of *more than 25 percent of an activity in the program budget.*

When *the City of Houston* pursues the substantial amendment process, the amendment will be posted here at https://houstontx.gov/housing/dr.html#uri for a 30-day public comment period. The amendment will be posted in adherence with ADA and LEP requirements. *The City of Houston* will review and respond to all public comments received and submit them to HUD for approval.

Substantial amendments are subject to a citizen participation process and require formal action by the City Council and submission to HUD. The City announces substantial amendments to the public through a public notice published in one or more newspapers of general circulation, for 30 days, to provide an opportunity for public review and comment regarding proposed substantial amendments. Notices will be available in English and may also be available in Spanish and other languages, as feasible. The City will consider all written and/or oral comments or views concerning proposed substantial amendments that are received during the comment period. A summary of these comments and views, including comments or views not accepted, and the reason why, along with HCD's response to each, shall be submitted with each Substantial Amendment.

b. Non-Substantial Amendment

A non-substantial amendment is an amendment to the plan that includes technical corrections clarifications and budget changes that do not meet the monetary threshold for substantial amendments to the plan and does not require posting for public comment. *The City of Houston* will notify HUD five (5) business days before the change is effective.

All amendments will be numbered sequentially and posted to the website into one final, consolidated plan.

4. Displacement of Persons and Other Entities

To minimize the displacement of persons and other entities that may be affected by the activities outlined in this action plan, the *City of Houston* will coordinate with *all agencies and entities necessary to ensure that all programs are administered in accordance with the amended RARAP, Uniform Relocation Assistance and Real Property Acquisition Policies Act (URA) of 1970, as amended (49 CFR Part 24,) and Section 104(d) of the Housing and Community Development Act of 1974, as amended, and the implementing regulations at 24 CFR Part 570.496(a)* to minimize displacement. Should any proposed projects or activities cause the displacement of people, the following policy has been adopted to ensure the requirements of the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (URA), as amended are met.

The City of Houston does not plan to administer activities that will cause a direct or indirect displacement of persons or entities. Should any proposed projects or activities cause the displacement of persons or entities, the City of Houston plans to amend the current Residential Anti-displacement and Relocation Assistance Plan (RARAP) to reduce any hardship of a displaced person or entity and increase oversight to ensure the requirements of Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (URA), as amended are met. The amended RARAP will set the minimum standard for, but not limited to, planning efforts, Relocation Plan, relocation schedule, accommodations for displaced persons with disabilities, relocation budget, and project the number of staff needed to carry out URA requirements.

If relocation is applicable, a program or project must demonstrate it has met the latest RARAP requirements before it can be approved before implementing any activity. Relocation activities will be planned for and budgeted within the applicable CDBG-DR program.

CDBG-DR funds may not be used to support any federal, state, or local projects that seek to use the power of an eminent domain unless eminent domain is employed only for public use (e.g., mass transit, railroad, airport, seaport, highway, and utility projects). None of the currently planned projects under this Action Plan anticipate the use of eminent domain.

5. Protection of People and Property

The City of Houston will promote high-quality, durable, energy-efficient, sustainable, and mold-resistant construction methods for residents impacted by the disaster. All newly constructed buildings/structures must meet all locally adopted building codes, standards, and ordinances. Future property damage will be minimized by requiring that any rebuilding be done according to Chapter 19 of the City's Code of Ordinances (https://www.houstontx.gov/codes/).

a. Elevation Standards

New construction, repair of substantially damaged, or substantial improvement to structures principally for residential use and located in the 1 percent annual (or 100-year) floodplain must be elevated with the lowest floor, including the basement to at least two feet above the 1 percent annual floodplain elevation.

Mixed-use structures with no dwelling units and no residents must be elevated or floodproofed to at least two feet above base flood elevation.

All critical actions located in a 500-year floodplain must be elevated to at least three feet above the 100-year floodplain.

At a minimum, the City will adhere to the advanced elevation requirements established in section II.B.2.c of the Federal Register "Elevation standards for new construction, reconstruction, and rehabilitation of substantial damage, or rehabilitation resulting in substantial improvements." The City's local floodplain regulations, as outlined in Chapter 19 of the City's Code of Ordinances, are more stringent and will be followed.

Chapter 19 of the City's Code of Ordinances requires new structures (and/or significant improvement to structures) located in the special flood hazard area to elevate to 24 inches above the 500-year flood elevation or to 36 inches above the 500-year flood elevation for critical facilities. This will help mitigate housing damage during future flooding disasters.

The average cost to elevate a single-family home can vary significantly and is dependent upon the number of feet it must be elevated, the location of the home, and the square footage of the home. The average cost to elevate a 1,200-square-foot home in Houston is estimated at $116,100 based on the factors mentioned above. Program guidelines will determine the most cost-reasonable method to adhere to elevation standards, particularly for elevating standards related to rehabilitation of substantial damage or rehabilitation resulting in substantial improvements. The

City of Houston will ensure that all rehabilitation of substantial damage will meet the HUD-required elevation standards through the construction requirements of all CDBG-DR housing programs.

b. Flood Insurance Requirements

Assisted property owners must comply with all flood insurance requirements. HUD-assisted homeowners for a property located in a Special Flood Hazard Area must obtain and maintain flood insurance in the amount and duration prescribed by FEMA's National Flood Insurance Program (NFIP). *The City of Houston* may not provide disaster assistance for the repair, replacement, or restoration of a property to a person who has received Federal flood disaster assistance that was conditioned on obtaining flood insurance and then that person failed to obtain or allowed their flood insurance to lapse for the property. *The City of Houston* is prohibited by HUD from providing CDBG-DR assistance for the rehabilitation or reconstruction of a house if:

- The combined household income is greater than 120% AMI or the national median,
- The property was located in a 100-year floodplain at the time of the disaster, and
- The property owner did not maintain flood insurance on the damaged property.

To ensure adequate recovery resources are available to low- and moderate-income homeowners who reside in a floodplain but who are unlikely to be able to afford flood insurance may receive CDBG-DR assistance if:

- The homeowner had flood insurance at the time of the qualifying disaster and still has unmet recovery needs, or
- The household earns less than 120% AMI or the national median and has unmet recovery needs.

The 2021 Winter Storm was not a flooding event; however, the City of Houston is committed to ensuring that homeowners are protected from future flooding disasters, which are occurring more frequently in the Houston area.

c. Construction Standards

The City of Houston will require quality inspections and code compliance inspections on all projects and places an emphasis on high-quality, durable, sustainable, and energy efficient construction methods and materials. Site inspections will be required on all projects to ensure quality and compliance with building codes.

All rehabilitation, reconstruction, or new construction must meet an industry-recognized standard that has achieved certification under at least one of the following programs:

- Energy STAR (Certified Homes or Multifamily High Risk)
- Enterprise Green Communities
- LEED (New Construction, Homes, Midrise, Existing Building Operations and Maintenance or Neighborhood Development)
- ICC- 700 National Green Building Standards
- EPA Indoor AirPlus
- Any other equivalent comprehensive green building standard program acceptable to HUD

The City of Houston will use *the most updated local building and construction standards, including accessibility standards,* for the proposed programs or activities.

For rehabilitation of non-substantially damaged residential buildings, *the City of Houston* will follow the guidelines to the extent applicable as specified in the HUD CPD Green Building Retrofit Checklist. When older or obsolete products are replaced as part of rehabilitation work, the rehabilitation is required to use ENERGY STAR-labeled, WaterSense-labeled, or Federal Energy Management Program (FEMP)-designed products and appliances.

For infrastructure projects, *the City of Houston* will encourage, to the extent practicable, implementation of sustainable planning and design methods that promote adaptation and resilience.

All projects will be subject to cost reasonableness standards as outlined in the policies and procedures of the applicable programs specific to the applicable activity.

A substantially damaged structure means the damage sustained by a structure for which the cost of repair or restoration of the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure. For this definition, the market value refers to the value of the structure immediately prior to the damage.

d. Contractors Standards

Contractors selected under *the City of Houston* will make every effort to provide opportunities to low and very low-income persons by providing resources and information to notify Section 3 individuals and businesses of opportunities in the community. *The City of Housing will undertake the following efforts to help meet its Section 3 goals:*

- *Ensure Section 3 requirements are in all applicable contracts and subrecipient (if applicable) agreements*
- *Build the capacity of stakeholders, including subrecipients (if applicable) and contractors, to meet Section 3 standards through technical assistance and guidance*
- *Conduct outreach to certify Section 3 businesses*

The City of Houston will report Section 3 accomplishments in the Disaster Recovery Grant Reporting (DRGR) system.

Recovery programs implemented by HCD, and its partners, will incorporate uniform best practices of construction standards for all construction contractors performing work in all relevant jurisdictions. Construction contractors will be required to carry the required licenses and insurance coverage(s) for all work performed and to provide a warranty period for all work performed with a formal notification to beneficiaries periodically, which may be 6 months and 1 month before the warranty expiration.

Contractor standards and warranty periods will be detailed in the respective guidelines, policies, and procedures documents and will pertain to the scale and type of work being performed, including the controls for ensuring that construction costs are reasonable and consistent with market costs at the time and place of construction. Rehabilitation contract work provided through a program administered by HCD included in this Action Plan may be appealed to by homeowners whose property was repaired by contractors.

As included in the City's certifications, HCD is committed to meeting full and open competition requirements, which will help ensure that construction costs are reasonable and consistent with market costs at the time and place of construction.

The processes for homeowners to submit appeals and complaints for rehabilitation work completed with CDBG-DR21 funds will be detailed within each respective set of program guidelines and on the CDBG-DR21 webpage.

e. Preparedness, Mitigation and Resiliency

Resilience is defined as a community's ability to minimize damage and recover quickly from extreme events and changing conditions, including natural hazard risks.

To integrate hazard mitigation and resilience planning with recovery efforts, HCD will continue to promote sound, sustainable, long-term recovery planning informed by post-disaster evaluation of hazard risk, including climate-related hazards, and the creation of resilience performance metrics.

Protect People and Property from Harm

The CDBG-DR21 activities will include measures that will increase resilience to disasters and reduce or eliminate the long-term risk of life, injury, damage to and loss of property, and suffering and hardship by lessening the impact of future disasters. Hardships include but are not limited to, financial hardship and hardship caused by future disasters and climate change. HCD will document how programs and activities protect people and property from hardship within program and/or applicant files.

Emphasize Quality, Durability, Energy Efficiency, Sustainability, and Mold Resistance

HCD's construction-related activities include construction standards incorporating resilience and hazard mitigation measures, as feasible. This Action Plan aligns with the City's existing hazard mitigation plan. In addition, mitigation measures will be incorporated when carrying out activities to construct, reconstruct, or rehabilitate residential or non-residential structures with CDBG-DR funds.

For construction activities related to residential or non-residential structures, HCD will establish resilience performance metrics for the activity including:

- An estimate of the projected risk to the completed activity from natural hazards, including those hazards that are influenced by climate change.
- Identification of the mitigation measures that will address the projected risks.
- An assessment of the benefit of the grantee's measures through verifiable data.

Support Adoption and Enforcement of Modern and/or Resilient Building Codes and the Mitigation of Natural Hazards

HCD is supporting the modernization efforts for building codes to help make Houston a more resilient city for its residents. HCD is supporting the effort through previous CDBG-DR funding. The effort will create a plan that City staff can follow to update future building codes regularly. The effort is expected to also produce an updated building code to be adopted by 2024.

Establish and Support Recovery Efforts by Funding Feasible, Cost-Effective Measures That Will Make Communities More Resilient Against Future Disaster

As a direct result of the 2021 Winter Storm, the City of Houston and CenterPoint Energy have partnered on a new initiative called Resilient Now to ensure the future energy demands and needs are met for the Houston region's economy to grow and thrive for all stakeholders. This initiative will create a Master Energy Plan which will help prepare our infrastructure to handle multiple future disaster events, including flooding, high winds and hurricanes, winter storms, heatwaves, and drought. This plan to enhance power resilience across the region will likely be completed by the end of 2022 and will include short- and medium-term goals like implementing climate-ready infrastructure and energy efficiency in commercial, industrial, and residential buildings.

The goal of the programs funded with CDBG-DR21 is to address the impact of the 2021 Winter Storm but also to make communities more resilient against future disasters. HCD programs will document their efforts in program files, which may include a cost reasonableness and/or cost-benefit analysis of the activity, quantifiable benefits, or a description of the mitigation benefits of the program. Documents may include, but are not limited to an analysis of

- The risks to public health, safety, and well-being without the project or program
- The costs against the anticipated value of the risk reduction in both direct damage and subsequent negative impacts to the area if future disasters were to occur
- The contribution of the activity to a long-term solution to the problem it is intending to address
- How the activity will protect the functionality of the project for its useful life and/or create future management maintenance and modification options

Make Land Use Decisions that Reflect Responsible and Safe Standards to Reduce Future Natural Hazard Risks

The City of Houston does not have zoning; however, the City has other building requirements that help reduce risks of impact and damage due to future hazards and disasters. After Hurricane Harvey, the City updated Chapter 19 of the Code of Ordinances to ensure that new construction and substantial rehabilitation of a structure were raised to certain levels to avoid future flooding. In addition, the City of Houston's partnership with CenterPoint Energy through the Resilient Now initiative will help to modernize infrastructure to address disruptive weather events and increase the use of renewable energy sources.

Increase Awareness of the Hazards in Communities Including Underserved Communities, Through Outreach in the MID Areas

As a MID area, the City shares information with residents and businesses through local, trusted partners to effectively increase awareness of community hazards. The Office of Emergency Management (OEM) regularly communicates directly with the public and through non-profit organizations, including Voluntary Organizations Active in Disaster (VOADs) before, during, and after disasters. OEM has free materials and actively makes presentations to the public about disaster preparedness. In addition, over the past several years, HCD has funded non-profit organizations and community advocates through an ongoing program to reach underserved communities with fair housing, hurricane preparedness, and resilience information. This is also an effective way to receive feedback from organizations and community members regarding disaster awareness.

Promote Sound, Sustainable Long-Term Recovery Planning Informed by a Post-Disaster Evaluation of Natural Hazard Risks

The City of Houston will soon update its Hazard Mitigation Plan to include information about recent disaster events. In addition, HCD has allocated previous CDBG-DR funds for planning activities directly linked to action items in *Resilient Houston*, the City's resilience strategy. Multiple planning efforts are currently taking place to promote sound, sustainable long-term recovery efforts informed by post-disaster evaluation of hazard risk, especially land-use decisions that reflect responsible floodplain management and consider future possible extreme weather events and other natural hazards and long-term risks.

The City of Houston is allocating the CDBG-DR21 mitigation set-aside funding to improve neighborhood facilities in low- and moderate-income areas by updating or creating power resilience. This is considered an infrastructure activity under CDBG. Considering the limited ability of local infrastructure to address the concerns of a large-scale power outage due to infrastructure outside of the City's jurisdiction, as occurred in the 2021 Winter Storm disaster, local infrastructure solutions can address the needs of emergency power across multiple neighborhood facilities that can be used to provide essential services, especially to assist vulnerable communities. While the benefits are harder to predict than cost savings, when it comes to infrastructure that is primarily utilized in disaster scenarios, more reliable emergency power generation will not only serve the City's ability to respond to or recover from a disaster and ensure the safety of its residents in winter storm events, but it will also serve the City in other disaster events like flooding as well. In addition, electric generation could provide annual cost savings to organizations, such as nonprofits, that own and manage a neighborhood facility.

The Neighborhood Facilities Resilience Program will enhance the community-based mitigation system by making neighborhood facilities operable during power outages, which can be used by nearby residents and serve as places where assistance is distributed immediately after a disaster event. Because the climate-related risks include an increased likelihood of weather-related events that can cause power outages, these mitigation measures will provide electricity in neighborhood facilities across the city. This activity is directly tied to the *Climate Action Plan* and *Resilient Houston* action 17 Develop "Lily Pads" to Serve as Neighborhood Resilience Hubs and Action 31 Adopt and Implement the Climate Action Plan Goals and Actions. Working with other City Departments and using up-to-date research, the City will employ adaptable and reliable technologies.

FEMA-Approved Hazard Mitigation Plan

Houston's Office of Emergency Management is the lead agency for developing the City's FEMA-approved Hazard Mitigation Plan. The City's Hazard Mitigation Plan informs the larger landscape of disaster recovery planning, including the activities within *Resilient Houston*. This Action Plan utilizes the City's Hazard Mitigation Plan to inform its mitigation needs assessment.

f. Broadband Infrastructure in Housing

Any substantial rehabilitation or new construction of a building with more than four (4) rental units will include installation of broadband infrastructure, except when:

- The location of the new construction or substantial rehabilitation makes the broadband infrastructure infeasible,
- The cost of installing broadband infrastructure would result in a fundamental alteration like its program or activity or an undue financial burden, or
- The structure of the housing to be substantially rehabilitated makes installation of broadband infrastructure infeasible.

g. Cost Effectiveness

HCD will establish policies and procedures to assess the cost-effectiveness of each proposed program or activity to assist a household under any residential rehabilitation or reconstruction program or activity funded with CDBG-DR funds. Policies and procedures also will establish the criteria for determining when the cost of the rehabilitation or reconstruction of the unit will not be cost-effective relative to other means of assisting the property owner.

HCD will define "demonstrable hardship" in its policies and procedures before carrying out activities that may be subject to the one-for-one replacement housing requirements.

HCD will define a residential property as "not suitable for rehabilitation" in its policies and procedures before carrying out activities that may be subject to the one-for-one replacement housing requirements.

Exceptions to award maximums on a case-by-case basis may apply as outlined in program guidelines. If applicable, program guidelines will describe the circumstances in which an exception is needed and will be reviewed and the amount of assistance necessary and reasonable. Exceptions defined in the guidelines could include items such as neighborhood or environmental conditions. HCD may make exceptions to the maximum award, when necessary, to comply with federal accessibility standards or to reasonably accommodate a person with disabilities. All exceptions to award limitations are subject to grant fund availability.

h. Duplication of Benefits

Section 312 of the Stafford Act, as amended, generally prohibits any person, business concern, or other entity from receiving financial assistance with respect to any part of a loss resulting from a major disaster for which such person, business concern, or other entity has received financial assistance under any other program or from insurance or any other source. A duplication of benefits occurs when an impacted homeowner or community receives financial assistance from multiple sources, such as FEMA, insurance, etc. for a cumulative amount that exceeds the total need for a particular unmet need or mitigation purpose.

Through its guidelines, policies, and procedures, the City of Houston, and any subrecipients as applicable, will determine an applicant's unmet need to ensure that each activity aids a person or entity only to the extent that the person or entity has a disaster recovery need that has not been fully met. Further requirements of duplication of benefits are outlined in 84 FR28836 and 84 FR 28848, published June 20, 2019, and other applicable notices

All agreements between HCD and beneficiaries (and subrecipients, if applicable) require all sources of possible duplicative assistance to be disclosed to HCD. Additionally, a subrogation clause contained in these agreements

requires any person who receives further assistance to repay that assistance if the amount of assistance exceeds the funding required for the project.

E. Grantee Proposed Use of Funds

1. Overview

The City of Houston is the lead agency and responsible entity for administering *Disaster Relief Supplemental Appropriations Act, 2022 (PL117-43) and Continuing Appropriations and Ukraine Supplemental Appropriations Act, 2023 (PL 117-180)* in CDBG-DR funds allocated for disaster recovery. These programs include the *Winter Storm Home Repair Program, Neighborhood Facilities Resilience Program, Rental Housing Counseling, Planning, and Administration*.

Based on the unmet needs assessment and input from impacted communities and stakeholders in Houston, the City of Houston has prioritized activities that will assist in meeting the short- and long-term recovery needs of its residents and communities and increase resilience against climate impacts. The initial analysis indicates unmet needs in three core recovery categories defined by HUD: housing, infrastructure, and economic revitalization. The largest recovery need is housing.

Reflecting these findings, the City of Houston intends to utilize CDBG-DR funding to support multiple recovery programs that complement each other. Further, by implementing resilience measures across programs, the City aims to facilitate an equitable recovery that results in not only repairing the impact of the 2021 Winter Storm but also funding a recovery leading to a community that can better withstand the impacts of future disasters.

2. Program Budget

The program budget table below reflects the allocation of $50 million for the 2021 Winter Storm.

Table 48: Program Budget

Program Category	Program	Budget	HUD/Grantee Identified MID Budget	% of Allocation	Maximum Award	National Objective	Estimated Outcome
Housing	Winter Storm Home Repair Program	$40,106,250	$40,106,250	80.1%	Based on Program Standards ($10K or $300K)	Low- and Moderate-Income and Urgent Need	242
Mitigation	Neighborhood Facilities Resilience Program	$7,284,000	$7,284,000	14.5%	Based on Program Standards ($2M)	Low- and Moderate-Income	3
Admin	Admin	$2,504,750	$2,504,750	5.0%	-	-	-
Planning	Planning	$200,000	$200,000	0.4%	-	-	-
Total		$50,095,000	$50,095,000	100.0%	-	-	-

Source: HCD

3. Connection to Unmet Needs

As required by the *87 FR 31636 and 88 FR 3198, the City of Houston* will allocate at least 80 percent of the funds to address unmet needs with HUD-identified "most impacted and distressed" areas. The remaining 20 percent of the allocation may be used to address unmet needs that received a *DR-4586* presidential major disaster declaration. HCD will allocate 100% of the CDBG-DR21 funds to address unmet needs within the HUD-identified "most impacted and distressed" (MID) areas. HUD designated the entire City of Houston as a MID area.

This action plan primarily considers and addresses the unmet needs of residents, including homeowners and renters, through housing and infrastructure unmet recovery and mitigation needs, along with public services and planning that support housing and residents finding and maintaining housing.

At least 70 percent of all program funds will benefit LMI persons or households. All programs funded with CDBG-DR21 are limited to benefiting low- and moderate-income persons or have allocated only a portion of program funds to serve residents earning above 80% of the area median income. The Winter Storm Home Repair Program through the Reimbursement Pathway is the only activity that will serve households through the urgent need national objective. HCD plans to exceed HUD's requirement of at least 70% of all program funds expended to benefit LMI persons or households. To ensure no unjustified discriminatory effect, HCD will monitor the impact of its programs on impacted LMI persons, including vulnerable populations, protected classes, and members of underserved communities.

The Winter Storm Home Repair Program will assist homeowners with grants and forgivable loans to repair or rebuild homes that were damaged as a direct result of the 2021 Winter Storm. Home repair was found to be one of the main needs in the needs assessment, and it was also a funding priority from public engagement. Stakeholders said that many residents live in homes with deferred maintenance that can put them at risk in future disasters, including vulnerable populations such as seniors. In addition, the resident survey found that some Houstonians borrowed funding to help address the impacts of the Winter Storm, including from payday lenders, and financial reimbursement could help to make these families whole. The Winter Storm Home Repair Program will help improve Houston's housing, which will give residents a safer place to stay in future disasters.

The Renter Housing Counseling Program will assist disaster-impacted households that are facing challenges and are making life-changing decisions related to housing and their household finances. Due to the recurring disasters, many households are forced to make quick decisions with little to no financial support, which may have long-term effects on the household and particularly vulnerable households. The Renter Housing Counseling Program will help vulnerable renters find and/or maintain housing, while preparing them to be more prepared for future disasters. This assistance is critical for helping renters plan for current and future housing costs, accessing recovery programs, and gaining the support needed to drive their recovery in a way that makes them more resilient to future disasters and disruptions.

The Neighborhood Facilities Resilience Program is a mitigation activity, supported by the stakeholder and community feedback received. The Federal Register Notice requires that 15 percent, $6,534,000, of the total estimate for unmet needs allocated to this disaster, be set aside for the City to carry out mitigation activities. HCD may meet the requirements of the CDBG-DR mitigation set-aside:

- By incorporating mitigation measures into the recovery activities included in this Action Plan and documenting how those activities and the incorporated mitigation measures will meet the definition of mitigation, or
- By including eligible activities that do not have a tie-back to the 2021 Winter Storm but still incorporate mitigation measures, meeting the mitigation definition, into the recovery activities.

HCD is allocating 100 percent of the mitigation set-aside program funding to incorporate property hardening activities within neighborhood facilities, which will make the facilities withstand future disaster events to better serve the

community before, during, and after a disaster event occurs. Other activities, including home repair, may have additional mitigation measures.

Mitigation activities are those that increase resilience to future disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship. Proactively addressing the impacts of climate change and natural disasters is critical to building long-term community resilience.

Proposed mitigation activities utilizing the set-aside must:

- *Identify how the proposed use meets the definition of mitigation activities*: This activity will help to prepare Houston communities for future disasters by hardening neighborhood facilities primarily by ensuring they have backup power to become resource hubs for residents during and after a disaster.
- *Address the current and future risks identified in HCD's mitigation needs assessment*: The loss of energy and power can impact multiple other lifelines after a disaster, including food, water, and shelter. According to the mitigation needs assessment, energy is highly vulnerability to multiple types of risks, including winter storms, floods, hurricanes, extreme heat, thunderstorms, lightning, tornadoes, and drought. By providing a neighborhood facility that can withstand disasters, even when power goes out, residents may have a safe place to receive preparedness materials, shelter from the disaster, and services after a disaster.
- *Ensure proposed activities are CDBG eligible or eligible under waivers or alternative requirements in the Federal Register Notice*: Proposed activities will be CDBG-eligible public facility improvements.

Planning activities support plans, studies, strategies, or research about direct and indirect impacts of the 2021 Winter Storm or mitigation needs related to future disaster events within the City of Houston, the HUD-identified MID area.

The majority of the CDBG-DR21 funding is allocated for housing assisting low- and moderate-income Houstonians, both homeowners and renters. Although the unmet needs assessment identified unmet needs in the infrastructure and economic revitalization categories, other funding sources have been made available to assist in the recovery within these categories. As illustrated in the allocation of the CDBG-DR21 funds, HCD has made it a priority to direct most of the funding for housing programs to assist residents impacted by the 2021 Winter Storm and who have still not recovered, which will help address significant disparities in housing needs and access to opportunity. HCD will provide extensive outreach, including in multiple languages, and find ways to streamline the application process for housing assistance to reduce barriers that individuals may face when accessing assistance.

a. Leveraging Funds

The City of Houston anticipates leveraging CDBG-DR funds with funding provided by other federal, state, local, and non-profit sources to fully utilize the limited CDBG-DR funds to generate a more effective and comprehensive recovery. As applicable, leveraging requirements may be added to program guidelines, applications, or NOFA/RFPs.

b. Program Partners

HCD may engage program partners through formal agreements such as subrecipient agreements and interagency agreements and through informal partnerships. HCD engages program partners so that programs are more accessible, understandable, and tailored to equitably meet the unmet needs of disaster-impacted residents and communities. When formally engaging through agreements, HCD will ensure that subrecipients and other partners have the capacity and will provide technical assistance and training to partners on program requirements, applicable federal cross-cutting requirements, and reporting and performance requirements.

4. Distribution of Funds

State Grantees are required to describe how they will distribute grant funds to local governments and Indian tribes. This section does not apply to the City of Houston.

5. Program Income

HCD does not intend to implement any programs or activities that generate income as described in 87 FR 31636. However, if any CDBG-DR activities generate income before or after the close-out of the grant, HCD will retain program income to fund additional CDBG-DR activities or to fund the repair, operation, or maintenance of existing CDBG-DR activities. HCD will comply with all HUD requirements and the program income waiver and alternative requirement in 87 FR 31636 and subsequent notices, including tracking program income in the Disaster Recovery Grants Reporting (DRGR) system and using program income before drawing additional grant funds. Specifically, the City will adhere to the program income policies and procedures as stated in the City's financial certifications.

6. Resale or Recapture

HCD will use recapture requirements in its Winter Storm Home Repair Program. The recapture requirements are described within the Winter Storm Home Repair Program section and program guidelines will provide additional details on the terms of the recapture and specific circumstances under which the recapture will be used. HCD will not use resale provisions for any of the CDBG-DR21-funded programs

7. Program Details

The following provides details about the activities and programs HCD will implement using CDBG-DR21 funds to address impacts from the 2021 Winter Storm and increase resilience in Houston.

a. Winter Storm Home Repair Program

This program will assist homeowners in recovering from this disaster. The City will provide reimbursement for low- and moderate-income and urgent-need homeowners by defraying some of the financial burden homeowners experienced due to the disaster. The City will also rehabilitate or reconstruct homes for low- and moderate-income homeowners impacted by the disaster. Resilience measures such as power generation and/or storage enhancements will be incorporated when feasible. The City may administer this program directly or offer this program through subrecipients or other program partners. The total budget includes activity delivery expenses.

1. Total Budget: $40,106,250
2. Reimbursement Pathway
    a. Total Budget: $1,656,978
    b. National Objective: LMI Benefit, Urgent Need
    c. Compliance Period: None (Grant only)
    d. Max Award: $10,000
    e. Selection Criteria/Award Methodology: The application period will open to all interested parties at the same time. Applicants will be assigned phases based on area median income (AMI) and other characteristics, as described below. A deadline will be established for Round 1. Complete applications received by the deadline will be served in Round 1 on a first come first serve basis according to the assigned phases. Incomplete applications submitted by the deadline may be moved to subsequent rounds and then served according to the assigned phase. Based on the availability of funding, subsequent rounds will be announced, and complete applications will be served in subsequent rounds based on the assigned phases on a first come first serve basis.

i. Phase 1: Elderly (62 years or older) or disabled household member in a household at or below 80 percent AMI
ii. Phase 2: Households at or below 80 percent AMI
iii. Phase 3: Households at or below 120 percent AMI

3. Reconstruction or Rehabilitation Pathway

    a. Total Budget: $38,449,272

    b. National Objective: LMI Benefit

    c. Compliance Period: Rehabilitation and reconstruction projects will have a 3-year compliance period with a lien. Assistance will be provided in the form of a zero-interest secured forgivable loan. Homeowner(s) must agree to the forgivable loan compliance period and lien requirements, as applicable.
        i. The lien on the property will be removed upon completion of the terms and conditions of all documents related to the program and completion of the compliance period.
        ii. Homeowner(s) are required to maintain principal residency in the assisted property throughout the length of the forgivable loan compliance period.
        iii. Homeowner(s) must maintain the required insurance for the assisted property during the applicable compliance period.
        iv. Where disaster assistance triggers the flood insurance purchase requirement, assisted homeowners will notify any transferee of the requirement to obtain and maintain flood insurance, in writing, and to maintain such written notification in the documents evidencing the transfer of the property, and that the transferring owner may be liable, if he or she fails to do so.
        v. Should the homeowner sell or otherwise convey their ownership interest in the property during the compliance period, the remaining prorated amount of assistance will become immediately due and payable.

    d. Rehabilitation Max Award: $100,000

    e. Reconstruction Max Award: $300,000

    f. Selection Criteria/Award Methodology: The application period will open to all interested parties at the same time. Applicants will be assigned phases based on AMI and other characteristics, as described below. A deadline will be established for Round 1. Complete applications received by the deadline will be served in Round 1 on a first come first serve basis according to the assigned phases. Incomplete applications submitted by the deadline may be moved to subsequent rounds and then served according to the assigned phase. Based on the availability of funding, subsequent rounds will be announced, and complete applications will be served in subsequent rounds based on the assigned phases on a first come first serve basis. The City will advise homeowners which construction pathway they are eligible for based on the condition of their home.
        i. Phase 1: Elderly (62 years or older) or disabled household member in a household at or below 80 percent AMI

        ii. Phase 2: Households at or below 80 percent AMI

4. Eligible Activities: Housing activities allowed under CDBG-DR; HCDA Section 105(a)(1), 105(a)(3-4), 105(a)(11), 105(a)(18), and 105(a)(26), 24 CFR 570.201(g) including but are not limited to:
    a. Single-family owner-occupied reimbursement, rehabilitation, and reconstruction.

b. Hazard mitigation.
c. Mobility (ADA) measures.
d. Relocation assistance.
e. Other activities associated with the recovery of impacted single-family housing stock.

5. Ineligible Activities:
    a. Incentive payments to households that move to disaster-impacted floodplains.
    b. Properties that served as second homes during or following the disaster, are not eligible for rehabilitation assistance.
    c. Properties located in the floodway.
    d. Properties where the following are applicable:
        i. the combined household income is greater than 120% AMI or the national median, and
        ii. the property is in a 100-year floodplain at the time of the disaster, and
        iii. the property owner did not maintain flood insurance on the damaged property, even when the property owner was not required to obtain and maintain such insurance. (Section 582 of the National Flood Insurance Reform Act of 1994, as amended, 42 U.S.C. 5154a)

6. Eligibility Criteria:
    a. Property
        i. Not located in a floodway.
        ii. Sustained damage from the 2021 Winter Freeze.
        iii. Environmentally cleared.
        iv. Costs for rehabilitation, reconstruction, and new construction are reasonable and consistent with market costs at the time and place of construction.
        v. Substantially damaged/substantially improved properties in the 100- or 500-year flood plain must be elevated in accordance with City of Houston Ordinance Chapter 19.
        vi. Property taxes are current, on an approved payment plan or have an exemption under current laws.
        vii. Must be current on mortgage or be on a payment plan.
        viii. No liens on property at the time the award is distributed.

    b. Applicant
        i. Applicant(s) must own the property.
        ii. The property must be the owner's primary residence at the time of the storm and at the time the award is distributed.
        iii. All household members 18 and older must be current on child support payments or on an approved payment plan.
        iv. Applicant(s) cannot have abstract judgments at the time the award is distributed.
        v. Applicant(s) must agree to a limited subrogation of any future awards related to the 2021 Winter Freeze to ensure duplication of benefits compliance.

7. Outreach: To promote this program and available housing assistance to vulnerable populations, the City will provide outreach through advertising on social media or other media outlets, creating information materials, giving presentations, providing information at community events, and partnering with and providing information to other organizations that serve vulnerable populations.

8. Timeframe: The City is prepared to complete the program within the established period of performance allowable under this grant.

b. Neighborhood Facilities Resilience Program

HCD will assist neighborhood and/or public facilities by providing funding for resilience measures including standby electric power options that will allow these facilities to be a resource to the surrounding community in the event of future disasters. The public facilities and improvements may include, but not be limited to, adding a generator or other power generation and/or storage enhancements.

This program will harden the community and/or public facilities, owned by the City of Houston or a non-profit organization, which may result in protecting critical infrastructure and/or creating places residents can go to receive information or services related to disaster preparedness and/or disaster recovery. Facilities may be used as shelters or distribution points during or immediately following a disaster. The total budget includes activity delivery expenses.

1. Total Budget: $7,284,000

2. Max Award: $2,000,000

3. Eligible and Ineligible Activities: Activities allowed under CDBG-DR; HCDA Section 105(a)(1, 2, 4, 5, 8, and 14), 105(a)(7-9), and 105(a)(11), include but are not limited to:

4. Eligible Activities:
    a. Infrastructure improvements (such as water and sewer facilities, streets, provision of generators, removal of debris, bridges, etc.), including flood control and drainage repair and improvements through the construction or rehabilitation of stormwater management system; natural or green infrastructure
    b. Clearance, demolition, rehabilitation of publicly or privately-owned buildings, and code enforcement
    c. Provision of assistance including loans and grants for activities carried out by public or private nonprofit entities, including acquisition of real property, and acquisition, construction, reconstruction, rehabilitation, or installation of public facilities or commercial or industrial property improvements.

5. Ineligible Activities:
    a. Emergency response services
    b. Funds may not be used to assist a privately-owned utility for any purpose
    c. Buildings and facilities used for the general conduct of government (e.g., city halls, courthouses, and emergency operation centers)

6. Eligible Criteria: Facilities requesting assistance must be in an area where the service radius is more than 50% residential and 51% or more Low-to-Moderate Income. Assisted facilities must be open to the public.

7. Selection Criteria: Non-profit subrecipient(s) will be selected through an application or NOFA process. The application or NOFA will establish the process and acceptance period, threshold criteria, selection criteria, and the award process. Selection criteria and any prioritization will be established in the Neighborhood Facilities Resilience Program guidelines or NOFA. Selection criteria will likely include the activity and need, cost reasonableness and effectiveness, activities management and implementation, experience/past performance, and target areas that are identified as having a high need. City-owned facilities may also be funded directly through a letter of agreement.

8. National Objectives: LMA Benefit

9. Timeframe: The City is prepared to complete the program within the established period of performance allowable under this grant.

c. Planning

Planning activities will support the development and management of the Action Plan for Disaster Recovery 2021 Winter Storm. Activities will include community engagement to inform the City's plan development. The City may also use these funds to study specific topics related to mitigation or resilience. Planning activities will strive to promote sound, sustainable long-term recovery planning informed by a post-disaster evaluation of hazard risk, especially land-use decisions that reflect responsible floodplain management and consider future possible extreme weather events and other natural hazards and long-term risks.

1. Total Budget: $200,000

2. Eligible and Ineligible Activities:
    a. Eligible Activities: The eligible activity is planning, urban environment design, and policy-planning-management-capacity building activities as listed in 24 CFR 570.205

3. Timeframe: The City began the program before the grant was awarded and is prepared to complete the program within the period of performance. The program will end when all funds have been expended and program activities have completed closeout or six years after the execution of the grant agreement with HUD.

d. Administration

HCD will use administration funds for necessary general administration costs related to CDBG-DR grants, including but not limited to staff time administering programs, compliance, and monitoring of the City's subrecipients, vendors, and other recipients of funding; and other costs specified as eligible administrative expenses in 2 CFR 570.206. Up to 5% of the overall grant and any program income may be used for administration of the grant.

1. Total Budget: $2,504,750

2. Eligible and Ineligible Activities
    a. Eligible expenses are Administration Costs, as defined at 24 CFR 570.205 and 24 CFR § 570.206 and any applicable waivers or alternative requirements.

3. Timeframe: The City will begin the program after the grant is awarded and is prepared to complete the program within the period of performance. The program will end when all funds have been expended, and program activities have completed closeout or six years after the execution of the grant agreement with HUD.

F. Appendix

1. Certifications

a. The grantee certifies that it has in effect and is following a residential anti-displacement and relocation assistance plan (RARAP) in connection with any activity assisted with CDBG–DR grant funds that fulfill the requirements of Section 104(d), 24 CFR part 42, and 24 CFR part 570, as amended by waivers and alternative requirements.
b. The grantee certifies its compliance with restrictions on lobbying required by 24 CFR part 87, together with disclosure forms, if required by part 87.
c. The grantee certifies that the action plan for disaster recovery is authorized under state and local law (as applicable) and that the grantee, any entity or entities designated by the grantee, and any contractor, subrecipient, or designated public agency carrying out an activity with CDBG–DR funds, possess(es) the legal authority to carry out the program for which it is seeking funding, following applicable HUD regulations as modified by waivers and alternative requirements.
d. The grantee certifies that activities to be undertaken with CDBG–DR funds are consistent with its action plan.
e. The grantee certifies that it will comply with the acquisition and relocation requirements of the URA, as amended, and implement regulations at 49 CFR part 24, as such requirements may be modified by waivers or alternative requirements.
f. The grantee certifies that it will comply with section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) and implementing regulations at 24 CFR part 75.
g. The grantee certifies that it is following a detailed citizen participation plan that satisfies the requirements of 24 CFR 91.115 or 91.105 (except as provided for in waivers and alternative requirements). Also, each local government receiving assistance from a state grantee must follow a detailed citizen participation plan that satisfies the requirements of 24 CFR 570.486 (except as provided for in waivers and alternative requirements).
h. State grantee certifies that it has consulted with all disaster-affected local governments (including any CDBG entitlement grantees), Indian tribes, and any local public housing authorities in determining the use of funds, including the method of distribution of funding, or activities carried out directly by the state.
i. The grantee certifies that it is complying with each of the following criteria:
    1. Funds will be used solely for necessary expenses related to disaster relief, long-term recovery, restoration of infrastructure and housing, economic revitalization, and mitigation in the most impacted and distressed areas for which the President declared a major disaster according to the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1974 (42 U.S.C. 5121 et seq.).
    2. Concerning activities expected to be assisted with CDBG–DR funds, the action plan has been developed to give the maximum feasible priority to activities that will benefit low- and moderate-income families.
    3. The aggregate use of CDBG–DR funds shall principally benefit low- and moderate-income families in a manner that ensures that at least 70 percent (or another percentage permitted by HUD in a waiver) of the grant amount is expended for activities that benefit such persons.
    4. The grantee will not attempt to recover any capital costs of public improvements assisted with CDBG–DR grant funds, by assessing any amount against properties owned and occupied by persons of low- and moderate-income, including any fee charged or assessment made as a condition of obtaining access to such public improvements, unless:
        a. Disaster recovery grant funds are used to pay the proportion of such fee or assessment that relates to the capital costs of such public improvements that are financed from revenue sources other than under this title; or
        b. for purposes of assessing any amount against properties owned and occupied by persons of moderate income, the grantee certifies to the Secretary that it lacks sufficient CDBG funds (in any form) to comply with the requirements of clause (a).
j. State and local government grantees certify that the grant will be conducted and administered in conformity with title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d), the Fair Housing Act (42 U.S.C. 3601–3619),

and implementing regulations, and that it will affirmatively further fair housing. An Indian tribe grantee certifies that the grant will be conducted and administered in conformity with the Indian Civil Rights Act.

k. The grantee certifies that it has adopted and is enforcing the following policies, and, in addition, state grantees must certify that they will require local governments that receive their grant funds to certify that they have adopted and are enforcing: (1) A policy prohibiting the use of excessive force by law enforcement agencies within its jurisdiction against any individuals engaged in nonviolent civil rights demonstrations; and (2) A policy of enforcing applicable state and local laws against physically barring entrance to or exit from a facility or location that is the subject of such nonviolent civil rights demonstrations within its jurisdiction.
l. The grantee certifies that it (and any subrecipient or administering entity) currently has or will develop and maintain the capacity to carry out disaster recovery activities on time and that the grantee has reviewed the requirements applicable to the use of grant funds.
m. The grantee certifies the accuracy of its Financial Management and Grant Compliance Certification Requirements, or other recent certification submissions if approved by HUD, and related supporting documentation as provided in section III.A.1. of the Consolidated Notice and the grantee's implementation plan and related submissions to HUD as provided in section III.A.2. of the Consolidated Notice.
n. The grantee certifies that it will not use CDBG–DR funds for any activity in an area identified as flood-prone for land use or hazard mitigation planning purposes by the state, local, or tribal government or delineated as a Special Flood Hazard Area (or 100-year floodplain) in FEMA's most current flood advisory maps, unless it also ensures that the action is designed or modified to minimize harm to or within the floodplain, following Executive Order 11988 and 24 CFR part 55. The relevant data source for this provision is the state, local, and tribal governments. Land use regulations and hazard mitigation plans and the latest-issued FEMA data or guidance, which includes advisory data (such as Advisory Base Flood Elevations) or preliminary and final Flood Insurance Rate Maps.
o. The grantee certifies that its activities concerning lead-based paint will comply with the requirements of 24 CFR part 35, subparts A, B, J, K, and R.
p. The grantee certifies that it will comply with environmental requirements at 24 CFR part 58.
q. The grantee certifies that it will comply with the provisions of Title I of the HCDA and with other applicable laws.

Warning: Any person who knowingly makes a false claim or statement to HUD may be subject to civil or criminal penalties under 18 U.S.C. 287, 1001, and 31 U.S.C. 3729.

_____ _____

John Whitmire, Mayor Date

2. Waivers

HCD will comply with all waivers and alternative requirements related to this funding, as indicated in each applicable Federal Register notice. HCD may request waivers through future substantial amendments. At this time, HCD does not have any waiver requests.

3. Summary and Response of Public Comments

a. Amendment 1

The following will describe the summary of public comments received during the public comment period.

b. Original Action Plan: Community Engagement Summary

The following provides a summary of public comments received for the *Draft Action Plan for Disaster Recovery 2021 Winter Storm* in response to the *2021 Winter Storm* during the two public comment periods from August 5, 2022, through September 4, 2022, and March 28, 2023, through April 27, 2023.

In addition, this section contains a summary of the information received through community engagement throughout the development of this Action Plan.

The City of Houston implemented several strategies to receive feedback regarding long-term recovery and funding strategies related to this Action Plan. Opportunities for the community to give feedback about their disaster impacts, remaining community recovery needs, and priorities for funding, included

- Stakeholder interviews
- Two surveys
- 30-day comment period (twice)
- Public hearing

Key Engagement Findings

- Houstonians have not yet fully recovered from the 2021 Winter Storm, and damaged homes are still in need of repair.
- Recovery assistance is most needed for vulnerable populations and other residents who have been negatively impacted by multiple disaster events.
- Many residents need home repair assistance to address deferred maintenance, which if unrepaired, could leave them vulnerable to future disasters. In addition, home weatherization is needed to help residents become more resilient.
- Improvements to the infrastructure to decrease power and water outages are necessary, although changes at the state-wide and local levels are needed.
- Community facilities should be improved to become a resilience hub, so they can serve as a resource for residents during and after a disaster event.

Stakeholder Interviews

HCD staff reached out to advocates, nonprofit organizations, and government partners to conduct interviews to support the development of this Action Plan. During the interviews, HCD staff asked open-ended questions about the immediate and long-term impacts of the 2021 Winter Storm, current unmet needs, groups that are unable to access assistance, recovery needs due to multiple disaster events, and activities needed to help address outstanding needs.

The following organizations participated in the interviews. Other stakeholders were contacted and did not reply to a request for an interview.

AARP
Area Council on Aging
CEER
City of Houston General Services Department
City of Houston Office of Complete Communities
City of Houston Office of Emergency Management
City of Houston Office of Resilience and Sustainability
Connective
Crowdsource
Disability Rights Texas
Fifth Ward CRC
Greater Houston Community Foundation
Houston Area Urban League
Hope Disaster Recovery
Houston Habitat for Humanity
Houston Housing Collaborative
Houston Volunteer Lawyers
Houston LISC
Housing Advocates Collective
Rebuild Together Houston
The Alliance
VN Teamwork
West Street Recovery

The following summarizes the findings from the stakeholder interviews categorized by unmet need, program design, and funding priorities.

Unmet Need

- There are outstanding repairs to homes impacted by the Winter Storm.
- There is deferred home maintenance that may lead to residents living in an unhealthy environment or that may lead residents to be more vulnerable to impacts from future disasters.
- Houstonians have compounding issues from multiple disasters, leaving them without savings to address future emergencies.
- Many Houstonians have not been able to access disaster assistance because of language barriers, socioeconomic status, or financial barriers.
- Houstonians need financial assistance.
- There continue to be landlord and tenant issues, including landlords delaying needed repairs.

CDBG-DR21 Program Design

- Work with residents to design programs that directly benefiting residents.
- Streamline application processes to decrease barriers like documentation and wait time.
- Use community organizations and trusted messengers.
- Meet people where they are.
- Focus on vulnerable populations/target areas.
- Must build trust with the community.
- Ensure access for people with language barriers.

CDBG-DR21 Priority Activities

- Home repair to address deferred maintenance and unrepaired damage from the Winter Storm.
- Weatherization, including additional home repairs to prepare homes for weatherization upgrades.
- Assistance for community organizations to carry out assistance programs.
- Resilience hubs / Lily pads – neighborhood spaces that provide assistance and resources to residents before, during, and after a disaster.
- General disaster preparation activities, including providing information and outreach directly before a disaster.
- Prioritization of vulnerable residents and areas with compounding needs.
- Resilient infrastructure so there will be less or no interruption to electricity or water service.

Stakeholder Survey

HCD made a stakeholder survey available online for advocates, nonprofit organizations, for-profit organizations, and government agencies beginning June 27, 2022. The survey was advertised through HCD's social media and email listserv, CitizensNet, and various community partners. The purpose of the survey was to gather information about HCD partners and the communities they serve including impact, remaining unmet need, disaster preparation needs, and funding priorities. 154 respondents took the survey. The following summarizes the feedback received from the survey.

Information about Respondents

- Almost half (39%) of respondents were staff members from a nonprofit organization; about one quarter were staff from a government agency (22%) and for-profit organization (15%); and 5% were advocates.
- Over half (62%) of respondents said their organization primarily serves low- and moderate-income people.
- Only 15% of respondents indicated that their organization was not financially impacted by a recent disaster; most respondents' organizations were financially impacted by the COVID-19 pandemic (80%) and Hurricane Harvey (60%).

Impacts from the 2021 Winter Storm

- Almost all respondents indicated that the 2021 Winter Storm impacted their organization, of which almost half (39%) had their organization closed for 1 to 3 days, and over a third (36%) had their organization closed for more than 3 days. Half of the respondents (48%) could not serve their clients due to the disaster.
- About one in five (19%) respondents' organizations sustained building damage, and only 2% had damage to contents, like furniture or other belongings. The following shows the highest and lowest amounts received regarding the estimated organizational cost of damage incurred from the 2021 Winter Storm
    - $1,000 and $275,000 for lost work
    - $89 and $1,500,000 for building damage
    - $650 and $50,000 for contents damage
- About one in ten respondents (16%) indicated outstanding building repair needs for their organization, in which some or no repairs or replacements have been made due to damages from the 2021 Winter Storm.

Recovery Needs

- Respondents indicated the following would have helped their organization recover more quickly from the 2021 Winter Storm: 1) Stronger electric infrastructure that can withstand weather-related events keeping power and water on, 2) Additional funding to assist with recovery efforts, 3) Backup power, and 4) Additional staff.
- The following are the top ways that respondents thought their organizations need to better prepare for the next disaster: 1) Install alternative power supply or backups (generators, batteries, solar, wind) (54%), 2) Prepare staff to work remotely (45%), 3) Create and follow a risk assessment, emergency plan, communication plan or business continuity plan (43%), and 4) Prepare buildings to withstand future disaster events better (34%).
- The top three community unmet needs identified by respondents are: 1) Home repair to fix damages and weatherization to make homes more resilient, 2) Addressing needs of underserved populations including seniors, people living in poverty, and people of color, 3) Assist residents in need of housing.
- The top ways that respondents identified for the City to help low- and moderate-income communities and vulnerable Houstonians recover from a similar disaster are: 1) Improve disaster preparedness, education, and planning for all types of future disaster events, 2) Assist to weatherize homes, 3) Provide backup power, and 4) Provide funding assistance.

Funding Priorities

- The top four funding priorities are:
    - Repair owner-occupied homes with outstanding damage from the 2021 Winter Storm

  - Improve City infrastructure to withstand future disaster events better
  - Repair rental homes with outstanding damages from the 2021 Winter Storm
  - Improve community facilities to be resources for Houstonians during disaster events

- The top four groups that should receive funding priority:
  - Low- and moderate-income people
  - Seniors
  - People experiencing homelessness
  - People with a physical disability

Resident Survey

HCD made a resident survey available online beginning June 27, 2022. The survey was advertised through HCD's social media and email listserv, CitizensNet, and various community partners. The purpose of the survey was to gather information about the impact, remaining unmet need, and funding priorities. There were 1,169 survey responses. The following is a summary of the responses received.

Information about Respondents

- Most respondents were homeowners (70%); one quarter were renters (17% renting an apartment and 8% rented a single-family home); and the remaining 4% of respondents either lived with a friend or family member, did not have a permanent home, or had other living arrangements.
- Over half of respondents were White (57%); almost one-third were Black or African American (33%); 5% were Asian; 3% were American Indian or Alaska Native; and 8% were another race.
- Almost one in five respondents were Hispanic, Latino, or Spanish Origin (17%).
- Almost half of the respondents lived in a household earning below $50,000 (43%); approximately one-third lived in a household earning $50,001-$100,000 (30%); and one-quarter (27%) of respondents lived in a household earning over $100,000.
- Over three-quarters of respondents had financial losses from a recent disaster in Houston other than the 2021 Winter Storm (79%) with the most in Hurricane Harvey (56%), COVID-19 (47%), and Hurricane Ike (44%).

General Impacts

- Almost all respondents (94%) had a loss of electricity during the 2021 Winter Storm with almost half (48%) experiencing a loss of electricity or rolling blackouts for more than 3 days.
- Almost all of the respondents (85%) had a loss of water or low water pressure, with 42% of respondents experiencing a loss of water or low water pressure for more than 3 days.
- Almost three-quarters of respondents (73%) were affected by a mandatory boil water notice.
- Over a quarter of respondents (28%) lost pay due to the 2021 Winter Storm with 19% of respondents going more than 3 days without pay.
- A small number of respondents (4%) permanently lost employment due to the 2021 Winter Storm.

Winter Storm Damage to Homes

- Over half (54%) of respondents suffered damage to their homes during the 2021 Winter Storm.
  - Respondents had the following impacts from the 2021 Winter Storm: 52% experienced emotional trauma or anxiety; 15% had a health or mental health crisis; 10% had damage to their vehicle; 5% had a slip and fall; and 25% had other impacts.
  - Respondents estimated their building repair costs: 32% estimated costs up to $1,000, 28% estimated costs between $1,001 and $5,000, 11% estimated repair costs between $5,001 and $10,000, 15% estimated costs above $10,000, and 14% did not know the total repair costs for the damages to their homes.

  - Almost half of respondents (48%) have made all repairs, while 41% have made some repairs and 11% have made no repairs.
- Almost half (43%) had damage to personal belongings due to the 2021 Winter Storm.
  - Respondents estimated the cost to fix or replace their personal belongings: 54% estimated costs up to $1,000, 22% estimated costs between $1,001 and $5,000, 8% estimated costs between $5,001 and $10,000, 9% estimated costs above $10,000, and 7% did not know the total repair or replacement cost.
  - Over a third (38%) of respondents have fixed or replaced damaged personal belongings, while 45% have only fixed or repaired some, and 17% have fixed or replaced none of their damaged belongings.
- To pay damages to their homes, over half of respondents (54%) used their savings, 16% used a gift or loan from friends or family members, 11% used insurance, 4% used government assistance (FEMA, SBA), 4% used a loan from a payday lender, 4% used grant or assistance from a community organization. One in ten respondents (10%) used another source, which included credit cards, retirement funds, pawning valuables, and getting a second job.

Long-term Recovery

- The top issues that respondents had trouble with since the 2021 Winter Storm include: Almost one-third (30%) had trouble paying utility bills, 29% had trouble paying for repairs that need to be made to their home, , 21% paying for rent or mortgage, 21% paying for home insurance, 16% paying property taxes, 16% finding a better place to live.
- Since the 2021 Winter Storm, 44% of respondents made home improvements or changed something at home to better prepare for similar future disasters.
- Over half (57%) of respondents plan on making changes to prepare for a similar event in the future.

Funding Priorities

- The top three funding priorities are:
  - Improve City infrastructure to withstand future disaster events better
  - Repair owner-occupied homes with outstanding damage from the 2021 Freeze
  - Improve community facilities to be resources for Houstonians during disaster events

- The top three groups that should receive a funding priority:
  - Seniors
  - People experiencing homelessness
  - People with a physical disability

Summary of Written Public Comments

The following is a summary of public comments received during the public comment period from August 5, 2022, through September 4, 2022, with responses.

Comment 1: A resident wrote that he was greatly affected by the Winter Storm and had pipes burst which flooded his whole house. He and his family had to live with family members and in hotels until they were able to move into an apartment.

Response: Thank you for your comment. The Winter Storm Home Repair Program will assist families like yours to help make needed repairs or provide reimbursement for already completed repairs due to impacts caused by the 2021 Winter Storm.

Comment 2: A resident is still in need of repair. Her home pipes have not been repaired. She needs assistance to repair her home's entire water system and HVAC system due to damage from the storm.

Response: Thank you for your comment. The Winter Storm Home Repair Program will assist residents like you to help make needed repairs that were caused by the 2021 Winter Storm.

Comment 3: The CEO of Rebuilding Together Houston requested that the City issue an RFP or RFQ for subrecipients, which would allow partners and nonprofits to apply. Local nonprofit organizations jumped into action immediately to provide emergency plumbing repairs to close to 2,000 households through the Houston Harris County Winter Storm Relief Fund. As nonprofit organizations have long-standing relationships with Houston's most underserved neighborhoods and have shown they can work effectively, these organizations should have the opportunity to help deploy CDBG-DR funding.

Response: Thank you for your continued work in communities throughout Houston. HCD looks forward to continued partnerships with Rebuilding Together Houston and other organizations assisting vulnerable populations. RFPs, RFQs, and NOFAs issued by HCD are available for nonprofit organizations to submit proposals. HCD will continue to consider ways to deploy home repair activities efficiently while supporting and building the capacity of nonprofit organizations.

Comment 4: A resident who operates water and wastewater districts proposed to have better communications during emergencies with industries, such as MUDs, who are known to have backup power generation. If these districts were asked to utilize backup generation sooner, they could have reduced the electrical load to make an impact.

Response: Thank you for your comment and your commitment to promoting communication during a disaster. Although HCD works on providing disaster recovery and mitigation activities, HCD will support the Office of Emergency Management and other City Departments that lead emergency communications during disasters.

Comment 5: A resident who worked in electricity wholesale markets for 28 years proposes to use CDBG-DR funding to provide natural gas or propane generators to assist vulnerable residents, including seniors and children or others who utilize neighborhood centers.

Response: Thank you for your comment. Through the Neighborhood Facilities Resilience activities, HCD will fund electrical generation at community facilities to help residents before, during, and/or after a disaster event.

Comment 6: A resident's roof was impacted by the freeze, which is creating structural issues in her home, and she needs assistance to replace her roof.

Response: Thank you for your comment. The Winter Storm Home Repair Program will assist residents like you to help make needed repairs that were caused by the 2021 Winter Storm.

Comment 7: The Director of Operations of Hope Disaster Recovery confirmed that many people still need help repairing their homes, but there is no funding. Most homes have been repaired using up to $6,500, however, some homes need much more extensive repairs due to impacts from multiple disasters. Many homes were uninsured, and damage from the Winter Storm would have likely been covered by insurance, not including the deductible. She thanked the City for engaging residents and agencies in the process.

Response: Thank you for your comment. Through the Winter Storm Home Repair Program, HCD will assist homeowners in making smaller repairs or reconstructing homes, as necessary. This will help protect households during future disaster events, as they will have a safe, healthy home.

Comment 8: A resident had to leave his home and stay at a hotel far from Houston during the Winter Storm, and he had a loss in wages and major tree damage. Insurance partially covered his claims. He filed and was denied FEMA assistance. He said that it is very difficult to deal with Federal and State agencies because assistance and assistance is insufficient.

> Response: Thank you for your comment. HCD will continue to look for ways to decrease barriers for residents seeking assistance that we provide.

The following is a summary of the written comments received during the second public comment period from March 28, 2023, through April 27, 2023.

Comment 1: Commenter requested a grant or low-interest loan for very low-income people to assist with home repair, especially seniors with disabilities living on a fixed income. There is not enough funding for home repair assistance.

> Response: Thank you for your comment. The majority of this CDBG-DR funding will be allocated to the Winter Storm Home Repair Program to assist low- and moderate-income homeowners.

Comment 2: Commenter stated that many renters lost subsidies due to the damage from the Winter Storm, and she supports activities and funding to assist renters to help them become future homeowners.

> Response: Thank you for your comment, the Renter Housing Counseling Program is intended to assist renters impacted by the 2021 Winter Storm. Although not funded with CDBG-DR from the 2021 Winter Storm, HCD has several programs using other funding sources that can assist renters to become homeowners, including the Homebuyer Assistance Program, the New Home Development Program, and programs available through the Houston Community Land Trust.

Comment 3: Commenter requires home repair due to impacts from the 2021 Winter Storm and other recent freeze events.

> Response: Thank you for your comment. The majority of this CDBG-DR funding will be allocated to the Winter Storm Home Repair Program for homeowners like you, who have outstanding repairs.

Summary of Public Comments at Public Hearings

The following comments were received at the public hearing during the virtual community meeting for the 2021 Winter Storm held on August 9, 2022.

Comment 1: Congresswoman Sheila Jackson Lee said that this plan should reference climate change, environment, and housing that has been impacted by multiple natural disasters. It is important to rebuild and repair. The plan should address different housing situations. These funds should include beautification. These funds should get to the people and serve those most in need. These services should help create a better quality of life, and these programs should complement one another to improve neighborhoods.

> Response: Thank you for your comment and continued support. This Plan references the changing environment and the multiple disasters that have impacted Houston's housing. This plan addresses the needs of renters and homeowners to improve housing stock in Houston neighborhoods to help mitigate future disaster impacts.

Comment 2: Councilmember Cassex Tatum supports using funds to build gas lines in all-electric neighborhoods because residents in these neighborhoods could not keep warm. Funds should also help keep warming centers open.

> Response: Thank you for your comment. Although this plan does not directly address large infrastructure projects to connect new gas lines to neighborhoods, funding will support community facilities that can be used as warming centers or as a hub for services before and after future disasters to help residents.

Comment 3: The Regional Director of Texas Housers asked for the Draft Action Plan to be shared by email. The Draft Action Plan should be more direct about how programs will be carried out. Any budget reallocation, not just substantial amendments, should have at least a 7-day comment period. Federal funds should not be used to supplant. Public facility improvements should be leveraged with local funds and not fully funded with CDBG-DR funds. Planning should study the electrical grid, green energy, and an energy continuity plan to help keep electricity available for residents' use. The City should form a community advisory committee made up of residents who have lived through disasters and gone through recovery assistance programs. Flood insurance for freeze repair is an unnecessary barrier. Relocation should allow flexibility for temporary housing options.

> Response: HCD sent out an email to its listserv dedicated to the Draft Action Plan. The City follows CDBG-DR regulations and does not use CDBG funds to supplant other funds. The City will look into ways to involve residents in different ways in reviewing reallocations and improving programs. The City will publish draft program guidelines for public comment, and the guidelines will include additional information about how programs will be carried out.

Comment 4: The Director of Operations of Hope Disaster Recovery supported the Draft Action Plan. Hope Disaster Recovery has repaired over 500 homes. They found it challenging to make repairs related to the most recent disaster because there were additional needed repairs caused by multiple previous disasters and/or deferred maintenance. She supported helping people in the most vulnerable areas and that homeowners need assistance to pay for homeowner's insurance.

> Response: Thank you for your comment and your continued work to assist Houstonians. The Winter Storm Home Repair Program will address all needed repairs in a home.

Comment 5: This plan and funding should be a public-private partnership. Many publicly owned companies could contribute to disaster recovery, especially right after a disaster occurs.

> Response: Thank you for your comment. Although CDBG-DR funding is for long-term disaster recovery and mitigation and not for immediate emergency or short-term relief, the City has worked with the private sector and philanthropies to fund immediate assistance after a disaster occurs, including the Winter Storm.

Comment 6: A resident is concerned that Freedman's Town has applied for assistance and has not received funding from HCD for various housing assistance or development activities or the construction of a youth center. She asked about the contract compliance officer and wanted assurances that people with the greatest needs will be assisted, like people with disabilities.

> Response: HCD publishes notices of funding availability (NOFAs) periodically to fund public facility improvements and affordable rental home construction or rehabilitation throughout the City. Please sign up for HCD's email listserv, so that you may be notified as these funding opportunities are made available. HCD has several compliance teams, including contract compliance staff members, that ensure compliance throughout the grant period.

Comment 7: A staff member from West Street Recovery supports protecting low-income residents and guiding them through flood insurance claims. He said that flood insurance should not be necessary to receive assistance through

the Winter Storm Home Repair Program. Nonprofit organizations are still working on repairs, and funding has been exhausted.

> Response: Thank you for your comments and your work in the community. More information about HCD's programs will be published for public comment.

The section provides a summary of comments received and discussions held during the 2023 Spring Public Hearings.

Meeting 1: Tuesday, March 28, 2023

Comment 1: A Commenter from the North Houston area stated that his apartment complex of 6 years was built on a landfill. He alleged that the apartment made his wife gravely ill and is seeking remedy through a lawsuit. He recommended that HCD be careful about where they are building new homes to avoid circumstances like his.

> Response: Thank you for the comment. HUD requires that all HUD-assisted home developments conduct an environmental review to ensure that there will be no adverse environmental effects, including negative health impacts on residents. Each development is required to follow the National Environmental Policy Act (NEPA). In addition to HUD requirements, the Houston Permitting Center reviews new development plans to ensure environmental safety according to the latest adopted International Building and Residential Codes. These processes will continue to help limit adverse environmental impacts for developments funded by HCD

Comment 2: Commenter recommended that HCD create a better system of tracking applications for assistance. The commenter also stated that seniors have a hard time accessing and navigating websites to fill out electronic applications. The commenter also mentioned that HCD staff should keep compassion in mind when doing their work.

> Response: Thank you for the comment. Although HCD retains all applications and related documents, we continue to improve and streamline the application processes. Each applicant should retain the application number that they receive upon submitting their application, which can be used to track the application status. HCD will also continue to improve its website navigation and other means of communication about HCD programs and initiatives. In addition, HCD will explore ways to better communicate with seniors about important HCD information.

Meeting 2: Thursday, March 30, 2023

Commenter # 1: Commenter recommended that HCD allocate renters with the disaster recovery funds from the 2021 Winter Storm. Many of the programs for these funds are directed to homeowners, but there are families whose vouchers were abated due to the damages caused by the Winter Storm, and who incurred out-of-pocket expenses until their vouchers were reinstated. There should be a grant program to provide direct payments to those families.

> Response: Thank you for the comment. During HCD's public engagement process in the summer of 2022 for the 2021 Winter Storm funds, HCD found that the greatest need was for homeowners who had outstanding repairs or who had already made repairs. Undoubtedly, some renters experienced losses from the Winter Storm, but many of those losses were reported as damage to personal property. While these funds cannot pay for these kinds of damage, HCD has allocated funds to Renter Housing Counseling to help vulnerable renters find and/or maintain housing, while preparing them to be more prepared for future disasters. This assistance is critical for helping renters plan for current and future housing costs, accessing recovery programs, and gaining the support needed to drive their recovery in a way that makes them more

resilient to future disasters and disruptions. For more information about the proposed Rental Housing Counseling, please view the Draft Action Plan for Disaster Recovery – 2021 Winter Storm.

Commenter # 2: A Commenter from Hope Disaster Recovery recommended that HCD reduce the max award for each household assisted through the Winter Storm Home Repair Program because her organization is not finding massive destruction. Reducing the amount used for each household will allow HCD to repair more homes. Also, homelessness is a major problem so the budgets for rehousing, preventing, and sheltering should be increased.

Response: Thank you for the comment. HCD has proposed assisting 348 homeowner households based on estimated repair costs, but HCD may exceed that number if repair costs are significantly lower. HCD will repair or reimburse as many homeowner households as possible using the $40.1 million that has been allocated to the Winter Storm Home Repair Program.

HCD also recognizes the great need for funding programs for rehousing, shelters, and homeless prevention for those who are or are at risk of becoming homeless. HCD has increased its Emergency Grants Solution (ESG) budget for rental housing because of the increased need for these services since COVID-19. However, other funding sources will target rehousing, sheltering, and prevention programs. Funding sources like HOME-ARP, CDBG-CV, and ESG-CV – amongst others – will help to fund the Community COVID Housing Program (CCHP). CCHP has been a successful program that provides housing services, Permanent Supportive Housing (PSH), Rapid Re-housing (RRH), and Diversion. HCD will also continue improving programs and expanding funding to assist those who are experiencing or are at risk of homelessness.

4. Data Sources / Methodologies

Owner Occupied Households:

- **Minor-Low:**
  - **Less than $3,000 of FEMA inspected real property damage**
- **Minor-High:**
  - **$3,000 to $7,999 of FEMA inspected real property damage**
- **Major-Low:**
  - **$8,000 to $14,999 of FEMA inspected real property damage**
- **Major-High:**
  - **$15,000 to $28,800 of FEMA inspected real property damage**
- **Severe:**
  - **Greater than $28,800 of FEMA inspected real property damage**

Renter Occupied Households:

- **Minor-Low:**
  - **Less than $1,000 of FEMA inspected personal property damage**
- **Minor-High:**
  - **$1,000 to $1,999 of FEMA inspected personal property damage**
- **Major-Low:**
  - **$3,500 to $4,999 of FEMA inspected personal property damage**
- **Major-High:**
  - **$5,000 to $8,999 of FEMA inspected personal property damage**
- **Severe:**
  - **Greater than $9,000 of FEMA inspected personal property damage**

5. Important Definitions and Terms

AMI: Area Median Income
CBDO: Community Based Development Organization
CDBG: Community Development Block Grant
CDBG-DR: Community Development Block Grant- Disaster Recovery
CFR: Code of Federal Regulations
CO: Certifying Officer
CP: Participation
DOB: Duplication of Benefits
DRGR: Disaster Recovery and Grant Reporting System
FEMA: Federal Emergency Management Agency
HCD Act: Housing and Community Development Act of 1974, as amended
HMGP: Hazard Mitigation Grant Program
IA: (FEMA) Individual Assistance
LIHTC: Low-Income Housing Tax Credit
LMI: Low and moderate-income
NFIP: National Flood Insurance Program
PA: (FEMA) Public Assistance
RE: Responsible Entity
RFP: Request for Proposals
SBA: U.S. Small Business Administration
SFHA: Special Flood Hazard Area
UGLG: Unit of general local government
URA: Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended
USACE: U.S. Army Corps of Engineers

6. Standard Form 424

7. Projections

Appendix: Projected Expenditures and Outcomes

Program/Activity	Program Allocation	Year 1			
		Q1	Q2	Q3	Q4
Winter Storm Home Repair	$40,106,250	$746,225	$761,150	$882,933	$1,165,472
Neighborhood Facilities Resilience	$7,284,000	$15,000	$15,000	$15,000	$15,000
Planning	$200,000	$200,000	$0	$0	$0
Administration	$2,504,750	$0	$20,000	$54,250	$54,250
Grand Total	$50,095,000	$961,225	$796,150	$1,002,183	$1,334,722
Funds Remaining	$46,000,720	$49,133,775	$48,337,625	$47,335,442	$46,000,720

Program/Activity	Program Allocation	Year 2			
		Q1	Q2	Q3	Q4
Winter Storm Home Repair	$40,106,250	$1,351,948	$1,784,571	$2,070,102	$2,235,710
Neighborhood Facilities Resilience	$7,284,000	$30,000	$30,000	$30,000	$30,000
Planning	$200,000	$0	$0	$0	$0
Administration	$2,504,750	$78,273	$78,273	$156,546	$156,546
Grand Total	$50,095,000	$1,610,221	$2,042,844	$2,356,648	$2,422,256
Funds Remaining	$37,568,751	$44,390,499	$42,347,655	$39,991,007	$37,568,751

Program/Activity	Program Allocation	Year 3			
		Q1	Q2	Q3	Q4
Winter Storm Home Repair	$40,106,250	$2,220,000	$2,220,000	$2,220,000	$2,350,000
Neighborhood Facilities Resilience	$7,284,000	$819,250	$819,250	$819,250	$819,250
Planning	$200,000	$0	$0	$0	$0
Administration	$2,504,750	$156,546	$156,546	$156,546	$156,547
Grand Total	$50,095,000	$3,195,796	$3,195,796	$3,195,796	$3,325,797
Funds Remaining	$24,655,566	$34,372,955	$31,177,159	$27,981,363	$24,655,566

Program/Activity	Program Allocation	Year 4			
		Q1	Q2	Q3	Q4
Winter Storm Home Repair	$40,106,250	$2,350,000	$2,349,000	$2,200,000	$2,056,854
Neighborhood Facilities Resilience	$7,284,000	$819,250	$819,250	$819,250	$819,250
Planning	$200,000	$0	$0	$0	$0
Administration	$2,504,750	$156,547	$156,546	$156,546	$156,546
Grand Total	$50,095,000	$3,325,797	$3,324,796	$3,175,796	$3,032,650
Funds Remaining	$11,796,527	$21,329,769	$18,004,973	$14,829,177	$11,796,527

Program/Activity	Program Allocation	Year 5			
		Q1	Q2	Q3	Q4
Winter Storm Home Repair	$40,106,250	$1,892,305	$1,740,921	$1,601,647	$1,505,548
Neighborhood Facilities Resilience	$7,284,000	$550,000	$0	$0	$0
Planning	$200,000	$0	$0	$0	$0
Administration	$2,504,750	$156,546	$156,546	$78,273	$78,273
Grand Total	$50,095,000	$2,048,851	$1,897,467	$1,679,920	$1,583,821
Funds Remaining	$4,586,468	$9,747,676	$7,850,209	$6,170,289	$4,586,468

Program/Activity	Program Allocation	Year 6			
		Q1	Q2	Q3	Q4
Winter Storm Home Repair	$40,106,250	$1,415,215	$1,338,295	$1,330,303	$318,051
Neighborhood Facilities Resilience	$7,284,000	$0	$0	$0	$0
Planning	$200,000	$0	$0	$0	$0
Administration	$2,504,750	$54,250	$54,250	$54,250	$21,854
Grand Total	$50,095,000	$1,469,465	$1,392,545	$1,384,553	$339,905
Funds Remaining	$339,905	$3,117,003	$1,724,458	$339,905	$0

8. Citizen Participation Plan for Houston's CDBG-DR21

Introduction

The purpose of the Citizen Participation Plan for Houston's Community Development Block Grant Disaster Recovery for the 2021 Winter Storm (CPP-DR21) is to establish a means by which residents of the City of Houston (City), public agencies, and other interested parties can actively participate in the implementation and assessment of documents related to CDBG-DR21 activities. The City of Houston Housing and Community Development Department (HCD) developed the CPP-DR21 to meet the requirements of the CDBG-MIT funds and reflects the alternative requirements as specified by 87 FR 31636 and 88 FR 3198.

The CPP-DR21 is a separate, distinct, and tailored plan based upon and consistent with the City's Citizen Participation Plan, which describes public participation related to the consolidated planning process and entitlement grants. The City encourages citizen participation that emphasizes the involvement of low- and moderate-income residents, minority populations, persons with limited English proficiency, and persons with disabilities.

Availability and Accessibility of Documents

During the term of the CDBG-DR21 grant, the City will provide citizens and other interested parties with reasonable and timely access to information and records relating to the Action Plan and the grantee's use of grant funds. This Action Plan and associated amendments and performance reports will be made available on HCD's website, and upon request, from HCD. In addition, these documents are available in a form accessible to persons with disabilities and those with limited English proficiency, upon request.

Public Website

The City of Houston will maintain a public website that provides information accounting for how all grant funds are used, managed, and administered, including links to all disaster recovery action plans, action plan amendments, program policies and procedures, performance reports, citizen participation requirements, and activity and program information described in this plan, and details of all contracts and ongoing procurement processes.

These items are made available through https://houstontx.gov/housing/dr.html#uri. Specifically, the City of Houston *will make the following items available:*

- the action plan created using DRGR (including all amendments)
- each QPR (as created using the DRGR system)
- citizen participation plan; procurement policies and procedures
- all executed contracts that will be paid with CDBG-DR funds as defined in 2 CFR 200.22 (including subrecipients' contracts)
- a summary including the description and status of services or goods currently being procured by the grantee or the subrecipient (e.g., phase of the procurement, requirements for proposals, etc.)

Contracts and procurement actions that do not exceed the micro-purchase threshold, as defined in 2 CFR 200.67, are not required to be posted to a grantee's website.

In addition, the City of Houston will maintain a comprehensive website regarding all disaster recovery activities assisted with these funds. The website will be updated on time to reflect the most up-to-date information about the use of funds and any changes in policies and procedures, as necessary. At a minimum, updates will be made monthly.

Amendments

Over time, recovery needs will change. Thus, *the City of Houston* will amend the disaster recovery action plan as often as necessary to best address our long-term recovery needs and goals. This plan describes proposed programs

and activities. As programs and activities develop over time an amendment may not be triggered if the program or activity is consistent with the descriptions provided in this plan.

Amendments to this Action Plan are divided into two categories: Substantial amendments and non-substantial Amendments. As amendments occur, both types of amendments are numbered sequentially and posted on HCD's Disaster Recovery webpage, www.houstontx.gov/housing/dr.html. Copies of amendments are available upon request to: hcdd@houstontx.gov or 832.394.6200. Changes in amendments will be identified at the beginning of each amendment.

The most current version of the entire Action Plan will be accessible for viewing as a single document. Each amendment will have highlighted changes, and the beginning of amendments will include:

- Section identifying exactly what content is added, deleted, or changed
- Revised budget allocation table that reflects all funds and illustrates where funds are coming from and moving to, as amended and applicable
- Description of how the amendment is consistent with the mitigation needs assessment

Substantial Amendment

A change to this action plan is considered to be a substantial amendment if it meets the following criteria:

- A change in program benefit or eligibility criteria,
- The addition or deletion of an activity, or
- The allocation or reallocation of *more than 25 percent of an activity in the program budget.*

When the City of Houston pursues the substantial amendment process, the amendment will be posted here at https://houstontx.gov/housing/dr.html#uri for a 30-day public comment period. The amendment will be posted in adherence with ADA and LEP requirements. *The City of Houston* will review and respond to all public comments received and submit them to HUD for approval.

Substantial amendments are subject to a citizen participation process and require formal action by the City Council and submission to HUD. The City announces substantial amendments to the public through a public notice published in one or more newspapers of general circulation, for 30 days, to provide an opportunity for public review and comment regarding proposed substantial amendments. Notices will be available in English and may also be available in Spanish and other languages, as feasible. The City will consider all written and/or oral comments or views concerning proposed substantial amendments that are received during the comment period. A summary of these comments and views, including comments or views not accepted, and the reason why, along with HCD's response to each, shall be submitted with each Substantial Amendment.

Non-Substantial Amendment

A non-substantial amendment is an amendment to the plan that includes technical corrections, clarifications, and budget changes that do not meet the monetary threshold for substantial amendments to the plan and does not require posting for public comment. *City of Houston* will notify HUD five (5) business days before the change is effective.

All amendments will be numbered sequentially and posted to the website into one final, consolidated plan.

Public hearings

Public hearings will be held at times and locations convenient to potential and actual beneficiaries, with accommodation for persons with disabilities and appropriate auxiliary aids and services to ensure effective communication, by providing CART services and advertising accommodations are available upon request. If a significant amount of non-English speaking residents are expected at a public hearing or an interpreter is requested within a reasonable time, HCD will make interpretation services available.

Application Status and Transparency

As applicable, the City of Houston will provide multiple methods of communication to provide applicants with timely information to determine the status of their application for assistance, including by phone, by mail, and in person.

Application Status and Transparency

Written complaints from the public related to this Action Plan (or its amendments), QPRs, or the City's activities or programs funded with CDBG-DR21, will receive careful consideration and will be answered in writing, or other effective methods of communication, within 15 business days, where practicable.

Written complaints should be sent to:

Attn: Planning and Grants Reporting
City of Houston Housing and Community Development Department
2100 Travis Street, 9th Floor
Houston, TX 77002

Email: HCDDComplaintsAppeals@houstontx.gov
Phone: 832.394.6200

Complaints regarding fraud, waste, or abuse of government funds will be forwarded to the City of Houston Office of Inspector General or the Department of Housing and Urban Development Office of Inspector General (Phone: 1-800-347-3735 or Email: hotline@hudoig.gov).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