



THREE-YEAR REPORT

RESILIENT HOUSTON &
HOUSTON CLIMATE ACTION PLAN



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BACKGROUND

The Mayor's Office of Resilience and Sustainability (MORS) coordinates the implementation of Resilient Houston and the Climate Action Plan (CAP) with the support of City departments and external stakeholders. Departmental Resilience & Sustainability Officers (DRSOs) remain key to the implementation success of both Resilient Houston and the CAP by institutionalizing equity, resilience, and sustainability within all city functions.

Since the offices of Resilience and Sustainability were combined 18 months ago, MORS laid out a **roadmap** as a comprehensive and intentional approach to implementation. This roadmap enables MORS to reference, track, and communicate activities in both plans across many variables such as timeline of completion, program area, department responsible, type of action, and others. Each action was evaluated for its potential for **equitable** deployment and workforce development, known or upcoming opportunities for funding, as well as the existence of any ongoing implementation **momentum**.

Efficient implementation requires a programmatic approach to leverage resources and expertise. The roadmap also organizes each sub-action/action within a primary program:

- Equity and Opportunity
- Mobility and Land Use
- Buildings and Energy
- Water
- Disaster Management
- Heat and Nature
- Materials Management
- Resilience Coordination

This year, MORS reports progress not only by targets, but also by actions and sub-actions across both plans. "Sub-action" is a term used in Resilient Houston to describe specific initiatives that fall within a similar group of "actions", just as specific CAP "actions" fall under broader "strategies".

This report summarizes the number of sub-actions underway or complete out of the total number described in each plan and set of corresponding goals. Key initiatives from Year 3 are described in the Program Area Highlight section of this report. Details on specific targets can be found online on Rice University's Kinder Institute for Urban Research's state-of-the-art Resilience and Recovery Tracker (<https://resilience.rice.edu/climate-resilience-metrics>).



Over the last 7 years together, as a city, we have faced unprecedented global and local threats. Yet, amidst the uncertainty and disruption we continue to work together to develop new ways and design new solutions to strengthen our community. One of my top priorities after taking office was to develop a Resilience strategy and a Climate Action Plan so that we could tackle the causes and effects of climate change and increase our resilience in an informed manner. I am pleased to provide this report on our City's continued resilience and sustainability progress.

The City is looking towards long-term resilience by investing in action and implementing the bold but achievable vision that was laid out in our plans. We are prioritizing projects that help us strengthen our city, grow our economy, and equitably focus on communities most impacted by climate change. We have the opportunity and the responsibility to continue to implement strategies within our communities to further reduce emissions – from our transportation, building, and waste sectors – respond to disasters, adapt our infrastructure, protect our residents, invigorate our city, and to ensure that efforts are equitably focused, addressing environmental injustices and lifting communities that have been historically overburdened and under-resourced.

Among our key accomplishments this past year:

1. Adopting and implementing a decarbonization policy for City-owned and operated buildings to decrease emissions associated with the City's 550+ buildings.
2. Adopting the municipal Nature Preserve Ordinance, which protects 7,423 acres of natural habitat within 26 City of Houston parks.
3. Supporting deployment of renewable energy resources, carbon capture and storage, and 75 new energy 2.0 companies focusing on clean energy technologies to maintain our status as the Energy Capital of the World.
4. Continuing to plan and implement resilience hubs to help residents better manage storms, floods, loss of power, or extreme heat.
5. Being awarded with a LEED for Cities – Gold certification in recognition of all our efforts to make our city more resilient, more sustainable, and more equitable.
6. Launching the City of Houston's first ever Earth Day HTX Speaker Series and Festival.
7. A total of 82 electric vehicles (EVs) and 343 hybrid vehicles comprise 12% of the city's non-emergency light duty fleet. Another 55 EVs are scheduled to be delivered by the end of 2023.

I am proud of our shared vision, the work that we are doing, and the progress we have made - not only at the municipal level but at the community level too, through partnerships with organizations such as METRO, Evolve Houston, the Houston Recycling Collaboration, HCC, and many others. I call on all Houstonians to work with me and work together to help us protect and advance our communities, our city, and our future. With intentional action and creative solutions, we will build upon the progress we have made and continue to prosper.



The creation of the Mayor's Office of Resilience and Sustainability (MORS) as a combined office in October 2021 is a visionary and bold step that brings a holistic perspective to the practice of resilience and sustainability in Houston. When Houston talks about resilience – it means building capacity in our most vulnerable communities to respond, grow, and thrive in the face of climate shocks and stressors. When Houston talks about sustainability – it means reducing greenhouse gas (GHG) emissions, but it also means energy affordability, energy reliability, and energy access for everyday Houstonians.

We have learned many things on our journey towards holistic resilience. Whether we call it resiliency or resilience (incidentally both are correct, *we think*), a word association exercise at our recent Earth Day HTX 2023 panel showed that for many of us resilience is grit, equity, collaboration, security, access, inclusion, flexibility and humility. While we may think of resilience as a new concept, in some ways it is also a familiar one – one that is foundational to the core of the human spirit. This perspective helps us collaborate across many teams, disciplines, and partners.

This work is made possible by the Mayor's call to action and the vision for a resilient future for all Houstonians, which is embodied in Resilient Houston and the Climate Action Plan. One of our first steps as a combined office was to develop an intentional approach to implementation - a strategy that leverages implementation momentum for expediency. This holistic perspective has guided all aspects of our work - such as program development, implementation, and monitoring; identifying and nurturing strategic partnerships; and supporting the Mayor in critical climate leadership roles. This work is also accomplished through our partners' commitment to collaboration and communication and their willingness to work closely with our team, listen to concerns and ideas, and provide regular feedback.

I am confident that the work that we have accomplished together in the last year will have a lasting impact for Houstonians and for the entire world. Your contributions have been instrumental in building a more resilient and sustainable future.

I look forward to continuing our exceptional work, partnerships, and advancing climate equity in the years to come.

Priya Zachariah, AICP
Chief Resilience and Sustainability Officer

THREE-YEAR REPORT EXECUTIVE SUMMARY



HOUSTON



Adopted in 2020, the Resilient Houston strategy and Houston Climate Action Plan provide a clear framework to foster the growth of a city that is a healthy place to live, and an equitable, inclusive, and affordable city that leads in climate mitigation and adaptation and offers a transformative economy that builds forward. Over the last three years, the Mayor's Office of Resilience and Sustainability, in collaboration with all City departments, has been heavily focused on implementation of both plans.

This report is a combined update detailing the progress made on major initiatives of both plans during the third year of implementation (2022-2023). In addition to the key targets tracked ([Resilience and Recovery Tracker](#)), we have had numerous successes this year and are continuing to make progress on projects, programs, and initiatives.

There are 297 total sub-actions/actions described across both plans. This year we are reporting progress not just at the higher level of targets, but also at the more tangible level of sub-actions/actions.

172 (84%) out of 201 Resilient Houston sub-actions and 69 (72%) out of 96 Climate Action Plan actions are complete or in progress. Key programs, projects, and initiatives that correspond to the sub-actions in Resilient Houston and the actions in the Climate Action plan are laid out in this report. A few highlights of our accomplishments from the past year are discussed below:

- Our greenhouse gas emissions inventory (2020) **showed a 10% reduction from the 2014 baseline.**
- **The City was awarded an A rating from the Carbon Disclosure Project (CDP) once again in 2022.** To score an A, among other actions, a local government must disclose publicly through CDP-ICLEI Track and have a community-wide emissions inventory. It must have set a renewable energy target and a climate action plan. It must also complete a climate risk and vulnerability assessment and have a climate adaptation plan to demonstrate how it will tackle climate hazards.
- The City achieved its **Gold designation as a Leadership in Energy and Environmental Design (LEED) for Cities** by the U.S. Green Building Council (USGBC).
- More than 214,134 trees were planted by the City and other entities in 2022. This brings the **total to over 1.4 million trees planted since 2019**, out 4.6 million by 2030 – or over 31% of the goal.

THREE-YEAR REPORT EXECUTIVE SUMMARY



HOUSTON



- **In addition, the City has launched a Tree Equity platform aimed at not only collecting information from tree plantings by our major partners, non-profit agencies, and communities** but also educating entities on where to plant trees by providing heat map information, as well as existing disparities in total canopy cover.
- **In 2022, the Houston City Council approved the Nature Preserve Ordinance - an ordinance designed to protect 7,423 acres of natural habitat in City of Houston parks.** The ordinance preserves land within 26 parks with a focus on habitat protection and passive recreation. The nature preserves will ensure the preservation of habitat for native wildlife and for the ecosystem services they provide to the citizens of Houston. The areas will help mitigate flooding, store carbon, reduce urban heat island effects, improve air and water quality, and provide educational opportunities for the public.
- Sixteen green storm-water infrastructure projects were completed in 2022, **marking a total of 86 projects completed within the first three years**, or 86% of the goal completion.
- Twenty miles of high-comfort bike lanes were built in 2022 bringing **the total number of bikeway miles to 406 out of a goal of 500 miles – or 81% completion.**
- **In April 2022, the City of Houston adopted a Municipal Building Decarbonization and Benchmarking policy.** Implementation started right away and the first internal benchmarking report was finalized in April 2023.
- And **the Houston Airport System (HAS) started engaging in the Airport Carbon Accreditation (ACA).** In March 2023, HAS published a policy statement letter to achieve carbon neutrality by 2030, gathered information to establish its carbon footprint at each of the City's three airports in pursuit of Level 1 accreditation, and has already begun documentation for Level 2 accreditation.
- **In 2022, we kicked off the Climate Resilience Measurement for Communities (CRMC) project in partnership with Resilient Cities Network (RCN),** identifying two communities with extreme heat and flood impacts and completing the data collection under Phase 1 of the project. This includes about 150 household surveys, a focus group in each community, and subject matter interviews.
- The latest data (2021) shows that annual local solar generation in Houston increased to 148,030 MWh. Demand for solar permits is growing exponentially – the number of permits had already doubled from the end of 2019 to the end of 2021 and grew another 66% in 2022. The City's efforts to increase solar investments are supporting this trend: **the City launched a group-buying campaign with Solar United Neighbors (SUN) -**

THREE-YEAR REPORT EXECUTIVE SUMMARY



HOUSTON



growing participation from under 300 to over 1,600 registrants in 2022. Larger projects such as the Sunnyside Landfill Solar Farm and future additional solar arrays at City facilities such as the airports and facilities designated as Resilience Hubs will also add significant local solar generating capacity.

- **Our 2022-2023 purchases of Electric Vehicles (EVs) will more than triple the number of EVs in the municipal fleet.** The City now operates 333 hybrid electric vehicles and 88 battery electric vehicles. **Within a year, the City is expecting delivery of another 107 battery electric vehicles and 41 hybrid electric vehicles.** The City is also actively applying for grant funding to support further electrification of the municipal fleet. With regard to charging infrastructure, **the City currently has 57 installed chargers and City Council recently approved the purchase of an additional 144.** The City is also actively pursuing funds and public-private partnerships to increase investment in publicly accessible charging stations.
- Three additional **neighborhood resilience plans** were completed in 2022 (Independence Heights, East Houston, and Edgebrook Area).
- In September 2022, the **City signed an MOU with the Houston Community College to train 500,000 Houstonians in Resilience**, through the College's new program: Resiliency by Design.
- **Greentown Labs has 75 Houston-based Energy 2.0 member companies today and has supported 98 since opening**, way over the initial target of 50 2.0 companies by 2025.
- The Houston Recycling Collaboration, a public-private partnership between the City, ExxonMobil, LyondellBasell, Cyclyx International, and FCC Environmental Services, intends to increase the rate of plastics recycling in the City of Houston through advanced chemical recycling. **The HRC already started collecting “all plastics,”** including plastics such as Styrofoam, plastic bags and films which are not currently accepted in curbside recycling at pilot dropoff locations and is also **helping the Houston Independent School District (HISD) roll out recycling programs at its campuses.**
- In terms of national and international leadership in climate action, **Mayor Turner led a delegation to Mexico City to launch the RCN initiative Women in Resilience** in November 2022.
- In September 2022, **the City of Houston hosted Queen Maxima of the Netherlands and signed a Letter of Intent with the City of Rotterdam** to collaborate on community and energy resilience.



TARGET STATUS DASHBOARD

Rice University's Kinder Institute for Urban Research, an implementation partner for the Resilient Houston strategy and the Climate Action Plan, is providing annual updates on the city's climate and resilience metrics on its Resilience and Recovery Tracker, which can be accessed at <https://resilience.rice.edu>.

Resilient Houston has 18 main targets, one for each of the 18 goals in Resilient Houston and across the individual, neighborhood, bayou, city, and regional scales. The Climate Action Plan is organized into 12 targets through four focus areas: Transportation, Energy Transition, Building Optimization, and Materials Management.

The Climate and Resilience Metrics section of the tracker provides an update on the activities that are implemented annually to meet these targets, related initiatives, and interactive data components. This website is complementary to the annual report and is intended to provide detailed information behind each individual goal and target.

Resilient Houston Goal 13: Transform city government to operationalize resilience and build trust

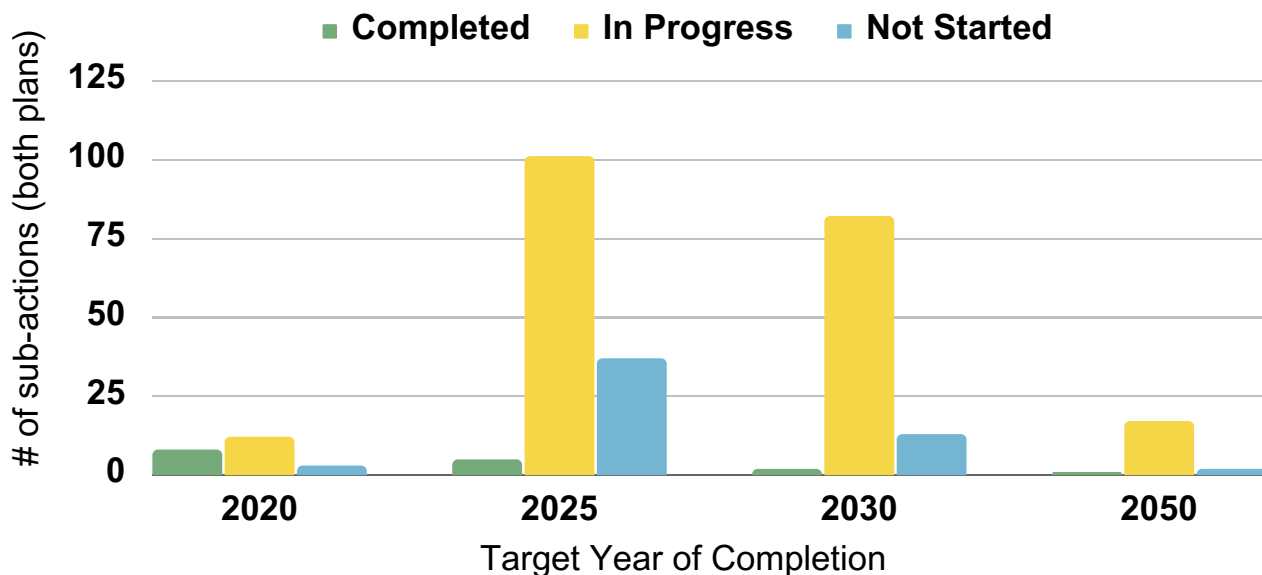
- 41.3 Track progress on the implementation of Resilient Houston through an annual report and a strategy update every five years
- 44.2 Create dashboards to show the status of City goals

BY THE NUMBERS

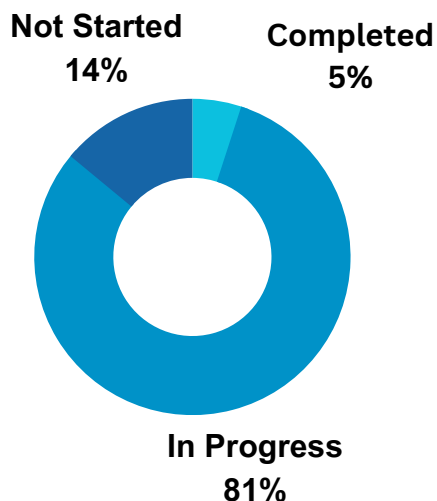
There are 297 total sub-actions/actions across both plans.

- Nearly 50% have a 2025 completion date.
- 80% are targeted for completion by 2030.
- 30% can be completed by partners or through public-private partnerships
- For 60%, the lead department is either ARA/MORS, Public Works, or Planning; over 90% are distributed across 12 City departments.

Implementation Status

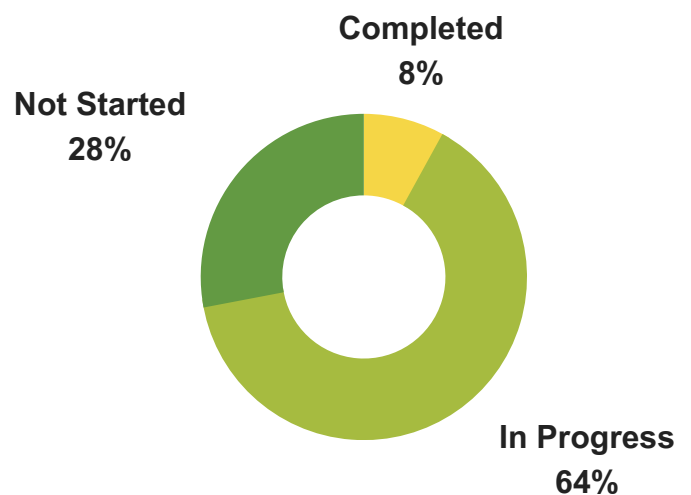


Resilient Houston



Out of 201 Sub-actions in Resilient Houston, 9 are completed, 163 are in progress, and 29 are considered not started.

Climate Action Plan



Out of 96 Actions in the Climate Action Plan, 8 are completed, 61 are in progress, 27 are considered not started.

Resilient Houston's framework of chapters and goals was developed and launched in February 2020. Houston remains committed to this framework for a just, green, and resilient future, benefitting all Houstonians, neighborhoods, bayous, the city, and the region.

% of Subactions underway or complete, organized by goal

CHAPTER 1: PREPARED & THRIVING HOUSTONIANS		
Goal 01: Support Houstonians to be prepared for an uncertain future	61%	(12 out of 18)
Goal 02: Expand access to wealth-building and employment opportunities	77%	(10 out of 13)
Goal 03: Improve safety and well-being for all Houstonians	67%	(8 out of 12)
CHAPTER 2: SAFE & EQUITABLE NEIGHBORHOODS		
Goal 04: Ensure that all neighborhoods have equitably resourced plans	63%	(5 out of 8)
Goal 05: Invest in arts and culture to strengthen community resilience	67%	(2 out of 3)
Goal 06: Ensure all neighborhoods are healthy safe and climate ready	94%	(15 out of 16)
Goal 07: Build up not out to promote smart growth as Houston's population increases	91%	(10 out of 11)
CHAPTER 3: HEALTHY & CONNECTED BAYOUS		
Goal 08: Live safely with water	92%	(12 out of 13)
Goal 09: Embrace the role of our bayous as Houston's front yard	90%	(9 out of 10)
CHAPTER 4: ACCESSIBLE & ADAPTIVE CITY		
Goal 10: Demonstrate leadership on climate change through action	92%	(11 out of 12)
Goal 11: Modernize Houston's infrastructure to address the challenges of the future	90%	(19 out of 21)
Goal 12: Advance equity and inclusion for all	100%	(8 out of 8)
Goal 13: Transform city government to operationalize resilience and build trust	89%	(8 out of 9)
CHAPTER 5: INNOVATIVE & INTEGRATED REGION		
Goal 14: Continue to invest in the region's diverse economy	71%	(5 out of 7)
Goal 15: Increase regional transportation choice	100%	(10 out of 10)
Goal 16: Manage our land and water resources from prairie to bay	75%	(3 out of 4)
Goal 17: Enhance regional emergency preparedness and response	100%	(10 out of 10)
Goal 18: Leverage existing and new investments and partnerships	94%	(15 out of 16)



CLIMATE ACTION PLAN ACTION PROGRESS

The Houston Climate Action Plan provides evidenced-based measures to reduce greenhouse gas emissions and preventative measures to address the negative outcomes of climate change. The plan demonstrates how Houston will adapt and improve its resilience to climate hazards that impact the city today, as well as risks that may increase in years and decades to come.

% of Subactions underway or complete, organized by goal

TRANSPORTATION		
Goal T1: Shift regional fleet to electric and low-emission vehicles.	71%	(5 out of 7)
Goal T2: Reduce vehicle miles traveled (VMT) per capita.	100%	(10 out of 10)
Goal T3: Provide equitable and safe mobility choices.	86%	(6 out of 7)
ENERGY TRANSITION		
Goal E1: Grow Houston's investment in renewable and resilient energy.	90%	(9 out of 10)
Goal E2: Make Houston the leader in carbon capture technology and energy innovation.	86%	(6 out of 7)
Goal E3: Restore, protect, and enhance Houston's natural ability to capture and store carbon.	60%	(6 out of 10)
BUILDING OPTIMIZATION		
Goal B1: Reduce building energy use and maximize savings.	67%	(6 out of 9)
Goal B2: Expand investment in energy efficiency.	100%	(4 out of 4)
Goal B3: Invest in skilled local jobs to optimize building operations.	100%	(4 out of 4)
MATERIALS MANAGEMENT		
Goal M1: Reduce waste and transform the circular economy.	36%	(5 out of 14)
Goal M2: Optimize waste operations and create power from waste.	20%	(1 out of 5)
Goal M3: Ensure safe and cost-effective long-term disposal capacity.	78%	(7 out of 9)

KEY INITIATIVES UNDERWAY

Key initiatives from Year 3 are described in the Implementation Highlights section of this report.

Initiative	Goal
Green Infrastructure for Affordable Housing	RH Goal 06 RH Goal 16
Equity Indicators Project	RH Goal 12
Climate Resilience Measurement for Communities (CRMC) Project	RH Goal 06
Neighborhood Resilience Plans	RH Goal 04
Youth Climate Ambassadors	RH Goal 01
Municipal Building Decarbonization and Benchmarking Policy	RH Goal 10 CAP Goal B1
LEED for Cities Certification: Gold Level	RH Goal 10
Sustainability at Airports	RH Goal 10
Solar APP+	RH Goal 10 CAP Goal E1
2021 Building Code Update	RH Goal 11 CAP Goal B1
Sunnyside Solar Farm	RH Goal 10
Solar Group-Buying Program – Solar Switch Houston	RH Goal 10 CAP Goal E1
CCUS and Hydrogen	RH Goal 14 CAP Goal E2
Hertz Electrifies	RH Goal 10 CAP Goal T1
Green Fleet Procurement	RH Goal 10 CAP Goal T1
METRO Electric Bus Award	RH Goal 10
Livable Places	RH Goal 07 CAP Goal T2
Transportation Funding Awards	RH Goal 03 CAP Goal T3
One Water Plan	RH Goal 10

Initiative	Goal
Stormwater Master Plan	RH Goal 10
Water Affordability Study	CAP Goal B1
Resilience Hub Pilot	RH Goal 06
Buy In/Buy Out	RH Goal 08
Resilience Hubs Master Plan	RH Goal 06
Flood Mitigation Infrastructure	RH Goal 18
Uri Action Plan	RH Goal 18
Tree Planting Partnerships	RH Goal 06
Trillion Tress Pledge	RH Goal 18
Tree Tracking Portal	RH Goal 06 RH Goal 13
Nature Preserve Ordinance	RH Goal 16 CAP Goal E3
Beat the Heat	RH Goal 01
Houston Recycling Collaboration	CAP Goal M3
Composting Pilot	CAP Goal M1
Resource Recovery Implementation Committee	CAP Goal M1
Mayoral Climate Leadership	RH Goal 18
Visit to Mexico City with Resilient Cities Network	RH Goal 18
Letter of Intent to Collaborate with the Netherlands	RH Goal 18
Memorandum of Understanding with Houston Community College	RH Goal 01 RH Goal 02
Federal Funding	RH Goal 18

Implementation Highlights

Programs, Projects, & Initiatives in Progress

Green Infrastructure for Affordable Housing

The MORS team is collaborating with New Hope Housing and Star of Hope to develop an urban prairie on the site of their affordable housing community. The project integrates principles of resilience to advance the goals set forth in Resilient Houston, including workforce development, youth programs, food and nutrition education, and access to green spaces.

RH Goal 06 — Subaction 16.2
RH Goal 16 — Subaction 53.1



Equity Indicators Project

The City of Houston and the Kinder Institute for Urban Research are developing an equity indicators report and atlas to establish a system for measuring and mapping racial and ethnic inequities in Houston. This initiative aims to guide decision-makers with budget priorities, programming, policies, and projects to achieve equitable outcomes. The full report is expected to be released in 2023. For more information:

<https://www.letstalkhouston.org/equity>

RH Goal 12 — Subaction 39.3

Climate Resilience Measurement for Communities (CRMC) Project

The City of Houston, Resilient Cities Network, and the Zurich Foundation are working together to increase city resilience and reduce risks to life and property due to shocks and stresses, particularly around the intersection of climate risk and social inequity. All community engagement will be conducted using the CRMC tool, which measures community resilience over time and works to understand how resilience-focused interventions change the experience of local communities in extreme weather events. The program will result in implementable solutions that tackle social injustice and build resilience.

RH Goal 06



Implementation Highlights

Programs, Projects, & Initiatives in Progress

Neighborhood Resilience Plans

In early 2022, the Planning and Development Department began work with the Mayor's Office of Resilience and Sustainability and the ONE team to guide three communities continuing to recover from recent climate related disasters such as Hurricane Harvey in 2017 and other flooding events. This community specific effort will generate a Neighborhood Resilience Plan for each of the three pilot neighborhoods and establish a replicable framework for other neighborhoods to follow in creating their own resilience plans. For more information: <https://www.letstalkhouston.org/nrp>

RH Goal 04 — Subaction 12.2

Youth Climate Ambassadors

In conjunction with MORS and the City's Hire Houston Youth program, the Youth Climate Ambassador program was created to train young Houstonians to be climate leaders in their communities - raising awareness about the impacts of climate change and gathering feedback from historically underserved communities on climate challenges and environmental justice issues.

RH Goal 01 — Subaction 2.1





Municipal Building Decarbonization and Benchmarking Policy

In April 2022, Mayor Turner signed a decarbonization policy for city-owned and operated buildings that formalizes benchmarking requirements; sets operational requirements and energy targets for existing buildings; increases emissions reduction standards for new construction; and furthers education and training opportunities related to building decarbonization for City staff. In partnership with CenterPoint Energy, the City has obtained opportunity assessments for city buildings that identify low cost improvements that provide a return on investment through a reduction in energy use and qualify the City for rebates upon project completion. The federal Energy Efficiency Conservation Block Grant (EECBG) formula funding announced in 2023 is also being examined as a mechanism to fund additional energy audits and identified improvements at City facilities.

*RH Goal 10 — Subaction 31.6
CAP Goal B1— Subaction B1.2.1*



LEED for Cities Certification: Gold level

In September 2022, the City was awarded with the LEED for Cities Certification, achieving the LEED Gold level by earning 66 out of 110 points possible based on requirements prescribed within the LEED rating systems as created and maintained by the U.S. Green Building Council® (USGBC®). The accreditation is earned by adhering to energy, waste, water, transportation, materials, health, and indoor environmental quality standards created by LEED.

RH Goal 10 — Subaction 31.6

Implementation Highlights

Programs, Projects, & Initiatives in Progress

Sustainability at Airports

The Houston Airport System, through an agreement with Texas A&M University, is upgrading and renovating outdated infrastructure and equipment at the William P. Hobby and George Bush Intercontinental Airports. The projects include installing four new chillers, improving building operations, and installing a solar array on new shading canopies. The implemented projects will reduce annual energy consumption by more than 24 million kWh and utility costs by more than \$1.3 million. This will also help the Houston Airport System reach its “net-zero” energy goal for George Bush Intercontinental Airport.

RH Goal 10 — Subaction 31.6

SolarAPP+

The Houston Permitting Center offers expedited solar panel permitting for residential properties, an incentive that has helped encourage the increased adoption of solar panel installations over the past four years. To further streamline and accelerate solar permitting processes, MORS and the Permitting Center are working with the National Renewable Energy Laboratory to pilot its SolarAPP+ software to standardize and automate plan review, permit approval, and project tracking. Houston is currently the largest city piloting SolarAPP+.

*RH Goal 10 — Subaction 31.2
CAP Goal E1 — Subaction E1.1.4*

2021 Building Code update

Construction codes significantly mitigate the effects of hurricanes, storm surges, and extreme weather changes. By staying current with our building codes, we can help our residents protect their homes and businesses by providing safer, more resilient construction that will support greater economic security and public safety. The Construction Code Modernization project began in mid-June of 2022 and will take two years to successfully complete. All updates and information at: <https://www.houstonpermittingcenter.org/construction-code-modernization>

*RH Goal 11 — Subaction 36.1
CAP Goal B1 — Subaction B1.1.3*





Sunnyside Solar Farm

The City continues to make progress on converting the 240-acre former Holmes Road landfill into a 50 MW solar farm plus a 2 MW community solar array, complete with co-located battery storage. The project is expected to generate enough clean energy to power 5,000 homes and off-set 120 million pounds of carbon per year. It will also bring an estimated \$70 million in private investment to the community, creating jobs and training opportunities in one of the fastest growing job markets today. An additional \$750,000 in Congressional funds was secured in 2022 for the EmPowering Solar Jobs Program to train and certify Houstonians in Sunnyside and other historically underserved communities for solar-related jobs.

RH Goal 10 — Subaction 31.2

Solar Group-Buying Program – Solar Switch Houston

For the last two and a half years, the City has worked with Solar United Neighbors (SUN) to expand their solar rooftop group-buying program open to homeowners and business owners. Houstonians can now register to participate in the Solar Switch Houston program and receive a discounted personal offer from a vetted qualified installer. The most recent campaign ended on February 21st, 2023 and resulted in 1,564 households registering, a five-fold increase compared to the previous campaign.

RH Goal 10 — Subaction 31.2
CAP Goal E1 — Subaction E1.1.4

CCUS and Hydrogen

The City of Houston continues to support the Greater Houston Partnership and private sector companies looking to make Houston a leader in CCUS and clean hydrogen technologies. In particular, the City is actively supporting local grant applications for the DOE's Regional Direct Air Capture and Clean Hydrogen Hubs programs.

RH Goal 14 — Subaction 45.3
CAP Goal E2 — Subaction E2.1.3



Sunnyside Energy Center

Implementation Highlights

Programs, Projects, & Initiatives in Progress

Hertz Electrifies

MORS is working with Evolve Houston, Hertz, and others to accelerate the adoption of EVs and deployment of charging infrastructure in the public, through educational campaigns, ride and drives, microgrant initiatives, or private initiatives such as Hertz Electrifies Houston.

RH Goal 10 — Subaction 31.5
CAP Goal T1 — Subaction T1.1.3



Green Fleet Procurement

With almost half of carbon emissions in Houston coming from the transportation sector, electrification is an important part of our climate action plan. MORS is working with the City's Fleet Management Department and RMI to develop a municipal fleet electrification strategy and deploy municipal electric vehicles and charging infrastructure. 44 EVs were added to the municipal fleet in 2022 and an additional 55 are awaiting delivery. The City also added 41 charging stations to support the growth of its EV fleet.

RH Goal 10 — Subaction 31.4
CAP Goal T1 — Subaction T1.2.2

METRO Electric Bus Award

In August 2022, Houston METRO announced it will receive \$21.6 million from the Federal Transit Administration to aid in the organization's transition from diesel buses to electric ones. This grant will allow for METRO to double its initial purchase of 20 full-sized electric buses to 40. By 2030, METRO plans to only purchase zero-emissions buses.

RH Goal 10 — Subaction 31.4





Livable Places

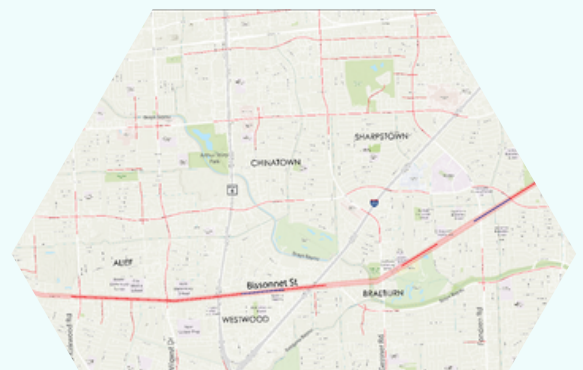
The goal of the Livable Places Initiative is to pave the way for more connected, resilient, and livable neighborhoods for all Houstonians by updating development standards to allow for a greater variety of homes to be built, make neighborhoods safer, and better utilize alternative forms of transportation. For the last three years, the City of Houston Planning and Development Department has been working with the Livable Places Action Committee to develop, draft, and present recommendations for housing, including small lot developments, small multi-family developments, accessory dwelling units, and lot access to public streets. In January, City Council approved residential buffering ordinance amendments to address the effects that may arise when newly constructed, mid-rise, and high-rise structures abut single-family and small-scale multi-family residential structures.

*RH Goal 07 — Subaction 24.1
CAP Goal T2 — Subaction T2.2.4*

Transportation Funding Awards

In February 2023, Houston was selected to receive a \$28.79 million federal grant to overhaul a 7-mile stretch of Bissonnet Street that has been identified as one of the most dangerous in the city for motorists and pedestrians. The City of Houston also received \$20.96 million in federal funding through the Rebuilding American Infrastructure with Sustainability & Equity (RAISE) grant program for the Telephone Road: Main Street Revitalization Project.

*RH Goal 03 — Subaction 8.1
CAP Goal T3 — Subaction T3.2.3*



Implementation Highlights

Programs, Projects, & Initiatives in Progress

One Water RFQ

In May 2022, the City issued a Request for Qualifications ("RFQ") for Phase 1 of a project to develop a set of integrated sustainable and equitable water master plans. Phase 1 will last one year and include working with City personnel to establish the objectives and guiding principles for the Project; engaging stakeholders and community members; developing a Water Equity Roadmap to consider impacts on vulnerable communities and prioritize equitable projects; and creating a Project website for Project communication.

RH Goal 10 — Subaction 33.1

Stormwater Master Plan

To better protect Houston residents against extreme risks posed by larger and more intense storm events, Houston Public Works kicked off a project in September 2022 to better analyze the performance of the City's stormwater infrastructure, using updated rainfall data to identify and assess areas of the City with the greatest need for system improvements. The project is made possible through Community Development Block Grant Disaster Recovery (CDBG-DR) and will produce City-wide, dynamic 2-D hydrologic and hydraulic models of flood mitigation and stormwater infrastructure.

RH Goal 10 — Subaction 33.4

Water Affordability Study

The Houston Climate Action Plan action B1.3.2 states to "Consider water rates that encourage water conservation" in order to reduce water and wastewater energy consumption by 10% through optimization of facility operations and water conservation. In May 2022, the City of Houston initiated a Water Affordability Plan in partnership with the Alliance Water Efficiency. The final report is online: [An Assessment of Water Affordability and Conservation Potential in Houston.](#)

CAP Goal B1 — Subaction B1.3.2



Resilience Hub Pilot

Resilient Cities Catalyst is working with the City of Houston and the Northeast Houston Redevelopment Council (NEHRC) to implement a resilience hub in Kashmere Gardens. This will act as a physical space for neighborhood residents to reach needed services and resources before, during, and after emergencies; act as critical social infrastructure; and foster broader connectivity within the community. Through this project, we aim to build local capacity to sustain this work over the long term by establishing unique partnership models that will drive lasting collaboration among community members and our City government.

RH Goal 06 — Subaction 17



Buy in/Buy out

For homes in the floodway and floodplain that cannot be repaired or elevated, buyouts and relocations are essential tools. In May 2022, The City kicked off a planning effort with CDBG-DR funding to establish a resource program for expedited buyouts and relocation opportunities that allow Houstonians to “buy in” to the strength and safety of their community. The intent is to reduce risk to the vulnerable people and households within a community while being respectful of social networks and community resources. If and when flood-prone properties are acquired as part of the relocation project, the lots will be used to support flood risk reduction and serve as public amenities.

RH Goal 08 — Subaction 25.4



Resilience Hubs Master Plan

The City of Houston is actively planning a network of resilience hubs to increase resilience to events such as storms, floods, loss of power, or even extreme heat, at the neighborhood level. These sites should serve as spaces for the community to support residents and coordinate resource distribution and services before, during, and/or after a natural hazard event. Once this plan is completed, the City aims to attract funds to select, design, implement/construct the hubs across the City.

RH Goal 08 — Subaction 17

Implementation Highlights

Programs, Projects, & Initiatives in Progress

Flood mitigation infrastructure projects

Following Hurricane Harvey, the City of Houston submitted funding applications for flood risk reduction through FEMA. These include channel improvements, detention basins, dam improvements, and home elevations. In April 2023, the City and its partners broke ground on the first of four funded projects to reach the construction phase, the Inwood Forest Stormwater Detention Basin. Inwood, where the City of Houston purchased a 227-acre golf course in 2011, will reduce the potential for future flood damage for hundreds of residential and commercial structures. Harris County Flood Control District is the project manager, and the project is expected to take 2 and a half years to complete. North Canal Diversion Channel, Lake Houston Dam Gate Structure, and TIRZ 17 Regional Detention are the three other major flood mitigation projects in Houston funded by FEMA.

RH Goal 18 — Subaction 58.2



Uri Action Plan

In 2022, the U.S. Department of Housing and Urban Development (HUD) announced the City of Houston would receive \$30.2 million in Community Development Block Grant – Disaster Recovery funding for impacts related to the 2021 Winter Storm. The Housing and Community Development Department (HCD) conducted extensive community engagement in the summer of 2022, which informed the creation of the Draft Action Plan for Disaster Recovery for the 2021 Winter Storm. In January 2023, HUD announced an additional allocation of \$19.8 million to the City of Houston. With this grant, HCD will fund home repair, renter housing counseling, and neighborhood facilities resilience improvements. HCD will update and submit the Action Plan for Disaster Recovery, the application for funding, to HUD by May 2023 and anticipates starting programs in late 2023, depending on HUD's review and approval process.

RH Goal 18 — Subaction 58.1





Tree Planting Partnerships

From late fall through early spring of each year, the City undertakes several tree planting projects at city parks and along city esplanades and also supports tree planting initiatives with external partners. For example, in February 2023, the City participated in the Texas A&M Forest Service Green Futures partnership to support community members planting more than 600 mature trees in the Kashmere Gardens Super Neighborhood. In March 2023, The City of Houston and NRG planted over 270 trees on Friday at Tuffly Park in Kashmere Gardens as the first of 100,000 trees committed by NRG to the City. Some of the trees provided by NRG will be planted or donated to communities throughout Houston by Trees for Houston.

RH Goal 06 — Subaction 16.2

Trillion Trees Pledge

In November 2022, the City of Houston made a pledge to support the 1t.org mission to conserve, restore and grow one trillion trees by 2030. The U.S. Chapter of 1t.org is a community of U.S.-based companies, non-profit organizations, and governments committed to reaching the global goal of creating healthy and resilient forests. For more information, visit <https://us.1t.org/pledge/houston/>

RH Goal 18 — Subaction 62.1



Tree Tracking Portal

To track progress on the 4.6 million new native trees planting goal, the Houston Parks and Recreation Department created the Resilient Houston Tree Planting Portal to collect data on all tree plantings within the City of Houston. A beta version of the site launched at Earth Day HTX in April 2023. Tree planting organizations, residents, and businesses can register and map tree plantings on the website:

<https://pg-cloud.com/HoustonTX/>

RH Goal 06 — Subaction 16.2

RH Goal 13 — Subaction 44.1

Implementation Highlights

Programs, Projects, & Initiatives in Progress

Nature Preserve Ordinance

Approved by City Council in October 2022, the municipal Nature Preserve Ordinance protects 7,423 acres of natural habitat within 26 City of Houston parks. The ordinance aligns with Resilient Houston by conserving city parkland as nature preserves and the Houston Climate Action Plan to restore, protect, and enhance Houston's natural ability to capture and store carbon. The nature preserves will help mitigate flooding, store carbon, reduce urban heat island effects, improve air and water quality, and provide educational opportunities for the public.

RH Goal 16 — Subaction 51.1
CAP Goal E3 — Subaction E3.2.4

Beat the Heat

When the National Weather Service issues a Heat Advisory (Heat index of 108 F for two consecutive days), the City of Houston may open cooling centers in the interest of public health. For the 17th consecutive year, the City partnered with Reliant to launch the Beat the Heat program which provides \$75,000 in donated portable air conditioning units to senior and disabled individuals and families.

RH Goal 01 — Subaction 1.1



Houston Recycling Collaboration (HRC)

HRC is a public-private partnership between the City of Houston, ExxonMobil, LyondellBasell, Cyclyx International and FCC Environmental Services. Since December 2022, the City's Solid Waste Department, in collaboration with the HRC, has been conducting an "All Plastics Dropoff Pilot" at the Kingwood Neighborhood Recycling Center as part of the City's recycling program. The partners are now working to expand the pilot to all 10 of the City's Neighborhood Recycling Centers. In February 2023, HISD and the HRC announced the roll out of recycling programs at 20 HISD campuses with \$300,000 in funding to collect "all plastics." The first 20 campuses constitute the first phase of this program, with a vision to expand to all HISD campus.

CAP Goal M3 — Subaction M3.2.3

Composting Pilot

The City of Houston partnered with Zero Waste and Moonshot Compost to conduct a free composting pilot drop-off program. The program ran for 6 weeks beginning October 20, 2021 to November 27, 2021 in the Greater Heights, Kashmere Gardens, and the Southeast Houston (Botanic Gardens) neighborhoods, diverting a total of 14,551 pounds. Additionally, the Solid Waste Management Department collected pumpkins for onsite composting during the week of November 1st – 4th 2022 to divert 9,996 pounds from the landfill. Currently, the department has applied for a USDA grant for composting initiatives and is working to add a composting drop-off program at the Neighborhood Depositories & Recycling Centers (houston.tx.gov). For more information on composting initiatives and composting companies in Houston, visit:

www.houstontx.gov/solidwaste/compost/

CAP Goal M1 — Subaction M1.3.2

Resource Recovery Implementation Committee

Throughout 2022, the City engaged various industries impacting waste management (such as the grocery, healthcare, and food and beverage industries) to address commercial and multifamily recycling, construction & demolition waste, food waste, and industrial waste via a series of meetings that resulted from the City's Long Range Solid Waste Plan finalized in 2020.

CAP Goal M1 — Subaction M1.2.2



Implementation Highlights

Programs, Projects, & Initiatives in Progress

Mayoral Climate Leadership

Mayor Turner's participation and leadership in global and national networks such as Climate Mayors, RCN, AAMA, NLC, USCM, and C40, have allowed the City to work closely with federal agencies to inform the development and implementation of the IJJA, Justice 40, and the IRA. In December 2022, Mayor Turner ended his term as Chair of Climate Mayors and is now serving as Chairman Emeritus. Mayor Turner is also a member of the Environmental Protection Agency's Local Government Advisory Committee, Board Chairman of the Resilient Cities Network, and a member of C40 Cities.

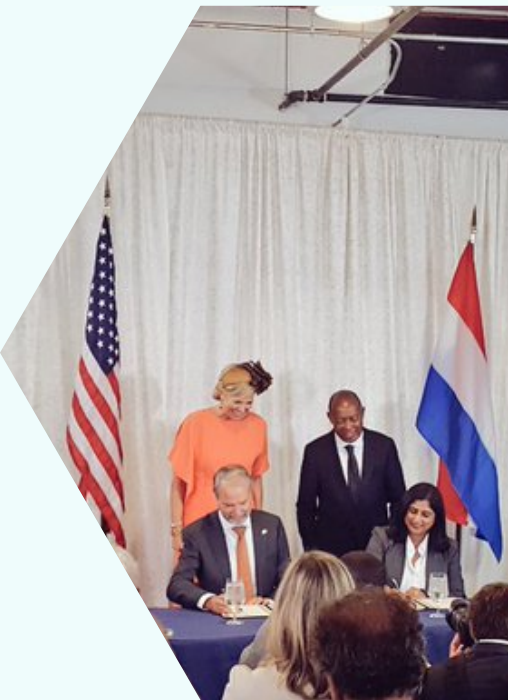
RH Goal 18 — Subaction 62.1

Visit to Mexico City with Resilient Cities Network

In November 2022, Mayor Turner attended the Resilient Cities Network's Latin America and the Caribbean region convened in Mexico City to discuss resilience challenges and solutions. The "Women in Resilience" initiative was launched to raise awareness of the important role women and gender equity play in making communities more resilient.

RH Goal 18 — Subaction 62.1





Letter of Intent to Collaborate with the Netherlands

In September 2022, during Her Majesty Queen Máxima of the Netherlands visit to Houston, Rotterdam’s Chief Resilience Officer and Houston’s CRSO signed a letter of intent for the two cities to collaborate on flood resilience.

RH Goal 18 — Subaction 62.4

MOU with HCC

In August 2022, the City of Houston signed a Memorandum of Understanding (MOU) with Houston Community College (HCC) to train 500,000 citizens, employees, small businesses, volunteers, and first responders in new resilience training programs. Current credential titles include Disaster Literacy, Business Continuity: Disaster Case Management, Disaster Case Management for Applied Data Science, Teambuilding and Communications: Crisis Resource Management for Medical Personnel, and Compliance and Safety: Debris Removal and Reuse.

RH Goal 01 — Subaction 1.3

RH Goal 02 — Subaction 7.1



Federal Funding

Houston also worked closely with federal agencies to inform the development and implementation of the Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act (IRA), and Justice40 initiative. The IRA commits \$369 billion to energy and climate, which will help Houstonians day-to-day and facilitate the energy industry’s transition, all while supporting our local government’s climate action and resilience efforts. The Justice40 Initiative aims to ensure investments are equitably distributed by mandating that 40 percent of the benefits of all investments related to climate change, clean energy and energy efficiency, transit, housing, training and workforce development, remediation and reduction of pollution, and water and wastewater infrastructure flow to disadvantaged communities.

RH Goal 18 — Subaction 60

YEAR 3 TIMELINE WITH MILESTONES

2022

MARCH

- 8th – HUD finds the GLO discriminates against communities of color
- 11th – Progress update one year after the passage of the American Rescue Plan Act
- 19th – HUD approves GLO amended state action plan
- 22nd – City allocated \$30M for home repair and weatherization as a result of Winter Storm Uri
- 23rd – 2 Year update for Resilient Houston and the Climate Action Plan

APRIL

- 22nd – Green Opportunities Houston Career Expo
- 22nd – Sunnyside Solar Project receives TCEQ approval and \$750,000 Congressional grant
- 22nd – Decarbonization policy signed for City buildings

JUNE

- 2nd – Mayor Turner chairs the Climate Mayors Leadership Forum in Reno, NV
- 15th – 2022 Youth Climate Ambassadors Summer Program begins
- 30th – Houston-France delegation convenes to focus on energy transition

JULY

- 5th – City acts to sue Union Pacific for pollution of Houston's Fifth Ward
- 13th – City Health Department plans additional testing in Kashmere Gardens after dioxin discovered
- 13th – City writes a letter to GLO regarding the unfair allocation of Hurricane Harvey relief funds
- 22nd – Hire Houston Youth and the University of Houston (UH) welcome cohort of at-risk young adults to the UH Sales Academy with scholarships
- 27th – City announces intent to sue Union Pacific for creosote contamination in Fifth Ward and Kashmere Gardens, seeks justice for families
- 28th – Houston Fund for Social Justice and Economic Equity launches OPEN FOR BUSINESS grant portal partnership with Wells Fargo

AUGUST

- 4th – Back to School Fest provides thousands with backpacks, school supplies, and health screenings
- 10th – City of Houston awarded RAISE grant funding for Telephone Road Project
- 11th – Houston is first US city to become a candidate for the UNICEF Child Friendly Cities Initiative
- 16th – President Biden signed the Inflation Reduction Act into law
- 26th – City of Houston, Houston Community College sign agreement to train 500,000 citizens, employees in disaster resiliency and sustainability
- 26th – City and County announce update on negotiations with Union Pacific for contamination cleanup

YEAR 3 TIMELINE WITH MILESTONES

2022

SEPTEMBER

- 9th – Rotterdam Chief Resilience Officer (CRO) and Houston CRSO sign a Letter of Intent for the two cities to collaborate on resilience, sustainability, and the energy transition
- 9th – Evolve Houston launches the eMobility Microgrant Initiative
- 22nd – Dignitaries and Energy Executives attend the inaugural Houston-Africa Energy Summit
- 28th – City Council approves agreement for Buffalo Bayou Park Master Plan
- 28th – Mayor's Office of Cultural Affairs awards \$87,500 to projects promoting resilience and tourism

OCTOBER

- 12th – City Council passes Nature Preserve Ordinance to protect 7,423 acres of natural habitat in city parks
- 19th – Leading energy companies invest \$100 million into innovative plastics recycling facility
- 19th – FEMA approves City's Inwood Forest Flood Mitigation project
- 21st – Texas Supreme Court support's City's drainage fee

NOVEMBER

- 2nd – Mayor Turner announces new program to help individuals experiencing homelessness
- 10th – Houston joins US Chapter of 1t.org and pledges to restore and grow trees
- 22nd – Houston and Solar United Neighbors launch affordable and accessible rooftop solar program
- 22nd – Mayor Turner, as chair of the Resilient Cities Network, launches "Women in Resilience" program

DECEMBER

- 7th – City of Houston purchases land to protect the community during future severe storms
- 20th – City of Houston prepares for freezing weather with five emergency warming centers
- 23rd – City of Houston extends hours and consolidates services at warming center locations
- 31st – End of Mayor Turner's successful leadership as Chair of Climate Mayors

2023

JANUARY

- 12th – Mayor's Office of Cultural Affairs awards \$62,500 to projects promoting tourism and resilience
- 28th – Mayor Turner and Houston Health Department open Sunnyside Health and Multi-service Center

YEAR 3 TIMELINE WITH MILESTONES

2023

FEBRUARY

- 1st – City awarded federal Safe Streets and Roads for All grant for Bissonnet Corridor Project
- 13th – Housing Navigation Center opens
- 17th – Houston Police Department investigates the Compliance of Kingwood Central Wastewater Treatment Plant
- 21st – Mayor Turner and 50/50 Park Partners celebrate improvements to Harwin Neighborhood Park
- 22nd – City Council approves agreement for the Inwood Forest Stormwater Detention Basin Flood Mitigation Project
- 28th – City awarded federal Reconnecting Communities Planning Grant for “Gulfton and Beyond” study

MARCH

- 1st – City of Houston issues statement on EPA Order for Union Pacific Contamination Cleanup
- 7th – Mayor Turner issues statement on FHWA and TXDOT Agreement on the I-45 North Houston Highway Improvement Project
- 8th – CERAWEEK conference in Houston focuses on Energy Transition
- 11th – Improvements to Forum Park announced as part of City's 50/50 Park Partners initiative
- 17th – Mayor's Office of Cultural Affairs Awards \$84,000 to projects promoting tourism and resilience
- 24th – City of Houston "Dinner to Home" program provides meals and wraparound services to individuals experiencing homelessness
- 29th – City releases comprehensive plan to combat illegal dumping

APRIL

- 3rd – City of Houston breaks ground on Inwood Forest Stormwater Detention Basin project
- 17th - 19th – City presents Earth Day HTX Speaker Series and Festival



Growing a Brighter Tomorrow in Gulfton Produced by: UP Art Studio Artist: Rahmaan Statik
Location: Salvation Army Gulfton, 6150 Bissonnet St, Houston, TX 77081

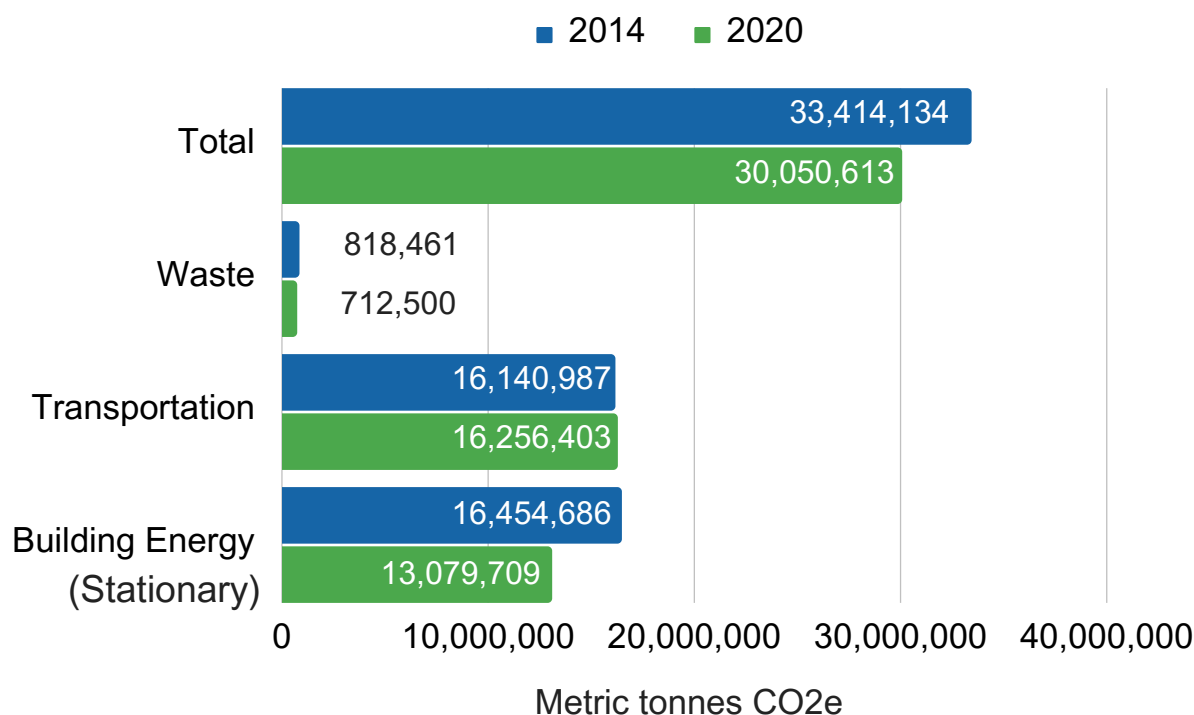
HOUSTON'S 2020 GREENHOUSE GAS INVENTORY UPDATE

Our total greenhouse gas (GHG) emissions decreased 10% in 2020 compared to our 2014 baseline. There was a 21% decrease in emissions from energy use in buildings (Stationary Energy) in 2020 compared to 2014, even as commercial and residential electricity usage increased with population growth. This can be attributed to the electricity grid becoming cleaner as more renewable energy is developed and adopted.

2020 vs. 2014

Overall GHG Emissions ↓ 10%
 Stationary Energy ↓ 21%
 Transportation ↑ 0.1%
 Waste ↓ 16.0%

GHG Emissions Source (by Sector)



Methodology

The City uses the Global Protocol for Community Greenhouse Gas Emissions Inventories (GPC) to calculate Houston's city-wide greenhouse gas (GHG) emissions. This baseline inventory was established in 2018 using 2014 data when our first Climate Action Plan (CAP) was being developed. The geographic scope is the city's general-purpose boundary and excludes the extraterritorial jurisdiction and limited-purpose boundary (such as the Houston Ship Channel). To date, data for 2019 and 2020 have been added to the inventory and we will continue collecting this information on a regular basis to identify trends and inform our strategies and projects.

A LOOK AHEAD TO YEAR 4

As the City continues to develop program areas for implementation focused on buildings, energy transition, materials management, vehicle electrification, land use, heat and nature, climate resilience, and equity – specific activities for year 4 to look forward to are:

- **Energy Efficiency Block Grant (EECBG) formula grant**
- **Tree planting portal launch**
- **Equity Indicators and Atlas**
- **Resilience Hub master plan and pilot program**
- **Building decarbonization and benchmarking implementation**
- **Phase II Reinventing Cities with C40**
- **Zurich-RCN North America Climate Resilience Program participation**
- **National League of Cities Mayor's Institute participation**
- **Heat planning and mitigation**
- **Green stormwater infrastructure and urban prairie plantings**





Acknowledgments:

Mayor's Office of Resilience and Sustainability
Administrative and Regulatory Affairs Department
Mayor's Office and Departmental Leadership and Staff
Departmental Resilience and Sustainability Officers
Houston Advanced Research Center
Rice University Kinder Institute for Urban Research
Our Partners and Community Stakeholders

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