

Houston's Commitment to Climate Action

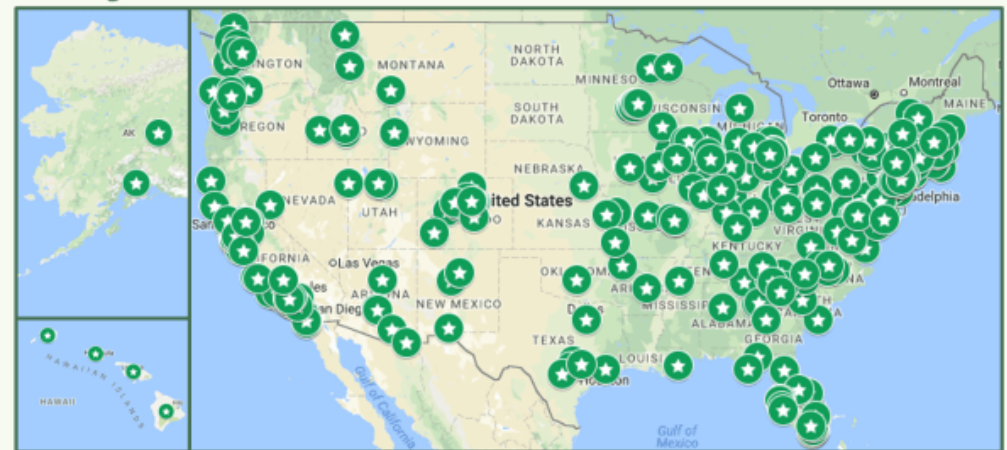


June 1, 2017: The U.S withdraws from the 2015 Paris Agreement

June 24, 2017: Mayor Turner, co-chair of Climate Mayors, commits to adopt Paris Agreement goals in Houston



407 US #ClimateMayors, representing 70 million Americans, have committed to adopt, honor and uphold the climate goals of the Paris Agreement

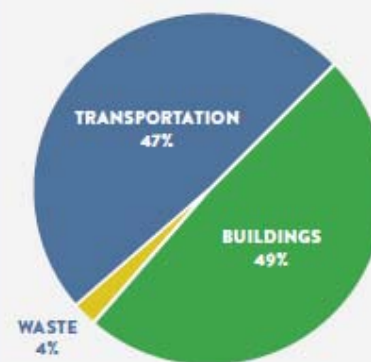


Houston Community Greenhouse Gas Emissions

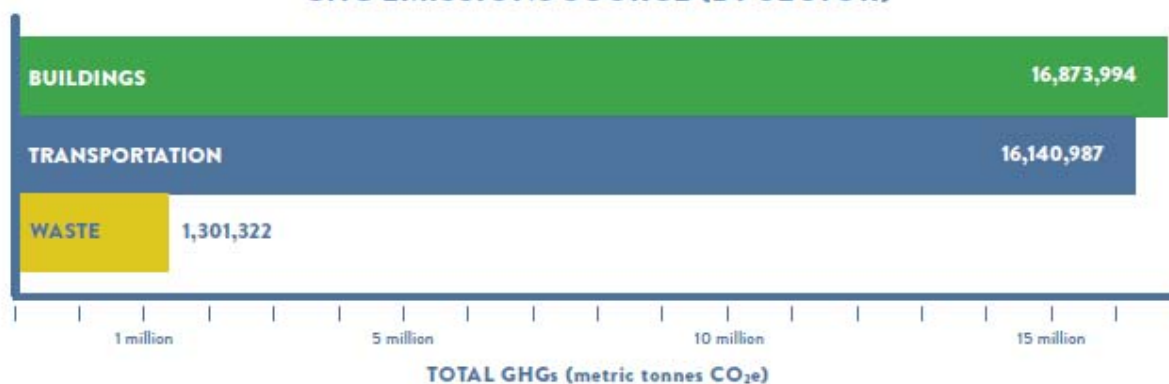
TOTAL ANNUAL EMISSIONS PER CAPITA
(Metric Tonnes CO₂e)



GREENHOUSE GAS
EMISSIONS SOURCES
HOUSTON 2014



GHG EMISSIONS SOURCE (BY SECTOR)



Total Housing Units for Houston, TX

Home / Texas / Harris County / Houston / Total Housing Units



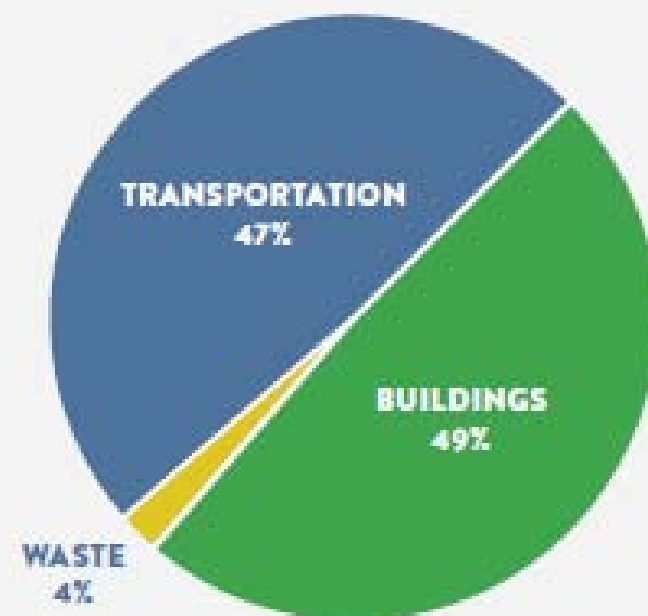
Total Housing Units in Houston over years

■ Houston city



</> Embed This

GREENHOUSE GAS EMISSIONS SOURCES HOUSTON 2014



Housing Unit. A housing unit is a house, an apartment, a group of rooms, or a single room occupied or intended for occupancy as separate living quarters. Separate living quarters are those in which the occupants do not live and eat with other persons in the structure and which have direct access from the outside of the building or through a common hall. For vacant units, the criteria of separateness and direct access are applied to the intended occupants whenever possible. If the information cannot be obtained, the criteria are applied to the previous occupants. Tents and boats are excluded if vacant, used for business, or used for extra sleeping space or vacations. Vacant seasonal/migratory mobile homes are included in the count of vacant seasonal/migratory housing units. Living quarters of the following types are excluded from the housing unit inventory: Dormitories, bunkhouses, and barracks; quarters in predominantly transient hotels, motels, and the like, except those occupied by persons who consider the hotel their usual place of residence; quarters in institutions, general hospitals, and military installations except those occupied by staff members or resident employees who have separate living arrangements.



[Building Directory](#)
[World Building Map](#)

Your location:

[World](#) / [North America](#) / [U.S.A.](#) / [Texas](#) / [Houston](#)

Houston



(c) Emporis

About Houston






Population 2,312,717 in city
5,968,586 in metro

Size 1,398 km² (540 mi²)

Altitude 15.24 m

A city with a Texas-sized skyline – Houston is unique for its lack of zoning restrictions, a situation which has permitted major skyscrapers to be built all over the city.

No. of Buildings

No.	Current status
4,093	All Buildings
3,577	 existing
56	 under construction
177	 planned
189	 unbuilt
94	 demolished

No. of Buildings

No.	Current status
4,093	All Buildings
3,577	 existing
56	 under construction
177	 planned
189	 unbuilt
94	 demolished

Summer Weather Impacts on GRID by Customer Type

Thursday,
March 24, 2016
5:00 p.m.
ERCOT Load:
33,597 MW
Temperature in
Dallas: 62°



Thursday, Aug. 11, 2016
5:00 p.m.

ERCOT Load: 71,093 MW
Temperature in Dallas:
106°

- Customer class breakdown is for competitive choice areas; percentages are extrapolated for municipals and co-ops to achieve region-wide estimate
- Large C&I are IDR Meter Required (>700kW)
- Hourly integrated demand values

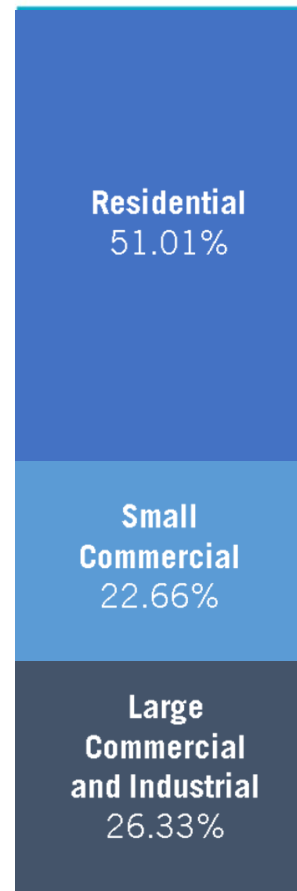


>37,000 MW of
weather-sensitive
load -- 53% of peak



Winter Weather Impacts on GRID by Customer Type

Thursday,
Nov. 16,
2017
7:15 a.m.
ERCOT Load:
36,795 MW
Temperature
in Dallas:
63°



← Wednesday, Jan. 17,
2018
7:15 a.m.
ERCOT Load: 65,904 MW
Temperature in Dallas:
15°

- Customer class breakdown is for competitive choice areas; percentages are extrapolated for municipals and co-ops to achieve region-wide estimate
- Large C&I are IDR Meter Required (>700kW)
- Hourly integrated demand values

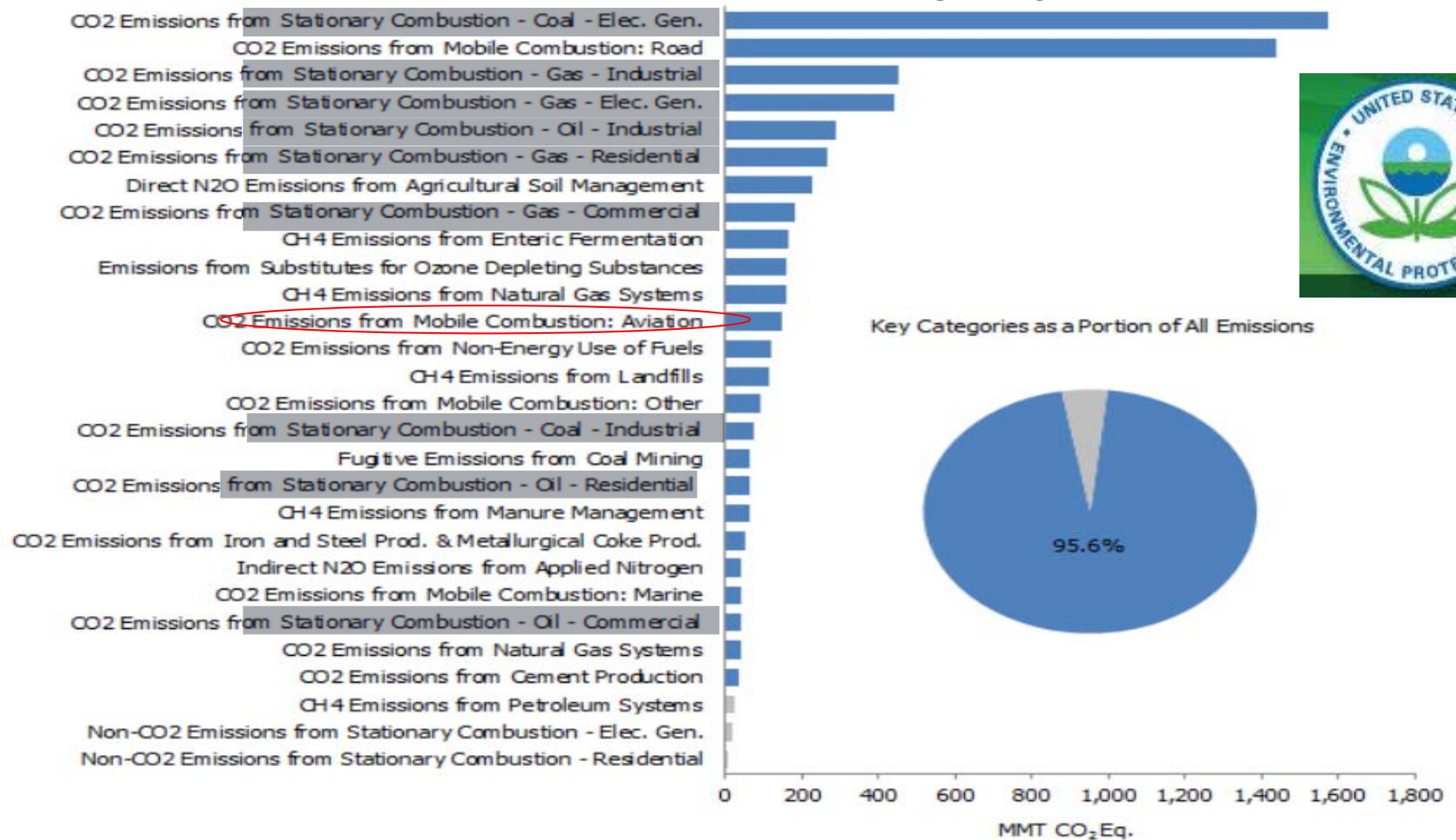


**>29,000 MW of
weather-sensitive
load -- 44% of peak**

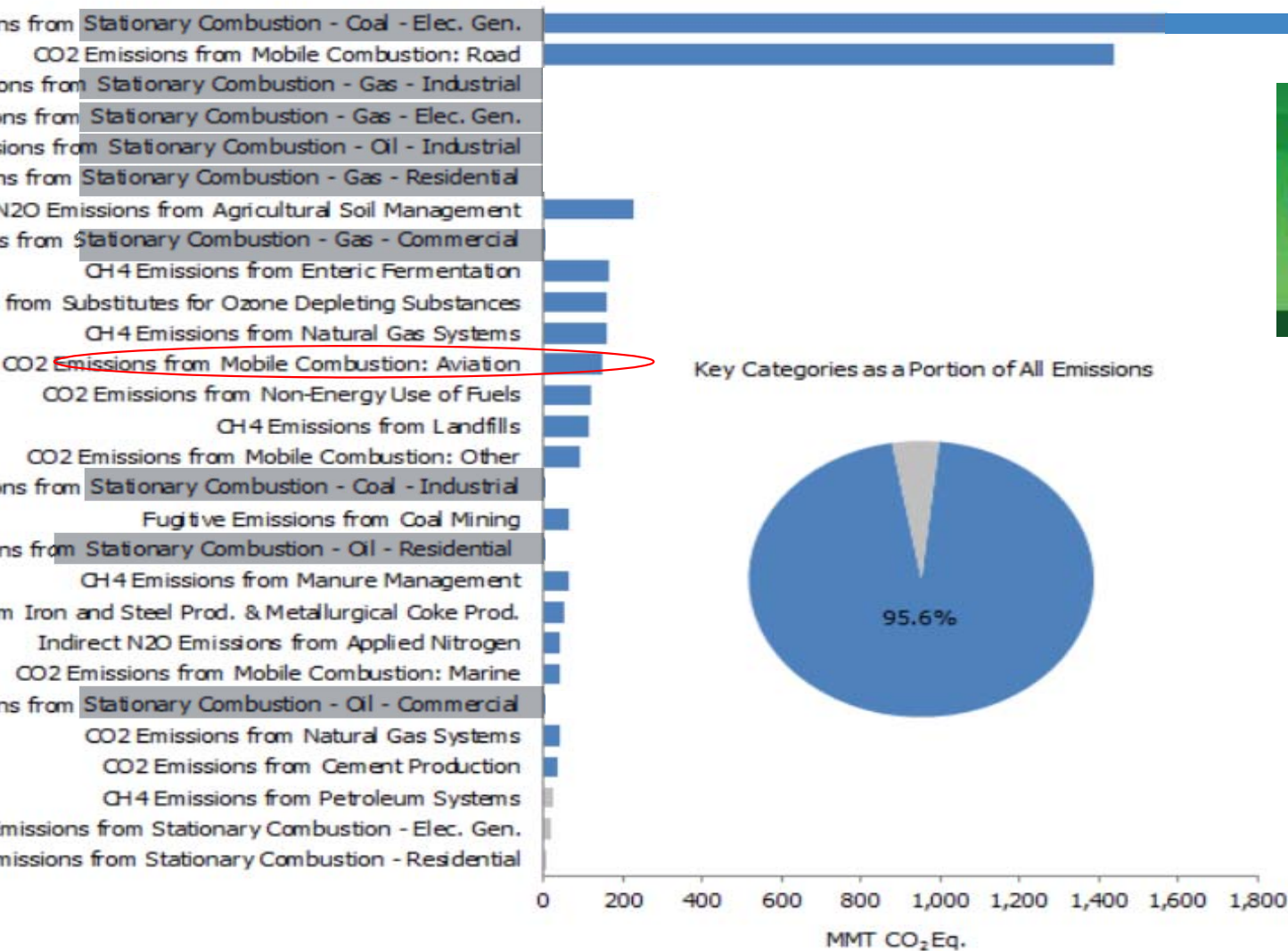


Figure ES-16: 2013 Key Categories

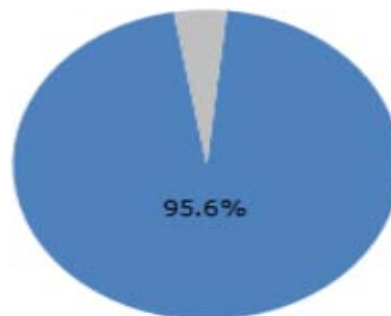
Grey equals Grid



2013 Key Categories



Key Categories as a Portion of All Emissions



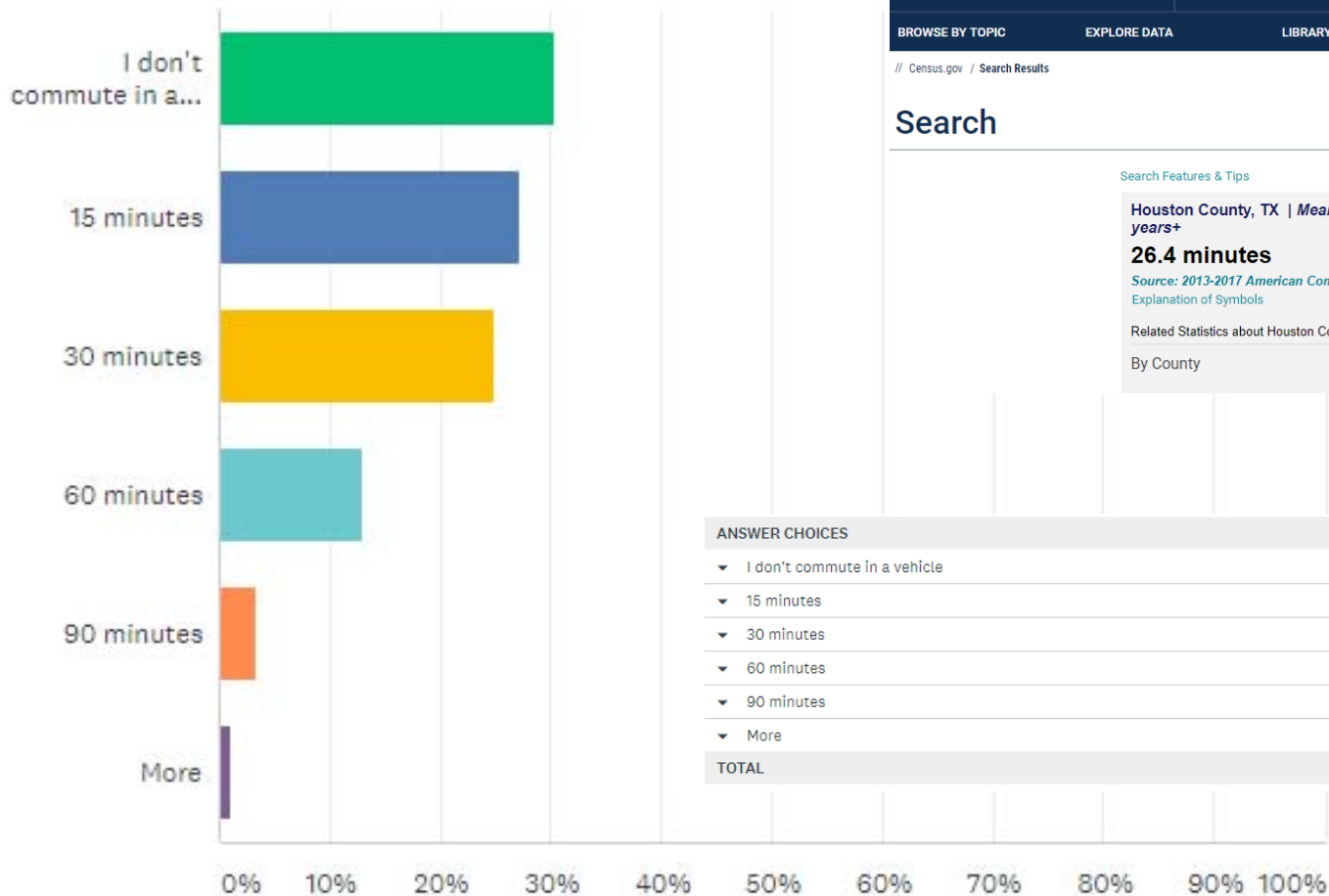
The Grid MATTERS

The Survey You Took Results



How long is your vehicular work commute each way?

Answered: 92 Skipped: 0



United States
Census
Bureau

commute Houston TX

BROWSE BY TOPICEXPLORE DATA LIBRARY SURVEYS/ PROGRAMS INFORMATION FOR...

// Census.gov / Search Results

Search

[Search Features & Tips](#)

Houston County, TX | Mean travel time to work(minutes), workers age 16 years+

26.4 minutes

Source: 2013-2017 American Community Survey 5-Year Estimates

[Explanation of Symbols](#)

Related Statistics about Houston County Commute

By County

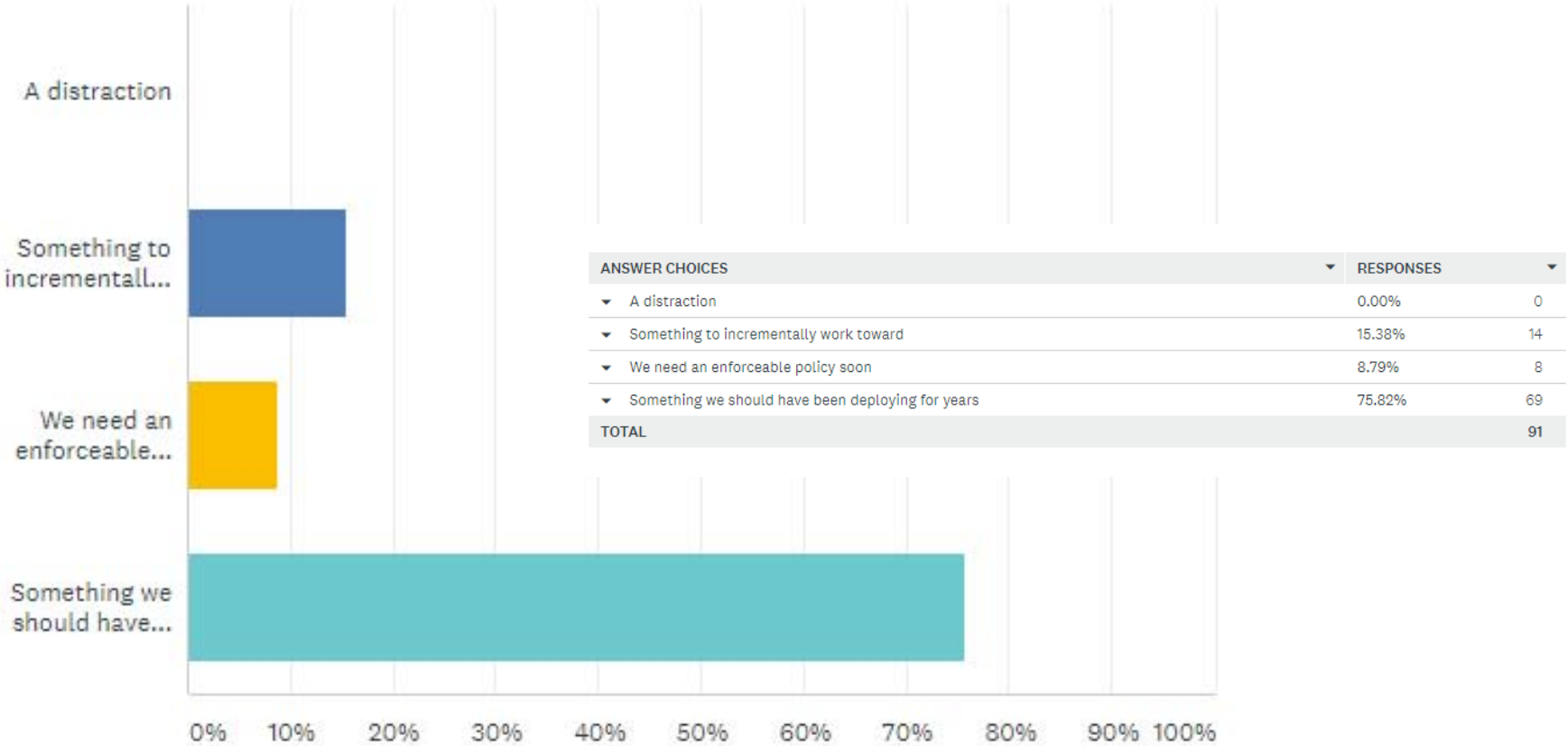
Chart

Table

ANSWER CHOICES	RESPONSES
I don't commute in a vehicle	30.43% 28
15 minutes	27.17% 25
30 minutes	25.00% 23
60 minutes	13.04% 12
90 minutes	3.26% 3
More	1.09% 1
TOTAL	92

Which ONE of the following most closely indicates your opinion of resilience/sustainability in the workplace?

Answered: 91 Skipped: 1



Enter your level of agreement with the following:

Answered: 91 Skipped: 1

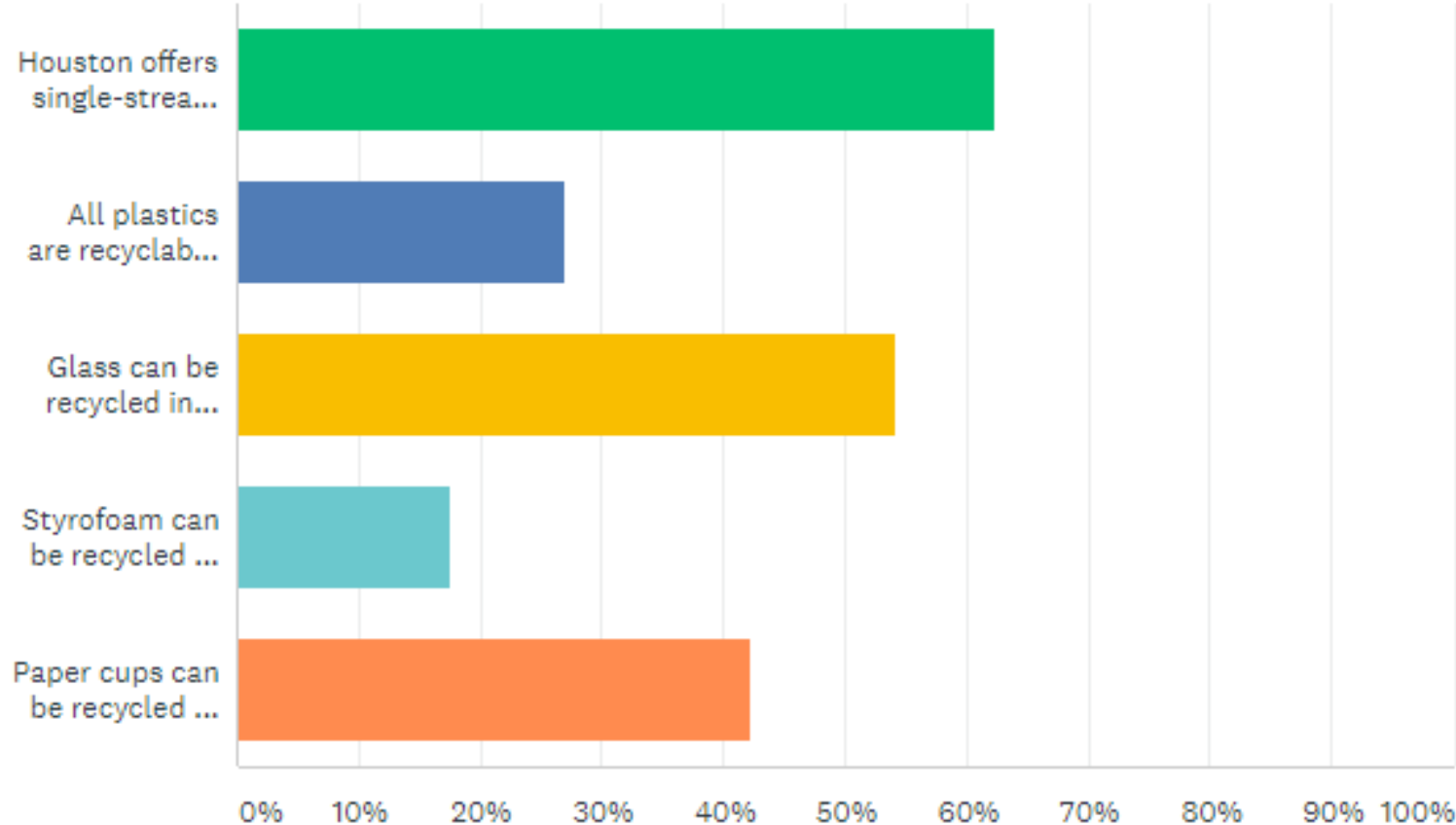


	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
HVAC refrigerants are potent greenhouse gases	3.33% 3	2.22% 2	12.22% 11	34.44% 31	47.78% 43	90	4.21
Methane is a potent greenhouse gas	1.10% 1	2.20% 2	4.40% 4	29.67% 27	62.64% 57	91	4.51
Trees and oceans absorb CO2 which reduce CO2 in the atmosphere	3.33% 3	3.33% 3	3.33% 3	21.11% 19	68.89% 62	90	4.49
Carbon footprint includes carbon emissions from fossil fuel usage	1.10% 1	0.00% 0	5.49% 5	16.48% 15	76.92% 70	91	4.68
Consumption of chicken and salmon is a lower carbon footprint than beef	3.30% 3	8.79% 8	15.38% 14	37.36% 34	35.16% 32	91	3.92
High post-consumer recycle content paper is lower carbon footprint than regular paper	2.22% 2	1.11% 1	18.89% 17	35.56% 32	42.22% 38	90	4.14
Governments should regulate emissions	2.20% 2	1.10% 1	5.49% 5	18.68% 17	72.53% 66	91	4.58

Select any statement you feel is true.

Answered: 85 Skipped: 7

ANSWER CHOICES	RESPONSES	
▼ Houston offers single-stream recycling	62.35%	53
▼ All plastics are recyclable in Houston	27.06%	23
▼ Glass can be recycled in Houston	54.12%	46
▼ Styrofoam can be recycled in Houston	17.65%	15
▼ Paper cups can be recycled in Houston	42.35%	36
Total Respondents: 85		



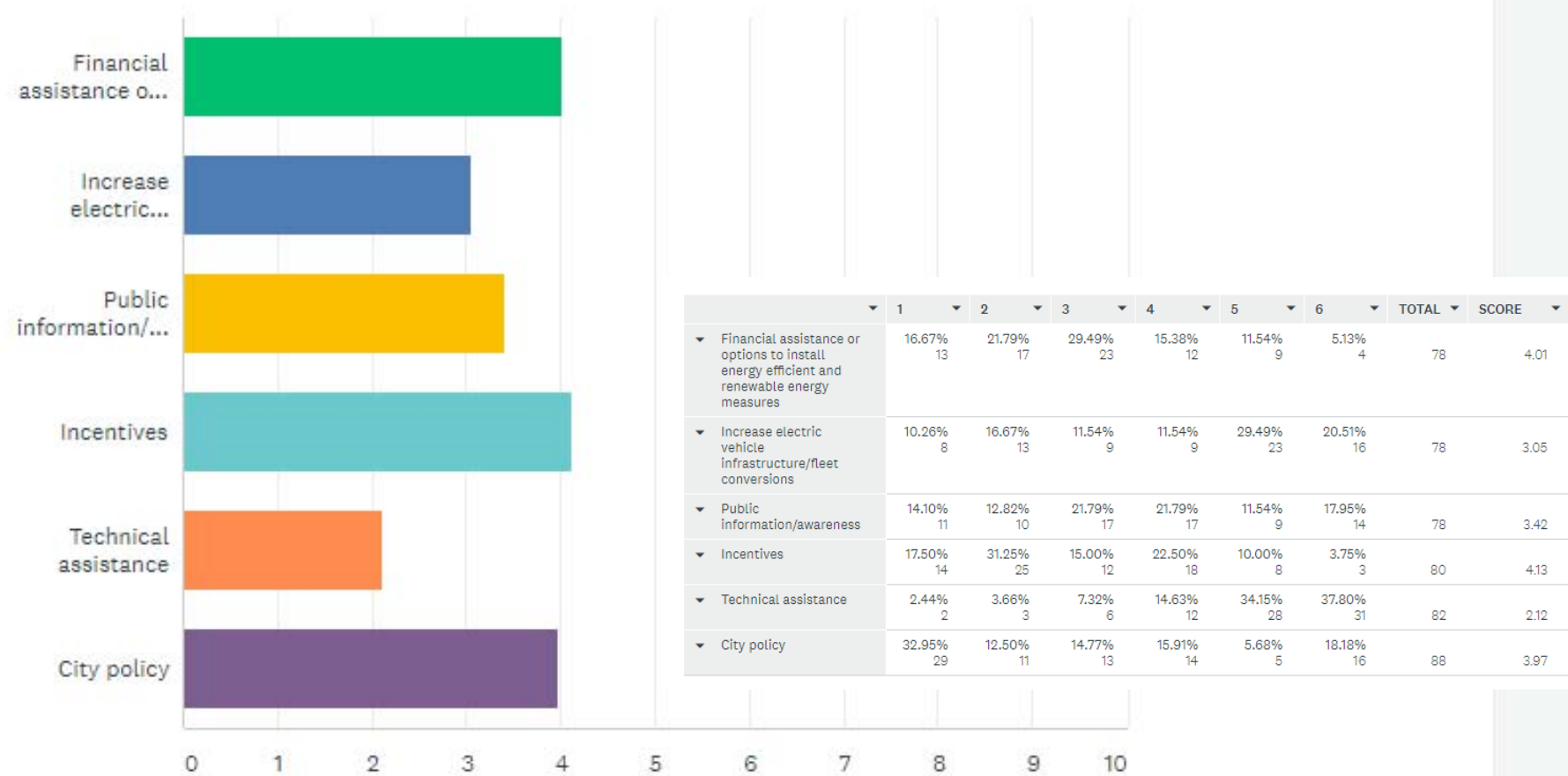
Enter your level of confidence participating with the following:

Answered: 91 Skipped: 1



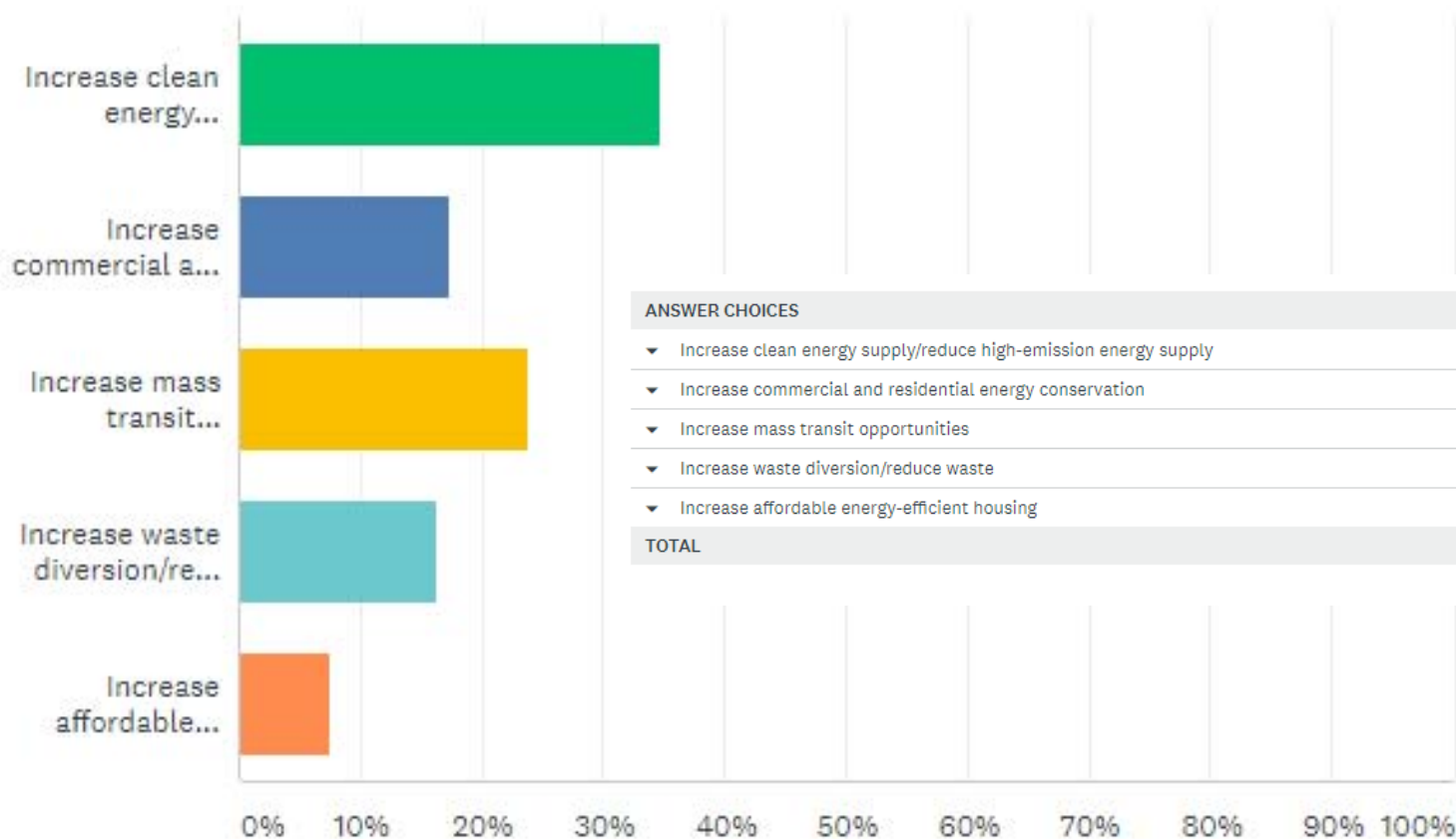
Rank the effectiveness of the following measures to reduce local climate impacts

Answered: 89 Skipped: 3



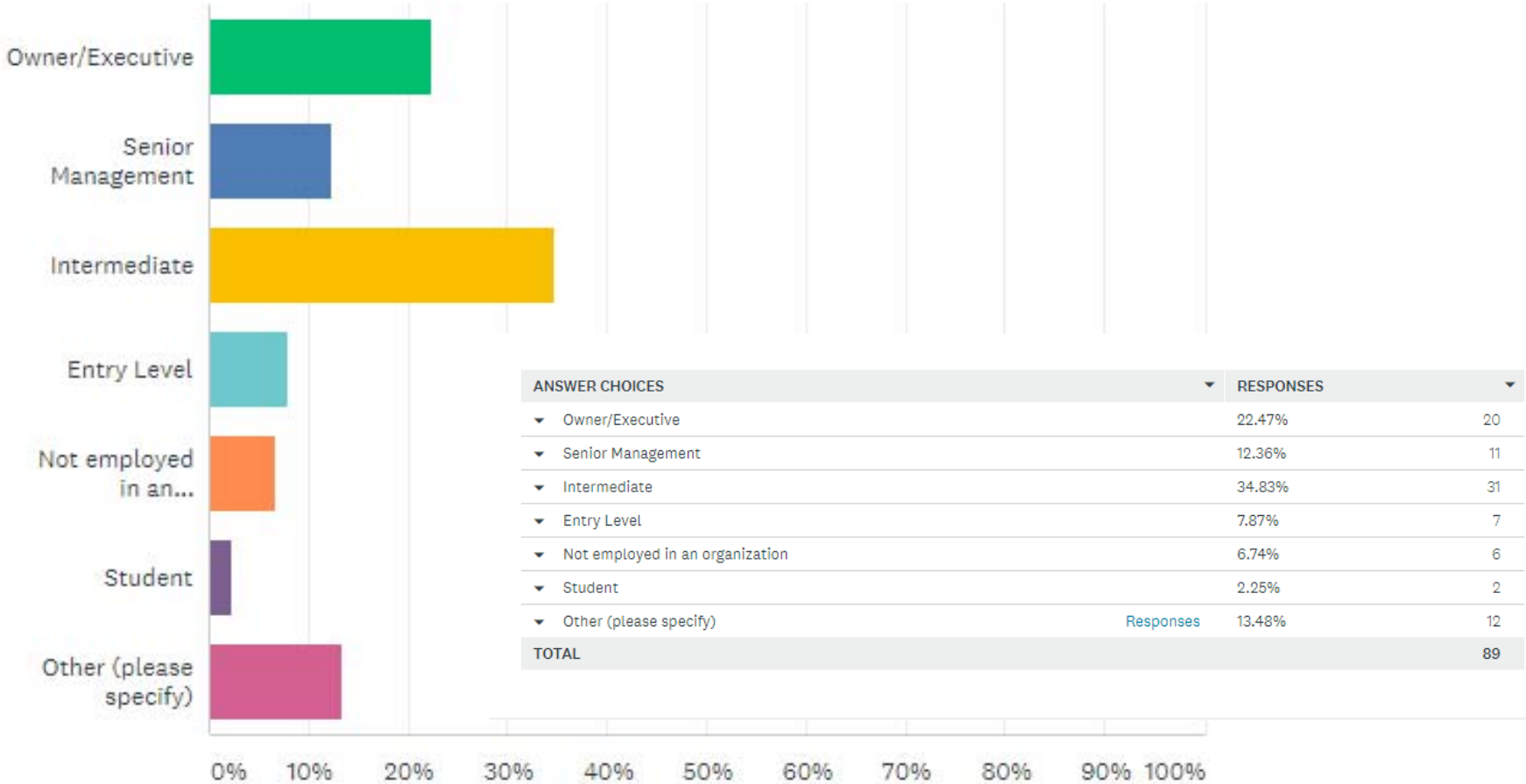
Which strategy is the most important to you? Pick one only.

Answered: 92 Skipped: 0



Which of the following best describes your current job level?

Answered: 89 Skipped: 3



Showing 35 responses

- ☐ Ecosystems conservation & restoration is equally important to atmospheric carbon and global climate change, while also mitigating local impact of heat, drought, flood, etc.

3/26/2019 11:20 AM

[View respondent's answers](#)

- ☐ While I believe that much of the science of climate change, and what is or isn't causing it, is still up for debate and true scientific scrutiny, I do feel that we should do all we can, in a sensible and practical way, to be good stewards of the earth.

3/26/2019 10:10 AM

[View respondent's answers](#)

- ☐ We need a mass movement toward clean energy, sustainability, & clean, real foods, but as long as those things are much more expensive and harder to access than the conventional ways, most people will not buy into it.

3/25/2019 5:49 PM

[View respondent's answers](#)

- ☐ Question Number 6 ranking was a little confusing. Need verbiage like from one through six in order of your importance or something like that. shd

☐ Education to the public on energy alternatives are needed. Energy efficient public transportation is important.

3/22/2019 8:55 PM

[View respondent's answers](#)

[A](#)

☐ I want to become involved in my local community to promote sustainability and to fight against pollution and climate change. I am a young professional with a Bachelor's degree in Environmental Science. I am attending this meeting to learn more about the local conversation regarding these topics. Additionally, I want to meet other like-minded individuals and potentially discover organizations that I can become a part of.

3/22/2019 10:04 AM

[View respondent's answers](#)

[A](#)

☐ Looking forward to hearing about the city's plans.

3/22/2019 9:26 AM

[View respondent's answers](#)

[A](#)

☐ Also interested in water management and flood mitigation strategies for resilient cities and how is Houston moving forward on this track?

☐ I would love to have our city reduce waste by using less. Mandate recycling in large apartment complexes. Allow bring your own containers for take out. Charge for plastic bags so people bring their own. These are not as expensive as increasing mass transit options (which is great but requires massive \$\$\$ up front).

3/16/2019 9:25 PM

[View respondent's answers](#) [Add](#)

☐ The information and awareness has been in place since the late 90's. Capitalism will move to most cost effective means. Only way to tackle this is thru policy and incentives.

3/14/2019 9:48 AM

[View respondent's answers](#) [Add](#)

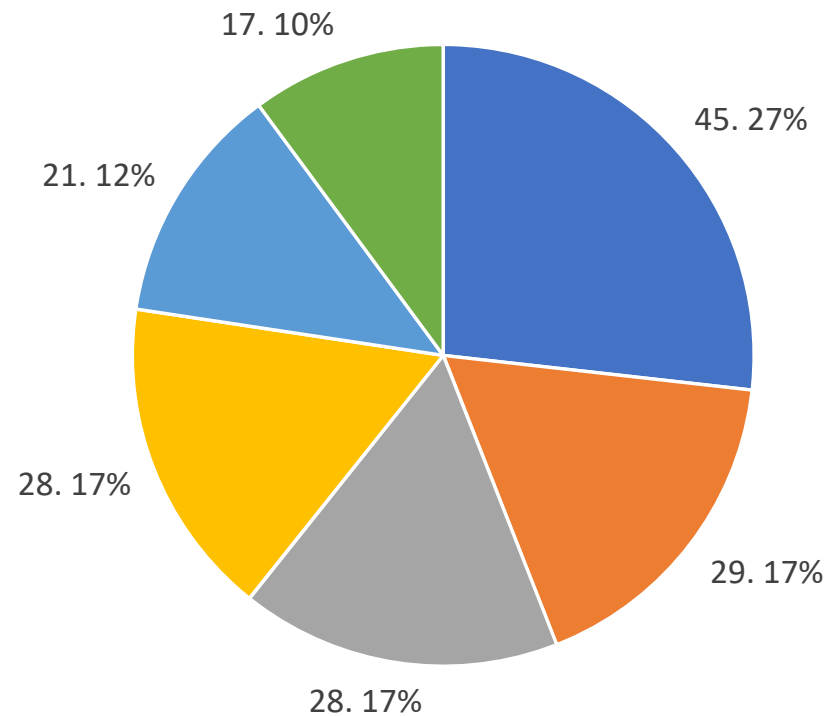
☐ Global Warming is a hoax.

3/14/2019 7:49 AM

[View respondent's answers](#) [Add](#)

☐ I'm concerned about recycling. My apartment building "collects" it, but I've never seen a recycling truck. I'm also nervous about what really happens to the collected recycling and want to see for myself how Houston handles it. Especially now that China has cut us off from sending our recycling to them.

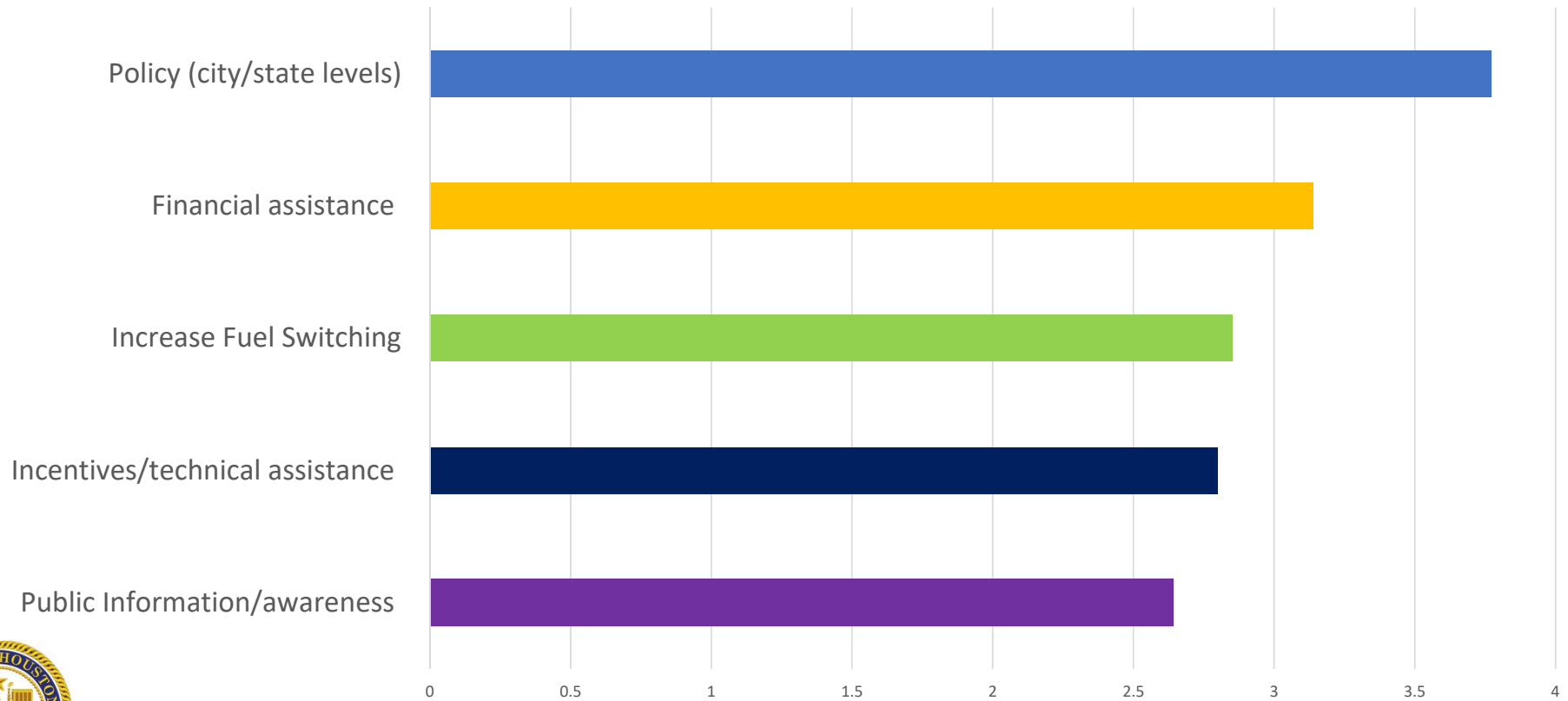
Community Stakeholder Priorities



■ Transportation ■ Public Outreach ■ Decarbonization ■ Building Optimization ■ Equity ■ Pollution/Solid Waste ■

N = 93 Respondents from Stakeholder Survey

Stakeholder Ranking of Effectiveness of Measures



N = 93 Respondents from Stakeholder Survey

Mayoral Powers

	own and operate	set and enforce policies	budgetary and revenue control	set vision
Private Buildings	N/A	S	L	L
Public Buildings	S	S	S	S
Energy Supply	L	S	L	L
Finance & Economy	S	S	S	S
Public Transport	P	S	P	P
City Roads	S	S	P	P
Urban Land Use	P	S	L	L
Waste	P	P	P	P
Water	S	S	S	S

not available

not applicable

limited powers

partial powers

strong powers



**What does a Climate Action Plan
look like?**

**Let's see San Antonio's draft
and LA's third year Update**



Climate Action



- With a goal of carbon neutrality by 2050, the City has already achieved:
- A 10% reduction in total Greenhouse Gas (GHG) emissions from 2014 to 2016, in spite of population and economic growth.
- Recognition in 2018 as 6th in the nation for installed solar capacity with 161 Megawatts of installed capacity.³
- Adoption of the most advanced International Energy Conservation Code (IECC) building code, setting the city apart as one of the most progressive jurisdictions in the nation, and ensuring the energy efficiency of our new buildings.

❖ Model is **data-driven and city-specific** with 500+ data fields to complete

❖ CURB uses population growth, GDP growth or International Energy Agency's methodology to estimate future emissions

❖ 100+ cities have adopted the CURB model, allowing for comparability and benchmarking



DEVELOPMENT SERVICES HOME

ABOUT >

BOARDS AND COMMISSIONS >

BUILDSA PROJECT

BUSINESS OWNERS >

CONSTRUCTING IN SAN ANTONIO >

CONTRACTOR REGISTRATION & LICENSING

CODE ENFORCEMENT >

RESOURCES >

ONLINE SERVICES >

SA.GOV RELATED SITES

FIRE MARSHAL

OFFICE OF HISTORIC PRESERVATION

STORM WATER

MORE LINKS...

HELPFUL LINKS

BEXAR APPRAISAL (BCAD)

BEXAR COUNTY LAND DATA

CPS ENERGY

MORE LINKS...

OFFICE & LOCATION

Cliff Morton Development and
Business Services Center
1901 South Alamo Street
San Antonio, TX 78204

Phone:
210.207.1111

Hours:
7:45 am - 4:30 pm (Mon - Fri)

CODES & ORDINANCES OVERVIEW

Development in the City of San Antonio requires conformance with all adopted building codes, land use regulations and the City's design and construction standards.

On June 21, 2018, San Antonio City Council approved the adoption of the 2018 International Code Council (ICC) Building-related, Fire and Property Maintenance codes with local amendments, with an effective date of October 1, 2018.

CODES/ORDINANCES

ICC CODE UPDATES

ZONING UPDATES

UNIFIED DEVELOPMENT CODE

SHORT TERM RENTALS • CODES/ORDINANCES • SENIOR LIVING FACILITIES • DARK SKY/MLOD

• HABITAT COMPLIANCE FORM UPDATE • GUN SAFETY UDC AMENDMENTS • ETJ MILITARY PROTECTION AREAS

The following 2018 ICC Building-related, Fire and Property Maintenance codes and the 2017 National Electrical Code with local amendments, were approved effective October 1, 2018:

- 2018 International Building Code, IBC
- 2018 International Existing Building Code, IEBEC
- 2018 International Residential Code, IRC
- 2018 International Fire Code, IFC
- 2018 International Mechanical Code, IMC
- 2018 International Plumbing Code, IPC
- 2018 International Fuel Gas Code, IFGC
- 2018 International Energy Conservation Code, IECC
- 2017 National Electrical Code, NEC
- 2018 San Antonio Property Maintenance Code (based on the 2018 International Property Maintenance Code)

Refer to the links below for 2018 Codes:

- [2018 Chapter 10 Building-related Codes](#) (PDF)
- [2018 International Fire Code Amendments](#) (PDF)
- [2018 San Antonio Property Maintenance Code](#) (PDF)

Chapter 28 - Signs and Billboard Ordinance went into effect July 3, 2017:

- [2017 Chapter 28 Sign Code and Billboard Ordinance](#)

The Building and Fire related codes are updated every three years. During those update periods, there are often questions concerning how the City is interpreting the actual Code or the Rules.

Go to Code Interpretations to see if your question has been addressed. To obtain a Code Interpretation see [IB 115 on How to Request a Code](#)



[Home](#)

Customer Assistance & Code Development (CACD) Section

Michael G. Howard, Code Administrator

CONSTRUCTION CODE

Building

[2012 IBC Houston Amendments-Print 2](#)

09/01/2018

[2012 IBC Houston Amendments](#)

02/01/2016

Residential

[2012 IRC Houston Amendments](#)

02/01/2016

Electrical

The 2017 National Electrical Code (NEC) became mandatory by state law effective September 15, 2017. The Houston Administrative provisions to the NEC are currently awaiting review by City Council.

Mechanical

[2012 UMC Houston Amendments](#)

02/01/2016

Plumbing

[2012 UPC Houston Amendments](#)

02/01/2016

Fire

[2012 IFC Houston Amendments](#)

02/01/2016

LSB Standards

NOTE: The LSB Standards are currently being reviewed for update to the 2012 Houston Adopted Construction Code.

[Draft 2018 LSB Standards](#)

NOTE: Updates are to become effective on October 18, 2018.

Residential Energy

SERVICES HOME

MISSIONS >

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RS >

N SAN ANTONIO >

ISTRATION & LICENSING

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>

D SITES

IC PRESERVATION

L (BCAD)

AND DATA

CODES & ORDINANCES OVERVIEW

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CODES/ORDINANCES

ICC CODE UPDATES

ZONING UPDATES

UNIFIED DEVELOPMENT CODE

SHORT TERM RENTALS • CODES/ORDINANCES • SENIOR LIVING FACILITIES • DARK SKY/ML0D

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2018 International Fuel Gas Code, IFGC

2018 International Energy Conservation Code, IECC

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2018 San Antonio Property Maintenance Code (based on the 2018 International Property Maintenance Code)

Refer to the links below for 2018 Codes:



The
City of Houston
Official Site for Houston, Texas



[Home](#)

Customer Assistance & Code Development

Michael G. Howard, Code Administrator

Mission Statement

Serving and educating the public and staff by providing personalized assistance and internal liaisons with informational handouts and seminars.

About CACD

The Customer Assistance & Code Development Office (CACD) was established as an ombudsman for customers in the permit process, providing personalized assistance and analysis.

This office is also responsible for the Public Outreach and Education through handouts and guidelines and maintaining the Office of Building and Safety.

Main Functions of the Code Development Office

[Codes & Code Amendments](#) - Coordinate, draft and recommend code amendments.

[Code Interpretations](#) - Create Code Words for formal interpretations and answers.

[Alternate Methods](#) - Review and approve requests for alternate methods of construction; review Temporary Building Placement requests.

[E-newsletters & Public Notices](#) - Distribute E-Newsletters and/or notices of changes, updates and training seminars.

Building

[2012 IBC Houston Amendments-Print 2](#)

09/01/2018

[2012 IBC Houston Amendments](#)

02/01/2016

Residential

[2012 IRC Houston Amendments](#)

02/01/2016

Electrical

The 2017 National Electrical Code (NEC) became mandatory by state law effective September 15, 2017. The Houston Administrative provisions to the NEC are currently awaiting review by City Council.

Mechanical

[2012 UMC Houston Amendments](#)

02/01/2016

Plumbing

[2012 UPC Houston Amendments](#)

02/01/2016

Fire

[2012 IFC Houston Amendments](#)

02/01/2016

LSB Standards

NOTE: The LSB Standards are currently being reviewed for update to the 2012 Houston Adopted Construction Code.

[Draft 2018 LSB Standards](#)

NOTE: Updates are to become effective on October 18, 2018.

Residential Energy

Note: The enforcement of Chapter 11 of the 2015 International Residential Code became mandatory by state law effective September 1, 2016.

[2015 IECC Amendments \(Residential Provisions\)](#)

10/24/2016

Commercial Energy

Note: The 2015 IECC-Commercial Provisions became effective November 1, 2016 per state law.



[About The pLAN](#) [Where L.A. Is Leading](#) [Get Involved!](#) [Our Progress](#)

3rd Annual Report

Read about our progress in implementing the pLAN below. Click [here](#) to see our 2017 Sustainability Highlights at a Glance. You can view the status of all of our near-term outcomes [here](#), and download the full PDF of the 3rd Annual report [here](#).

L.A.'s Greenhouse Gas Emissions by Sector

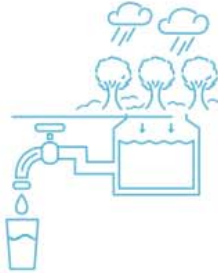


2017 Sustainability Highlights at a Glance



Local Water

- L.A. broke ground on the North Hollywood West Wellhead Remediation Project that will restore the use of groundwater as a safe source of drinking water.
- L.A. has undergone a multi-year collaborative effort, led by LASAN and LADWP, to develop *One Water LA 2040*, an implementation strategy to manage our water in a more integrated, cost effective, and sustainable manner.



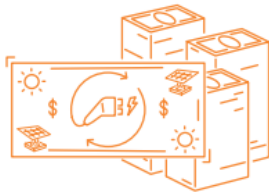
Lead by Example

- At 475 vehicles, we have the largest municipal EV fleet in the country.
- L.A. is the first U.S. city to mount an EV charging station onto a light pole.
- L.A. is named #1 city with EPA certified ENERGY STAR buildings (public and private).



Air Quality

- The Port of L.A. announced goals to transition all terminal equipment to zero emissions by 2030 and to transition to a zero-emission drayage fleet by 2035.
- At nearly 1,500, L.A. has the most publicly available electric vehicle chargers of any U.S. city and LADWP has committed to install 10,000 EV chargers in the next 5 years.



Prosperity & Green Jobs

- L.A. has created over 28,500 green jobs.
- L.A. has attracted \$159 million in green investment through LACI.



Local Solar

- LADWP launched Solar Rooftops, a community solar program to help deploy solar in low-solar penetration neighborhoods.
- At 291 MW, L.A. has the most installed solar power of any city in the U.S.



Environmental Justice

- The Watts community was awarded \$35M in cap-and-trade funding for transformative community revitalization projects including affordable housing, urban greening, clean energy, and active transportation.



Mobility and Transport

- Mayor Garcetti announced a "Twenty-eight by '28" initiative to push for the completion of 28 major Metro projects in time for the 2028 Olympic and Paralympic Games.



Preparedness & Resiliency

- L.A. released its first ever comprehensive resilience strategy that addresses climate change vulnerabilities and strategies for adaptation.
- L.A. has installed over 140,000 square feet of cool pavement and over 39 million square feet of cool roofs throughout the city to help mitigate urban heat.



Carbon and Climate Leadership

- In 2016 alone, L.A. reduced its city-wide greenhouse gas emissions by 11%, equivalent to taking 737,000 cars off the road.
- L.A. has secured \$160M in California Climate Investment Funds from the state's cap-and-trade program.



Urban Ecosystem

- L.A. is the first U.S. city to apply the Singapore Index on Cities' Biodiversity, an international index for evaluating and monitoring cities' progress on biodiversity conservation efforts.

Letter from Mayor Eric Garcetti



Here in Los Angeles, we know that when we live sustainably, we increase equity, protect the environment, and fortify ourselves in the best of times so we don't just survive – but thrive – in the face of inevitable challenges.

This past year was marked by a series of milestones in our work to make Los Angeles the most sustainable city in the United States, and the world. I set 61 commitments, and I'm proud to announce that we have achieved – and in many cases, exceeded – 90% of our goals. Here's a glimpse at some of this year's defining accomplishments:

- Launched the BlueLA Electric Car Sharing Program, the nation's largest EV car sharing program for underserved communities. The project works to reduce greenhouse gas emissions and provide low-income communities with clean, affordable transportation options in neighborhoods. Since the first demonstration site opened in June, the City has hosted more than 140 community events to increase awareness and exposure to affordable, clean transportation options.
- Signed the Fossil Fuel Free Streets Declaration alongside 11 other C40 Mayors – which pledges to procure only zero-emission buses by 2025 and ensures that a major area of our city will be zero-emission by 2030.

- Secured \$35 million in state funding from the Transformative Climate Communities grant program for a community revitalization project in Watts. The grant will fund an array of projects, including affordable housing, urban greening, emission-free transportation, and energy efficiency retrofit programs.
- Partnered with Long Beach Mayor Robert Garcia to sign a joint declaration setting ambitious goals for the Ports of Los Angeles and Long Beach to make the transition to zero emissions goods movement in their Clean Air Action Plan, which will help reduce greenhouse gas emissions and provide relief to communities that have historically borne the burden of poor air quality caused by port-related activities.
- Passed the Affordable Housing Linkage Fee, which will help Los Angeles double its production and preservation of affordable housing, put incentives in place for more mixed-income developments, and create more than 900 good-paying jobs for Angelenos every year. After its full implementation, the fee is expected to generate \$100 million for affordable housing activities.

Los Angeles is a leader on the global stage, much of which is due to our commitment to sustainability. Indeed, climate change is a transnational issue that extends far beyond county and state lines. That's why when the White House announced the decision to withdraw from the Paris Climate Agreement, I spearheaded a bipartisan coalition of U.S. mayors committed to upholding the Paris Climate Accord.

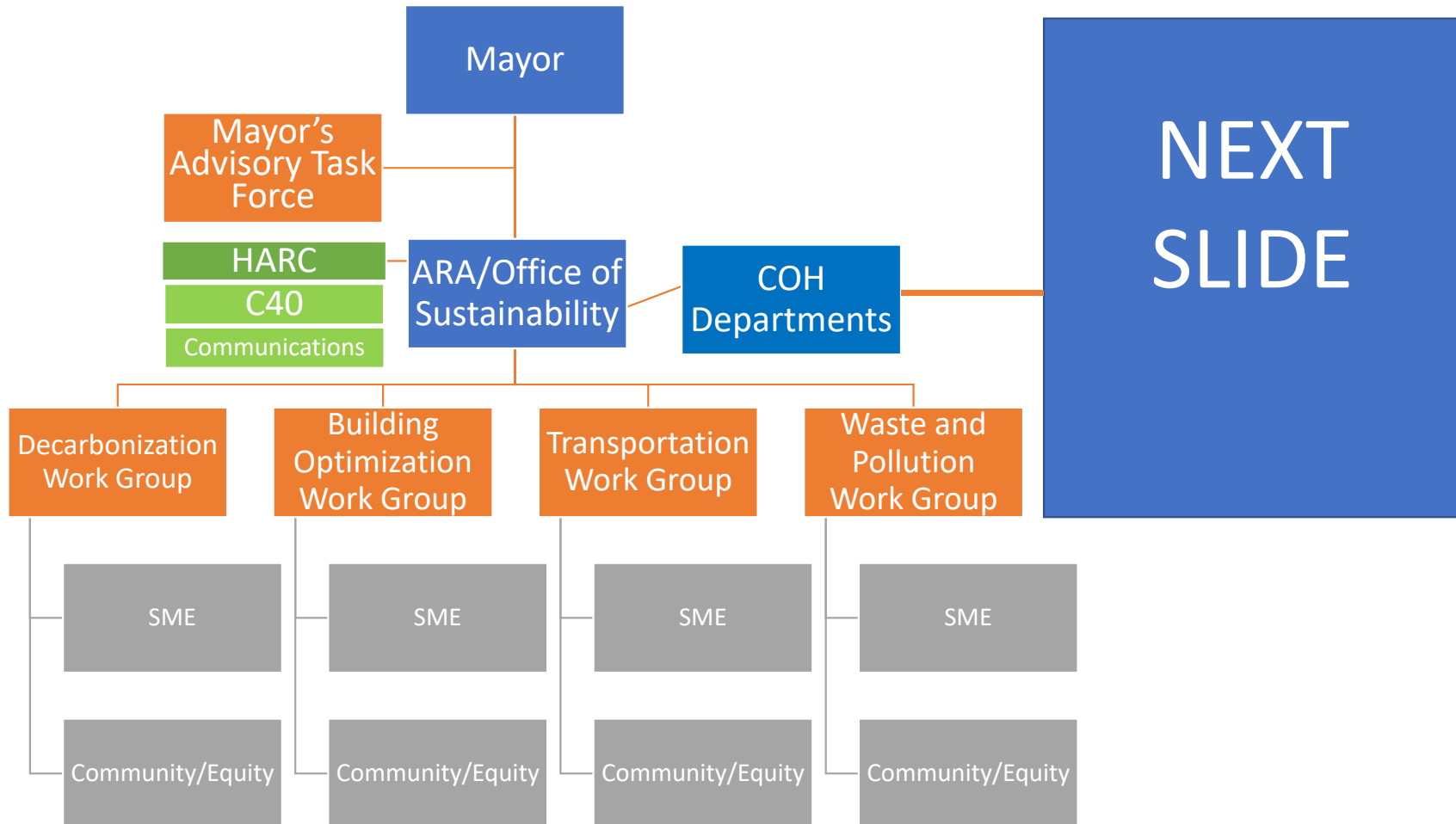
Today, the Climate Mayors network is 402 cities strong, spanning 47 states and representing nearly 70 million Americans. And to help Los Angeles uphold the Paris Agreement, we are working together with our partners at the C40 Cities Climate Leadership Group to ensure our Sustainable City pLAn is compatible with the goals of the agreement.

(Remember this slide from Larissa's presentation?)

Climate Action Plan Structure and Process



Planning Organizational Structure



Houston Mayor's Office

Houston City Departments



Rhonda Sauter
832.393.0955
Division
Manager,
Mayor's Citizens'
Assistance Office

Juliet Stipeche
Director, Mayor's
Office of
Education

William Paul
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Council Relations



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With Disabilities

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the Mayor

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and Constituent
Services



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Director,
Community
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Hunter
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Andy Icken
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Development
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Channel)

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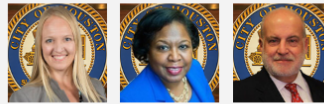
Terence O'Neill
832.393.0855
Director Mayor's
Office of New
Americans and
Immigrant
Communities



MAYOR'S OFFICE

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- View Departments and Directors
- Listed below alphabetically
- This page last updated February 27, 2019 8:07 AM



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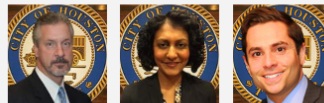
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Agenda Director

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Marc
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Rhea Brown
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Library

J. Elaine Marshall
713.247.5464
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Municipal Courts

TaKasha L.
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Director
Neighborhoods

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Recreation



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Planning and
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Works

Harry Hayes
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Director of Solid
Waste
Management
and Chief

Houston's Office of Sustainability

Lara Cottingham

With 13 years of communications and public policy experience, Lara is the Chief of Staff of the Administration and Regulatory Affairs Department and the Chief Sustainability Officer for the City of Houston. In addition to leading the Mayor's Sustainability Office, Lara is the public face of ARA in the media as well as before City Council, industry stakeholders, and customers.



Prior to joining the City of Houston, Lara was a member of Hill+Knowlton Strategies' Houston office, providing strategic counsel in sustainability and social responsibility issues for a broad range of clients across the energy sector. Lara worked in Washington, DC and served as Communications Director for the Chairman of the House Natural Resources Committee, Vice Chairman of the House Transportation Committee, and Vice Chairman of the Sustainable Energy and Environment Caucus, as well as for congressional campaigns in Colorado, West Virginia, and Texas. She also produced a web-based reality show for CNN and served as a Government & Marketing Consultant for SXSW Interactive in Austin.

Lara attended the University of Texas in Austin where she graduated magna cum laude with degrees in History, Ancient History & Classical Civilizations, and Government. In 2013, she earned an MBA in Energy Finance and Public Affairs from the University of Texas at Austin's McCombs School of Business, where she co-founded the UT Energy Savings Fund.

Larissa Williams

Prior to joining ARA, Larissa worked for the Mississippi State government for four years overseeing staff and programs related to energy management, providing technical and financial assistance to business and governmental entities. She also worked at Atmos Energy for twelve years in the areas of sales, marketing and business development.



In her role as Energy Manager, Larissa is responsible for oversight the municipal energy benchmarking portfolio as well as our annual greenhouse gas reporting and community-wide emissions inventory.

Larissa is a native of Baton Rouge, Louisiana. She attended Southern University and A&M College, where she earned a Bachelor of Science in Mechanical Engineering, and Belhaven University, where she earned a Master of Business Administration.

Departmental Sustainability Officers



Marissa Aho
832.393.0811
Chief Resilience
Officer

LA Mayor's Office of Sustainability



Lauren Faber O'Connor
Chief Sustainability Officer



Jeanalee Obergfell
Senior Policy Analyst



Kathryn Goldman
Climate Adviser



Katie Mika
Water Policy Adviser



Liz Crosson
Deputy Chief Sustainability Officer



Michael Samulon
Senior Policy Analyst



Nidia Erceg
Air Quality Adviser



Elena Guevara
Policy Analyst

The People Behind the Plan

LA Departmental Sustainability Officers



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Marco Perez
Additional Sustainability Staff:
Jennifer Ware



Department of Animal Services
Tammy Watson



Department of Building and Safety
Osama Younan



Department of Contract Administration
Chris Smith
Additional Sustainability Staff:
Hannah Choi



Department of Cultural Affairs
Danielle Brazell



Economic and Workforce Development Department
Stella Calanzarile
Additional Sustainability Staff:
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Bureau of Engineering
Mahmood Karimzadeh
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Commander Jeffrey Bert, Detective Michael Bland



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Additional Sustainability Staff:
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James Quigley



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Additional Sustainability Staff:
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Additional Sustainability Staff:
Aaron Gross



Los Angeles World Airports
Samantha Bricker
Additional Sustainability Staff:
Tamara McCrossen-Orr



Los Angeles Zoo
Darryl Pan

Below are all the 2017 (or where noted 2025) outcomes. We met 55 out of the 61 2017 outcomes, and 2 of the 2025 outcomes have been completed ahead of schedule. The 6 outcomes not met remain in progress.

LA Third Report of CAP Progress



Local Water

- ✓ Secure additional funding for San Fernando Groundwater Basin clean up
- ✓ Reduce average per capita potable water use by 20%
- ✓ Establish Water Cabinet to implement key aspects of local water policy
- ✓ Expand recycled water production by at least 6 million gallons per day
- ✓ Replace 95 miles of water pipe infrastructure
- ⚙️ Reduce number of annual sewer spills to less than 125
- ✓ Identify funding mechanism(s) to implement the Enhanced Watershed Management Plan necessary for Municipal Separate Storm Sewer System permit compliance
- ⚙️ Reduce number of annual sewer spills to less than 100 (2025)



Local Solar

- ⚙️ Increase installed capacity of local solar photovoltaic (PV) power to 400 megawatts (MW)
- ✓ Reduce residential solar PV interconnection wait time to less than two weeks
- ⚙️ Install at least 1 MW of solar on L.A. Convention Center roof
- ✓ Increase total cumulative MW of energy storage capacity to 24 MW (excluding Castaic Pump-Storage Plant)
- ✓ Upgrade Castaic Pumped-Storage Plant to accommodate intermittent renewable energy sources
- ✓ Launch a revised Integrated Resource Plan (IRP) process that includes in the 2015 and/ or 2016 IRP a local solar scenario that achieves the long-term stretch goal outcomes



Energy Efficient Buildings

- ⚙️ Avoid cumulative 1250 GWh of energy use between 2014 and 2017 due to efficiency programs
- ⚙️ Expand Los Angeles Better Buildings Challenge (LABBC) to 60 million square feet
- ✓ Create benchmarking policy to monitor and disclose building energy-use
- ✓ Develop a policy package (e.g., audits and retro-commissioning) to address energy consumption in the city's largest buildings (public and private)
- ⚙️ Retrofit 12,500 homes with residential Property Assessed Clean Energy (PACE) financing



Carbon & Climate Leadership

- ⚙️ Establish a pathway to derive 50% of LADWP's electricity from renewable sources by 2030
- ✓ Develop a comprehensive climate action and adaptation plan, including an annual standardized GHG inventory
- ✓ Work with other cities to establish standardization of municipal and community-wide GHG inventory reporting in the US and globally
- ✓ Lead Mayors of the US's largest cities to sign on to the Mayor's National Climate Action Agenda
- ✓ Accelerate the decarbonization of the electricity grid, including ceasing delivery of power from Navajo Generating Station



Waste & Landfills

- ✓ Expand local organic waste-collection program
- ✓ Designate a site and project parameters for an anaerobic digestion facility with at least 50 tons of capacity to process local organic waste
- ✓ Implement a waste franchise system to increase commercial recycling rates, reduce pollution from heavy-duty waste-hauling vehicles, and enhance material recovery opportunities to reach an 80% diversion rate by 2020.



Housing & Development

- ✓ Issue permits for 17,000 new units of housing within 1,500 feet of transit
- ⚙️ Increase the combined annual amount of federal, state, and local money dedicated to affordable housing development by at least 33% compared to 2014 levels
- ✓ Minimize the loss of existing affordable housing units through density bonus revision and implementation of AB 2222



Mobility & Transit

- ✓ Complete LA Metro's regional integrated bike share system plan
- ✓ Establish bike share system in LA starting with at least 65 stations and 1,000 bikes
- ✓ Increase multimodal connections at 10 rail stations



Prosperity & Green Jobs

- ⚙️ Increase Minimum wage to \$13.25/ hr
- ⚙️ Achieve annual parity between incoming and outgoing entitlement cases (i.e. no additional case backlog)
- ⚙️ Create 20,000 green jobs
- ⚙️ Attract \$100 million of private-sector investment through the L.A. Cleantech Incubator
- ⚙️ Reduce the unemployment gap between City of LA and LA County to .35% (2025)



Preparedness & Resiliency

- ✓ Implement enhanced Reverse 911 system to incorporate mobile phones and alerts
- ⚙️ Install 10,000 new cool roofs
- ⚙️ Pilot installation of "cool slurry" pavement
- ✓ Develop comprehensive climate action and adaptation plan

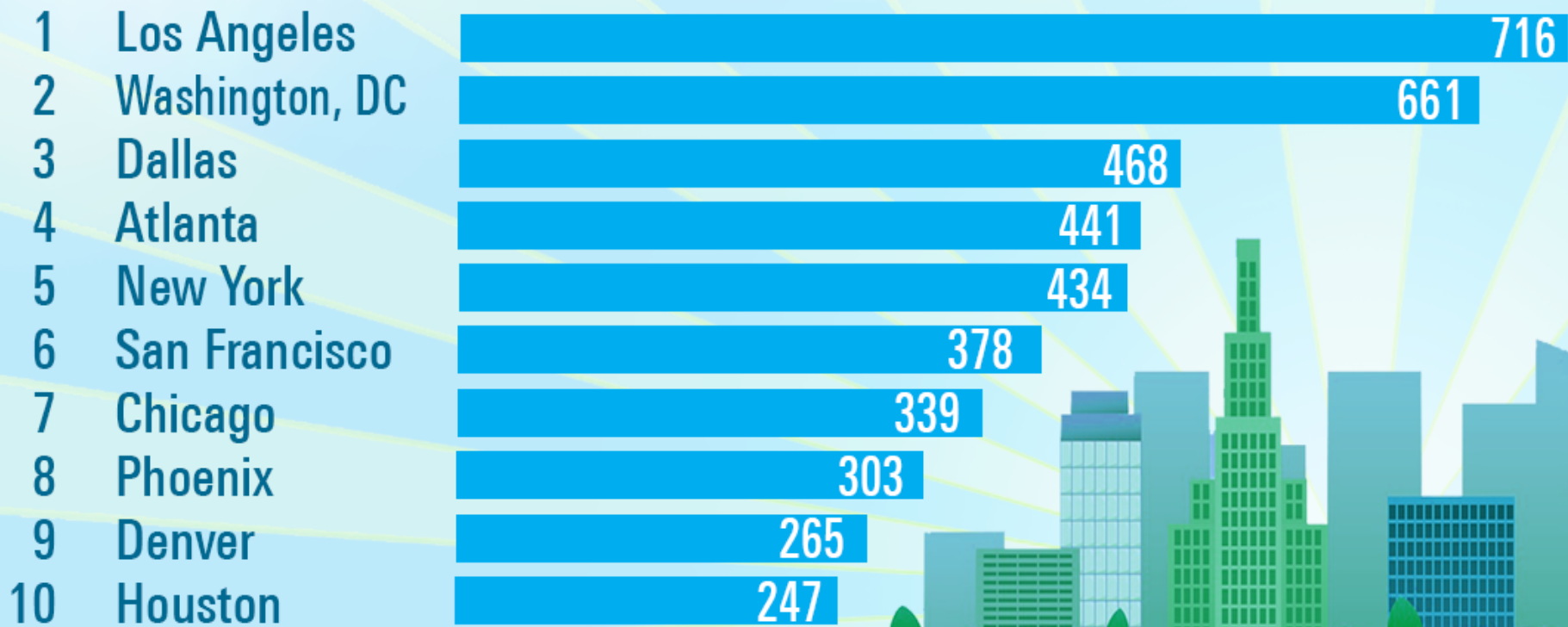


Air Quality

- ⚙️ Install more than 1,000 publicly available EV charging stations, with more than 100 (including DC fast chargers) on City property
- ✓ Expand alternative maritime power and alternative low-emission compliance mechanisms (e.g., stock on the stack) to 70% of ships calling at the Port of Los Angeles
- ✓ Execute four zero-emissions or PZEVs goods movement pilots within the Port of Los Angeles
- ✓ Develop and complete Clean Air Action Plan 2.0 at the Port of Los Angeles

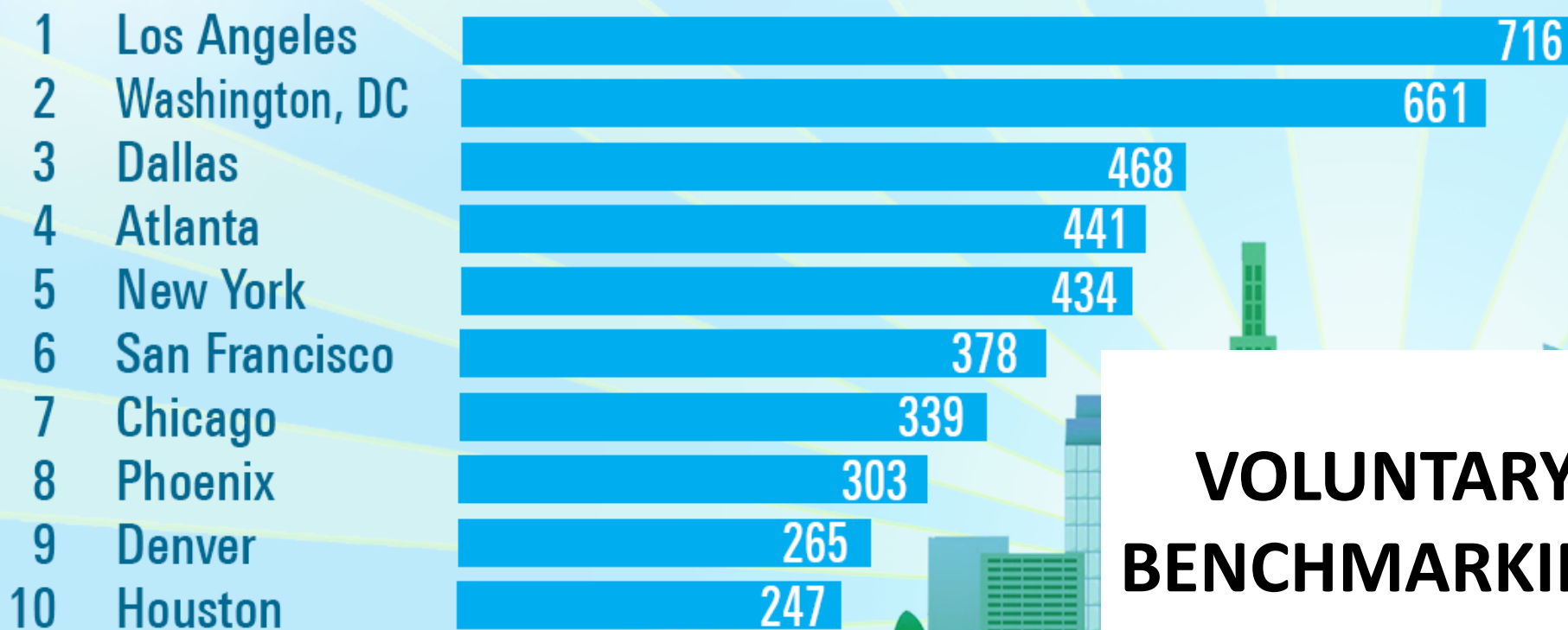


2018 TOP CITIES





2018 TOP CITIES



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Enter data into Portfolio Manager

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How Portfolio Manager calculates metrics

Interpret your results

Verify and document your savings

Share and request data

Updates to ENERGY STAR® metrics with new market data

Get help accessing your utility data

Tools and materials

Learn how Portfolio Manager helps you save

Portfolio Manager is an interactive resource management tool that enables you to track and assess energy and water use across your entire portfolio of buildings ... all in a secure online environment.

More importantly, it can help you implement every step of your energy management program, from setting a baseline and identifying which buildings to target to setting goals and tracking improvements. It's also the tool for getting recognition from EPA for your efforts.

Use it to help you save energy, save money ... and save the environment.

Manage energy and water consumption for any building

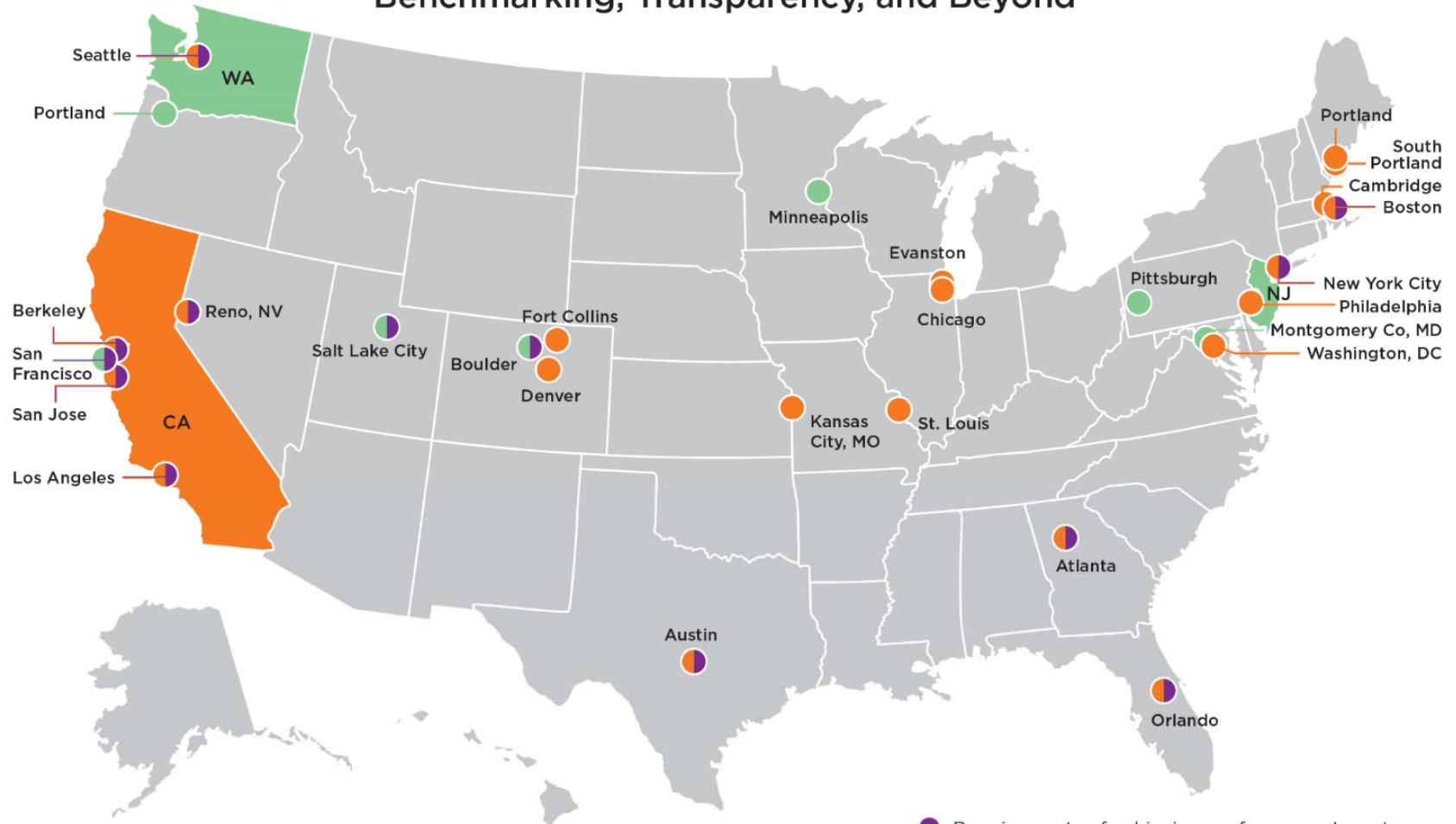
You can use Portfolio Manager to manage the energy and water consumption of any building. Simply enter your consumption data, cost information, and operational use details. Portfolio Manager will then help you track more than 100 different metrics. Use them to compare your building's performance against a yearly baseline, national medians, or similar buildings in your portfolio.

Already use a system? With Portfolio Manager's web services, you can easily integrate Portfolio Manager's metrics into your own tracking systems or commercial energy management services.

Compare your energy and water performance to similar buildings



Benchmarking, Transparency, and Beyond



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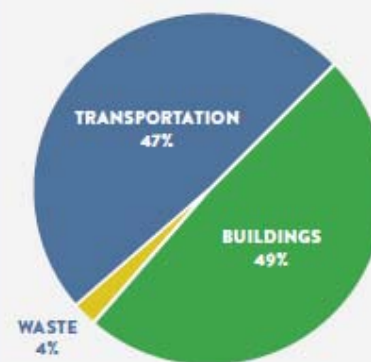
- Requirements of achieving performance targets or completing additional actions
- Benchmarking policy for public, commercial, and multifamily buildings adopted
- Benchmarking policy for public and commercial buildings adopted

Houston Community Greenhouse Gas Emissions

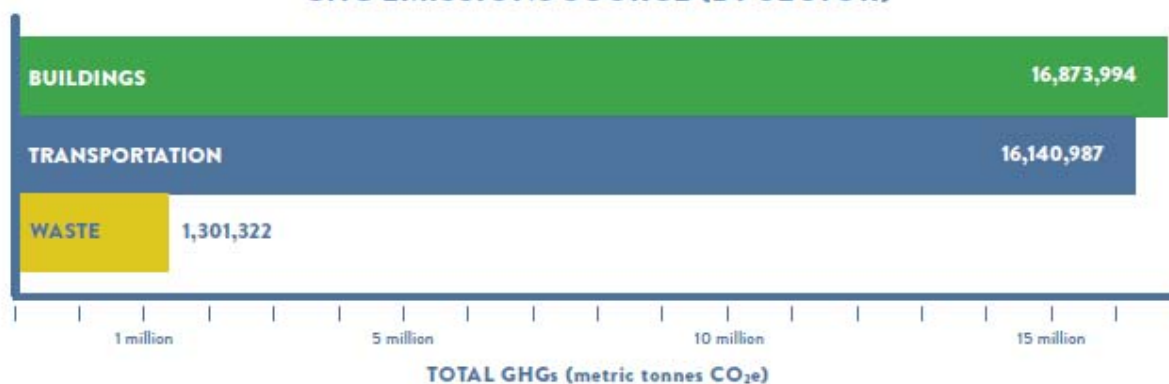
TOTAL ANNUAL EMISSIONS PER CAPITA
(Metric Tonnes CO₂e)



GREENHOUSE GAS
EMISSIONS SOURCES
HOUSTON 2014



GHG EMISSIONS SOURCE (BY SECTOR)



C40
CITIES

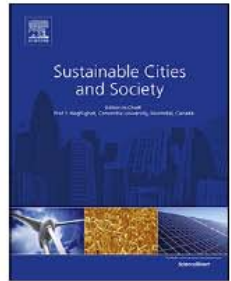
City	MSA Pop. Rank	C40 CAPs emissions per capita	C40 CAPs per capita Rank	29 CAPs per Capita Rank	29 CAPs Score	100 MA emissions per capita	Year CAPs adopted
San Francisco	13	5.9	1	8	73	9.8	2012
NYC	1	6.0	2	4	67	8.3	2014
Seattle	18	6.9	3	1	65	5.9	2013
Los Angeles	2	6.9	4	3	77	7.5	2007
Boston	21	9.1	5	5	65	8.9	2007
New Orleans *	49	9.4	6				2017
Portland	26	10.1	7	2	79	6.2	1993
Austin	11	10.4	8	6	78	9.4	2015
Washington D.C.	20	10.5	9	7	65	9.4	2016
Philadelphia	6	11.2	10	9	62	10.7	2015
Chicago	3	12.0	11	10	49	16	2008
Houston	4	14.9	12	11	50	26	2020



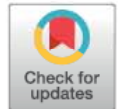
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Review of climate action plans in 29 major U.S. cities: Comparing current policies to research recommendations



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ARTICLE INFO

Keywords:

Cities and climate change
Decarbonization

ABSTRACT

This study reviews the research literature's recommendations on which policies a city can pursue to reduce its greenhouse gas emissions. Using these recommendations, we develop a multi-parameter, analytic scoring rubric for quantifying the comprehensiveness of a city's climate action policy plans. The scoring rubric is used to assess

22 Strategies

Essential

1) Building Quality

reduce lifetime emissions

2) Parking Restrictions

reduce availability & affordability

3) Dense Development

discourage sprawl

22 Strategies

Priority

4) Mass Transit

5) Automobile Independence

6) Non-motorized Transport

7) Mixed Land Use Zoning

8) Regional Planning

incorporate inner-city travel into transportation planning

9) Strategic Growth

encourage affordable housing for population growth

22 Strategies

Priority continued

10) Transparent Assessment

record, validate, & report energy consumption/emissions data

11) Consumption-based Analysis

Incorporate embedded emissions & energy into planning decisions

12) Consumer Habits

educate consumers on beneficial energy habits

13) Appliance Efficiency

14) Smart Grid Management

enable flexible controllable electricity demand

22 Strategies

Additional

- 15) Green Spaces
- 16) Architectural Form
- 17) District Energy Systems
- 18) Vehicle Electrification
- 19) Clean Power Sector
- 20) Local Renewables
- 21) Water Infrastructure
- 22) Solid Waste Emissions

City	MSA Pop. Rank	C40 CAPs emissions per capita	C40 CAPs per capita Rank	29 CAPs per Capita Rank	29 CAPs Score	100 MA emissions per capita	Year CAPs adopted
Seattle	18	6.9	3	1	65	5.9	2013
Portland	26	10.1	7	2	79	6.2	1993
Los Angeles	2	6.9	4	3	77	7.5	2007
NYC	1	6.0	2	4	67	8.3	2014
Boston	21	9.1	5	5	65	8.9	2007
Austin	11	10.4	8	6	78	9.4	2015
Washington D.C.	20	10.5	9	7	65	9.4	2016
San Francisco	13	5.9	1	8	73	9.8	2012
Philadelphia	6	11.2	10	9	62	10.7	2015
Chicago	3	12.0	11	10	49	16	2008
Houston	4	14.9	12	11	50	26	2020
New Orleans *	49	9.4	6				2017

Table 3

Each city's climate action plans (see the last column of Table 2) are measured against the scoring rubric in Table 1 to produce the following scores. The "% of Possible" numbers show the total scores in each row and column normalized to 100%.

	New York	Los Angeles	Chicago	Dallas	Houston	Washington D.C.	Philadelphia	Miami	Atlanta	Boston	San Francisco	Phoenix	Riverside	Detroit	Seattle
Essential policies															
Building quality	9	9	9	6	6	9	6	6	6	6	9	9	6	9	6
Parking restrictions	0	6	3	3	3	3	6	9	9	9	9	0	6	0	3
Dense development	3	9	0	0	6	3	6	6	0	3	0	0	3	0	9
Priority policies															
Mass transit	6	4	6	2	4	4	6	4	4	4	4	6	4	4	4
Automobile independence	6	6	4	4	4	4	2	4	4	4	6	2	4	4	6
Non-motorized transport	6	4	6	4	4	4	4	4	4	4	6	4	6	4	4
Mixed land use zoning	4	4	0	6	4	4	6	4	4	4	4	4	4	4	4
Regional planning	4	6	4	6	6	4	6	6	2	4	4	2	6	0	6
Strategic growth	4	4	0	2	2	4	4	6	4	4	2	0	2	2	2
Transparent assessment	4	4	4	4	2	4	4	4	4	4	6	4	4	4	4
Consumption-based analysis	0	0	0	0	0	0	0	0	0	0	2	2	0	2	2
Consumer habits	4	4	0	2	0	4	4	6	0	6	6	0	6	6	0
Appliance efficiency	4	6	2	4	4	4	4	2	4	4	4	4	4	4	4
Smart grid management	6	6	2	4	4	4	2	2	2	4	4	0	6	2	6
Additional policies															
Green spaces	3	3	3	2	2	3	2	2	2	3	3	3	3	2	2
Architectural form	2	2	2	2	1	3	1	3	1	2	1	2	2	3	1
District energy systems	1	0	0	0	0	3	0	2	0	0	3	3	2	0	2
Vehicle electrification	1	3	2	1	1	2	2	2	2	2	2	2	3	1	2
Clean power sector	2	2	2	2	2	2	1	1	1	2	3	2	2	1	3
Local renewables	3	3	2	2	2	2	2	2	2	3	3	1	3	1	3
Water infrastructure	3	2	3	2	1	3	1	1	2	1	1	0	3	1	0
Solid waste emissions	3	3	3	3	1	3	3	2	2	3	3	3	2	3	3
% of Possible	67	77	49	52	50	65	62	67	50	65	73	45	69	49	65

Table 3 (continued)

	Minneapolis	San Diego	Tampa	Denver	St. Louis	Charlotte	San Antonio	Portland	Pittsburgh	Las Vegas	Kansas City	Austin	Nashville	Milwaukee	% of Possible
Dense development	6	6	0	0	9	0	3	6	6	3	6	9	6	3	43
Priority policies															
Mass transit	4	4	4	6	6	4	4	4	4	4	4	4	4	4	72
Automobile independence	6	4	4	6	6	4	2	6	4	4	6	4	4	4	74
Non-motorized transport	4	6	4	6	6	2	6	6	4	4	4	4	4	6	77
Mixed land use zoning	4	4	2	4	4	2	4	6	4	4	2	4	4	2	63
Regional planning	2	0	4	4	0	4	4	4	2	4	2	6	4	6	64
Strategic growth	4	4	4	0	0	0	6	4	2	2	6	6	2	2	48
Transparent assessment	4	6	4	4	4	2	4	4	4	4	4	4	4	2	66
Consumption-based analysis	2	0	0	4	2	2	2	6	0	0	2	2	0	0	17
Consumer habits	2	4	4	6	4	4	6	6	6	6	6	6	4	6	68
Appliance efficiency	6	4	4	4	6	2	2	4	4	2	4	6	2	4	64
Smart grid management	4	4	2	6	4	0	4	2	4	0	0	6	0	2	53
Additional policies															
Green spaces	2	2	2	2	2	2	2	2	2	2	2	2	2	2	76
Architectural form	0	1	1	1	2	2	3	2	3	1	2	1	2	3	60
District energy systems	3	0	0	1	2	0	0	3	2	0	0	2	0	1	34
Vehicle electrification	2	3	2	2	3	1	3	3	3	2	1	2	1	1	66
Clean power sector	2	3	2	3	2	2	2	2	2	3	1	2	2	2	67
Local renewables	2	3	2	2	2	2	3	3	3	3	2	2	2	3	78
Water infrastructure	1	3	2	2	3	1	1	2	3	1	0	1	1	2	54
Solid waste emissions	3	3	3	2	2	3	3	3	3	2	2	3	3	2	89
% of Possible	64	65	50	66	72	38	62	79	68	49	56	78	51	56	

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Boston	21	9.1	5	5	65	8.9	2007
Washington D.C.	20	10.5	9	7	65	9.4	2016
Philadelphia	6	11.2	10	9	62	10.7	2015
Houston	4	14.9	12	11	50	26	2020
Chicago	3	12.0	11	10	49	16	2008
New Orleans *	49	9.4	6				2017

Environmental Research Letters



LETTER

An integrated approach for estimating greenhouse gas emissions from 100 U.S. metropolitan areas

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Keywords: climate change mitigation, greenhouse gas inventories, climate action plans, urban areas

Supplementary material for this article is available [online](#)

Abstract

Cities have become key players in climate change mitigation policy. To develop their climate policies

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City	MSA Pop. Rank	C40 CAPs emissions per capita	C40 CAPs per capita Rank	29 CAPs per Capita Rank	29 CAPs Score	100 MA emissions per capita	Year CAPs adopted
Seattle	18	6.9	3	1	65	5.9	2013
Portland	26	10.1	7	2	79	6.2	1993
Los Angeles	2	6.9	4	3	77	7.5	2007
NYC	1	6.0	2	4	67	8.3	2014
Boston	21	9.1	5	5	65	8.9	2007
Austin	11	10.4	8	6	78	9.4	2015
Washington D.C.	20	10.5	9	7	65	9.4	2016
San Francisco	13	5.9	1	8	73	9.8	2012
Philadelphia	6	11.2	10	9	62	10.7	2015
Chicago	3	12.0	11	10	49	16	2008
Houston	4	14.9	12	11	50	26	2020
New Orleans *	49	9.4	6				2017

City	MSA Pop. Rank	C40 CAPs emissions per capita	C40 CAPs per capita Rank	29 CAPs per Capita Rank	29 CAPs Score	100 MA emissions per capita	Year CAPs adopted
Portland	26	10.1	7	2	79	6.2	1993
Los Angeles	2	6.9	4	3	77	7.5	2007
Boston	21	9.1	5	5	65	8.9	2007
Chicago	3	12.0	11	10	49	16	2008
San Francisco	13	5.9	1	8	73	9.8	2012
Seattle	18	6.9	3	1	65	5.9	2013
NYC	1	6.0	2	4	67	8.3	2014
Austin	11	10.4	8	6	78	9.4	2015
Philadelphia	6	11.2	10	9	62	10.7	2015
Washington D.C.	20	10.5	9	7	65	9.4	2016
New Orleans *	49	9.4	6			30	2017
Houston	4	14.9	12	11	50	26	2020

Plans vs Reality





Daily Digest: San Francisco moves 'zero waste' goal posts; latest on Florence

AUTHOR

Cole Rosengren
@ColeRosengren

PUBLISHED

Sept. 18, 2018

SHARE IT



In the Daily Digest, the Waste Dive team rounds up insights and moments you may have missed.

"ZERO WASTE" BY [INSERT DATE HERE]

A growing number of cities have set "zero waste" targets, or at least espoused the ideal, in recent years. West Coast cities are often cited as the model, with San Francisco chief among them. The California city set its own target of achieving "zero waste" by 2020 all the way back in 2003. Now, with that mark fast approaching, San Francisco has quietly conceded they will not be hitting this goal.

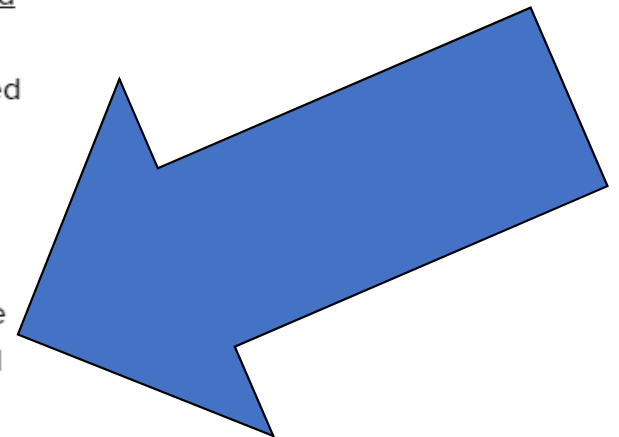
While others have since set their own targets of 2030 or beyond, San Francisco's was the first to come up by nature of its early adoption. This result won't necessarily come as a surprise to anyone that has been watching the city's efforts, as many have long questioned the math on claims of diversion rates surpassing 80%.

Though even if this could have been predicted, it still presents an interesting case study in shifting sustainability talking points. If you aren't going to hit your current target, then you might as well set a new one that can become the center of attention.

Mayor London Breed recently announced her city's commitment to a new global pledge from C40 that aims for a 15% reduction in waste generation and a 50% reduction in landfill disposal by 2030. Toward the bottom of this press release, San Francisco's Department of the Environment (SF Environment) mentioned 2003, but omitted any reference to 2020 and said the new pledge "will help the City set new waste reduction targets to effectively track the City's progress into 2030."

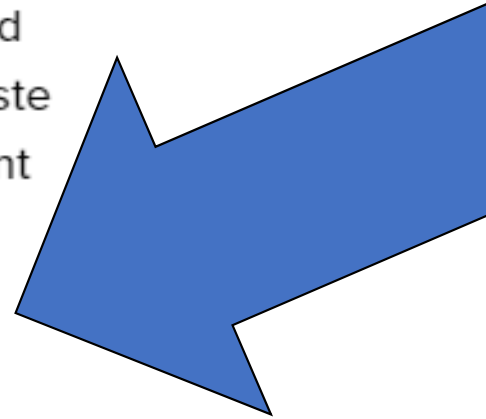
Earlier this spring, the San Francisco Board of Supervisors heard an update from SF Environment and Recology that recognized the 2020 goal would need to be updated. Presentations outlined areas to focus on, such as C&D or large generators, while also noting the current challenges caused by recycling market disruptions. Over the summer, Recology told Waste Dive it was still committed to maintaining an expanded list of accepted materials that was rolled out last year.

As noted in the spring, and highlighted by sharp local coverage from the San Francisco Examiner and Chronicle, one key issue is the city's landfill waste has been steadily rising since 2013. An estimated 60% of this material is recyclable or compostable.



Supervisor Ahsha Safai recently introduced a new ordinance that would require more than 500 of the city's largest generators to hire "zero waste facilitators" for at least two years if they were found to be non-compliant with existing separation guidelines. As is the case in any large city, diversion is often the most difficult in these commercial or multi-unit residential locations without the right systems in place. If passed, and enforced, that ordinance may well help move the needle closer to "zero waste."

Either way, the efforts of SF Environment and Recology are still above-and-beyond the average U.S. city and may serve as a useful model for others looking to expand their recycling efforts. Though the shifting benchmarks call into question whether the copious national press over the city's "zero waste" image is fully deserved and whether such targets are useful for anything beyond positive messaging if even this supposed paragon of sustainability can't achieve them.



In a Word:
Accountability



LOCAL // POLITICS

SF supervisors tell big buildings — City Hall included — to sort their trash



Trisha Thadani

| Dec. 4, 2018 | Updated: Dec. 4, 2018 8:47 p.m.



Trees are the Earth's way of soaking up our carbon.

If you wanted to plant enough new trees to absorb all the carbon people emit, guess how many you'd have to plant. Go ahead, guess.

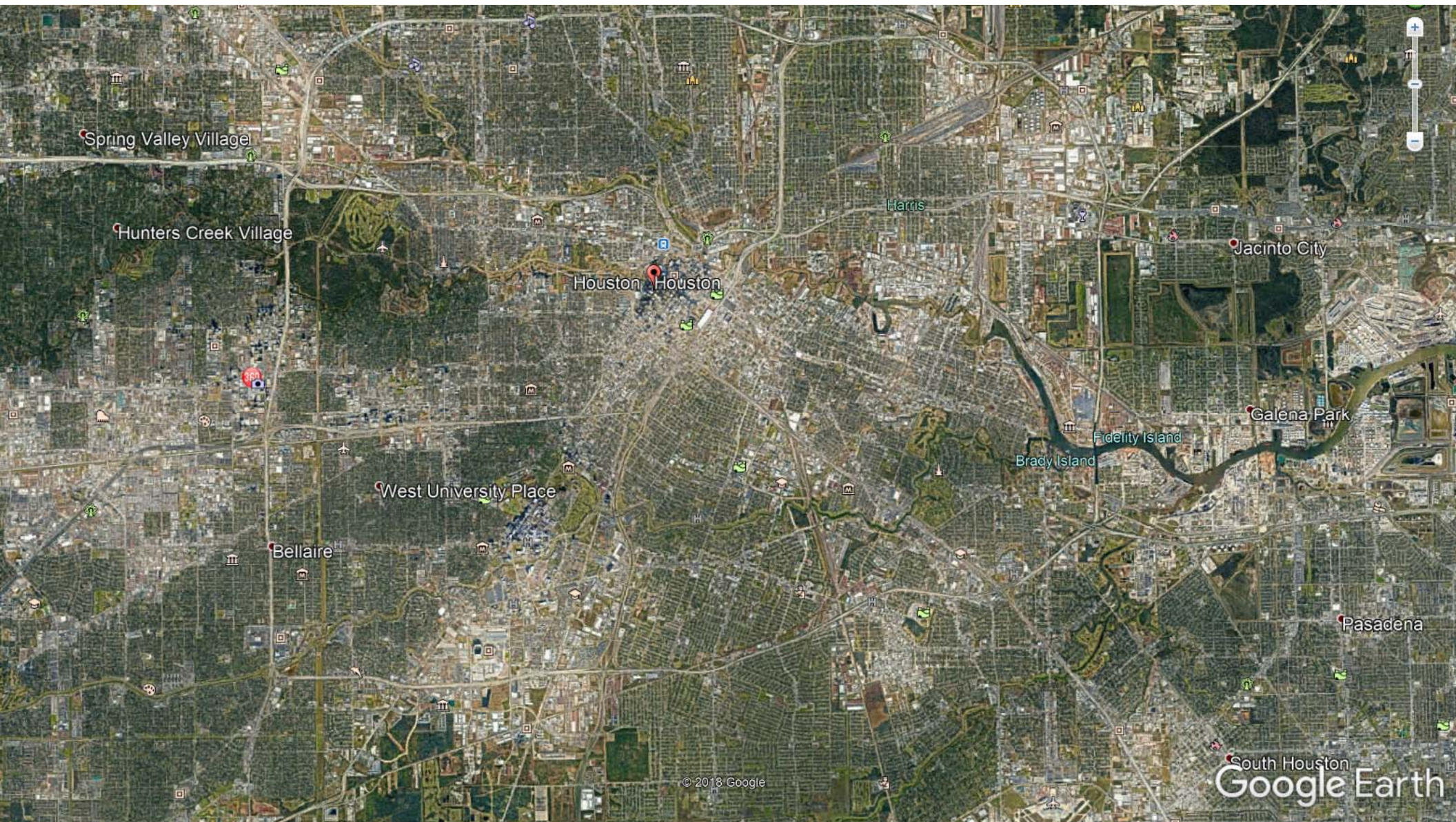




© Anan Kaewkhammul/Shutterstock

1.2 trillion new trees

At least, that's the number Thomas Crowther, a professor and scientific advisor to the UN, **came up with**. He and his colleagues used machine learning to calculate just how many trees we could plant to soak up our





Rice Military

© 2018 Google

Google Earth



Here's how the concerns stacked up. And for the record, the survey was offered in 14 languages, including all official languages of the United Nations.


1. Climate change / destruction of nature (48.8%)
2. Large scale conflict / wars (38.9%)
3. Inequality (income, discrimination) (30.8%)
4. Poverty (29.2%)
5. Religious conflicts (23.9%)
6. Government accountability and transparency / corruption (22.7%)
7. Food and water security (18.2%)
8. Lack of education (15.9%)
9. Safety / security / wellbeing (14.1%)
10. Lack of economic opportunity and employment (12.1%)

Subject: Garden work day


All,

We are having a work day this Saturday March 2nd from 8-11am at the HPC Picnic Garden.
If we get rained on we will plan for Saturday March 9th.

Hope to see you there!!



City of Houston Code Enforcement
1002 Washington Avenue
Houston, Texas 77002



www.houstonpermittingcenter.org



⊕ HPC - All Employees

FW: Garden work day

To be clear – since I have already been asked – this is not paid. It is a volunteer work day.



LIST OF LOCAL SOLAR INCENTIVES

The solar rebates and policies for the utility companies and cooperatives below are subject to change at any time. We strive to update this page regularly with the latest information and recommend that you contact your utility directly to confirm their current program.



American Electric Power (AEP)

AEP serves a multitude of cities in Texas including Corpus Christi, Abilene, McAllen, Harlingen, and others. AEP North offers a rebate of \$0.70 per watt, up to a total of \$90,000 for residential customers and \$73,590 for non-residential customers. AEP Central offers a rebate of \$0.70 per watt, up to a total of \$7,000 for residential customers and \$7,000 for non-residential customers. AEP operates in a competitive electricity market, so a net metering program would be handled by your retail electric provider (REP), if available. More incentives can be found on their [website](#).



Austin Energy

Austin Energy is currently offering a flat \$2,500 post-installation rebate for those that go solar, as well as net metering. Residential customers receive a Value of Solar credit on their monthly bill for every kilowatt-hour (kWh) of electricity generated by their solar PV system, at the current rate of 9.7 cents per kWh (effective January 1, 2018). Commercial net metering is available for systems under 20 kW-AC. Austin Energy also offers a community solar option for residential customers and a "Green Choice Plan", which are both great options for those that do not own their home but want to use clean electricity. More info can be found [here](#).



Bartlett Electric Cooperative

This co-op does not offer specific solar rebates but does offer several rebates for energy efficiency upgrades and homes. More info [here](#).



Brazos Electric Power Cooperative

Brazos serves multiple cities including Waco and Lubbock. They do not offer solar rebates. More info [here](#).



Bryan Texas Utilities (BTU)

BTU serves the city of Bryan. This utility does not offer rebates for solar customers but it does offer other rebates for energy efficiency. Find more info [here](#).



CenterPoint Energy

CenterPoint serves the Houston area. They do not offer a solar rebate. However, they do rebates to home builders, with more info [here](#).



Comanche Electric Cooperative

This co-op serves the Comanche area. They do not offer solar rebates or solar incentives. They do have specific information on how to connect solar systems [here](#).



Cooke Country Electric Cooperative

Cooke Country serves communities in the north central region of Texas. This co-op does not offer solar rebates but does offer other rebates for energy efficiency programs. Click [here](#) for more info.



CoServ Electric

CoServ serves Northern Texas and offers a periodic post-installation solar rebate on residential and commercial systems that is available from the announced start date until funds are depleted. The 2019 residential rebate starts on February 1st and has switched to a tiered structure this year. The first 4kW DC is rebated at \$0.40 per watt, \$0.30 per watt on the portion of the system between 4kW and 7kW, and \$0.20 per watt between 7kW and 10kW. The rebate is capped at \$3,100 per system. A commercial rebate is also available in 2019. Additional details will be posted as the become available, and you can learn more from CoServ [here](#).



CPS Energy

CPS serves the San Antonio area. There is an up-front solar rebate available for residential and commercial projects. As of December 1st, 2018, the residential rebate has changed to a flat incentive at \$2,500 per project, which will drop to \$1,500 per project when the current funding pool is fully allocated. The commercial solar rebate remains at \$0.60/watt up to \$80,000. Funds for both rebates are limited and available on a first-come, first-serve basis. There are some requirements, which can be found [here](#).



Denton Municipal Electric

Denton offers free energy audits and energy efficiency rebates as well as a solar incentive. The [solar rebate](#) varies between \$0.40 and \$0.80 per watt depending on the system size, up to \$30,000 and not to exceed 50% of the total installation cost, If the solar project includes battery storage, the rebate increases to between \$0.60 and \$1.20 per watt, The funds are limited, and the rebate is renewed each October.



El Paso Electric

El Paso Electric has energy efficiency programs, but no longer offer rebates on solar projects. More info can be found [here](#).



Engie Resources

Engie is a commercial retailer based in Houston. No solar rebates are offered currently, but they do offer [renewable energy certificates](#).



Entrust Energy

Entrust is a nationwide electric provider based in Houston. No solar rebates are provided currently. Click [here](#) for more information.



Fort Belknap Electric Cooperative

This co-op services multiple North Texas counties. There are no solar rebates or incentives offered at this time, but check back [here](#) for updated information.



Garland Power & Light

GP&L offers bill credits for those who install solar. The solar rebate of \$0.75 per watt, up to \$5,000 per system, is renewed every October and available until that year's funds runs out. Check back [here](#) for updated information.



Golden Spread Electric Cooperative

This utility, serving rural customers in West Texas and the Panhandle, does not offer rebates for solar panels or other energy efficiency incentives. Check [this page](#) for any updates.



Greenville Electric Utility System

Greenville does not offer solar rebates, but they do participate in net metering. Click [here](#) for more info.



Guadalupe Valley Electric Cooperative (GVEC)

GVEC offers a post-installation [solar rebate](#) of \$0.75 per watt up to \$3,000. GVEC also offers home energy efficiency rebates. Payment is delivered to the homeowner after the system passes inspection. This program will be ending on April 1, 2019. To be eligible for the rebate, your system must be installed by March 31st.



Hamilton County Electric Cooperative

Hamilton County does not offer solar rebates but does offer an option to use solar power through [distributed generation](#).



Heart of Texas Electric Cooperative

This co-op does offer multiple energy efficiency rebates, including a solar rebate of \$0.10 per watt on the solar installation. This [rebate](#) maxes out at \$500 per member.



HILCO Electric Cooperative

HILCO offers several rebates, including a solar installation rebate. Members who install solar are eligible to receive \$200 per kw, with a maximum of \$1000 per member. Click [here](#) for more information.



J-A-C Electric Cooperative

J-A-C operates in the northern region of the state. There are no solar rebates offered however. For more information, click [here](#).



Lower Colorado River Authority

LCRA is a utility cooperative that operates in the Austin area. There are currently no solar rebates but they do provide rebates, and are committed to using [renewable energy](#).



Luminant

Luminant, based in Dallas, does not offer solar rebates but does have information on their environmental practices [here](#).



Mid-South Synergy

Mid-South, a cooperative based in Navasota, offers a solar rebate on 20% of total construction costs up to \$2,000, as well as home improvement and energy efficiency rebates. More info can be found [here](#).



Navarro County Electric Cooperative

Navarro does offer some rebates but unfortunately, they have been used up for the year. Check back [here](#) for updated information.



Navasota Valley Electric Cooperative

Navasota does not offer solar rebates but does offer net metering. More information on their distributed generation policies can be found [here](#).



New Braunfels Utility (NBU)

New Braunfels Utility offers energy efficiency, water conservation, and solar [rebates](#). NBU pays the solar rebate of up to \$3,000 as a bill credit after system inspection.



Oncor Electric Delivery

Oncor offers a [residential solar rebate](#) in its territory, which covers much of the Dallas-Fort Worth metroplex, the I-35 corridor from DFW to the northern Austin suburbs, and other parts of North and West Texas. The rebate is calculated for each system using Oncor's calculator, but could be as high as \$5,000 for a 7.2-kilowatt SunPower system on an ideally suited Dallas. The solar rebate is renewed annually at the beginning of the year and tends to run out within a few months. Oncor also offers rebates for [commercial solar projects](#) and home energy efficiency projects.



Pedernales Electric Cooperative

PEC operates in the Hill Country. They do not offer solar rebates, but do participate in net metering. Find info [here](#).



South Plains Electric Cooperative

This co-op operates in the Lubbock area. There are no solar rebates offered with this coop but they have a helpful [page](#) with lots of information regarding solar power.



Texas New Mexico Power

TNMP operates in several areas of Texas. They do offer several energy efficiency rebates, but none specific to solar power. Check [here](#) for more details.



Tri-County Electric Cooperative

This co-op in the Dallas Fort Worth area offers a efficient water heater [rebate](#), but does not offer a solar power rebate.



United Cooperative Services

United offers several rebate programs for energy efficiency efforts and has a community solar program. While there are no rebates offered at the moment for solar panel installation, check back [here](#) for updated information.



Wise Electric Cooperative

Wise operates in the north central region of Texas. There are no solar rebates offered currently, but multiple [rebates](#) are offered for energy efficiency.

1,294

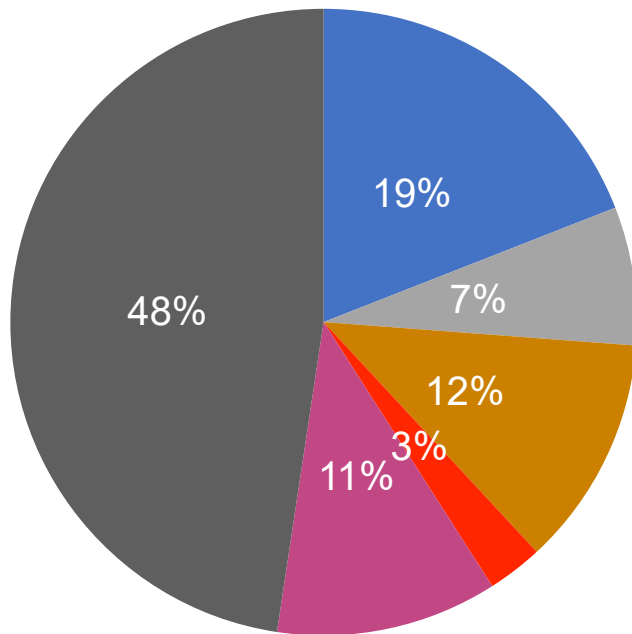
megawatts

of community solar have been installed in the
U.S. through Q3 2018

Coffee Footprint

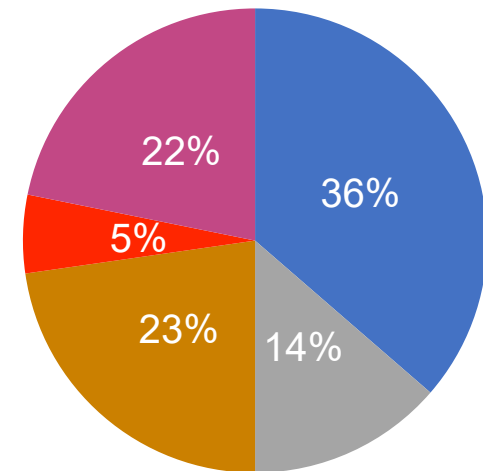
Lbs of CO2 per pound of Coffee

■ Farm ■ To Ship ■ Mill
■ Shipping ■ Roasting ■ Coffee Shop



Coffee Shop Coffee: 10.5 lbs CO2

■ Farm ■ To Ship ■ Mill
■ Shipping ■ Roasting



Home Coffee: 5.5 lbs CO2

Coffee Footprint

40 cups from a pound of coffee

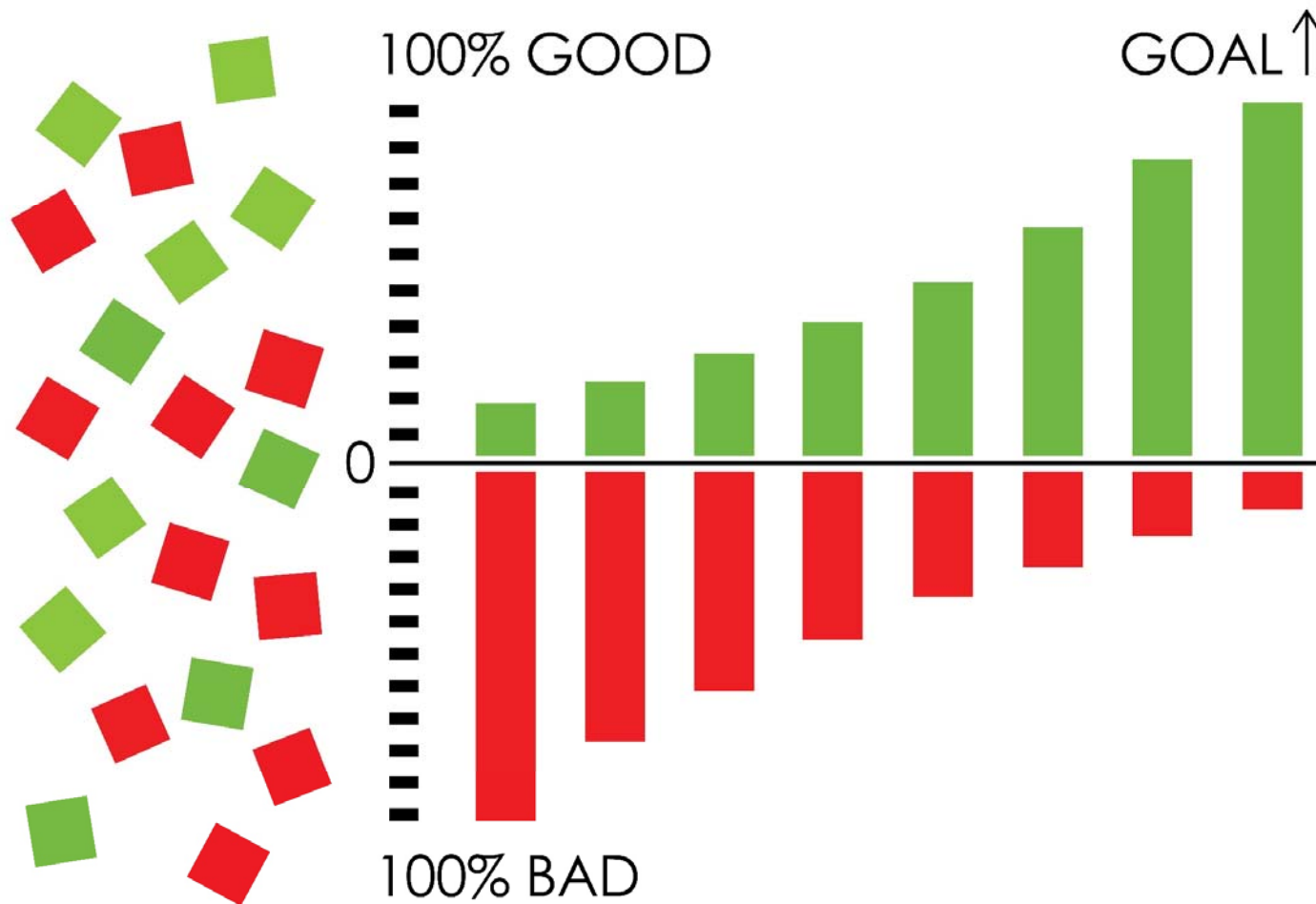
Coffee Shop-Coffee: 10.5 lbs
0.263 lbs CO₂ / cup

Home Coffee: 5.5 lbs
0.137 lbs CO₂ / cup

Gasoline = 20 lbs CO₂ per gallon
16 cups per gallon = 1.25 lbs CO₂ per cup

4.75 cups of coffee-shop coffee = a cup of gasoline
of CO₂

THE UPCYCLE CHART: Continuous Improvement



INVENTORY

ASSESS

OPTIMIZE

©2015 MBDC, LLC. We welcome proper use of this chart. For use, please contact Ken Alston (ken@mbdc.com).



CURB

ustainability (CURB) - scenario planning tool
data-driven scenario planning tool that
out the future of their energy, transport
ultimately result in higher greenhouse gas

acts of GHG mitigation initiatives in

CURB Tool

SUNNYSIDE
MULTI-SERVICE CENTER





MAXIMUM
OCCUPANCY
50
AUDITORIUM
AUDITORIUM



CLIMATE ACTION PLAN

GOAL: CARBON NEUTRAL BY 2050

WHY DO WE NEED A CLIMATE ACTION PLAN?

After three 500-year floods in as many years coinciding with the largest sea-level rise in North America, Houston's climate change is an environmental challenge for Houston. Sustainability and resiliency go hand-in-hand and this plan is essential to the health and economic vitality of Houston's future. The time for bold action is now.

Developing a Climate Action Plan allows the City to develop strategies that will:

- Decrease traffic congestion
- Increase air quality
- Provide better access to green space
- Improve quality of life
- Reduce costs through energy efficiency and renewable energy

TOTAL ANNUAL EMISSIONS PER CAPITA (Metric Tons CO₂e)

City	Annual Emissions per Capita (Metric Tons CO ₂ e)
Houston	14.5
San Francisco	10.5
Los Angeles	10.0
New York City	9.5
Chicago	9.0
London	6.0

GREENHOUSE GAS EMISSIONS SOURCES HOUSTON 2014

Source	Percentage
Buildings	41%
Transportation	37%
Waste	4%
Industry	1%
Electricity	1%

GHG EMISSIONS SOURCE (BY SECTOR)

Sector	Annual Emissions (Metric Tons CO ₂ e)
Buildings	14,572,000
Transportation	14,572,000
Waste	1,457,200
Industry	145,720
Electricity	14,572

TOTAL GHGs (Metric Tons CO₂e)

TIMELINE

Phase	Timeline
PLAN	FALL 2018
MODEL	WINTER 2018
ENGAGE	FALL 2019
COMPLETE	WINTER 2019
IMPLEMENT	SPRING 2020

GET ENGAGED AND LEARN MORE

<http://bit.ly/HOUSTON-CAP>
EMAIL: GREENHOUSTON@HOUSTONTX.GOV
@GREENHOUSTONTX





Policy/Program	Sector	Sub-sector	Impact on Equity - Positive, Negative, Neutral	Likelihood of Adoption - High, Medium or Low	Adoption Rate - High, Medium or Low	Time Frame - Short-term; Mid-term or Long-Term	Lead Implementation Organization (City, County, Private Sector, etc.)	Barriers to Success
Develop solar purchase aggregate program similar to Solarize Houston with HREG	Decarbonization	Renewable Energy					City of Houston	
Implement solar ready education program to help consumers improve buying decisions for solar roof-top installations (commercial and residential)	Decarbonization	Renewable Energy					City of Houston/ Private Sector	
Continuous improvement of building codes and permitting for solar + battery installations in residential and commercial properties; solar ready homes	Decarbonization	Renewable Energy					City of Houston/ Private Sector	
Encourage green space/trees in new development by updating land-use ordinance	Decarbonization	Green Infrastructure					City of Houston/ Private Sector	
Work with community partners to increase rate of tree planting	Decarbonization	Green Infrastructure					City of Houston/ Private Sector	
Implement brownfield to green space/park program	Decarbonization	Green Infrastructure					City of Houston	
Promote District Energy/Microgrid development for new development of green and brownfield sites	Decarbonization	Renewable Energy					City of Houston	





Policy/Program	Sector	Sub-sector	Impact on Equity - Positive, Negative, Neutral	Likelihood of Adoption - High, Medium or Low	Adoption Rate - High, Medium or Low	Time Frame - Short-term; Mid-term or Long-Term	Lead Implementation Organization (City, METRO, County, TxDOT, Private Sector, etc.)	Barriers to Success
Deploy City-wide electric vehicle (EV) charging network	Transportation	Electric Personal Vehicle s					Private Sector, City of Houston	
Factor air quality and GHG improvements into fleet procurement	Transportation	Mass Transit					METRO, Private Sector, City of Houston	
Reduced toll-road fees for EVs	Transportation	Electric Personal Vehicle s					TxDOT/Harris County	
Free EV charging at public stations	Transportation	Electric Personal Vehicle s					METRO/COH	
Preferred access to travel lanes, parking for EVs	Transportation	Electric Personal Vehicle s					COH/TxDOT/County	
Promote EV consumer education	Transportation	Electric Personal Vehicle s					COH/Private Sector	
Plan and implement more bus rapid transit (BRT)	Transportation	Mass Transit					COH/METRO/Management Districts	
Fast-track permitting for EV taxi, limo, and charter services	Transportation	Mass Transit					COH	
Change City of Houston parking ratios/requirements	Transportation	Parking Management					COH	
Integrate additional mixed-use and transit-oriented development (TOD) concepts in planning ordinance - Chapter 42	Transportation	Mobility					COH	
Adjust parking fees (congestion pricing) and/or adjust availability of parking to reduce traffic congestion	Transportation	Parking Management					COH/Private Sector	
Change TIRZ and Management District funding strategy to focus more on traffic infrastructure to reduce congestion	Transportation	Mobility					COH	
Conduct VMT reduction campaigns; such as Flex in the City	Transportation	Mobility					COH/Private Sector	
Expand Bike Sharing program to entire City	Transportation	Mobility					City of Houston	
Expand and improve bicycle infrastructure	Transportation	Mobility					City of Houston	
Expand and improve walking infrastructure	Transportation	Mobility					COH/County	



Policy/Program	Sector	Sub-sector	Impact on Equity - Positive, Negative, Neutral	Likelihood of Adoption - High, Medium or Low	Adoption Rate - High, Medium or Low	Time Frame - Short-term; Mid-term or Long-Term	Lead Implementation Organization (City, County, Private Sector, etc.)	Barriers to Success
Expand single stream recycling program for Houston residents	Waste	Solid Waste					City of Houston	
Organic Waste Diversion - develop city-wide compost/yard waste program for Houston	Waste	Solid Waste					City of Houston	
Implement commercial and residential waste reduction program	Waste	Solid Waste					City of Houston/ Private Sector	
Implement program to improve material reuse and circularity	Waste	Solid Waste					City of Houston/ Private Sector	
Expand construction and demolition debris recycling	Waste	Solid Waste					City of Houston/ Private Sector	
Implement carbon capture and sequestration systems at landfills.	Waste	Solid Waste					City of Houston/ Private Sector	
Expand City government recycling and green purchasing	Waste	Solid Waste					City of Houston	



Can Houston become a 'zero-waste' city?

Written by Jacqueline Havelka

Published: 13 August 2018



Waste headed for the landfill.

As the nation's fourth largest city, can Houston become a zero-waste city? Other Texas cities, like San Antonio, Austin and Dallas have long-term solid waste policies to try to reduce the trash going into landfills by as much as 90 percent.

Houston is certainly taking steps in the zero-waste direction. In January, the city approved a new contract with environmental services company Fomento de Construcciones y Contratas, Inc. (FCC) to build a zero-waste Multiple Recycling Facility similar to the one they did in Dallas. Dallas' goal is to achieve increased waste

diversion away from landfills over the next 20 years – 40 percent by 2020, 60 percent by 2030, and 80 percent zero waste by 2040. By comparison, the current national average for waste diversion is 34 percent. Houston's facility will be larger, with a 35-ton-per-hour throughput.

Fomento de Construcciones y Contratas CEO Inigo Sanz said in a June 28 press conference, "We're looking forward to building this magnificent facility for this city. It will be the flagship of our facilities."

Houston's new \$20 million facility is designed to sort curbside single-stream residential recyclable material for the next 15 years. The contract will cost the city \$57 million, and provides an option for a five-year extension. The facility is completely funded by FCC, with no cost to the city. In fact, the city does not own or operate any MRFs; they are all operated by companies contracted to the city. The brokerage of the waste products are left to FCC; the city does not get involved in selling the recycled waste. FCC will move its current U.S. headquarters from The Woodlands to the new facility.

While zero-waste advocate groups like Texas Campaign for the Environment say Houston is taking steps in the right direction, the city has a long, long way to go to achieve zero waste. Houston has a current diversion rate of approximately 20 percent, meaning 20 percent of trash items are repurposed for other uses. That means 80 percent of the city's waste still ends up in the landfill. Of the 20 percent that never makes it to the landfill, 13 percent is from the city's mandatory yard waste compost bags; these bags break down and the yard waste decomposes. The remaining 6 to 7 percent comes from recycling, and that could be a much greater amount given the size and population of the city.



In 2013, Houston expanded the budget to increase its single-stream traditional recycling program to expand curbside pickup across the city. The city says it is critical for all Houstonians to commit to minimizing waste, but that educating the public has been challenging due to resource limitations. As part of the new contract with the city, FCC has pledged to dedicate \$1 million toward public education efforts. The city and FCC both will depend on local groups such as Keep Kingwood Green to help promote recycling in their specific areas.

Despite the 2013 curbside recycling expansion, three short years later, in 2016, several city council members wanted to suspend the recycling program due to a \$150 million shortfall in the city budget. Advocate groups rallied Houstonians and thousands spoke out to save curbside recycling. The city kept the program by reaching a temporary two-year contract. The downside was that glass was eliminated from the recycling program. The contractor at the time, Waste Management, was netting about 1,000 tons a month of glass recycling, which they then provided to Strategic Materials, North America's largest glass recycling company.

Once curbside glass was halted, Waste Management was only getting 10 to 20 percent of that. The rest ends up in landfills. When the new FCC center is completed in March 2019, glass curbside recycling will resume shortly thereafter, according to the city's Solid Waste Department public information officer Irma Reyes. The Keep Kingwood Green group says that Kingwood residents fill two large bins with glass each weekend, but many opponents of the city's decision to curb curbside glass say that the 10 centers are not conveniently located. Furthermore, Texas Campaign for the Environment says that the city's numerous apartment complexes have no access to recycling of any kind. All of these factors combined mean that most of the city's glass is still ending up in landfills.

Once the city adds glass back to the bin, that move will be another major step along the road to becoming a zero-waste city. But ultimately, how will the city accomplish this gargantuan task?

One of the main drivers to the zero-waste effort is cost. Waste Management's two-year temporary contract with the city just ended, and they were charging the city approximately \$92 per ton as the cost to recycle. Five companies submitted bids, but FCC's bid was lower at about \$87 per ton, and they ultimately won the 15-year contract. In selecting FCC, the city turned down a bid from Waste Management, North America's largest hauler and multiple-recycling-facility operator. Houston Mayor Sylvester Turner said that FCC offers 100 new jobs, state-of-the-art technology, and a cap of what the city will pay (\$25 per ton) if the market were to turn down. FCC is even loaning the city \$2.4 million to buy a new fleet of eight collection trucks; the city's current aging fleet is eight years old on average. The new facility will even be able to process commercial material in the future.

"Quite frankly, it's a very, very, very good deal," Turner said. "We will never pay more for recycling than the current cost of landfilling trash in the Houston market," Turner explained. The city budget is \$2.9 million a year without glass, and FCC's proposed cost is \$1.6 million with glass, thus representing a significant cost savings for the city.

Part of Waste Management's \$92 per ton fee was obtaining compensation from the city for its contract prior to 2016, in which the company said it was losing money when commodity sales fell short of covering processing costs. Houston represents the eighth large U.S. city to award FCC a contract in the last two years. FCC already has a city contract to remove biosolids and sewage sludge.

Another driver is coverage. Reyes explained that the City of Houston collects only a portion of waste in the Houston area. For example, in Kingwood, the city collects 7,230 homes, according to Reyes. The rest are covered by private vendors selected by HOAs, and some neighborhoods in Houston don't recycle at all. Houston-wide, the city provides curbside recycling to nearly 400,000 households.

Another driver is the ability to recycle special items, a program the U.S. Environmental Protection Agency calls "sustainable materials management," in addition to the normal plastic and paper items. Keep Kingwood Green offers BOPA (batteries, oil, paint, antifreeze) and unused or expired prescription medication recycling twice per year, typically in April and November. The prescription medication recycling is particularly important because it keeps these substances away from children and pets, helps prevent drug abuse, and also helps prevent water pollution. More information can be found at <http://keepkingwoodgreen.org/bopa-event/>. The city partners with special recyclers who handle hazardous products and e-waste.



One of the largest problems that cities of all sizes have is the recycling of food and organic waste. Various experts estimated that about one-third of what ends up in landfills is this organic waste, which then becomes responsible for nearly 20 percent of America's greenhouse gas emissions. Towns like Wake County in North Carolina have begun piloting composting projects, where residents can drop off organic waste like food scraps, cooked meats, eggs, vegetables and fruits, and paper items like plates, napkins, tea and coffee grounds, and pizza boxes. The biggest issue Wake County has is residents dropping off non-allowed items like raw meats and other recyclables.

Illegal dumping is a huge problem in a city of Houston's magnitude. In 2016, the city launched a plan to catch the perpetrators. That program, which costs about \$600,000 per year, has resulted in about 400 arrests so far, and the city recently added additional cameras and even drones to better keep up with violators. Many Houstonians assume that contractors are the biggest culprits, looking to circumvent fees to properly dispose of contractor waste, particularly with massive construction still going on one year after the aftermath of Hurricane Harvey. However, contractors make up only 20 percent of the violations; the other 80 percent of violators are private citizens. Even with all the city's efforts, they catch a minuscule amount of the illegal dumpers.

To truly have a successful zero-waste program, many cities which have already embarked on that path say that better packaging design is a must-have for the effort to be successful. Efforts like reducing the prevalence of single-use bags and degradable packages that break down are much needed across America.

Who is to blame for why Houston doesn't recycle more? Some blame China, as explained in The Tribune's first part of this two-part article (ourtribune.com/headlines/20754-a-rash-of-recycling.html). Some Houstonians blame the city, saying they're not doing enough or diverting trash to landfills when residents think it is being recycled.

"We (the city) can guarantee that material collected by the city is handled properly as we promised the public it would be," said Reyes.

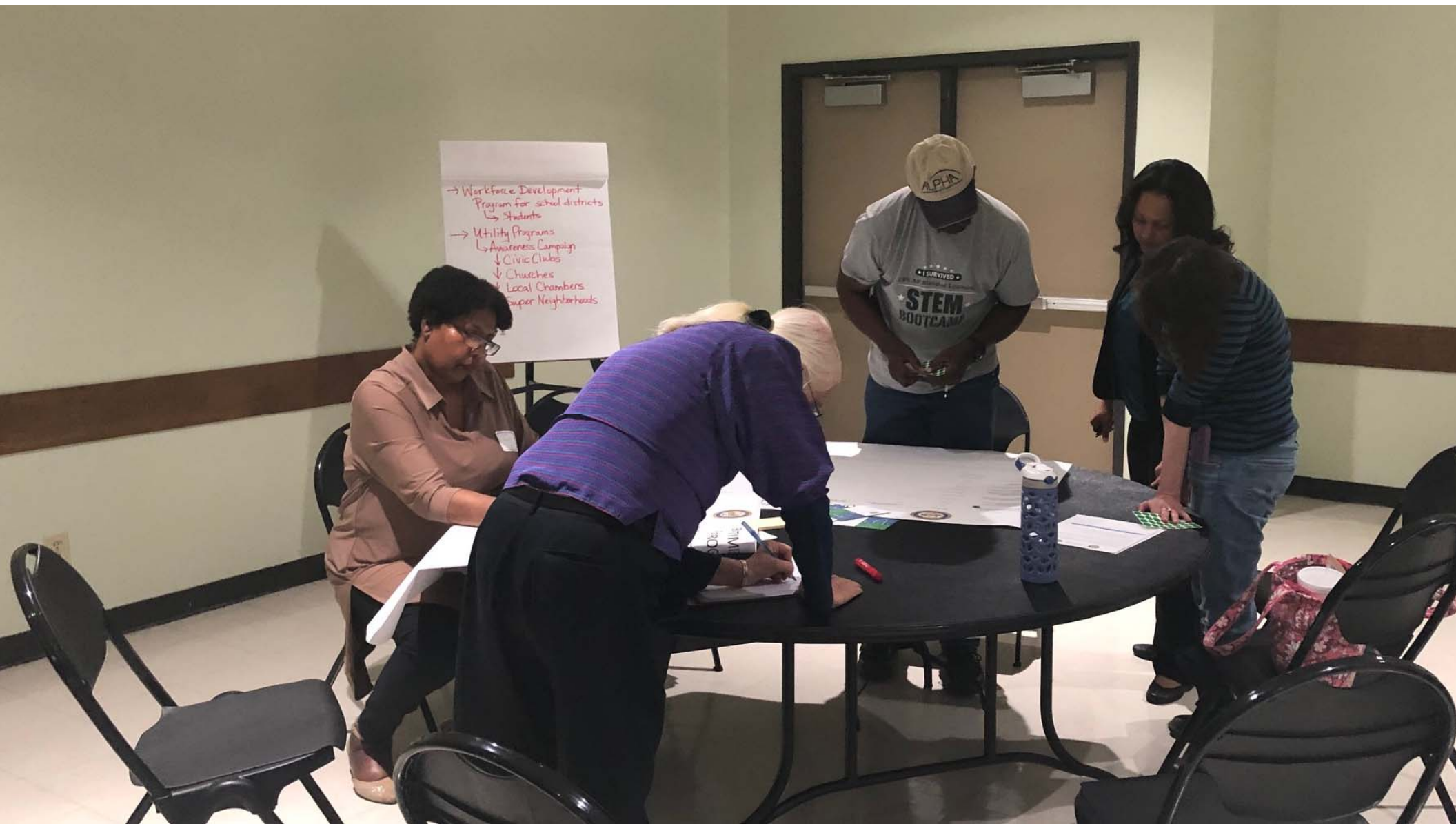
While there was a brief, 2.5-month hiatus of recycling after Hurricane Harvey, the city resumed its normal operations in November 2017, according to Reyes. When it comes down to it, any city's recycling effort largely depends on its citizens to do the right things.



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I am a rocket scientist turned writer. I worked at Lockheed Martin-Johnson Space Center for many years managing experiments on the Space Station and Shuttle, and I now own my own firm, Inform Scientific, specializing in technical and medical writing and research program management. I am a contributing correspondent to The Tribune, a Kingwood resident for 12 years, and proud mom to two Aggie sons.

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Policy/Program	Sector	Sub-sector	Impact on Equity - Positive, Negative, Neutral	Likelihood of Adoption - High, Medium or Low	Adoption Rate - High, Medium or Low	Time Frame - Short-term; Mid-term or Long-Term	Lead Implementation Organization (City, County, Private Sector, etc.)	Barriers to Success
Ensure building codes (IECC, etc.) are continually enforced and updated working toward net zero for all new buildings and major renovations	Building Optimization	Codes					City of Houston	
Build out and promote financing programs, such as PACE, that promote resource efficiency and conservation	Building Optimization	Retrofits					Private Sector	
Promote and educate building owners/operators on Energy Management System (ISO 50001) standards	Building Optimization	Energy Management					City of Houston /Private Sector	
In coordination with community colleges develop building operator/facility manager training program	Building Optimization	Energy Management					City of Houston/Community	
Implement residential and commercial water conservation program	Building Optimization	Water					City of Houston	
Develop and promote reclaimed water use for irrigation	Building Optimization	Water					City of Houston	
Develop and promote water efficient landscaping program	Building Optimization	Water					City of Houston	
Update utility rebate and incentive programs on annual basis to provide support for clean energy measures that would result in greatest GHG reduction potential	Building Optimization and Decarbonization	Clean Energy					City of Houston/CenterPoint	
Develop voluntary building benchmarking and energy auditing program that complements utility incentive program	Building Optimization and Decarbonization	Clean Energy					City of Houston / Private Sector	
Implement City-wide weatherization program to reduce energy burden of low income populations	Building Optimization	Retrofits					City of Houston /CenterPoint	
Improve efficiency of wastewater and water treatment operations	Building Optimization	Infrastructure					City of Houston	
More Inspectors								

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Resolved, That it is the sense of the House of Representatives that—

(1) it is the duty of the Federal Government to create a Green New Deal—

- (A) to achieve net-zero greenhouse gas emissions through a fair and just transition for all communities and workers;
- (B) to create millions of good, high-wage jobs and ensure prosperity and economic security for all people of the United States;
- (C) to invest in the infrastructure and industry of the United States to sustainably meet the challenges of the 21st century;
- (D) to secure for all people of the United States for generations to come—
 - (i) clean air and water;
 - (ii) climate and community resiliency;
 - (iii) healthy food;
 - (iv) access to nature; and
 - (v) a sustainable environment; and
- (E) to promote justice and equity by stopping current, preventing future, and repairing historic oppression of indigenous peoples, communities of color, migrant communities, deindustrialized communities, depopulated rural communities, the poor, low-income workers, women, the elderly, the unhoused, people with disabilities, and youth (referred to in this resolution as “frontline and vulnerable communities”);



(2) the goals described in subparagraphs (A) through (E) of paragraph (1) (referred to in this resolution as the “Green New Deal goals”) should be accomplished through a **10-year national mobilization** (referred to in this resolution as the “Green New Deal mobilization”) that will require the following goals and projects—

(A) building resiliency against climate change-related disasters, such as extreme weather, including by leveraging funding and providing investments for community-defined projects and strategies;

(B) repairing and upgrading the infrastructure in the United States, including—

(i) by eliminating pollution and greenhouse gas emissions as much as technologically feasible;

(ii) by guaranteeing universal access to clean water;

(iii) by reducing the risks posed by climate impacts; and

(iv) by ensuring that any infrastructure bill considered by Congress addresses climate change;

(C) meeting 100 percent of the power demand in the United States through clean, renewable, and zero-emission energy sources, including—

(i) by dramatically expanding and upgrading renewable power sources; and

(ii) by deploying new capacity;

(D) building or upgrading to energy-efficient, distributed, and “smart” power grids, and ensuring affordable access to electricity;

(E) upgrading all existing buildings in the United States and building new buildings to achieve maximum energy efficiency, water efficiency, safety, affordability, comfort, and durability, including through electrification;

(F) spurring massive growth in clean manufacturing in the United States and removing pollution and greenhouse gas emissions from manufacturing and industry as much as is technologically feasible, including by expanding renewable energy manufacturing and investing in existing manufacturing and industry;



- (G) working collaboratively with farmers and ranchers in the United States to remove pollution and greenhouse gas emissions from the agricultural sector as much as is technologically feasible, including—
- (i) by supporting family farming;
 - (ii) by investing in sustainable farming and land use practices that increase soil health; and
 - (iii) by building a more sustainable food system that ensures universal access to healthy food;
- (H) overhauling transportation systems in the United States to remove pollution and greenhouse gas emissions from the transportation sector as much as is technologically feasible, including through investment in—
- (i) zero-emission vehicle infrastructure and manufacturing;
 - (ii) clean, affordable, and accessible public transit; and
 - (iii) high-speed rail;
- (I) mitigating and managing the long-term adverse health, economic, and other effects of pollution and climate change, including by providing funding for community-defined projects and strategies;
- (J) removing greenhouse gases from the atmosphere and reducing pollution by restoring natural ecosystems through proven low-tech solutions that increase soil carbon storage, such as land preservation and afforestation;
- (K) restoring and protecting threatened, endangered, and fragile ecosystems through locally appropriate and science-based projects that enhance biodiversity and support climate resiliency;
- (L) cleaning up existing hazardous waste and abandoned sites, ensuring economic development and sustainability on those sites;
- (M) identifying other emission and pollution sources and creating solutions to remove them; and
- (N) promoting the international exchange of technology, expertise, products, funding, and services, with the aim of making the United States the international leader on climate action, and to help other countries achieve a Green New Deal;



- (3) a Green New Deal must be developed through transparent and inclusive consultation, collaboration, and partnership with frontline and vulnerable communities, labor unions, worker cooperatives, civil society groups, academia, and businesses; and
- (4) to achieve the Green New Deal goals and mobilization, a Green New Deal will require the following goals and projects—
- (A) providing and leveraging, in a way that ensures that the public receives appropriate ownership stakes and returns on investment, adequate capital (including through community grants, public banks, and other public financing), technical expertise, supporting policies, and other forms of assistance to communities, organizations, Federal, State, and local government agencies, and businesses working on the Green New Deal mobilization;
 - (B) ensuring that the Federal Government takes into account the complete environmental and social costs and impacts of emissions through—
 - (i) existing laws;
 - (ii) new policies and programs; and
 - (iii) ensuring that frontline and vulnerable communities shall not be adversely affected;
 - (C) providing resources, training, and high-quality education, including higher education, to all people of the United States, with a focus on frontline and vulnerable communities, so that all people of the United States may be full and equal participants in the Green New Deal mobilization;
 - (D) making public investments in the research and development of new clean and renewable energy technologies and industries;
 - (E) directing investments to spur economic development, deepen and diversify industry and business in local and regional economies, and build wealth and community ownership, while prioritizing high-quality job creation and economic, social, and environmental benefits in frontline and vulnerable communities, and deindustrialized communities, that may otherwise struggle with the transition away from greenhouse gas intensive industries;



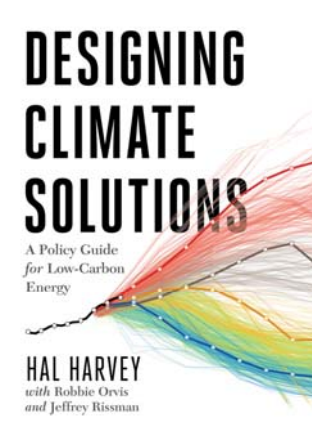
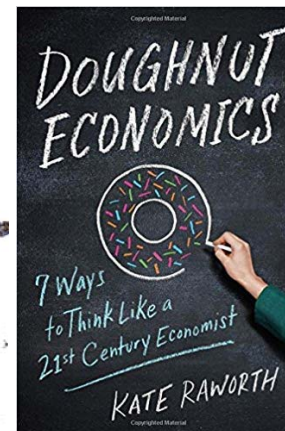
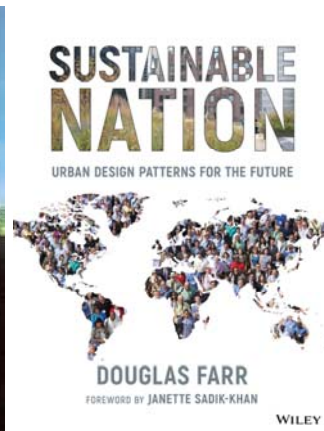
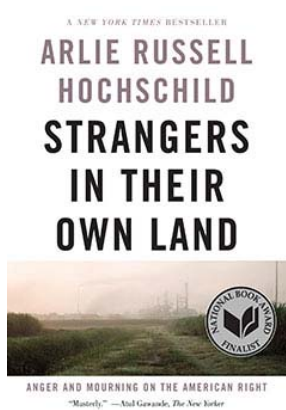
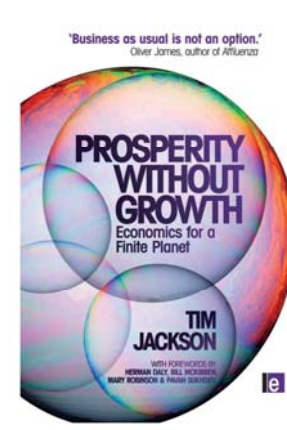
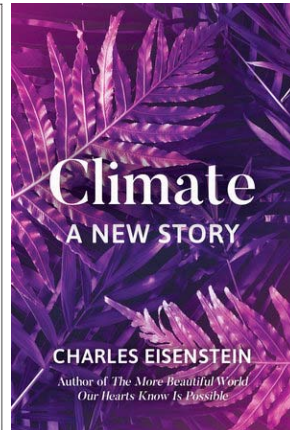
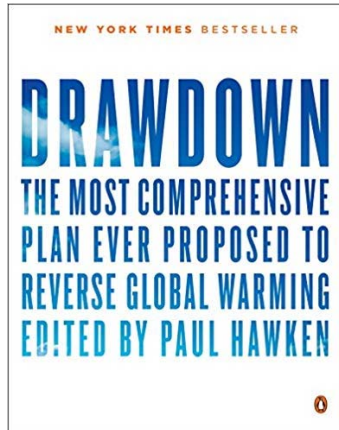
- (F) ensuring the use of democratic and participatory processes that are inclusive of and led by frontline and vulnerable communities and workers to plan, implement, and administer the Green New Deal mobilization at the local level;
- (G) ensuring that the Green New Deal mobilization creates high-quality union jobs that pay prevailing wages, hires local workers, offers training and advancement opportunities, and guarantees wage and benefit parity for workers affected by the transition;
- (H) guaranteeing a job with a family-sustaining wage, adequate family and medical leave, paid vacations, and retirement security to all people of the United States;
- (I) strengthening and protecting the right of all workers to organize, unionize, and collectively bargain free of coercion, intimidation, and harassment;
- (J) strengthening and enforcing labor, workplace health and safety, antidiscrimination, and wage and hour standards across all employers, industries, and sectors;
- (K) enacting and enforcing trade rules, procurement standards, and border adjustments with strong labor and environmental protections—
 - (i) to stop the transfer of jobs and pollution overseas; and
 - (ii) to grow domestic manufacturing in the United States;
- (L) ensuring that public lands, waters, and oceans are protected and that eminent domain is not abused;
- (M) obtaining the free, prior, and informed consent of indigenous peoples for all decisions that affect indigenous peoples and their traditional territories, honoring all treaties and agreements with indigenous peoples, and protecting and enforcing the sovereignty and land rights of indigenous peoples;



- (N) ensuring a commercial environment where every businessperson is free from unfair competition and domination by domestic or international monopolies; and
- (O) providing all people of the United States with—
- (i) high-quality health care;
 - (ii) affordable, safe, and adequate housing;
 - (iii) economic security; and
 - (iv) clean water, clean air, healthy and affordable food, and access to nature.



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