



Tempe



**CLIMATE**  
ACTION PLAN UPDATE

**CITY OF TEMPE 2022**  
[tempe.gov/Sustainability](https://tempe.gov/Sustainability)

# Letter from the Mayor



My fellow Tempe community members,

## **Climate change and the extreme heat our region faces present a critical opportunity for our community to come together.**

Tempe is a world-class city – some say we are Making Waves in the Desert – and I am proud to see all of our climate commitment and progress.

What's amazing is that the work of creating a more livable, resilient community is being championed by local businesses, young people, and neighborhoods with the support of city elected officials and staff members. We are all pulling together and that is just what we will need to keep creating the best future for Tempe.

In these pages, you can read about this new approach and the milestones we are committed to reaching in our journey. We actively seek and truly listen to community voices – they are here. And we have pinpointed the local, state and federal resources and partnerships that support our goals.

**Youth:** Middle school, high school, and college students are leading a passionate call for change and deeper investment in climate action. You will hear their voices in this document. For example, they want the city to expand climate action to include transportation equity, food access, and more changes in their schools. Adults must listen and respond.

**Businesses:** Tempe Chamber of Commerce, Local First Arizona, Downtown Tempe Authority, and businesses of all sizes across Tempe are making change happen. Opportunities for partnerships and program expansion are rich. Tempe businesses can be shining lights for social responsibility, energy cost savings, and climate action.

**Climate Justice:** Equal access to transportation, good jobs, affordable housing, and parks should be viewed as fundamental rights. Climate and social justice issues include addressing the racial and economic disparities of who has access to a shaded bus stop, a tree-lined cool street, an air-conditioned solar-powered home, and a dignified job. Our advocacy community speaks clearly that government needs to address racial and economic disparities.

**Neighborhoods:** Resident's love living in Tempe and they want to continue to stay – comfortably – for generations. We are hearing from neighbors that there is a need to double down on our efforts to address extreme heat and urban forestry. We see the amazing work that neighborhoods are doing to green their streets and schools. There are many exciting opportunities to support increased shade, walkability, and residents' connections to each other.

**Grants:** I am proud of our Sustainability and Resilience Office's work to bring more than \$2.5 million in grants to Tempe so far. These grants expand what we can do by bringing new ideas, ways of working, and talent into our climate work. From centering BIPOC voices to youth-led climate action, to developing governance models for resilience to extreme heat, and to bringing climate-sensitive urban forestry to our streets and schools. Grants play a critical role in expanding how local government supports the climate movement in Tempe.

**Partnerships:** No significant advances in climate action can be made alone. Our research collaborations with Arizona State University, business partnerships and connections to local, regional, national, and international organizations allow Tempe to expand and improve our approach to transforming our city.



# Letter from the Mayor

**Investments:** Tempe has a long history of using local, state, and federal resources to build a multi-modal city with biking, walking, Orbit, buses, light rail, and Tempe Streetcar. That commitment to deep investment and multiple funding streams can also apply to housing, urban forestry, clean energy, human services, and community resilience. We will remain diligent in creating regional, state, and federal funding streams that can be paired with Tempe's investment to increase impact and scale.

**Walking the Talk:** Tempe will not ask residents and partners to invest in new technologies and approaches if we do not do so ourselves. We are committed to becoming carbon-neutral city operation by 2050 with a 100% renewable energy strategy by 2035. I am so proud of our Municipal Utilities, Engineering and Transportation, Community Development, Community Services, Human Services, Finance, Human Resources, and Information Technology Departments for embracing these efforts and providing examples that inspire and motivate our residents and businesses.

**Mayor and Council:** I sincerely appreciate the hard work of my City Council colleagues in creating a more livable, sustainable and resilient city. Councilmembers Jennifer Adams and Lauren Kuby are working on policy and programs to support our climate work. Vice Mayor Randy Keating and Councilmember Robin Arredondo-Savage are leading the way in ensuring we are growing our economy and developing partnerships to help businesses across the city. Councilmembers Doreen Garlid and Joel Navarro are rethinking our approach to public safety and our parks and recreation investments.

**Regional Collaboration:** We all share air, water, energy, and transportation systems, so impactful change cannot happen in silos. Since our first Climate Action Plan, of the cities of Phoenix and Mesa now have climate plans, and regional collaboration is gaining momentum. We need to ensure a regional approach to growing sustainable transportation, expanding the clean energy economy and creating a cool and connected Maricopa County for all.

**Livable and Sustainable Tempe for All:** I appreciate your interest in exploring this thought-provoking plan. You will find inspiring voices, a solid set of potential investments, pathways for increased climate leadership, and plenty of opportunities for collaboration. We can do this. We can invest in the future. And we can do it together.

Sincerely,



Corey D. Woods  
Mayor

# Commission Letter



Hello neighbor,

We are the chair and vice chair of the Sustainability and Resilience Commission. We are a city commission made up of residents, experts, businesses, and advocates that guide and recommend climate action policy to your Mayor and Council. We are thrilled to be a part of the Climate Action Plan Update. The Commission has advised staff, attended meetings and briefed elected officials. The Commission worked with the Sustainability and Resilience Office, Unlimited Potential, Tempe Chamber of Commerce, Local First Arizona, Downtown Tempe Authority, Arizona State University, Tempe students, and residents like you on this update.

When we co-created the first plan with Mayor and Council, it was important for us to use five Tempe values as guiding principles to shape the update:

**Equity** - Race, income and background should not determine a resident's access to clean energy, shade, transportation or housing. We need to support initiatives that address inequality;

**Engagement** - The city must move away from just informing, to creating co-ownership that allows residents, youth, and businesses to be true parts in change;

**Evidence** - Data and best practices can ensure we use resources wisely and have impact;

**Enterprise** - Local businesses are part of Tempe's soul and critical partners in building solutions;

**Fiscal responsibility** - We have limited funds to address climate change and we must be stewards of public funds.

Over the past six years, our Commission worked to enhance and secure Tempe's Sustainability and Resilience program and its climate action approach. We are excited to continue this work in Tempe. But we want to be very clear; the actions taken so far are inadequate. Moving forward we need to:

**Be more urgent** - The science is clear, the window to take climate action this decade is critical;

**Welcome transformation** - We need to move beyond destructive fossil fuels and fully embrace the clean energy and transportation economy;

**Increase funding** - Tempe is a climate leader in Arizona, but that means nothing without deep city, regional, state and federal investments in our buildings, homes, schools and businesses;

**Collaborate more** - "If you want to go fast, go alone. If you want to go far, go together."

We need to encourage our Mayor and Council to make a deep financial investment in emissions reduction and resilience efforts. We have a responsibility to our friends, family, to our children and our children's children to take bold, decisive action today. The Sustainability and Resilience Commission believes this update to the Climate Action Plan is the next step towards a healthier and more resilient future for generations to come.

And we are proud that this plan centers the voices of Tempe residents and businesses at its heart, and we look forward to the investments in action and collaboration that will be made this year. We would like to thank everyone for working together on this update and continuing to step up to do the big things needed to make Tempe a better and healthier city.

Kendon Jung, Chair  
Barbie Burke, Vice Chair  
Sustainability and Resilience Commission  
City of Tempe

# Acknowledgments

We would like to thank the following contributors who helped with our Climate Action Plan Update, for which this work would not be possible without their contribution.

**Authors:** Dr. Braden Kay, Grace DelMonte Kelly and City of Tempe Sustainability and Climate Fellows (Haven Bills, Andrea Escobar, Dilan Evans, Henry Pearson, Kaleigh Shufeldt, and Aaron Urquidez)

**CAP Update Lead:** Andrea Escobar

**Copyeditor:** Marcus Donaldson

**CAP design & layout:** Keith Farnham

**Agenda Authors:**

Unlimited Potential

Tempe Chamber of Commerce

Local First Arizona

**City Council Members:**

Corey D. Woods, Mayor

Randy Keating, Vice Mayor

Jennifer Adams, Councilmember

Robin Arredondo-Savage,  
Councilmember

Doreen Garlid, Councilmember

Lauren Kuby, Councilmember

Joel Navarro, Councilmember

**City of Tempe Management:**

Andrew Ching, City Manager

Rosa Inchausti, Deputy City Manager

Tom Duensing, CFO

Steven Methvin, COO

**City of Tempe Staff:**

Richard Adkins, Urban Forester

Caroline Cicerchi, MUD

Grace DelMonte Kelly, Energy

Keith Farnham, CMR

Brianne Fisher, Sustainability

Megan Hutchison, CMO

Eric Iwersen, Transportation

Barrett Jurgemeyer, Engineering

Shannon Reed, CMR

Bonnie Richardson, Transportation

Nikki Ripley, CMR

Shauna Warner, Neighborhoods

Robert Yabes, Transportation

TaiAnna Yee, CMR

**Arizona Public Service**

**& Salt River Project:**

Brian Bednar, SRP

Marc Campbell, SRP

Patricia DiRoss, SRP

Noah Richman, SRP

Trevor Swanson, APS

Judson Tillinghast, APS

**City of Tempe Sustainability**

**Commission Members:**

Katja Brundiars, Member

Barbie Burke, Member

Meaghan Coon, Member

Kendon Jung, Member

John F. Kane, Member

Natalie Mendoza, Member

Stephanie Milam-Edwards, Member

Ryan Mores, Member

Gretchen Reinhardt, Member

Steven E. Russell, Member

Jake Ryan Swanson, Member

Shawn Swisher, Member

Joyce H. Vesper, Member

**Arizona State University:**

Marta Berbés, FIS

Katja Brundiars, Sustainability

Oswald Chong, Engineering

Paul Coseo, Design

Wanda Dalla Costa, Design

David Hondula, Geography

Ariane Middel, Sustainability

Anne Reichman, Sustainability

Jennifer Vanos, Sustainability

Lauren Withycombe Keeler, FIS

ASU Equity in Climate Action,

Spring 2021 (Zach Appel,

Rebecca Dietz, Ben Gansky,

Kate Hartland, Jordan King,

Francesca Lascala, Grace Logan,

Tammy Nguyen)

ASU Landscape Architecture Studio,

Fall 2021 (Allyce Hargrove)

**Other Contributors:**

Katherine Gajewski

Arianna Grainey

Arizona Forward

Arizona Thrives

Autumn Johnson

C40

Cartel Roasting Co.

CDP

Chispa Arizona (League of

Conservation Voters)

Chishie Farms

Cities of Austin, Baltimore,

Denver, Norfolk, Oakland, Orlando,

Phoenix, San Diego, San Jose,

Scottsdale and Tucson

Climate Mayors

Culdesac Tempe

Dequan Williams

Downtown Tempe Authority

Dustin Farrell

EPA

Global Covenant of Mayors for

Climate & Energy

ICLEI – Local Governments for

Sustainability

Indigenous Design Collaborative

Jacob Butler, Salt River Pima Indian

Community

Kim Lundgren Associates

Mercy Corps

NASA Develop (Sydney Boogaard,

Jack Dialesandro, Ryan Hammock,

Anson Pang, Blake A. Steiner)

National League of Cities (NLC)

National Weather Service

NOAA

Race to Zero Campaign

Richard Rushforth

Robert Wood Johnson Foundation

San Diego Association of

Governments (SANDAG)

Sharon Price

Sole Sports Running Zone

Susan Melkisetian

Sustainable Cities Network (ASU)

SWEEP

Tel Aviv-Yafo Municipality

Tempe Chamber of Commerce

Tempe Community Action Agency

Trees Matter

Tye Angelina Waggoner

Urban Sustainability Directors

Network (USDN)

US Green Building Council (USGBC)

Western Adaptation Alliance (WAA)

Yolehua Parra Cano



# Executive Summary

## 2022 Climate Action Plan Update

This is an update to Tempe's first Climate Action Plan (CAP). It covers the work happening in Tempe and includes the voices of residents and businesses that are changing the way we live and work.



A Climate Action Plan helps Tempe take local action against global climate change. This Update provides the following data and content to advance our collective work to reduce carbon emissions and build a resilient city:

### Resilience to Extreme Heat Update:

Data analysis and findings ..... 8

### Decarbonization Update:

Community and municipal inventories..... 11

### Proposed Investments:

New recommendations and budget proposals..... 23

### Agendas:

Residents and businesses create their own plans ..... 26

### Grants and Partnerships:

Organizations critical to making change happen..... 48



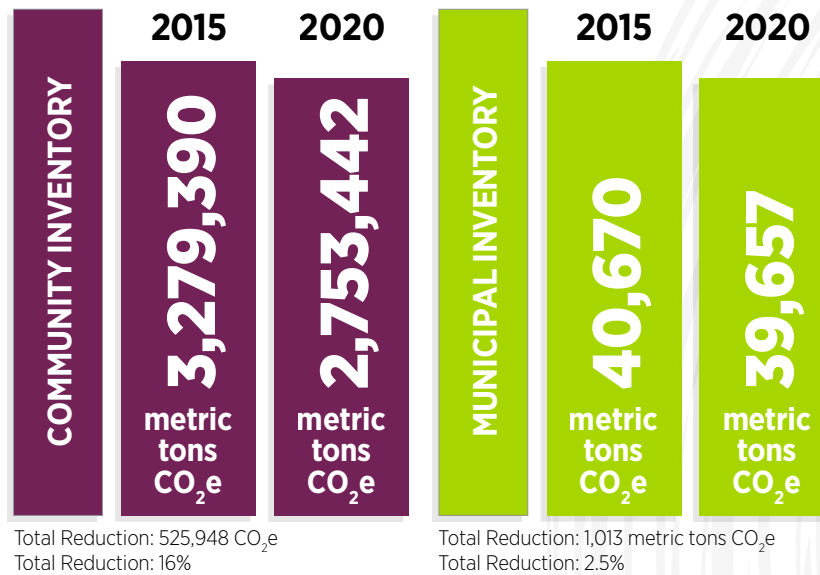
# Executive Summary

## 2019 Climate Action Plan and Ahead

The 2019 CAP focuses on reducing Greenhouse Gas (GHG) emissions and adapting Tempe to be resilient to climate changes.

### Emissions Reduction

Tempe is making important, but slow progress in community and municipal carbon reduction. Deeper investments and larger societal shifts are required to transform our energy and transportation systems.



### Resilience

Tempe has made strides to become more resilient to extreme heat, but our actions are not currently preparing our city for the extreme heat it will face in the decades to come. Our lack of investment in shade and cooling follows poverty and race, meaning we need to have a comprehensive approach to equitable cooling in Tempe.



Right of way without shade.



Right of way with shade.



# Executive Summary

## Community Actions

### Highlight Actions Update

The Sustainability and Resilience Commission identified immediate highlight actions in the first plan that still need policy adoption and investment:



#### **Green Codes and Standards: Green Stormwater Infrastructure and International Green Construction Code**

To establish resilience to extreme heat in new construction ..... 16



#### **Transportation Demand Management and Mobility Hubs**

To increase convenience of low carbon transportations options ..... 19



#### **Resilient Energy Hubs and Resilience Hubs**

To increase community connections and the ability to support survival during natural disasters ..... 21

## Agendas

Community voices are included in the 2021 CAP Update to reflect our city’s culture and values. The City of Tempe held engagement events to allow community members to share thoughts, advice, lived experiences, and ideas on how to invest and where to take action. Four stakeholder agendas emerged from our continued engagement. We worked with local partners, residents and businesses to co-create the following agendas:



#### **Youth**

Food and transportation equity and partnerships with school boards and leaders ..... 26



#### **Business**

Saving money, conserving resources and connecting to community ..... 30



#### **Climate Justice**

Extreme heat and energy equity and land stewardship ..... 34



#### **Neighborhoods**

Extreme heat and partnering with community-based organizations ..... 38



# Executive Summary

## Proposed Investments

Investments need to be made to address the concerns of community members. Opportunities of investment will be pursued through the following policies, programs, and infrastructure:



**Policies** that provide shade, urban cooling, energy cost savings, and increase access to food, transit and affordable housing through ordinances and plans . . . . . **23**



**Programs** that lower greenhouse gas emissions, develop resilience to extreme heat and address racial inequality . . . . . **24**



**Personnel** to write grants, develop policy, design infrastructure, implement programs and engage businesses and residents . . . . . **24**



**Infrastructure** that increases tree canopy, promotes urban cooling, manages stormwater and provides safe low carbon transportation options. . . . . **25**



**Municipal operations** including plans, infrastructure and policies, that demonstrate leadership in lowering greenhouse gas emissions and building up resilience to extreme heat. . . . . **25**

*Disclaimer : The Mayor and Council have the opportunity to use the General Fund and the Capital Improvement Budget to fund the programs, policies and infrastructure in this Update. The mention of an action in this Update does not mean that these recommendations will be automatically funded. Residents and businesses need to work with elected officials and city staff to determine the best investments to make each year.*

# Introduction

The 2022 Climate Action Plan (CAP) Update builds upon the original plan and provides updated data on Tempe's efforts to lower Greenhouse Gas emissions and become more resilient to extreme heat.



The City of Tempe has two adopted performance measures that guide this plan:

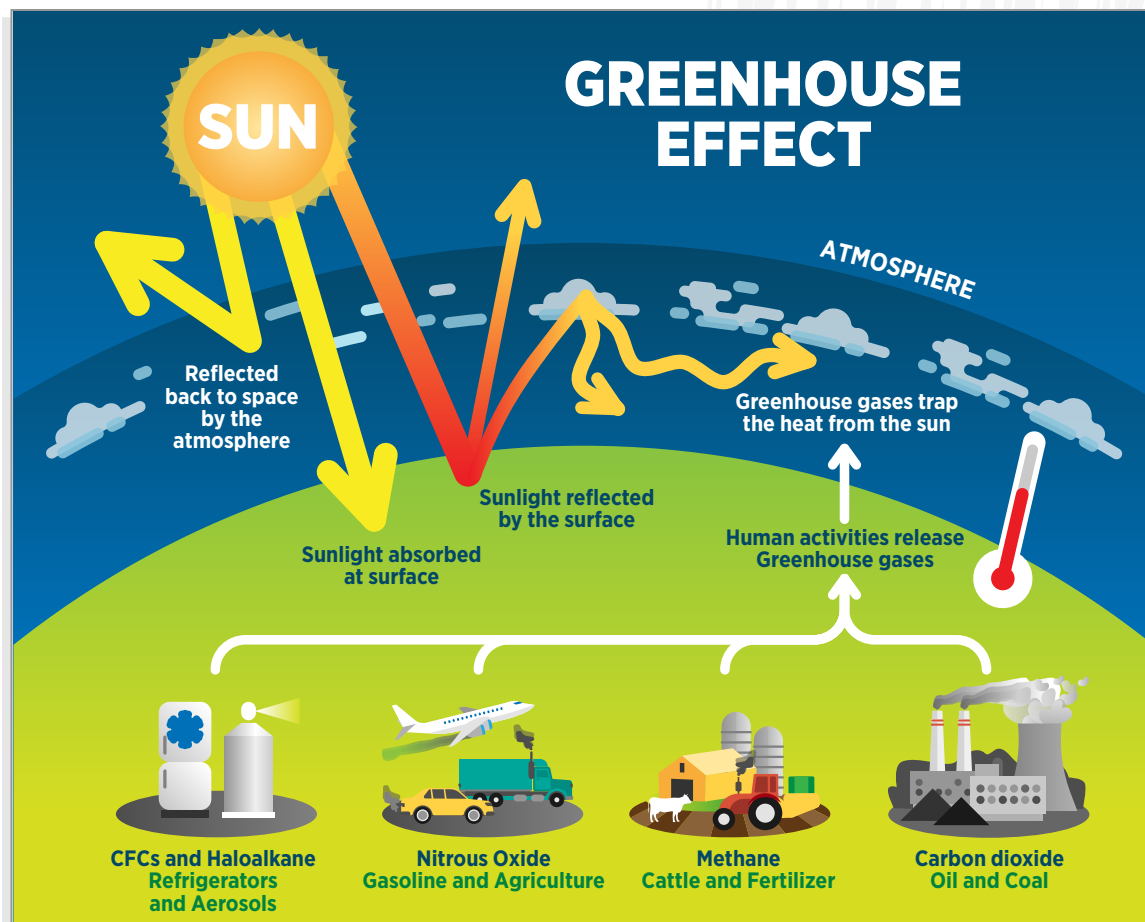
**Community Carbon Neutrality:** Zero Greenhouse Gas Emissions for residents, businesses, and industry by 2050.

**Municipal Carbon Neutrality:** Zero Greenhouse Gas Emissions in city operations by 2050 with a strategy of 100% renewable energy by 2035.

## What is global climate change?

Global climate change refers to increasing global temperatures, which cause changes in our regular weather patterns. Global climate change is caused by human activity: it is due to Greenhouse Gas (GHG) emissions being released into the Earth's atmosphere as by-products of burning fossil fuels used for producing energy and transportation. These GHGs include carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), and methane (CH<sub>4</sub>).

The increasing GHG emissions created by human activity, namely energy and transportation intensify the greenhouse effect. This natural process heats our Earth and allows it to be habitable. However, large amounts of GHG emissions block the solar radiation trying to escape our atmosphere. This leads to increased temperatures and irregular weather patterns, which are dangerous to health and affect the quality of life.



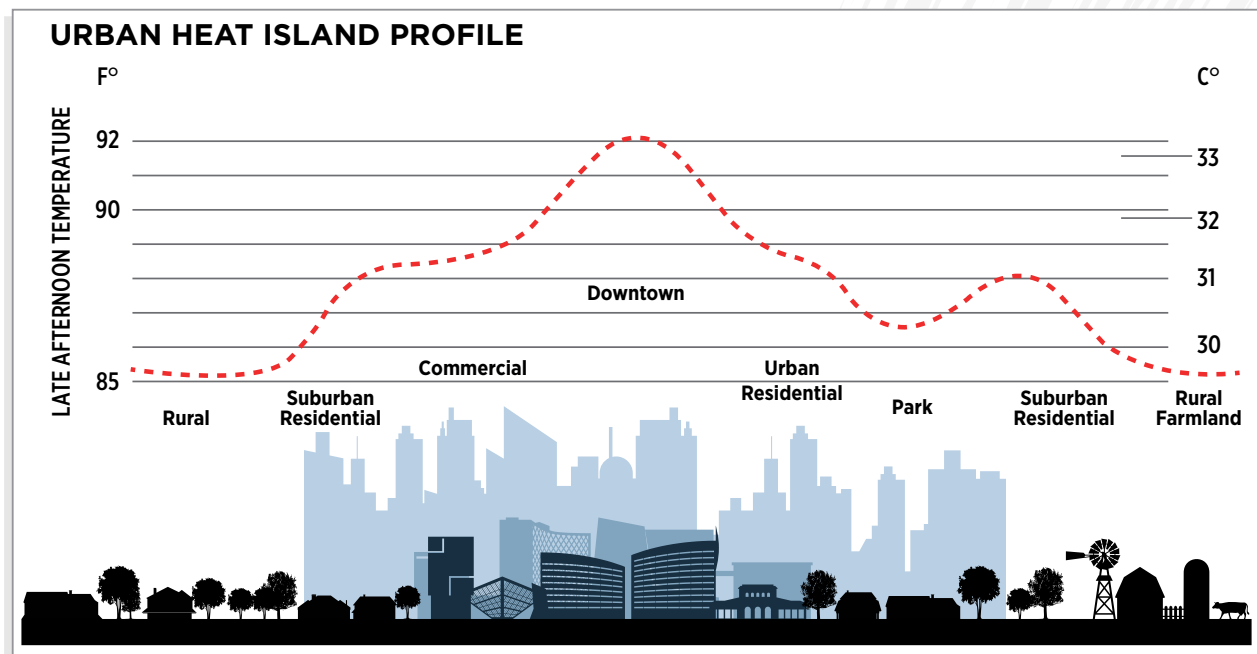


# Introduction

## How does global climate change affect Tempe?

Global climate change is already causing Tempe to see hotter days than in previous years. A second, different local climate change process is causing hotter nights because the daytime heat is stored in our built environments and released during the night. This process is called the urban heat island effect (UHI).

Local urban heat islands warm Tempe, but urban heat islands' impact on Tempeans is not experienced evenly throughout the community. Neighborhoods surrounded by wide roads, parking lots, and buildings with low vegetation cover and tree canopy can have up to 13°F warmer air temperatures than neighborhoods with more trees and less pavement and buildings. Combined, these increases in temperatures can dangerously affect Tempeans' everyday lives and some more than others. By taking action, Tempe can mitigate the severity of these combined climate impacts by building resilience against extreme heat and reducing dependence on fossil-fuel-based energy and gasoline-powered transportation.



## Purpose of a Climate Action Plan

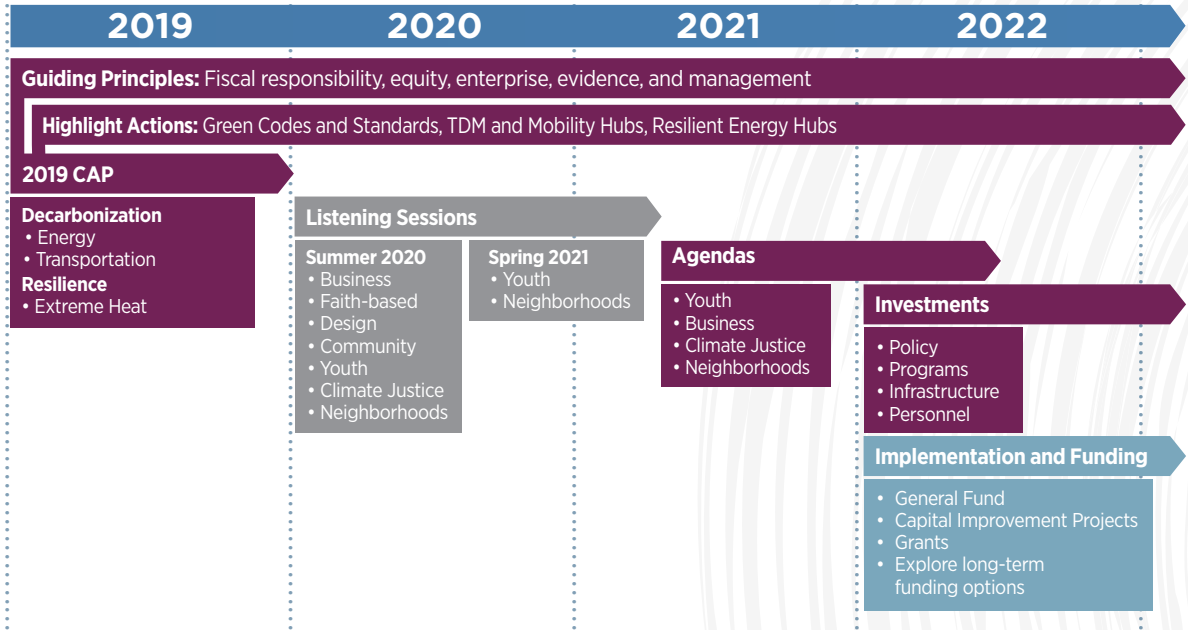
Tempe's 2019 Climate Action Plan serves as a guideline for the City of Tempe in its planning and decision-making concerning Greenhouse Gas emissions reduction and resilience. The CAP focuses on measuring and reducing greenhouse gas (GHG) emissions and increasing the City's ability to cope with extreme heat. The CAP proposes investments such as, policies, programs and infrastructure that the City of Tempe can make to support climate action.

# Introduction

## Purpose of 2022 Climate Action Plan Update

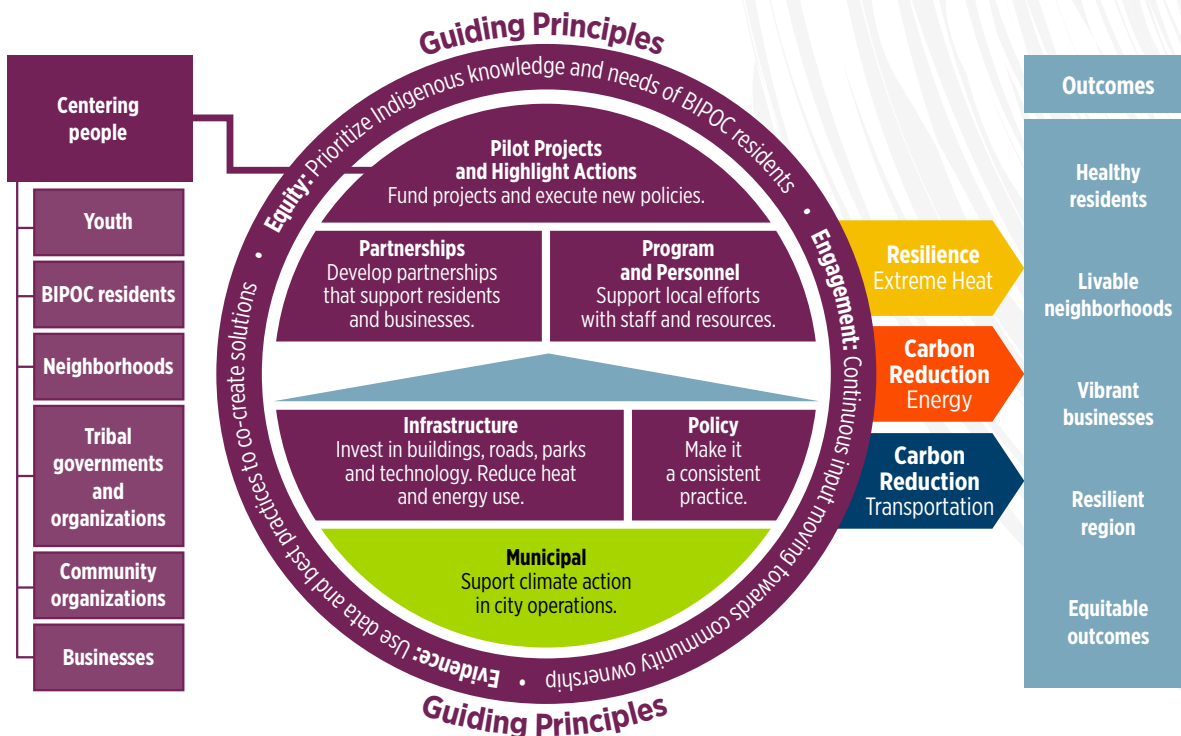
This is not a new Climate Action Plan but an update of the 2019 Climate Action Plan. The 2022 CAP Update continues to build on the actions and solutions presented in the 2019 CAP, and it provides new data, four stakeholder agendas, and updated investments and funding proposals. The update includes the voices and perspectives of Tempe residents and businesses in order to develop a set of investments that reflect the Tempe community. The 2022 CAP Update is guided by five principles put forward by the Sustainability and Resilience Commission: fiscal responsibility, enterprise, equity, engagement, and evidence.

## 2022 Climate Action Plan Progress



## Theory of change

### Sustainability Transitions Toward an Equitable, Resilient and Sustainable Tempe





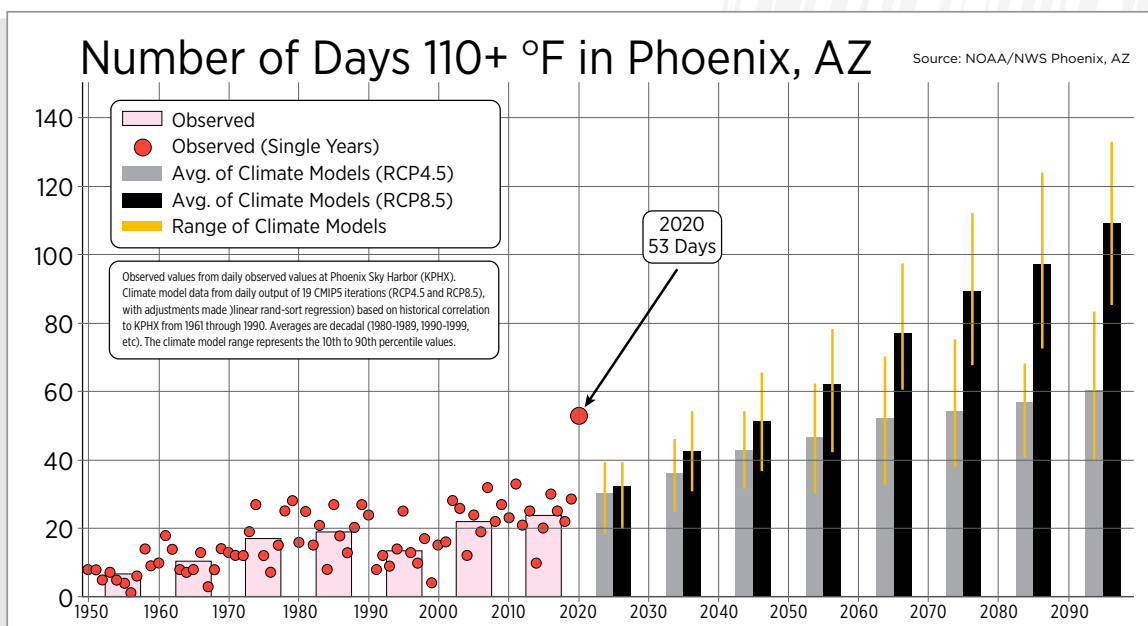
## Resilience to Extreme Heat Update

Tempe is experiencing hotter temperatures earlier in the spring, later in the Fall, and for more extended periods. Summer 2020 (June-August) set the record for the most number of days above 110°F (53 days), hottest month on record (August average 99.1°F), and hottest summer on record (average 96.6°F).

Extreme heat can disrupt our daily lives and jeopardize our health, but not everyone suffers equally. Urbanization intensifies these disruptions because it contributes to the urban heat island (UHI) effect, which traps heat in pavements and buildings, amplifying already high temperatures. Where UHIs are located is highly correlated with income, race, and other social factors.



The resilience to extreme heat actions recommended in the 2019 Climate Action Plan attempt to design and build infrastructure (roads, bridges, parks, and buildings) and programs (Emergency management and urban forestry) that reduce the impact of UHI and global climate change. The green codes and standards highlight actions in the 2019 CAP (green stormwater infrastructure and green construction codes) need to be fully implemented to support urban cooling and additional efforts need to be made to equitably cool neighborhoods that are most impacted by heat.



The number of days over 110°F has risen each decade and continues to increase. By the mid-21st Century, in the summer of 2020s, 53 days over 110°F will be the average. Information like this can help us apply cooling strategies to reduce the present and future impact of excessive sunlight and heat on our neighborhoods and communities.

# Introduction

## Heat Vulnerability

Urban heat islands can result in neighborhood vulnerability because some Tempeans are impacted more than others by heat. Tempe must build resilience against present and future threats that produce uneven adverse health, environmental, and economic impacts caused by extreme heat. The first step is to document existing heat vulnerabilities. It's not enough to find only the hot spots. We must look at who is suffering from heat the most and combine that with where it is hottest.

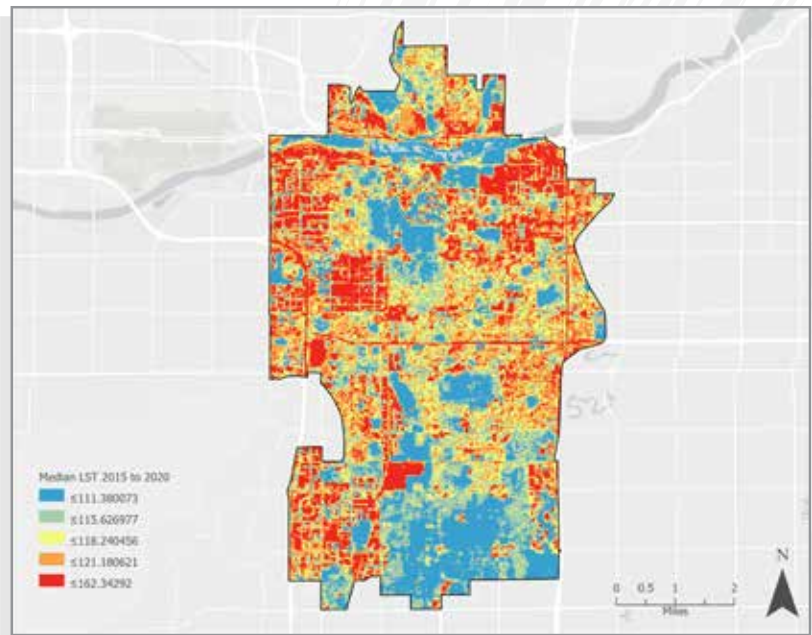
**Heat Vulnerability** means some residents and households are more **exposed + sensitive** to heat during their:

- daily routines inside homes and places
- commutes between places
- outdoor activities

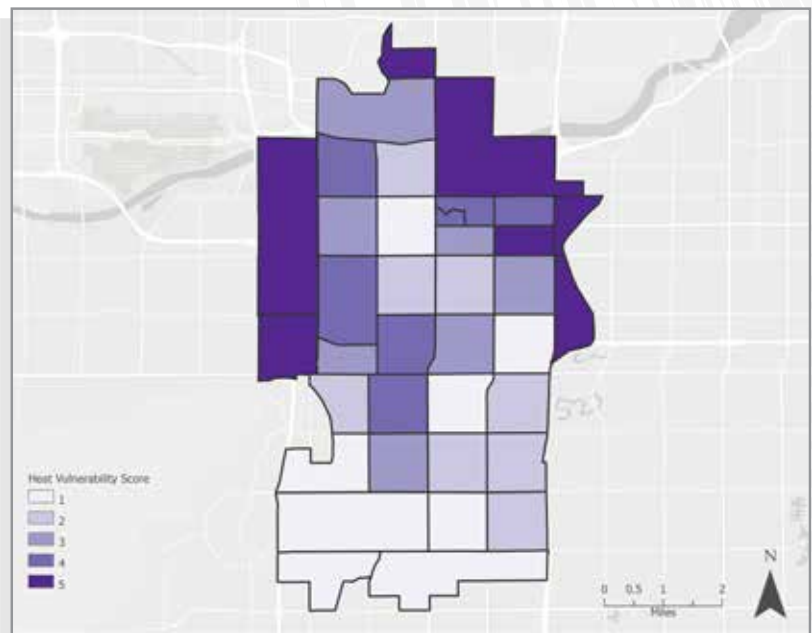
### Social factors for vulnerability assessment 2013-2018 (5-year Interval)



1. % Ethnic Minority
2. % Below Poverty Line
3. % Without HS Diploma
4. % 65 Years & Older
5. % 65 Years Older Living Alone
6. % Living Alone
7. \$ Total Median Income
8. Total Population



Median land surface temperature, for all warm season months 2015-2020.



Heat Vulnerability Score Map in Tempe, 2015-2020.



## Equitable Cooling

The city-university partnership between the City of Tempe and Arizona State University (ASU) is co-developing a new approach to implementing resilience to extreme heat. ASU technical experts have collected and analyzed new data that documents how extreme heat affects Tempe on three scales and how the City can create “equitable” urban cooling.



**City-scale:** heat is measured by taking the *temperatures of surfaces* such as streets and parks. Maps show how hot each census tract is and allows us to identify where heat affects our most vulnerable populations. This heat data can now be combined with other data available by census tracts, like age, race and income. Together, this informs the City of Tempe *where to place future infrastructure* to generate cooling for those most exposed to heat.

- Infrastructure placement
- Cooling Center placement
- Cool corridor placement
- Land use



**Neighborhood-scale:** heat is measured by Mean Radiant Temperature (MRT); this is the temperature that people *feel* because they experience the heat that surrounds them as it radiates from the sun, from the ground up, and from the buildings around them. This MRT data helps identify the hot places (like unshaded parking lots) and cool places (like a shaded park) within a neighborhood. This informs the City of Tempe how to *connect cool places* with each other, using infrastructure to create “*cool corridors.*”

- Park design
- Street design
- Transit shelter design
- Green buildings



**Touch-scale:** heat is measured by taking the temperature of the materials that people touch, such as when children play on jungle gyms or people sit on a bench. This informs the City of Tempe on how to specifically design infrastructures to offer the most cooling in a particular place. For instance, the city can select materials that don’t burn skin as quickly (e.g., wood is less likely to burn skin than metal) and place shade strategically to add further cooling.

- Street furniture selection
- Playground equipment selection
- Building material selection

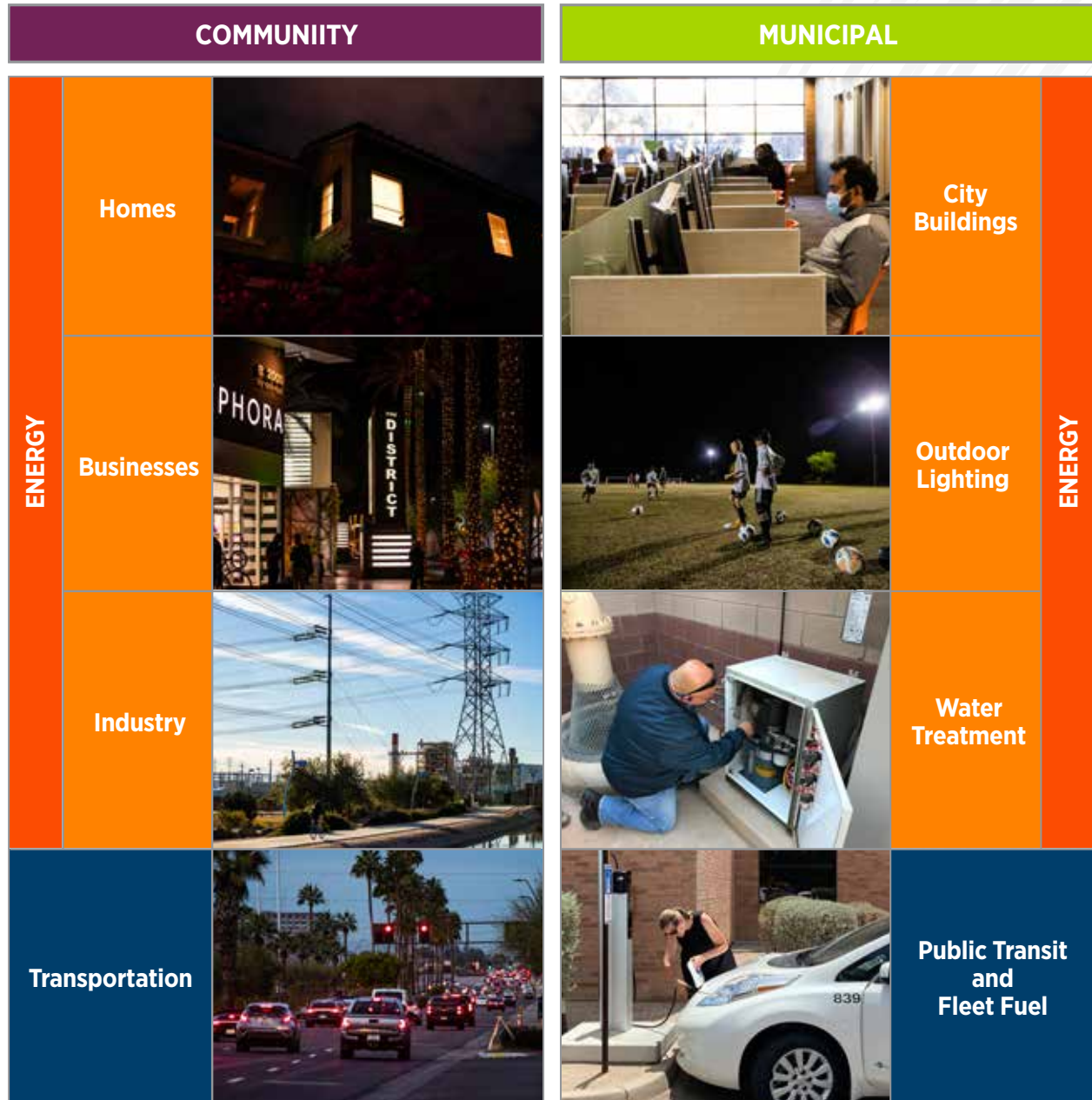
Deciding where to place infrastructure, focus programs and how to design infrastructure on the touch scale is done with people’s lived experience in mind and with a focus on equity. This analysis results in a deeper understanding of where investment is needed most to alleviate individuals’ vulnerability to extreme heat. Embedding this approach across city departments and into planning and design will support equitable urban cooling in Tempe.

# Introduction

## Decarbonization Update

GHG emissions result from fossil-fuel-based energy production and gasoline-based transportation. In the 2019 CAP and the 2022 CAP Update, GHG emissions are broken down into two categories: community and municipal.

### Emissions Sources



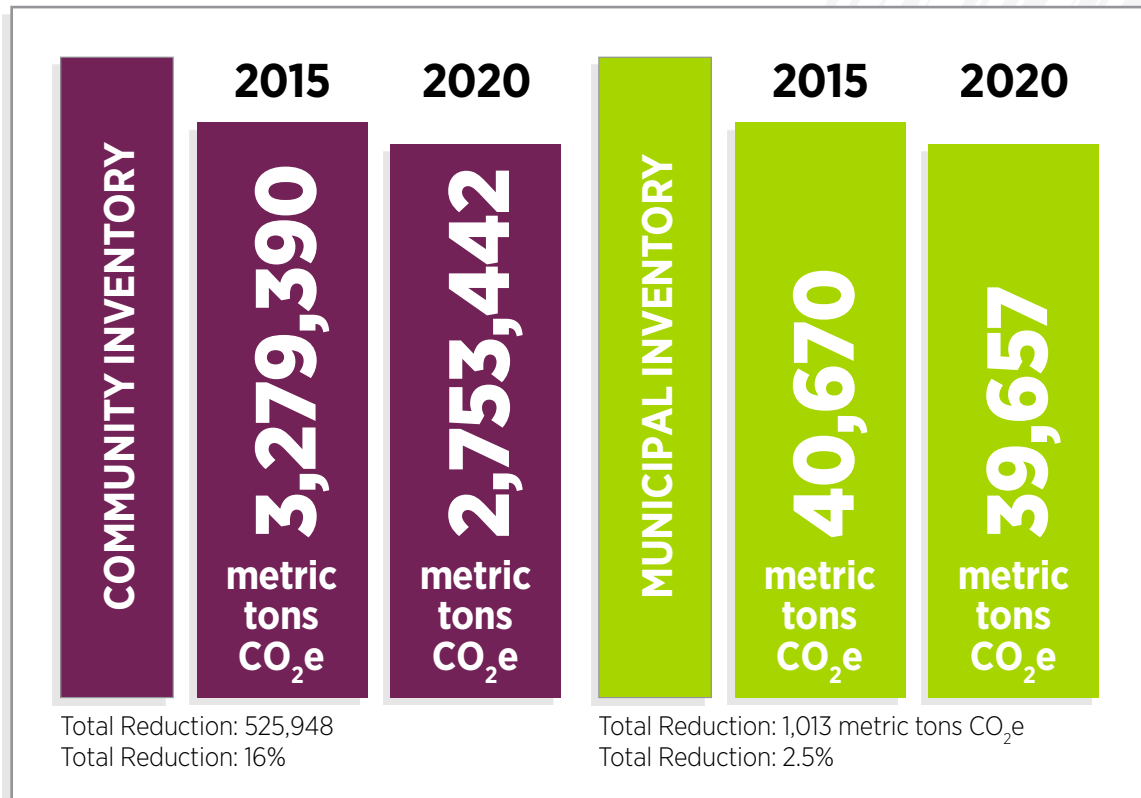


# Introduction

## Decarbonization Update

The community emissions inventory looks at how much is produced by the community at large. Community energy emissions account for the electricity powering residential, commercial, and industrial spaces. Community transportation emissions come from people driving through and in Tempe. The inventory demonstrates the importance of reducing emissions in energy and transportation and sheds light on the significant role our current transportation methods play in contributing to global climate change.

The municipal emissions inventory looks at the emissions created by the City of Tempe when providing city services to residents and operating government buildings and vehicles.



## Racial Equity and Climate Justice

During the planning of the 2019 CAP, residents requested more interactive engagement and a stronger focus on equity and climate justice. In response to that feedback, the Sustainability and Resilience Office played an active role in the Equity in Action (EiA) program with the Neighborhoods Services Department and the Strategic Management and Diversity Office. The EiA program, supported by a team of City of Tempe employees from many departments, recruited a diverse coalition of residents and advocates across Tempe. With the support of local racial equity consultants, the coalition developed a framework that supports the City of Tempe in increasing the participation of historically underrepresented and marginalized community members, including BIPOC residents (Black, Indigenous and People of Color) in government planning and decision-making.

### Equity in Climate Action Planning

In the Summer of 2020, the Sustainability and Resilience Office held a listening session with EiA members and residents that care about environmental justice. The residents urged the City of Tempe to fully acknowledge the connection between climate change and racial equity. The data in Tempe and the Phoenix region clearly shows that residents of color are harmed by extreme heat more than white residents. Addressing extreme heat and climate change means that racial inequality and structural racism must be addressed. The listening session participants recommended that the City support a Climate Justice Agenda that is co-created with a community-based organization with existing relationships and trust within communities of color.

### Climate Justice Agenda

The City of Tempe partnered with Unlimited Potential, a local non-profit, to identify climate change issues affecting marginalized communities in Tempe. These issues make up Tempe's first-ever Climate Justice Agenda. This partnership helps the City create awareness and address areas of priority such as transportation, energy, resiliency, affordable housing, and food access, specifically in the neighborhoods that are exposed to extreme heat. Unlimited Potential strives to center Indigenous voices in Tempe and highlights the importance of collaboration with local tribes and tribal members on land stewardship. Furthermore, Unlimited Potential conducted all of their engagements in English and Spanish in order to reach residents that do not traditionally engage in City of Tempe public outreach events.

The Climate Justice Agenda reflects one attempt to diversify the residents that have a say in city decision making. One of the key takeaways from the community-led work, is that intersectionality matters. Thinking in silos allows injustice and inequality to continue. Decisions made across the City of Tempe can affect how residents survive and thrive during climate change. Policing policy, affordable housing programs, parks infrastructure, road design all play a role in how residents of color experience Tempe. When a climate shock like a heatwave happens, decisions in different areas of the City from years before can have a lasting impact on what resources or infrastructure is available in a particular place. Climate justice and preparing for a future with extreme climate change require paying attention to connections, history, and how we support residents who have previously been left out of design processes and decision-making. The Climate Justice Agenda and the integration of equity into the 2022 CAP Update are one attempt at a more inclusive policy making process. There is a need to continuously work on who is involved in public engagement and what priorities are made in investing in the future of the city.

## 2022 CAP Update Engagement

The 2022 CAP Update improves upon the 2019 CAP to better reflect the voices and needs of residents and businesses.

Four agendas were created to express the views and ideas of Tempe residents and businesses: Youth, Business, Climate Justice, and Neighborhoods. Each stakeholder group was asked to identify the actions and partnerships need to advance climate action in Tempe. The agendas were created through the following process:

**Listening Sessions:** The Sustainability and Resilience Office hosted six listening sessions in the Summer of 2020 to learn from residents and businesses about what they wanted out of the 2022 CAP Update process. The listening sessions focused on youth, equity, design professionals, neighborhoods, businesses, and the faith-based community. In the Spring of 2021, ASU students in a course called “Equity in Climate Action” hosted two listening sessions inviting community members from the Neighborhood and Youth stakeholder groups. The course was co-taught by Dr. Lauren Withycombe-Keeler and Dr. Marta Berbés. The purpose of the listening sessions was to hear about people’s lived experiences and visions for climate action in Tempe. The listening sessions informed the tools, forums, and agenda development implemented during the rest of the update process.

**Imagining Tempe in 2035 through stories:** The Climate Stories project features two stories set in 2035. The stories were placed on posters throughout Tempe and led participants to see how communities might respond to extreme heat in the future. After reading the stories, participants were given the opportunity to respond to a survey on what they felt Tempe could do to combat climate change and make Tempe more resilient. They voiced problems that Tempeans face, solutions the City of Tempe can implement, and the community actions the City of Tempe can support. This project offered a novel engagement strategy to engage the public in future initiatives. The authors note that participants in their process envisioned: “A Tempe where the City is doing its best in combating climate change and making the City more resilient. More shade structures, sustainable farming, and solar energy were emphasized. But most importantly, it was envisioned that the City of Tempe would be more compassionate, collaborative, and cohesive.”

### Partnerships:

Partnerships were developed to co-create the four agendas:

- Tempe Chamber of Commerce (Business Agenda)
- Local First Arizona (Business Agenda)
- Unlimited Potential (Climate Justice Agenda)
- Arizona State University (Neighborhoods Agenda)
- Mayor’s Youth Advisory Commission (Youth Agenda)

**Public Forums:** Each agenda held public forums over the Summer and Fall of 2021. Local First Arizona and the Tempe Chamber held two panels to create the Business Agenda. The Sustainability and Resilience Office hosted neighborhood and youth forums. Unlimited Potential held a series of workshops and an evening event in Escalante Park to inform the Climate Justice Agenda.

**Stakeholder Agenda Open Houses:** The City of Tempe held two virtual meetings in September, 2021 and January, 2022 to allow residents to review and edit the four agendas and provide feedback on the investments.



*Resident interacting with a Climate Stories poster.*



# Community Actions

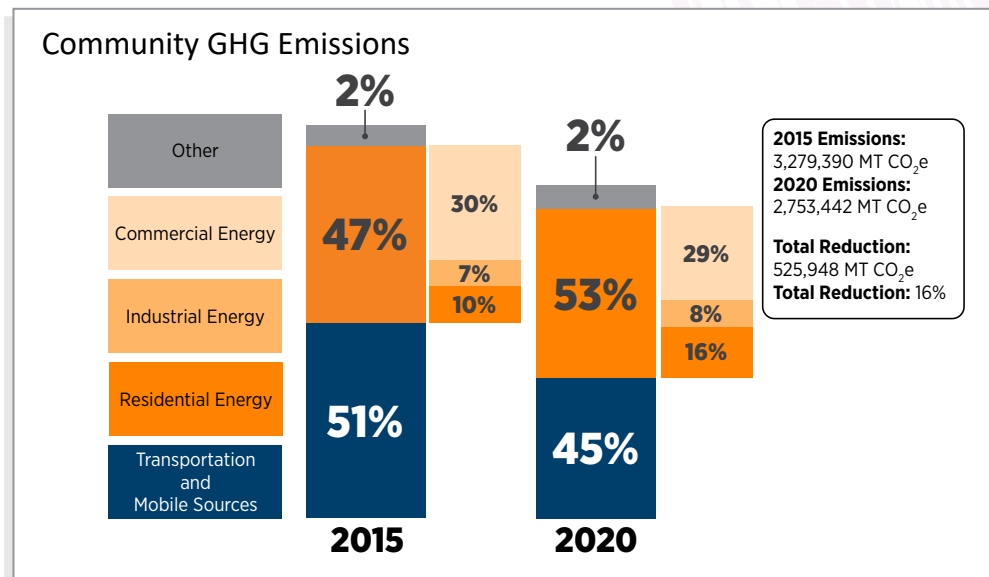
The Community Actions section includes a progress report on highlight actions from the first CAP, four stakeholder-led agendas and the proposed investments to continue making progress on greenhouse gas emissions reduction and resilience to extreme heat.

The community actions articulate the need to accelerate these critical transitions to support a more sustainable and resilient Tempe.



## Emissions Reduction

Tempe is making some progress on carbon emissions reduction. The Community Greenhouse Gas emissions inventory supports our efforts to reduction of emissions in energy and transportation.



# Community Actions

## Highlight Action Update

In 2019 the Sustainability Commission recommended four climate actions that the City should focus on to develop early wins and a culture of transformation. The following update shows what has been accomplished so far. The update uses examples from cities around the country and world to demonstrate how Tempe can lead in green buildings, green stormwater infrastructure, resilience hubs (including resilient energy hubs), and transportation demand management (including mobility hubs).

### Green Codes and Standards (GSI and IgCC Adoption)

Tempe is pursuing Green Stormwater Infrastructure (GSI) and green codes like the International Green Construction Code (IgCC) to combat extreme heat. Extreme heat affects public health, air and water quality, vegetation, and more.

GSI is an approach to water management that aims to save money, save water, and keep Tempe cool by working with nature to reduce stormwater runoff. Tempe's GSI objective is to create a citywide plan, including identified infrastructure investments with permanent funding for its operations and management.

The IgCC is a code that helps cool Tempe by guiding developers to make their buildings sustainable, resilient, and high performing. The goal for IgCC is to have a regional green building code that supports sustainability and urban cooling that is tailored to the desert Southwest.

### Tempe's Progress

Through piloting green buildings on city property and considering a sustainable building policy for City buildings, Tempe is at the early stages of a long-term green building strategy.

#### Policy

- Working towards IgCC adoption for city buildings

#### Programs

- Funded full time employee in Community Development to begin citywide IgCC code

#### Infrastructure

- GSI pilot projects at Rio Salado and Hardy, EVBOM and Apache and Dorsey, 12th and Mill
- LEED-certified city buildings (IgCC)



*Volunteers plant native vegetation in a bioswale on city property.*



*Street view of the LEED-certified Tempe Transit Center.*



# Community Actions

## Green Stormwater Infrastructure Roadmap

Tempe has the opportunity to follow Phoenix, Norfolk, Oakland and Tucson in developing policy and permanent funding for GSI.

ADVANCED



### Tucson, AZ

- **Citywide Plan:** Prioritized GSI investments
- **Permanent funding:** Utilities bill fee will provide ~\$3M per year
- **Operations and Maintenance:** Allows the city to install more, and maintain all, future GSI infrastructure

*Curb cuts at Pima County Service Center 2019, Tucson AZ.*

INTERMEDIATE



### Oakland, CA

- Adopted citywide GSI plan in 2019
- Identifies GSI projects, measures progress, secures funding, etc.
- Lacks permanent funding source for GSI projects

*Curb cuts and bioretention at the Rainbow Recreation Center, Oakland CA.*

INTERMEDIATE



### Norfolk, VA

- Adopted GSI into their zoning ordinances
- Requires developers to include GSI in their projects

*Pocket stormwater wetland in Norfolk, VA.*

BEGINNER



### Phoenix, AZ

- Private-public partnership surrounding GSI
- Implementing GSI projects on city and private land
- No GSI requirements

*Bioretention basin at the Cancer Center at 7th St and Fillmore in Phoenix, AZ.*

NOVICE



### Tempe, AZ

- Multiple GSI pilot projects
- Determining cost, practicality, and areas of improvement
- Does not involve private developments yet

*Volunteers build a bioswale at Dorsey and Lemon.*



## International Green Construction Code Roadmap

Tempe is taking initial steps in green construction and can learn from Scottsdale, San Jose, and Israel's approaches to using building code to advance sustainability and urban cooling.

ADVANCED



### Israel

- **Regional:** Green building code spans multiple cities
- **Customized:** Similar to LEED, the code applies to all types of buildings
- **Mandatory:** Code will become mandatory for all developments in 2022

*Porter School of Environmental and Earth Sciences in Tel Aviv, Israel.*

INTERMEDIATE



### San Jose, CA

- Building code requires LEED certification for large buildings
- Any major development must be constructed sustainably
- Building code limited to city and not county

*IgCC-designed Immanuel-Sobrato Community apartments.*

BEGINNER



### Scottsdale, AZ

- Adopted IgCC into green building codes and promotes private sector use
- Offers incentives for developers complying with IgCC
- Not a requirement for all private development

*Street view of IgCC-designed Optima Sonora Village.*

NOVICE



### Tempe, AZ

- Testing pilot codes in city buildings
- Determining best city standards
- Not formally in building codes or ordinances

*IgCC Fire Station 2 design.*

## Highlight Action Update

### Transportation Demand Management and Mobility Hubs

Tempe has upgraded its transportation sector by improving light rail, bike, pedestrian, and streetcar infrastructure. These changes reduce the use of single-occupancy vehicles and emissions, increase safety, and help make Tempe a 20-minute city.

Transportation Demand Management (TDM) provides alternative transportation options. A Transportation Management Association (TMA) is a public-private partnership that aims to reduce traffic congestion and carbon emissions.

Mobility Hubs (a TDM strategy) are sites that combine different modes of transportation in one location, helping reduce the need for vehicle ownership and single occupancy trips. Investment in mobility hubs will make trips safer, convenient, and more reliable. The goal for mobility hubs is to have policy and funding that supports a regional network of hubs that allow for safe and convenient low-carbon transportation.

### Tempe's Progress

Through planning for mobility hubs and starting a Transportation Management Association (TMA), Tempe is advancing its approach to Transportation Demand Management.

#### Policy

- Developing a plan for mobility hub locations and services

#### Programs

- Exploring opportunity to start a Transportation Management Association

#### Infrastructure

- Tempe Transit Center is a mobility hub pilot



*Aerial view of the Tempe Transit Center mobility hub pilot.*

## Transportation Demand Management and Mobility Hubs Roadmap

Tempe has the opportunity to invest in Transportation Demand Management and Mobility Hubs using Denver, Austin, and San Diego as best practice examples.

ADVANCED



### San Diego, CA

- **Regional:** Mobility hubs are centered in regional plan
- **Network:** Plan proposes a network of thirty specialized mobility hubs

*Aerial view of the San Ysidro Transit Center.*

INTERMEDIATE



### Austin, TX

- **Policy:** Adopted policy to help the creation of mobility hubs
- **Funding:** Allocated funding for mobility hubs

*Cyclist renting electric bicycle in Austin, TX.*

BEGINNER



### Denver, CO

- Multiple mobility hubs with differing size, programming, and design
- Hubs are specialized depending on the context and function of each location
- Regional planning does not focus on mobility hubs

*Passenger exiting a free ride share vehicle in Denver, CO.*

NOVICE



### Tempe, AZ

- One major mobility hub with more in planning
- Current hub has access to light rail, buses, electric scooters and bikes
- Only one hub located in Downtown Tempe

*Orbit bus stop at the Tempe Transit Center mobility hub pilot.*



## Highlight Action Update

### Resilient Energy Hubs and Resilience Hubs

In Tempe, climate change has increased the risk and intensity of natural disasters and has worsened the heat crisis. If disaster strikes, residents must have safe and cool locations to find shelter. Tempe is constructing its first Resilience Hub; A community-serving facility upgraded to support residents and coordinate resource distribution and emergency services. This hub will eventually be equipped with solar power and energy storage, making it a Resilient Energy Hub. The goal of resilience hubs is to create a network of trusted spaces across the city containing important community services.

### Tempe's Progress

Tempe's piloting of the Resilience Hub concept with EnVision Tempe is the beginning of creating a citywide network of Resilience Hubs and Resilient Energy Hubs.

#### Policy

- Exploring solar and battery (microgrid) opportunities with utilities

#### Programs

- Conducting neighborhood engagement and developing programs for EnVision Tempe

#### Infrastructure

- EnVision Tempe at Dorsey Lane and Apache Boulevard will open in 2022



*City of Tempe employees speaking with community members about the EnVision Tempe, a resilience hub pilot project.*



*EnVision Tempe before building retrofit.*

# Community Actions

## Resilient Energy Hubs and Resilience Hubs Roadmap

Through following Orlando's example of Resilient Energy Hubs and Baltimore, Austin and Puerto Rico's approach to Resilience Hubs, Tempe can advance its approach to community resilience and emergency management.

EXCEPTIONAL



### Puerto Rico

- **Network:** Transformed seventeen local community centers into resilience hubs
- **Multiple services:** Hubs are equipped with combinations of solar energy, water storage, gardens, communications systems, emergency kits, and psychological services
- **Always active:** Provides critical services absent of disaster

*Mercy Corps resilience hub include food, water and emergency preparedness solutions.*

ADVANCED



### Baltimore, MD

- Has twelve resilience hubs
- Placing hubs in different types of buildings, not just city buildings
- Provide food, education, health resources, and more

*Fan and food distribution at a resilience hub in Baltimore, MD.*

INTERMEDIATE



### Austin, TX

- Creating two resilience hubs by the end of 2023
- Engaging with community to create a people-centered resilience hub plan
- Granted \$3M from American Rescue Plan to build resilience hubs

*Mendez Middle School, a potential resilience hub in Austin, TX.*

BEGINNER



### Orlando, FL

- Developing six resilience hubs
- Hubs will provide services to lower-income communities after extreme weather events
- Will take time to develop

*LEED-certified neighborhood center with rooftop solar array.*

NOVICE



### Tempe, AZ

- First resilience hub will open in 2022
- Constructed to support workforce development and housing assistance during normal times and can act as an emergency cooling center

*Community members outside EnVision Tempe, a resilience hub pilot.*



# Proposed Investments

The following recommended policies, programs, infrastructure and personnel combine work that continues from the 2019 Climate Action Plan with investments that come with ongoing work with residents and businesses, as documented in the four agendas. The investments are categorized between community-wide investments and municipal investments for city operations.

## Community

Investments need to be made in policy adoption, program development, hiring of climate action personnel and the building of infrastructure that supports sustainability and resilience.

## Policies

City of Tempe has the opportunity to adopt policies that make our city more resilient to extreme heat and reduces greenhouse gas emissions.

### Extreme Heat

- Adopt a Tempe Green Construction Code for private development
- Adopt a Resilient Tempe Master Plan and Utility Feasibility Study
- Adopt Green Stormwater Infrastructure (GSI) Code and Standards

### Transportation

- Support creation of Transportation Management Association
- Increase transit frequency on key routes
- Advocate for regional and federal funding for Bus Rapid Transit (BRT) and Streetcar extension
- Adopt building codes that reduce barriers to install electric vehicles

### Energy

- Adopt Resilience Hub and Resilient Energy Hub Master Plan
- Resilience Hub Operating Standards
- Adopt Solar ready building codes

### Climate Justice

- Develop Food Access, Production and Entrepreneurship Roadmap



Mayor Corey Woods speaks about affordable housing at a Habitat for Humanity event.



Councilmember Joel Navarro participates at Climate Action Day with McClintock High School students.



# Proposed Investments

## Programs

As Tempe's approach to climate action matures, it will need to fund programs that support community carbon reduction and community resilience. Programs can be funded through supplemental budget requests to the General Fund or through grants or enterprise funds (for example, a new Stormwater Utility).

### Extreme Heat

- **Residential Green Stormwater Infrastructure program** to streamline resident efforts to build bioswales, curb cuts and bump outs
- **Cooling Center expansion** with standard practices to ensure a comprehensive and tailored approach

### Transportation

- **Community Electric Vehicle (EV) program** including residential and business outreach

### Energy

- **Energy Equity program** to support residents with low incomes in accessing affordable energy solutions
- **Business Sustainability** education and outreach

### Climate Justice

- **Food Forest program** to promote landscapes on public and private property that increase biodiversity and food production
- **Backyard Garden program** to support residents in growing food in backyards and on multi-family properties
- **Climate adapted urban forestry** to promote drought-tolerant and cooling landscapes on public and school properties
- **Indigenization program** for renaming, land stewardship, and developing arts and culture pilot projects



*Councilmembers Garlid and Arredondo-Savage with McClintock High School teacher Corey Ozan at McClintock High School's Climate Action Day.*

## Personnel

The Sustainability and Resilience Office will request full-time positions that allow it to support climate policy, programs and infrastructure.

### Community Resilience and Climate Justice Coordinator

- Support community-based-organization partnerships

### Youth Engagement Coordinator

- Support Youth Climate Councils, school outreach and school greening projects

### Climate Policy and Grants Coordinator

- Develop regional, state and federal policy solutions and develop grant proposals

### Local Food Specialist

- Develop local food plan and co-develop pilot projects (i.e., backyard gardening and food forests)

### Energy Equity Specialist

- Develop energy equity programs including mobile home solutions

### Climate Justice and Indigenous Land Stewardship Specialist

- Support target neighborhoods in transportation, urban cooling, Indigenous place keeping and land stewardship pilot projects

### Business Sustainability and Community Electric Vehicle (EV) Specialist

- Support businesses with carbon reduction efforts and develop EV roadmap and implement EV programs for residents and businesses

# Proposed Investments

## Infrastructure

Infrastructure is essential to supporting health, safety, resilience to extreme heat and low-carbon living. Mayor and Council allocate infrastructure funding in the Capital Improvement Budget, in which a 5-year budget is approved every year.

### Extreme Heat

- **Green Stormwater Infrastructure:** Projects to support flood mitigation, urban cooling and water conservation
- **Urban Forestry:** Maintain and grow tree canopy
- **ROW vegetation:** Ensure right-of-ways support cooling, beautification and tree canopy goals

### Transportation

- **Transit shelters:** Provide shade at bus stops to promote ridership
- **Bus Rapid Transit:** Provide BRT on Rural/Scottsdale to promote low-carbon commutes and ridership
- **Streetcar extension:** Provide sustainable development opportunities along Rio Salado and in Mesa
- **Electric vehicle (EV) charging:** Community charging for residents and businesses
- **Mobility Hubs:** Charging stations and carpool pullouts

### Energy

- **Community solar:** Solar projects that residents can buy into
- **Resilient Energy Hubs:** Investment in solar and battery storage (microgrids) at critical sites



City of Tempe employees inspect a new transit shelter prototype.

## Municipal

The City of Tempe can support policies, programs and infrastructure that support its city operations carbon reduction goals. These investments support community-wide climate action by demonstrating what is possible.

## Policies and Programs

- **City Green Building Policy:** Adopt policy to build all buildings using International Green Construction Code and EnVision certification
- **Sustainable Facilities Plan:** Adopt and implement retrofit and new building guidelines
- **Workforce Electric vehicle (EV) charging:** Develop electric vehicle chargers for city staff
- **Electric vehicle (EV) Fleet Roadmap:** Develop and implement investments in charging stations and vehicles



EnVision Tempe informational poster.

## Infrastructure

- **Energy Efficiency and retrofits:** Continue to invest in city buildings
- **Electric vehicle (EV) Fleet:** Continue to invest in electric vehicles across departments
- **Electric vehicle (EV) bus:** Pilot electric buses
- **Solar:** Continue to invest in solar
- **Resilient Energy Hubs:** Invest in microgrids (solar and battery storage)



Tempe Streetcar.

# Agendas

Residents and businesses are advancing the climate movement in Tempe. The following agendas are the actions, partnerships and recommendations created by our youth, neighborhoods, climate justice, and business community.

## Youth Agenda

Tempe youth are advocates of climate action and have the ideas and perspectives necessary to move climate action forward in our city. The Sustainability and Resilience Office hosted a series of engagement events throughout the summer of 2021 to allow youth to highlight topics important to them. These included food and transportation access, equity, partnerships with school boards and leaders, and Green Stormwater Infrastructure (GSI) solutions. In attendance were Tempe high school students, recent college graduates, and engaged community members who work with Tempe youth.



*Students plant native vegetation at McClintock High School.*

## Actions

### Equity

While equity was mentioned in the 2019 CAP, it was not a central focus. Young people echo the recommendations in the Climate Justice Agenda and request that Tempe address equity and climate justice more. This support makes clear the importance of these issues across communities in Tempe.

#### **Ways to center equity in Tempe:**

##### Improve Food Access

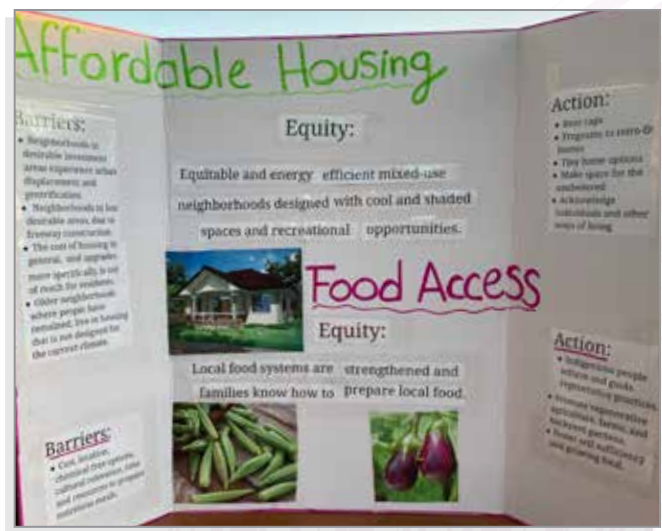
- Ensure easier access to healthy food across all income levels
- Remove/decrease taxes on produce and other “healthy” foods

##### Make Public Transit Comfortable and Appealing

- Provide free or affordable food and water options at transit centers and bus stops
- Implement free or affordable transportation options
- Increase overall accessibility of public transit for people with physical and mental disabilities
- Increase shade structures and tree canopy at all bus stops



# Youth Agenda



Display boards at a neighborhood resiliency event at Escalante Park.

## Food



Youths volunteer at Escalante Community Garden.

Young people believe there is an opportunity to improve food access and food entrepreneurship options in Tempe while increasing green space, mitigating heat, and building community. Food access is viewed as one of the major issues Tempe should focus on, especially how it directly impacts youth, students, and vulnerable communities.

Tempe has programs and services to increase food access, but youth believe the City can continue to create programs that increase the focus on food access.

### Current Programs:

- Food Banks
- The Farm Express Bus
- School Garden Initiatives
- Urban Agriculture and Community Gardens
- Farmers Markets
- Food Entrepreneurship Pilot Projects

### Proposed Programs:

- School compost/Vermiculture programs
- Food education programs that prevent food waste
- Public school programs subsidized by the City
- Reducing or eliminating the cost of food in schools and communities

### Youth ask that the City of Tempe create a plan and oversight committee to:

- Expand school gardens
- Empower youth and students interested in food entrepreneurship opportunities
- Invest in the local food economy
- Create affordable food access hubs at Tempe schools and community centers

## Partnership

### School Boards and Leaders



McClintock High School teacher Tim Cornwell and students plant native vegetation.

Students want to partner with school boards and leaders to pass climate action legislation and expand programs across Tempe's public schools.

#### Benefits of Climate Action Resolutions:

- Raise climate change awareness and encourage hands-on learning
- Generate savings through energy efficiency and foster more beautiful campuses
- Develop productive administration-student relationships

#### City-school partnerships can:

- Host sessions that empower students to change their schools, cities, counties, and states
- Promote policy changes to bring climate change education into the classroom
- Focus on immediate and long-term changes that directly target climate action

## Highlight Action

### Green Codes and Standards - Green Stormwater Infrastructure



Reilly Elementary School students examine Green Stormwater Infrastructure site plan.

Green Stormwater Infrastructure (GSI) work in Austin, Texas inspired Tempe youth to want the city and local school districts to make similar investments.

#### Best Practice: Reilly Elementary School-Austin, Texas

GSI adoption ensures that cities and developers consider water management and urban cooling when creating the landscape of parks, schools, and other developments. In 2020, Reilly Elementary School celebrated the opening of its GSI landscape.

#### Reilly Elementary School GSI benefits:

- Campus beautification
- Outdoor and hands-on education opportunities through partnership with a local community-based organization, Partners for Education, Agriculture, and Sustainability (PEAS)
- Collaboration between the school, surrounding neighborhoods, and the City of Austin
- Environmental protection including improved water quality and reduced erosion
- Raised GSI awareness

Tempe schools can also benefit from implementing similar GSI features on their campuses. Students believe their schools should install greywater systems and increase the number of native plants on school grounds.



## Champions

Tempe youth are making change happen across the city and the state. Elizabeth and Natalie are two inspiring local climate champions that are paving the way for more youth to make an impact in Tempe.



### Elizabeth Hollmann

Elizabeth Hollmann is a resident of Tempe and an honor student at Tempe Preparatory Academy. She plans to earn a degree in Political Science with a concentration in Environmental Studies. Elizabeth became motivated to work on climate action after becoming engaged in intersectional work that allowed her to see how socioeconomic and racial disparities affect the quality of life among communities.

#### Elizabeth is motivated by:

- Fridays For Future, an international movement of students demanding political leaders to take action against climate change
- The ability to take action in pressuring her local government to adopt actionable sustainability policies

#### Elizabeth contributes to climate action by:

- Participating in CHISPA River Clean-Ups
- Being a member of Tempe Preparatory Academy's Composting Crew
- Working with the City of Tempe on Dolores Huerta Day and Climate Action Plan Update Youth Forums

"I hope Tempe's future includes impactful climate action with funding from Tempe City Council and the state of Arizona. I hope that the City of Tempe continues to seek out and center voices from frontline communities and involve youth in the decisions that will impact long and short-term futures. I hope that we, especially those in my generation, have learned through Climate Action that progress is a never-ending effort that takes all of us."



### Natalie Mendoza

Natalie Mendoza is a resident of Tempe and an honor student at Arizona State University Preparatory Digital. Natalie plans to attend the IRA Fulton Schools of Engineering at Arizona State University to earn a Master's degree in Environmental Engineering. Natalie became motivated to work on climate action after learning about the severity of climate change and the slow response among global leaders.

#### Natalie is motivated by:

- The deterioration of the natural environment and the uncertain future that climate change has caused
- Natalie's connection to natural landscapes through outdoor activities and engaging with nature

#### Natalie contributes to climate action by:

- Aspiring to be an environmental engineer to innovate ideas that address environmental concerns and advocate for environmental legislative change
- Participating in Climate Action Plan Update Youth Forums and garbage cleanups

"I hope Tempe prioritizes climate action and finding long-term, innovative, and sustainable solutions to fight climate change and to take action to create a livable planet for generations to come. I hope my generation learns to consider the long-term future over the short-term costs when passing legislation and implementing solutions so that future generations do not face the same challenges we do. Young people can fight against climate change by learning the facts, brainstorming potential solutions, and advocating for policy change."



# Business Agenda



ASU student rendering of a sustainability conscious development.

The over 17,000 businesses in Tempe make up a strong stakeholder group that play a vital role in mitigating climate change and building a resilient, vibrant, and thriving community. Many have already been implementing sustainable practices into their business operations.

Over the Summer of 2021, the City of Tempe's Sustainability and Resilience Office, in partnership with the Tempe Chamber of Commerce and Local First Arizona's sustainability team, hosted two virtual forums for Tempe business leaders that resulted in the following actions.

## Actions

### Energy Efficiency



Energy efficient lighting at a Tempe small business.

In Arizona, a large percent of power comes from nonrenewable resources. Greenhouse gas emissions from these resources can cause detrimental problems such as poor air quality, temperature increases, urban heat island effect, and health complications. Businesses can work with their energy utility to save money, increase their energy efficiency, grow Arizona's clean energy economy, and become more sustainable and resilient to future disruptions.

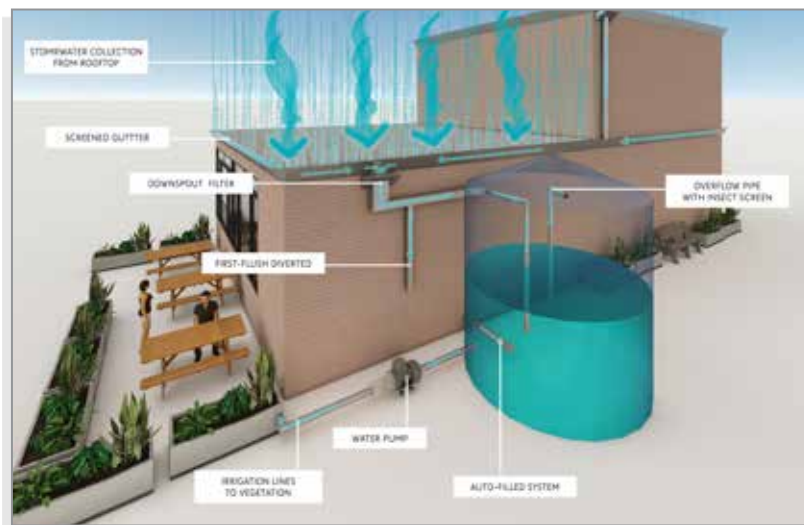
#### Energy, SRP or APS, Utility Programs for Businesses

- **Standard rebate programs:** Replace units with energy efficient ones - lighting, refrigeration, HVAC controls, thermostats, building envelope, and appliances.
- **Custom rebate programs:** Relates to unique projects, items, and industrial processes. Fit to facilities needs.
- **Retrocommissioning programs:** Reprogramming control systems and bringing a building back into its original design state (increase efficiency, fix wear and tear, preserve existing building stock).

#### Energy Cost Saving Actions for Businesses

- **Find the problem and start measuring:** Post utility bills and track usage; empower employees to participate; have an energy audit performed.
- **Prevent future problems:** Maintain and clean equipment; rearrange for common-sense layouts ie. refrigerator away from oven; proper ventilation; increase awareness and education among staff.
- **Make a plan to right size your business with efficiency:** Replace fluorescent and incandescent lights with LEDs, CFL, or daylighting; phase out old equipment and appliances with options that are "smart" or Energy-star related; seal building envelopes and replace inefficient windows and doors.

## Water Conservation



ASU student rendering of water conservation measures.



Water audit with DTA businesses.

Water is a precious resource that must be managed properly in our desert climate, as Arizona's water supply has grown increasingly uncertain. Businesses can partner with the City to learn how to better manage water use, save money, and conserve water to maintain the vibrancy of Tempe and ensure water security for future generations.

### Water Utilities Division Commercial Industrial and Institutional (CII) Program for Businesses

#### Best management practices

- Landscape consultations and water budgets
- Water efficiency audits
- Customer high water use inquiry and notification

#### WaterSmart Portal

- Water management tool

#### Non-residential Grants and Rebates

- Turf Replacement rebate: convert grass to desert landscaping
- Indoor fixtures rebate: upgrade fixtures to high-efficiency models

#### Industrial Grant

- Commercial and industrial users
- Target savings areas: industrial/commercial processes, landscaping, and cooling systems

#### Water Efficiency Audits

- Interior
- Exterior

### Water Conservation Actions for Businesses

**Measure what you want to change:** Track water usage and utility bills; establish a green team to monitor water use; have a water audit performed.

**Establish a plan and communicate water conservation and efficiency goals with team:** Promote awareness and conservation with a written policy; check for and fix leaks once a month; improve efficiency through retrofits.

**Identify opportunities that further support your efforts:** Take advantage of the City of Tempe Commercial Water Rebate Program to offset costs for improvements; support other businesses who are prioritizing sustainability and water conservation; participate in the Arizona Green Business Program for consultation and promotion of your business's efforts.



# Business Agenda

## Partnerships

Business leaders at the Summer 2021 forums expressed that the best way to involve their businesses in climate action planning was to provide more educational opportunities, outreach, and information on best practices. Topics discussed were:

### Barriers to Participating

Lack of relationships, knowledge, and capital

### Partnerships Provide

Access accountability structure and support

### Partnership Benefits

Access to experts, information and best practice webinars

The City of Tempe, Tempe Chamber of Commerce, and Local First Arizona each have several programs and opportunities to educate businesses on sustainable practices to overcome current barriers and challenges.



### City of Tempe

- 2022 Climate Action Plan Update
- Municipal Utilities Department Water Utilities Division CII Program



### Tempe Chamber of Commerce

- Directory of sustainability-minded businesses
- Basic, intermediate, and advanced actions businesses can take



### Local First Arizona

- Green Business Certification
- Scale-Up Program
- One-on-one work with businesses to help adopt cost savings solutions

## Highlight Action

### Mobility Hubs



Rendering of Culdesac Tempe development on Apache Boulevard.

Mobility hubs are infrastructure solutions that provide transportation options to bring workers and residents to business locations in Tempe, while supporting clean transportation. One example of a mobility hub being implemented in Tempe is Culdesac, the first car-free neighborhood in the United States. Culdesac is currently in development on a 17-acre lot in the city. The area will be made up of residential and retail space, co-working space, and an outdoor pedestrian area - **all car free**. Utilizing the mobility hub concept allows Culdesac to do just that by providing a variety of transportation solutions such as e-bikes, e-scooters, rideshare, bike parking, and on-site light rail.

### Walkable and bikeable neighborhoods and cities will provide economic benefit for businesses by:

- Reducing traffic congestion in the area
- Increasing foot traffic in the area
- Attracting workers and customers

“Mobility hubs help our residents and the surrounding community live affordably and sustainably.”

- Lavanya Sunder, General Manager Culdesac Tempe



## Champions

Tempe businesses are proving that climate action can save money and be good for business.



### Sole Sports Running Zone

Sole Sports Running Zone is a running and walking store in Tempe that specializes in shoes, running products, and athletic apparel. While they work to curate a fantastic customer experience, they also prioritize sustainability in their business and community engagement.

#### **Sole Sports has taken measures to reduce water, energy, and waste:**

- Retrofitted store with LED lighting and exit signs and double-pane windows
- Installed dual-flush toilets and a water-refill station to eliminate waste
- Reuses packaging materials and recycling
- Offers store credit to customers who donate shoes

“We think contributing to a culture of sustainability and the stewardship of our resources is a basic responsibility of our being in business, and as a running shop, we want to support the efforts to keep our outdoors clean, run-able, and healthy.”

- Holly Amend, Manager & Apparel Buyer at Sole Sports.



### Downtown Tempe Authority (DTA)

Downtown Tempe Authority (DTA) is a non-profit organization working in partnership with the City of Tempe to increase the value of Downtown Tempe through safety, promotion of the district as a destination, event production, and parking management. DTA is working to establish sustainable and resilient water stewardship practices in the district through a water retrofit and efficiency pilot in collaboration with Mill Avenue Shops and Caffe Boa.

#### **Pilot and Outcome:**

- Comprehensive water audit of 12+ businesses
- Projected efficiency savings of 20-75% through fixture retrofits
- Opportunity for district businesses to take advantage of the City's Commercial Indoor Efficiency Fixture Rebate
- Serves as example for other downtown centers to support businesses in adopting sustainable practices

“We are interested in water conservation and want to look at it in terms of the district we manage, which includes the space in the public right of way, how we clean and take care of it, how we manage parking lots and garages, as well be mindful of planters and landscape around downtown ... We want to cultivate water saving success stories from businesses and property owners and share with the public and encourage others to do the same.”

- Lori Foster, Chief Strategy Officer at DTA



*Councilwoman Doreen Garlid discusses a climate justice issue at an EnVision Tempe event.*

The Sustainability and Resilience Office hired community-based organization, Unlimited Potential, to connect with vulnerable residents of target neighborhoods most affected by climate change. A series of engagement events were held to discuss energy equity and extreme heat, community health and resilience, and the EnVision Tempe facility. Tempe residents assisted in building a climate action plan that addressed the inequitable and unjust effects of climate change.

## Actions

### Extreme Heat and Energy Equity



*A pedestrian walking in the heat.*

Residents want to live comfortably in a cool, walkable Tempe with adequate living standards that conserve energy. Unfortunately, some disadvantaged residents have to choose between paying for electricity and other necessities because the cost of cooling their homes is too expensive. Unsheltered residents, who use the least energy, are the most at risk from extreme heat.

The overall health and well-being of Tempe residents can improve with the following processes and policies:

- **Unsheltered Population:** support and respect unsheltered persons
- **Neighborhood Funding:** mobilize neighborhoods as a collective energy action
- **Green Stormwater Infrastructure (GSI):** promote water conservation and increase native vegetation
- **Energy Savings:** set an allotted amount of energy at no cost; lower-income residents would benefit the most
- **Property Renovations:** weatherize and update existing living spaces
- **Energy Efficiency:** incentivize the use of natural and clean energy resources



## Land Stewardship



ASU student rendering of a reimagined sustainable landscape for Indian Bend Wash.

Due to the colonization and commercialization of the environment over the last several centuries which has reduced the area's land, water, and food quality, Tempe needs to develop land practices that improve living standards for the most affected.

The relationship between the land and its people can improve through the following:

- **Indigenization of Tempe:** acknowledge colonization and integrate Indigenous knowledge
- **Regenerative landscaping:** promote regenerative agriculture, farms, and backyard gardens
- **Connectivity:** use tree canopies along bike and walking paths
- **Resilient landscape:** plant native vegetation to increase urban cooling and water conservation
- **Indigenous ownership:** historical unceded land is given back to Indigenous communities



Tyrone Thompson owns and operates Chi'shie Farms and teaches Navajo families how to farm.



Brian and Maria Parra Cano, owners of Sana Sana Foods, teach communities about ancestral foods in the Phoenix metro area.



# Climate Justice Agenda

## Partnership

### Community-Based Organizations



Residents of the Escalante neighborhood attend a bilingual neighborhood resiliency event co-hosted by Unlimited Potential and the Sustainability and Resilience Office.

Some residents do not feel safe navigating the city system. Hiring a community-based organization to facilitate City-resident relationships gives residents an opportunity to voice their concerns on important issues addressed. Community-based organizations can work on responding to climate change and climate justice inequities through:

- **Outreach:** increasing partnerships between City and community-based organizations to carry out planning and implementation
- **Education:** producing training to support residents' energy and resilience needs
- **Equity:** responding to community inequities and ensuring collective well-being across Tempe

## Highlight Action

### Resilience Hubs



Community member discusses potential support services that could be offered at EnVision Tempe.

The EnVision Tempe facility provides a centralized location for residents to practice community resilience, self-sufficiency, and offer shelter during an emergency. The facility offers additional access to economic, social and housing services, and helps improve residents' emergency management and response skills.

EnVision Tempe was created out of two existing frameworks that address community resilience, wellbeing, and self-reliance:

- **Resilience Hubs:** Community-based facilities that promote local empowerment through self-reliance by creating a local approach to emergency preparedness
- **EnVision Centers:** Government facilities that act as a one-stop shop for social and healthcare programs

EnVision Tempe will serve nearby communities through the following pillars:

- **Economic Empowerment:** Opportunities to improve economic sustainability
- **Educational Advancement:** Educational and skills training opportunities
- **Health and Wellness:** Improving access to better health outcomes
- **Character and Leadership:** Providing service opportunities for community members to encourage civic engagement
- **Resilience to Extreme Heat:** Providing immediate and long-term heat relief
- **Community Resilience:** Ensuring community wellbeing and self-reliant emergency preparedness

## Champions

Tempe residents want all community voices to be heard at the City level. Karla and Mariela are two women of color who are poised to improve their neighborhoods and have their voices heard.



### Karla M. Paez

Karla M. Paez is a Latina mother of four and a Tempe resident. She and her family use the Escalante Community Center to learn about environmental justice through workshops offered by Unlimited Potential.

**Climate Action Work:** Karla is motivated by the belief that present and future generations deserve clean air to breathe and clean parks to play in. She teaches her children to care for the environment by not littering and picking up after others' litter.

Karla advocates for environmental justice because she believes that every community member, regardless of where they live, should have green and beautiful natural spaces. She also supports her community's efforts to gain equal rights for a more dignified life, a better future for children, and to address the violence and oppression of women.

"All of us as a community have the right to benefit from green and beautiful spaces and we should join together to preserve nature for all of us. I hope the future of Tempe is greener and less extreme. Tempe residents should get informed, get involved, understand their rights, and advocate for the rights of everyone to live in a clean and healthy city."



### Mariela Acosta

Mariela Acosta is a Latina mother of four children and a Tempe resident. She supports local farmers by purchasing their produce and learns about environmental justice through workshops at the Escalante Community Center.

**Climate Action Work:** Mariela advocates for environmental justice because she sees her community struggle each day for sustenance. She believes in a better world with clean air and a clean economy. Mariela leads by example, encouraging her family to use less energy, conserve water, and avoid purchasing plastic and disposable products.

"I hope Tempe will lower energy costs and mitigate extreme heat. Human beings need to take better care of the environment for themselves and their families. If nothing is done, heat will become worse for people and their work conditions."



# Neighborhoods Agenda



*University Heights residents working with Watershed Management Group (WGM) and Four Peaks Brewery on a neighborhood Green Stormwater Infrastructure (GSI) project.*

Tempe residents understand the importance of climate action through lived experience, and they advocate for the changes needed in neighborhoods and communities. The Sustainability and Resilience Office engaged with Tempe residents on several topics concerning climate action. These included resilience to extreme heat, partnerships with community-based organizations around equity, and highlight actions regarding Resilient Energy Hubs and Resilience Hubs. Tempe parents, business owners, ASU faculty and students, City of Tempe staff, organization leaders, and homeowners and renters were in attendance.

## Action

### Resilience to Extreme Heat



*ASU student rendering of a cool landscape outside the Tempe Library which could function as resilience hub.*

Extreme heat is an issue that Tempe residents want the city to address. Not only is it a health issue and safety issue but a climate justice and equity issue. It is crucial that Tempe work on transformative actions that help our communities, especially the most vulnerable. The Sustainability and Resilience Office works on programs to address extreme heat, including the Cool Kids program, but residents know much more must be done.

#### **Additional programs Tempe residents ask for:**

- 100% bus shelter coverage
- Community Cooling Centers/Resilient Energy Hubs
- Increased tree canopy across the city
- Implementation of Permeable Pavement



# Neighborhoods Agenda

## Equitable Urban Cooling



*A final design for future Tempe transit shelters using shade and cool materials.*

### Residents want Tempe to address extreme heat equity by:

- Creating policies to make electricity more affordable for all residents (homeowners and renters), including subsidizing energy costs
- Implementing programs that ensure energy is always available for all residents
- Providing rebates and incentives for solar panel implementation
- Holding utilities accountable for a transition to renewable energy
- Building social capital and focusing on community-led solutions to extreme heat
- Providing services for people experiencing homelessness to seek shelter in times of extreme heat

## Partnership

### Community-Based Organizations and Equity



*City employees and Unlimited Potential employees celebrating Tempe outreach event.*

The Sustainability and Resilience Office partnered with Unlimited Potential to bring energy, extreme heat, and utility bill literacy education to Tempe residents. Residents want the City to continue to partner with community-based organizations to address equity and climate justice.

### To more seriously focus on equity, the City of Tempe should:

- Invest more in equitable transportation infrastructure improvements
- Address health concerns associated with long waits and lack of air conditioning at transit centers and bus stops
- Increase connectivity between neighborhoods, businesses, schools, and other public space
- Ensure that every child in Tempe can safely walk or bike to school
- Improve infrastructure and accessibility for people with physical and mental disabilities
- Increase the availability of clean energy jobs

### Tangible actions that address equity residents want to see in Tempe:

- Affordable/free water and electricity
- Public transportation infrastructure improvements
- Emergency services and on-demand transportation buttons
- Distribution of emergency packs (including water, electrolytes, food, toiletries, and other necessities) to residents in need

# Neighborhoods Agenda

## Highlight Action

### Resilient Energy Hubs and Resilience Hubs



Mercy Corps resilience hub in Puerto Rico.

Tempe neighborhoods can increase connections and community resilience through strategic investment in resilient energy hubs and resilience hubs that follows the example of work in Puerto Rico.

#### **Best Practice: Puerto Rico Mercy Corps Resilience Hubs**

Resilience hubs are community-oriented facilities that support residents, coordinate resource distribution and provide emergency services. Resilient energy hubs are community-oriented facilities equipped with solar power and energy storage. Mercy Corps, a nonprofit organization, manages 17 resilience hub locations around Puerto Rico. Asociación Pro Juventud's 5 main features are a prime example of a resilience hub.

- Community Gardens
- Connectivity
- Disaster Risk Reduction
- Off-Grid Solar Energy
- Potable Water

Resilience hubs are essential in providing year-round services to vulnerable communities and supporting all community members during times of disaster. A resilience hub in a community offers a sense of security, knowing that shelter, food, water, electricity, and more can be found during a crisis. The City of Tempe benefits from the leadership and technical assistance of the Urban Sustainability Directors Network (USDN) and cities across the country that are piloting this important concept.

## Champions

Tempe residents are making their neighborhoods more resilient and sustainable. Gretchen, Raul, Joel and his neighbors are examples of residents working to transform Tempe.



### Joel Cornejo

Joel Cornejo is a resident of Tempe. He began volunteering as a youth for community organizations Puente Human Rights and Mijente. Joel is the founder of Semillas Arizona, a nonprofit organization that organizes BIPOC to defend themselves from laws and institutions that target their communities.

**Semillas Arizona:** Joel was motivated to start Semillas Arizona in 2019 after the death of Antonio Arce and his own experience seeing his community targeted by police and ICE.

Semillas Arizona is in the process of creating the base for its newly formed Environmental Justice Coalition. The organization has also created a new initiative, the People's Budget that engages the community to participate in the City of Tempe budget process around:

- Increasing tree canopy in target neighborhoods
- Addressing environmental injustices
- Creating cooling centers for unsheltered people
- Increasing afterschool programs
- Making public transportation free

"Semillas stands for seeds, we believe in planting the fire for liberation into future generations. Who we must protect. Putting more cops with guns won't do that. The Barrio needs trees and plants. The Barrio deserves justice and that includes our environment."



# Neighborhoods Agenda

## Champions

Gretchen Reinhardt and Raul Puente-Martinez have lived in Tempe for over 20 years. They have advanced climate action as volunteers and as professionals. Both have contributed to increasing shade and mitigating heat by helping to establish the Escalante Community Garden and winning a tree-planting neighborhood grant for the Escalante and Alegre neighborhoods. They have been involved in climate action through multi-modal transportation advocacy, initiating neighborhood resilience conversations, and through several organizations.



### Gretchen Reinhardt

#### City of Tempe Sustainability and Resilience Commission

- Recommends sustainability solutions to the City of Tempe
- Supports council and citizens in understanding climate impacts

#### Citizens' Climate Lobby (CCL), East Valley Chapter

- Empowering everyday people to work together to create a livable world through passing effective, national, bipartisan climate policy

#### Arizona Faith Network

- Growing a state-wide interfaith Cherishing Creation Collaborative to support sustainability and resilience partnerships and the development and spread of good ideas
- Helped establish cooling centers at places of worship across Maricopa County

#### Tempe Interfaith Fellowship

- Promotes understanding, respect, and partnership across all faiths among topics such as climate resilience
- The organization's initial ideas led to the creation of Tempe Community Action Agency (TCAA) which addresses food insecurity, and the Interfaith Homeless Emergency Lodging Program (I-HELP), which provides shelter and food to people experiencing homelessness



### Raul Puente-Martinez

#### Curator of Living Collections and Research Botanist for the Desert Botanical Garden

- Educates visitors about the advantages of the collection's plants for water conservation and to help with cooling the landscape
- Involved with watershed management groups in creating gardens for rainwater harvesting
- Researches how climate changes impact native vegetation

#### Citizens' Climate Lobby (CCL), East Valley Chapter

- Empowering everyday people to work together to create a livable world through passing effective, national, bipartisan climate policy

"The most important part of a local climate action plan can't actually be in the plan...because it is us. All of us. As a community. It's our commitment to make decisions and provide funding based on a livable future for all. It's investments like a city-wide 1/4-mile school-safe bicycle grid, codes that understand tree needs and life-spans, and its funding resilience. We need to keep learning from our best-of-intentioned mistakes. It's a process, and each of us has a role to play."

– Gretchen Reinhardt and Raul Puente-Martinez



# Municipal Actions

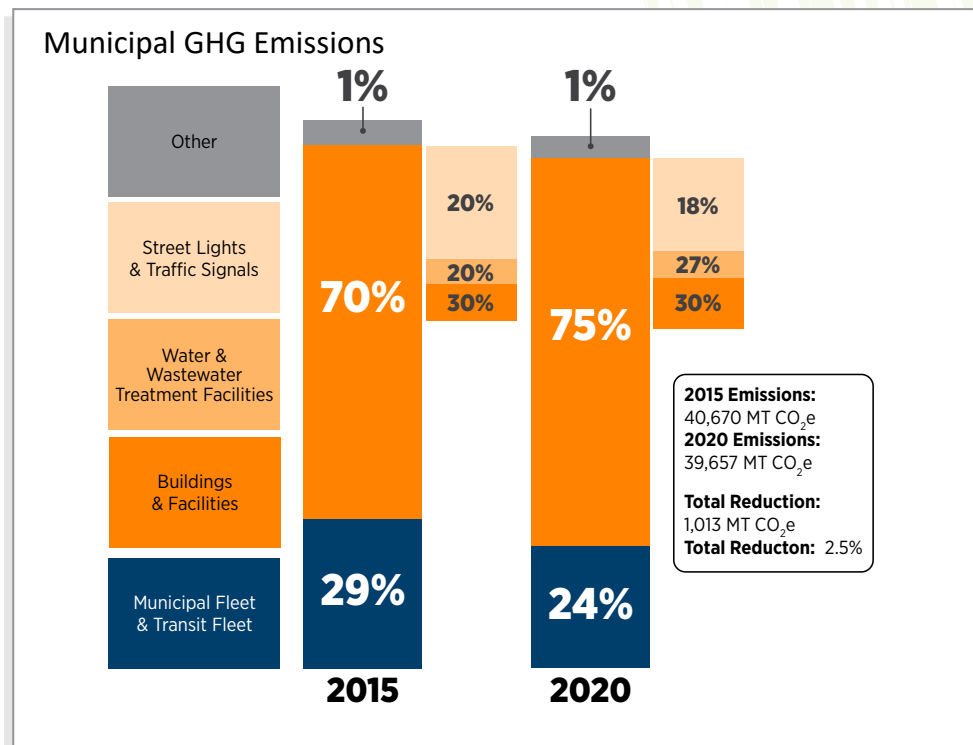
In addition to community actions, the city government has focused on actions it can perform to be sustainable and resilient. In 2015, Tempe collected data to form the city's first municipal GHG emissions inventory. A new inventory was completed in 2020, which showed a 2.5% decrease in overall municipal emissions. Emissions decreased in almost every sector over a 5-year period. This is a positive trend that the city hopes to reinforce through further action. Tempe set a goal of carbon neutrality in municipal operations by 2050 with a strategy of 100% renewable energy by 2035. The following sections provide strategies the city will employ to decrease GHG emissions in city operations.

## Municipal GHG Inventory



Mayor Corey D. Woods

In 2020, the total municipal emissions were 39,657 MT of CO<sub>2</sub>e. Approximately 75% of the city's GHG emissions were from electricity production, while 24% of total emissions came from the transportation sector. Tempe owns 120 buildings, which account for 30% of the city's electricity consumption and GHG emissions. Outdoor lighting, which includes 17,000 streetlights, park lights, and traffic signals, accounts for 18% of total emissions. The City of Tempe manages two drinking water treatment plants that consume approximately 22 million kWh of electricity per year, or 27% of the municipal GHG emissions. Tempe's municipal fleet, transit fleet and employee commute account for 24% of total emissions. Solid waste is transported to neighboring cities, specifically Phoenix, for disposal, and accounts for less than 1% of total emissions.



# Municipal Actions

## City Buildings

### Completed Actions



*Kiwanis Recreation Center*

#### Assessments:

- Annual assessments of city buildings are conducted to determine energy efficiency upgrades for lighting and electrical equipment.

#### Retro-commissioning:

- A retro-commissioning study was conducted at the Tempe Library and History Museum to improve efficiency.

#### Plans:

- A first draft of the Facilities Sustainability Plan has been completed.

#### Public/Private Partnerships:

- Solar panels have been installed at six city facilities to power buildings with renewable energy. The city will continue to make clean energy investments through partnerships with APS and SRP.
- Tempe participated in a demand response program with APS and SRP to help the utilities reduce peak demand.

### Next Actions



*Fire Station No. 2*

#### Energy Management:

- Tempe is working with energy management consultants to perform assessments and determine appropriate building efficiency upgrades.

#### Energy Retrofits:

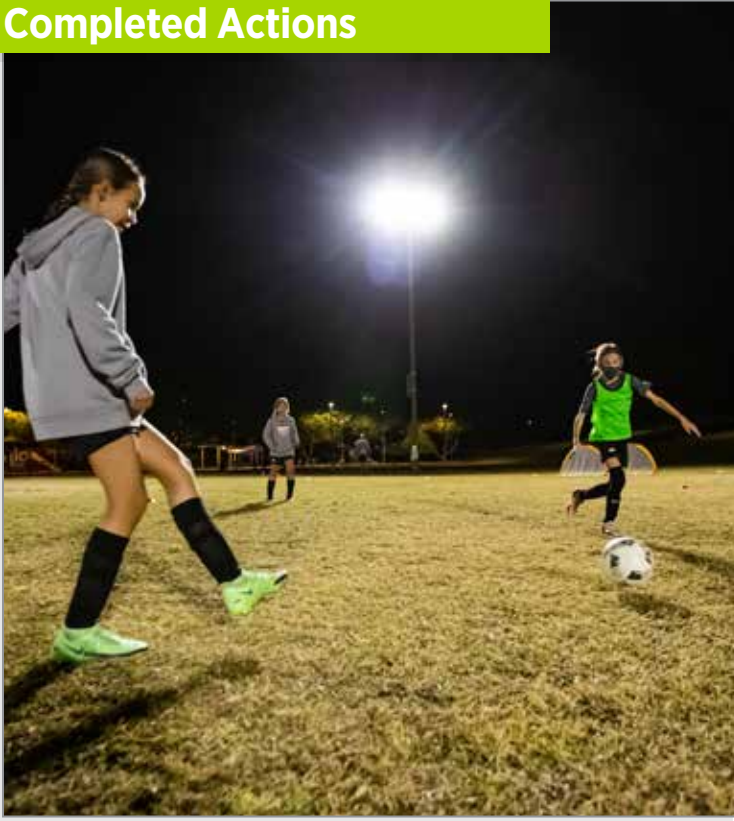
- Installation of 'cool roofs' on some city buildings is being assessed.
- Tempe will retrofit the Library and Fire Stations with LED lights.



# Municipal Actions

## Outdoor Lighting

### Completed Actions



Hanger Park

#### Parks/Area Lighting:

- 90% of area lighting at city parks has been upgraded to efficient LEDs.
- Installed 643 new LED area lights in parks in 2020.

#### Street Lighting:

- Began conversion of street lights from induction lights to LED lights.
- Priest Drive and Rural Road have been fully converted to LEDs.
- 4,000 residential and 1,000 arterial street lights have been converted to LEDs.

### Next Actions



University Road

#### Street Lighting:

- All lights will likely be completed by 2025.

#### Park Lighting:

- The city will work to convert the remaining 10% of unconverted park lights to LEDs in 2021.

#### Facility Lighting:

- The city will continue to upgrade exterior lighting to LEDs.



# Municipal Actions

## Water Infrastructure

### Completed Actions



*Municipal Utilities water well*

#### Assessments:

- Tempe has completed an efficiency study to assess the city's water treatment plants, wells, and pumps to determine how to optimize water and energy use.

#### Facility Lights:

- The outdoor lighting at all 3 city water treatment plants has been fully converted to LEDs

### Next Actions



*Municipal Utilities water pumps*

#### Renewable Energy:

- Tempe will install solar panels on the carports at our water plants.

#### Energy Retrofits:

- The possibility of 'right-sizing' pumps to make them more efficient is being examined.
- The city will implement the recommendations from the efficiency study.

# Municipal Actions

## Municipal Fleet and Transit Fleet

### Completed Actions



Downtown Police Courts Parking Garage

### Electric Vehicles:

- Tempe added 20 Electrical Vehicles to the municipal fleet to reduce fossil fuel use.
- Tempe installed 35 Electric Vehicle charging stations at city facilities to encourage accessible access to Electric Vehicle infrastructure.

### Buses:

- All buses have been converted from unleaded diesel to hybrids or alternative fuels.

### Studies:

- An Electric Vehicle feasibility report has been completed, which will further help the city implement Electric Vehicle infrastructure.

### Next Actions



Tempe Transportation Center

### Municipal Fleet Upgrades:

- Tempe will convert all light duty vehicles to Electric Vehicles by 2035.

### Transit Fleet Upgrades:

- Tempe's Orbit and Flash buses are switching to alternate fuels instead of using diesel gasoline.
- A pilot program with 8 buses will test the feasibility of fully-electric buses in Tempe.



# Municipal Actions

## Upcoming Investments

### City Buildings



#### Completed Actions

Tempe continues to work with local utilities to improve efficiency and demand response through yearly assessments which highlight buildings that can be retro-commissioned to improve energy efficiency.

#### Future Actions

Further building assessments, retrofits and retro-commissioning projects will take place as opportunities arise.

### Outdoor Lighting



#### Completed Actions

90% of park area lights and 25% of street lights have been converted to LED lights; improving efficiency, visibility, and safety throughout the city.

#### Future Actions

The remaining 10% of park lights and 75% of street lights will be converted to LED's.

### Water Infrastructure



#### Completed Actions

Efficiency studies have been conducted at Tempe's water treatment facilities.

#### Future Actions

Tempe will continue to examine ways to increase efficiency and decrease energy use at its water facilities. This includes 'right-sizing' pumps and installing LED lights at water facilities.

### Municipal Fleet and Transit Fleet



#### Completed Actions

Tempe has added 20 electric vehicles to its fleet and installed 35 EV chargers around the city. All city buses have been converted to either hybrids or alternative fuels.

#### Future Actions

All light-duty vehicles will be converted to electric vehicles by 2035. Orbit and Flash buses will continue to be converted to hybrid and alternative fuels. A pilot program for fully electric buses will be put in place.

Grants allow Tempe to expand and create programs that serve community needs.

## NEA Our Town Grant



*Centering Indigenous design principles and concepts of resilience in the future of Tempe.*

**Funder:** National Endowment for the Arts (NEA)

**City Partners:** Sustainability and Resilience Office, Arts & Culture Division, Community Development, Parks & Recreation, Strategic Management and Diversity Office

**Community Partners:** Indigenous Design Collaborative (IDC)

**Budget:** \$100,000

**Project Timeline:** 2021-2023

**Objective:** To bring Indigenous voices and perspectives to the forefront of city planning and take an active role in designing the future of Tempe.

**Outcome:** For Tempe to consider adopting Indigenous design principles and processes as expressed by artists and members of adjacent tribal communities.

The City of Tempe has partnered with the Indigenous Design Collaborative (IDC) to support projects that integrate Indigenous arts, culture, and design activities across Tempe. IDC will support creative engagements with three tribal communities: Salt River Pima-Maricopa Indian Community, Gila River Indian Community, and the Pascua Yaqui of Guadalupe. IDC will build connections with Indigenous community members, elevate Indigenous cultural identity, and reimagine city-making processes by leading with Indigenous cultural values. This project is an example of how local government can support and adopt sustainability and resilience principles, center the voices, and hear perspectives of Indigenous communities in municipal design and urban development.

Policy, program and infrastructure recommendations coming out of this work will include:

- Indigenization of Tempe
- Arts and Culture programming
- Community Development and Planning
- Resilience to extreme heat





## Energy Equity and Climate Justice Training and Engagement



*Supporting residents in saving money and staying cool.*

**Funder:** City of Tempe through CARES Act funding

**City Partners:** Sustainability and Resilience Office, Human Services, Community Development, Neighborhood Services, Communications and Media Relations, Engineering and Transportation

**Community Partners:** Unlimited Potential

**Budget:** \$32,000

**Project Timeline:** March to December 2021

**Objective:** To recruit and train Tempe residents in energy and climate issues and prepare residents to read their energy bills, understand their energy use, prepare for extreme heat in the summer and advocate for policy changes to support energy and resilience to extreme heat policy.

**Outcome:** Recruitment efforts will result in establishing a Climate Justice Advisory Group of 5-10 Tempe residents, from diverse backgrounds, to advise the Sustainability Commission on energy equity and climate justice.

Unlimited Potential has partnered with the City of Tempe to recruit and train Tempe residents in energy and climate issues and prepare residents to engage with city staff, the Mayor, and City Council. Unlimited Potential is a 35-year-old organization with expertise in community organization and resident advocacy. Unlimited Potential works in English and Spanish to assist residents who traditionally do not engage with local governments. This cross-sector collaboration will directly respond to community inequities and ensure that Tempe's climate policy, programs and infrastructure centers the voices of BIPOC residents.

Policy, program and infrastructure recommendations coming out of this work will include:

- Clean and affordable energy (Collaboration with APS and SRP)
- Energy efficiency (Housing retrofits)
- Sustainable transportation
- Resilience to extreme heat



## Climate-Sensitive Urban Forestry



*Co-creating landscapes for a hotter future.*

**Funder:** Salt River Pima Indian Community (SRPMIC) Gaming Grant

**City Partners:** Community Services, Engineering and Transportation, Municipal Utilities, and Community Development

**Community Partners:** SRPMIC, Trees Matter, Tempe Union High School District, Tempe Elementary District, Arizona Sustainability Alliance and Keep Tempe Beautiful

**Budget:** \$67,500

**Project Timeline:** 2021-2022

**Objective:** To mitigate the negative effects of extreme heat through climate-sensitive urban forestry.

**Outcome:** To develop pilot projects on city property and local schools that demonstrate the benefits of native pollinator gardens, desert-adapted trees and green stormwater infrastructure while working to achieve a citywide 25% tree and shade canopy by 2040.

This initiative contributes to urban cooling by planting native vegetation around Tempe. Increased vegetation cools surface temperatures and absorbs runoff water from rain and irrigation. This project funds the installation and maintenance of native vegetation, which require less water and are drought tolerant, helping them survive in extreme heat.

The grant is funding a native pollinator forest at 12th Street and Mill Avenue and demonstration projects at Thew Elementary, Tempe High School and McClintock High School. Funding is paired with additional resources from grants and donations from the city, APS, SRP and Trees Matter. Additional demonstration sites at schools and on city property will be added as funding allows.

Policy, program and infrastructure recommendations coming out of this work will include:

- Increase investment in urban forestry
- Increase investment in Green Stormwater Infrastructure (GSI)
- Water conservation
- Resilience to extreme heat





## Cool Kids, Cool Places, Cool Futures (Neighborhood Justice)



*Youth-led Climate Action leading to citywide and regional equitable cooling solutions.*

**Funder:** Robert Wood Johnson Foundation

**City Partners:** Sustainability and Resilience Office, Community Services, Human Services, Fire Medical Rescue

**Community Partners:** Arizona State University, Tempe Union High School District

**Budget:** \$590,000

**Project Timeline:** 2021- 2023

**Objective:** Support students in advancing resilience to extreme heat in the Escalante and Gilliland neighborhoods, Tempe, and Maricopa County through art, policy and cooling projects.

**Outcome:** Use the transformation of Tempe schools and neighborhoods to inspire a regional cooling authority or utility to design, fund and implement cooling infrastructure and programs throughout Maricopa County.

Cool Kids, Cool Places, Cool Futures is a project that aims to organize youth across the City of Tempe to take action on resilience to extreme heat. This opportunity shifts power and gives voice to the next generation of Tempe leaders. Cool Kids is organized by two youth councils of ten to fifteen core students that focus on advancing resilience to extreme heat efforts in the Escalante and Gilliland neighborhoods, two communities most impacted by heat-related issues. The students refer to the project as Neighborhood Justice. Youth council members will be supported by ASU researchers, City of Tempe staff, artists, local teachers, and social workers to give guidance on completing various community projects that address climate, health, and equity.

Cool Kids (Neighborhood Justice) complements existing Tempe and regional assets including the following Tempe programs, the Mayor's Youth Advisory Council, Community Arts program, Urban Forestry program, Emergency Management Program, and resilience to extreme heat expertise and Indigenous concepts of resilience. The intention is for the students' change at the school and neighborhood levels to influence the city and region to adopt a new approach to equitable cooling.

Policy, program and infrastructure recommendations coming out of this work will include:

- Resilience to extreme heat
- Green Stormwater Infrastructure (GSI)
- Urban Forestry Master Plan
- Emergency Management and Community Resilience programs



Robert Wood Johnson Foundation

# Partnerships

## Local Partnerships

Partnerships introduce knowledge, resources, and best practices, which move collaboration and climate action forward in Tempe.

### Tempe Chamber of Commerce



Description	Tempe Chamber of Commerce provides a unified voice for businesses and supports public policy and education initiatives and workforce and business development.
Mission	To sustain Tempe’s quality of life and keep the community and economy vibrant.
Participants	Community champions, businesses and individual members.
Core Sustainability Work	Tempe Chamber of Commerce created the Sustainability Pledge Program for businesses that want to reduce their environmental impact. Each year businesses set goals and targets and evaluate their progress. The program offers tips, resources, and examples for businesses to implement at a low cost. Businesses are encouraged to develop a mission statement and a plan and create a “green team” to establish sustainability in the work environment.
Collaboration with Tempe	City of Tempe sits on the Chamber’s Sustainability Committee. The Chamber co-led the creation of Tempe’s Business Agenda in the Climate Action Plan Update.

### Unlimited Potential



Description	Founded in 1985, the non-profit organization has worked to strengthen individuals and families in south Phoenix through literacy, education and self-improvement.
Mission	To ignite unity, pride and dignity through education and advocacy.
Participants	Low-income and underserved population in South Phoenix.
Core Sustainability Work	Unlimited Potential works to elevate community well-being while addressing current issues affecting their community. The organization increases awareness of environmental issues, promotes health and educational equity and cultivates a critical consciousness among community members.
Collaboration with Tempe	Unlimited Potential was hired by the Office of Sustainability and Resilience to carry out community engagement in target neighborhoods and provide feedback to develop a Climate Justice Agenda for the 2022 Climate Action Plan Update.



# Partnerships

## State and Regional Partnerships

### Sustainable Cities Network (SCN)



<b>Description</b>	The Sustainable Cities Network works with local communities to explore sustainable approaches and address challenges regarding land use, transportation, water and economic development.
<b>Mission</b>	To make sustainability a core value in city planning, policy, and operations.
<b>Participants</b>	Steering Committee: ASU's Global Futures Laboratory and the Global Institute of Sustainability and Innovation, SCN Staff, Maricopa County, City of Tucson, City of Tempe, City of Scottsdale, City of Phoenix, City of Peoria, City of Mesa, City of Glendale, City of Flagstaff, City of Chandler, City of Avondale and tribal representatives.
<b>Core Work</b>	Through the Network, participants collaborate in workgroups to streamline city operations, advance solar energy, practice sustainable design, mitigate the urban heat island effect, and secure water supplies in a changing climate. The current workgroups are AZ Heat Resilience, Climate & Resilience, Green Infrastructure (GI), Solar & Energy Efficiency (SEE), Best Management Practices (BMP) and Green Building (GB) Workgroup.
<b>Tempe's Involvement</b>	City of Tempe is currently the chair of the Steering Committee and co-leads the Climate and Resilience Working Group with the City of Flagstaff.

### Local First Arizona



<b>Description</b>	Local First Arizona is a nonprofit organization committed to community and economic development throughout Arizona.
<b>Mission</b>	To build equitable systems for Arizona's local businesses and communities that create a vibrant, inclusive, and sustainable Arizona economy by strengthening, supporting, and celebrating entrepreneurship, rural and urban community development, racial equity, environmental action, and food access.
<b>Participants</b>	Nearly 3,500 business members, legacy partners, and philanthropic partners.
<b>Core Work</b>	Local First Arizona's sustainability programs focus on helping local businesses find solutions to lessen their impact from future events and make Arizona a resilient state.
<b>Collaboration with Tempe</b>	Tempe partners with Local First Arizona on the deployment of the Green Business Certification, and Local First co-authored the Business Agenda of the 2022 Climate Action Update with the Tempe Chamber of Commerce.

# Partnerships

## National and International Partnerships

### ICLEI - Local Governments for Sustainability



<b>Description</b>	ICLEI – Local Governments for Sustainability is a global network working with more than 2,500 local and regional governments committed to sustainable urban development.
<b>Mission</b>	To build and serve a nationwide alliance of cities, towns and counties to achieve measurable progress towards more economically, socially, and environmentally sustainable forms of development, which is low-emission, equitable and people-centered, resilient, circular and nature-based.
<b>Participants</b>	2500+ local and regional governments active in over 125 countries.
<b>Core Work</b>	ICLEI advocates putting sustainability at the top of the agenda for governments across the world. Their change is driven by five pathways: low emission development, nature-based development, circular development, resilient development, and equitable and people-centered development. Each pathway is designed to cut across sectors and jurisdictional boundaries.
<b>Tempe's Involvement</b>	City of Tempe staff works with ICLEI Local Governments for Sustainability staff who provide technical assistance and software for benchmarking community and municipal carbon emissions.

### Urban Sustainability Directors Network (USDN)



<b>Description</b>	USDN is a network of local government professionals across the United States and Canada dedicated to creating a healthier environment, economic prosperity, and increased social equity to share best practices and accelerate the application of good ideas.
<b>Mission</b>	Connecting local government practitioners to accelerate urban sustainability in U.S. and Canadian communities.
<b>Participants</b>	Local government professionals across the United States and Canada.
<b>Core Work</b>	USDN adopted the High Impact Practices (HIPs) to help its members and partners increase project impact through more strategic investments. These practices help members take impactful actions to advance equity, GHG reduction, and resilience.
<b>Tempe's Involvement</b>	Tempe serves on the Planning Advisory Committee and hosted a USDN Equity, Diversity and Inclusion Fellow in 2020.



# Partnerships

## National and International Partnerships

### US Green Building Council (USGBC)



Description	US Green Building Council is committed to transforming buildings that regenerate and sustain the health and vitality of communities. LEED for Cities and Communities is a certification program that grew from the formation of USGBC.
Mission	To transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life.
Participants	Local and multinational companies, educators, innovators, scientists, activists, nonprofit staff, policymakers, advocates and more.
Core Work	The LEED for Cities helps cities benchmark performance against national and global standards, demonstrate a commitment to sustainability, resilience and social equity, develop a culture of data-driven decision making, transparency and leadership, and improve their communities' standard of living and quality of life.
Tempe's Involvement	Tempe was selected for the 2021 LEED for Cities Local Government Leadership Program. It is the second city in Arizona to participate.

### CDP



Description	CDP is a not-for-profit organization that runs the global environmental disclosure system used to measure companies and governments' environmental impacts.
Mission	To see a thriving economy that works for people and planet in the long term. CDP focuses investors, companies, and cities on taking action to build a sustainable economy by measuring and understanding their environmental impact.
Participants	Cities, counties, and other local governments, businesses, researchers, investor associations, index and fund providers, fund platforms, networks for cities, states and regions, intergovernmental organizations, national governments, government agencies, policy expert groups, networks and coalitions, non-governmental organizations and media and communications partners.
Core Work	CDP holds the most comprehensive environmental reporting dataset on corporate and city action. They measure corporate and city progress through their annual reporting process to evaluate and benchmark performances. These insights are used to empower their clients to find areas of opportunity to build a green economy.
Tempe's Involvement	City of Tempe works with CDP to report our annual carbon emissions and climate action work.

# Climate Action at Home

Consider some of these daily changes you can make in your life to be more sustainable.



## Reduce Energy Usage

- Turn off lights when not in use
- Unplug unused electronic devices
- Use energy-saving light bulbs
- Wash clothes in cool water
- Air dry clothes
- Set thermostat a few degrees higher or lower depending on the season
- Weatherize residential and commercial spaces
- Switch to renewable energy



## Reduce Water Consumption

- Turn off the tap while brushing teeth or washing dishes
- Hand wash dishes
- Take shorter showers
- Do full loads of laundry
- Check for leaking faucets and pipes
- Purchase water-efficient appliances
- Install low-flow faucets, showerheads, and toilets
- Harvest rainwater or use a greywater system for landscape irrigation



## Reduce Waste Production

- Try not to buy more than you need
- Avoid wasting food
- Sell, gift, or donate unwanted items
- Avoid single-use or individually wrapped products
- Bring a reusable cup or coffee mug
- Repair and reuse items
- Compost



## Lower Transportation Emissions

- Opt for slower shipping on online purchases
- Plan and combine trips to reduce the miles you need to travel
- Maintain tires and air filter
- Walk to nearby locations
- Carpool or use public transit
- Drive hybrids or electric vehicles



## Connect with Nature

- Go outside and connect with nature
- Respect and protect green spaces
- Decorate window sills or balconies with potted plants
- Grow flowers to protect bee and butterfly populations
- Plant native trees and other vegetation



## Support Local Food Systems

- Buy seasonal fruits and vegetables
- Purchase local food
- Choose restaurants that source food locally
- Join a community garden
- Volunteer at a local farm
- Start a garden and grow local produce



# Climate Action Checklist

These are some reflection questions to consider when incorporating elements of climate action into community projects and programs.

## Focus Areas

- Energy:** Are there opportunities to reduce energy use or use renewable energy?
- Transportation:** Are there opportunities to incorporate public transit use?
- Extreme Heat:** Can you incorporate heat relief or resilience to extreme heat into this project?

## Guiding Principles

- Equity:** How can your work center the needs of people that are not thriving? How can your project center the needs of BIPOC residents in Tempe?
- Enterprise:** Is there a role for a B-corporation or cooperative business to play in your project? Can you purchase items for your project from socially responsible businesses?
- Evidence:** Are you using data and best practices to carry out your project?
- Engagement:** Does your project engage its participants in the beginning, middle, and end of the project?
- Fiscal Responsibility:** Does your project use resources effectively and efficiently?

## Transformative Sustainability

- Youth:** Can you incorporate young people and their ideas into the project? Can you partner with a local classroom on the project?
- Collaboration:** Are there additional partners or perspectives you can include in the project?
- Urgency:** How does your project acknowledge the urgency of global climate change?
- Transformation:** Can you tell a story about how your project can lead to bigger and long-term change?
- Creativity:** Can you create a role for an artist or creative professionals to have an ongoing role in your project?
- Leadership:** Can you find a role for local leaders or elected officials to play in your project?

# What Comes Next

**Consumption-based GHG Inventory:** Can we get an understanding of how Tempe's purchases contribute to climate change?

**Food Access and Production:** How does Tempe support food access, production and sustainable food businesses?

**Carbon Sequestration Solutions:** How will Tempe support carbon capture and sequestration?

**Vehicles Miles Traveled:** How does Tempe make space for dedicated transit lanes in order to make low-carbon transportation people's first transportation choice? How do we significantly reduce single-occupancy vehicle use?

**Sustainable Enterprise:** How does Tempe support worker-owned cooperatives and B-Corporations?

**Deeper Collaboration with Local Tribal Governments:** How can Tempe work with our Indigenous residents and neighbors on land stewardship and community resilience?

**Community Resilience:** How will Tempe create a comprehensive community resilience program with a focus on youth and BIPOC residents?

**10-year CIP Equitable Investment Plan:** How will Tempe make deeper and long-term infrastructure investments with a racial equity focus?

**Regional Resilience:** How can we plan, organize, fund and implement infrastructure and programs at County and State levels?

**Long-term funding:** What additional funding streams could be created to fund resilience and decarbonization investments?

# Glossary

## Executive Summary

**GHG:** Greenhouse gases (such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), sulfur oxides (SO<sub>x</sub>), and nitrogen oxides (NO<sub>x</sub>)) that trap heat in the atmosphere and contribute to global climate change

**GHG inventory:** Estimation of the amount of greenhouse gases produced from a community or an organization within a year

**Resilient:** The ability of a system to thrive after something disrupts it

**Urban Heat Island (UHI) Effect:** Heat trapped in pavements and buildings amplifying already high temperatures

## Introduction

**Fossil fuel:** a fuel (such as coal, oil, or natural gas) formed in the earth from plant or animal remains

**Solar radiation:** radiation emitted by the sun that is turned into energy

**BIPOC:** abbreviation of Black, Indigenous and People of Color

## Community Actions

**Indigenization:** the action or process of bringing something under the control, dominance, or influence of the people native to an area

**Land Stewardship:** caring for a piece of land regardless of its ownership

**Equity:** Including all voices by addressing structural racism and equity challenges; practicing targeted universalism in government policies and programs

**Structural racism:** A system in which institutional policies and practices reinforce ways to perpetuate racial group inequity

**Energy equity:** the fair distribution of benefits and burdens from energy production and consumption

**Resilience hub:** community-serving facilities that support residents, coordinate resource distribution and emergency services

**Resilient energy hub:** community-serving facilities equipped with solar power and energy storage

# References

Appel, Z., Dietz, R., Gansky, B., Hartland, K., King, J., Lascala, F., Logan, G., Nguyen, T. (2021). January - April Engagement Strategies Report for the Tempe Climate Action Plan 2021 Update Final Report [Unpublished manuscript]. Arizona State University.

Boogaard, S., Anson Pang, Y. S., Steiner, B., & Dialesandro, J. (2020). (tech.). Tempe Urban Development II: Establishing an Urban Heat Exposure Severity Score for Infrastructure Prioritization in Tempe, Arizona, Using NASA Earth Observations and LiDAR (pp. 1-26). Tempe, AZ: NTRS - NASA Technical Reports Server.

City of Tempe. (2020). Annual Report 2020 Office of Sustainability. Retrieved from [tempe.gov/home/showpublisheddocument/81031/637317194785270000](https://tempe.gov/home/showpublisheddocument/81031/637317194785270000)

City of Tempe. (2019). Climate Action Plan. Retrieved from [tempe.gov/home/showpublisheddocument/78674/63711497544410000](https://tempe.gov/home/showpublisheddocument/78674/63711497544410000)

City of Tempe. (n.d.) Equity in Action Equitable Engagement Framework. Retrieved from [tempe.gov/sustainability](https://tempe.gov/sustainability)

City of Tempe. (n.d.). Performance Measures. Retrieved from <https://performance.tempe.gov>

City of Tempe. (n.d). Southwest Guide to Developing Climate Action Plans [Unpublished manuscript].

City of Tempe. (n.d). Sustainable Tempe. Retrieved from [tempe.gov/government/sustainable-tempe](https://tempe.gov/government/sustainable-tempe)

For a full list of references, visit [tempe.gov/ClimateAction](https://tempe.gov/ClimateAction)





City of Tempe 2022  
[tempe.gov/Sustainability](https://tempe.gov/Sustainability)



Scan the QR code to explore resources to learn more about the City of Tempe, energy, conservation, food equity and other organizations, to help you get involved in climate action.

