ANNUAL REPORT 2020
OFFICE OF SUSTAINABILITY
CITY OF TEMPE

Tempe
Making waves in the desert

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OVERVIEW

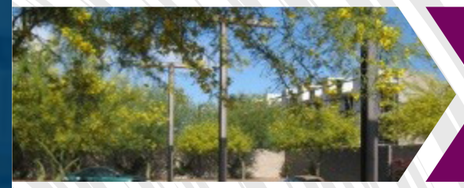
Tempe's major accomplishments, in collaboration with other city departments and the Sustainability Commission, include the following:

Johnny G Martinez Water Treatment Plant Solar Project

This project advances energy efficiency in Tempe by accounting for 2 percent of total municipal power to make city operations more resilient.

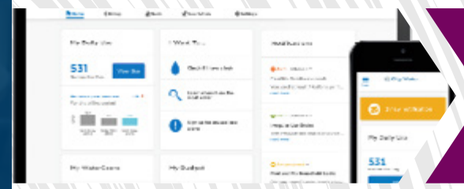
Tempe Streetcar

Investing in another transportation option will increase connectivity and reduce the need for single-occupancy vehicles in Tempe's downtown.



Urban Forestry Master Plan

Planting more trees in our city is vital to increase shade and sequester carbon.



WaterSmart

This program allows residents to track their water consumption to make data-driven choices.

SMART

By incentivizing the option to waste less, residents can save money on curbside trash pick-up and send less material to the landfill.

Urban Core Master Plan

By centralizing development near light rail and streetcar, we can support more sustainable living in Tempe.

Tempe-PRE

Tempe prioritizes the ability for families to choose free Pre-K education, so every child in Tempe is given the foundation to develop personal and academic skills.

Timeline of Sustainability

The City of Tempe has a long history of investing in sustainability action, but it took until 2018 for Tempe to create a formal Office of Sustainability. Because no one had the official duty of being responsible for sustainability at the city, the path towards a cohesive agenda for sustainable practices involved the Water Department, the Community Development Office, Internal Services, and the Public Works Department. After a short-term Sustainability Manager city position was co-funded by the City of Tempe and Arizona State University, the City Council formally added a Sustainability Office to oversee sustainability policy and programs in Tempe.

1988-89

Tempe began a Conservation Program to enable rebate program.

October 1991

Landscape Rebate, Toilet Rebate, and Retrofit Kit Programs administered.

1998/99

The City of Tempe entered into the Non-Per Capita Conservation Program with State of Arizona Department of Water Resources (ADWR), which mandated annual reporting to ADWR on 12 sustainable conservation measures.

2008

The Community Development Department compiled a Compendium of Sustainable Practices, which included 111 measures that different city departments could undertake. This outlined the environmental, cultural, and economic benefits, as well as including the total startup and annual costs.

2010

Tempe City Council established the Community Sustainability Committee, with Economic, Code, and Technology Subcommittees, which produced a Sustainability Update and Action Plan that year.

2013

The first Sustainability-at-a-Glance poster is published by the Public Works Office, providing a visually engaging presentation of the sustainable progress of the city. This poster was produced from Fiscal Year (FY) 2013 to FY 2017.

June 25, 2015

City Council established the Tempe Sustainability Commission, which offers 11 diverse stakeholders the ability to collaborate on sustainability solutions for Tempe's most pressing challenges.

2016

Mayor Mark Mitchell and Tempe City Council joined the Global Covenant of Mayors based on the Sustainability Commission's recommendation

2016-18

Arizona State University's Global Institute of Sustainability co-sponsored the Sustainability Manager position at the City of Tempe.

August 30, 2018

The Office of Sustainability was formed to be a part of the City Manager's Office and the Director of Sustainability position was created.

November 7, 2019

Tempe's first Climate Action Plan was adopted unanimously by City Council.

SUSTAINABILITY CONTENT AREAS

Tempe is making strides to become a resilient and sustainable city though collaborations among city departments and the hard work of the Sustainability Commission.

This report gives status updates in the following focus areas:

- Energy
- Transportation
- Resilience to Extreme Heat
- Water
- Waste
- Land Use and Built Environment
- Social Sustainability

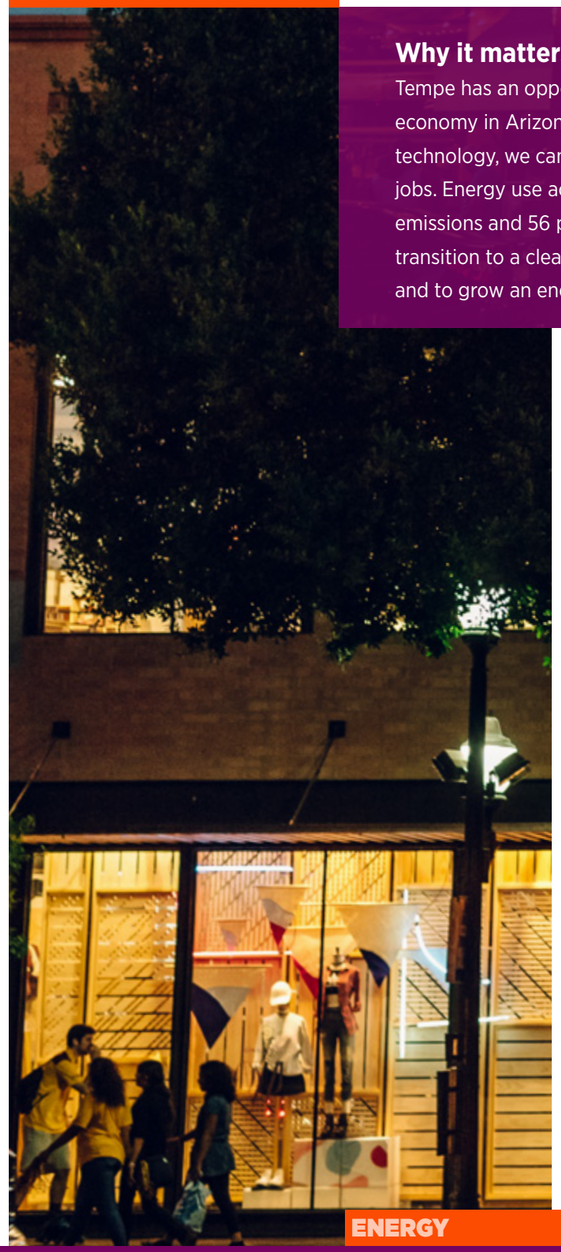
In each focus area, we cover the following:

- Why the focus area is important for Tempe and what we are doing to make progress.
- The City Council adopted Performance Measures that guide budget decision making.
- A program highlight that demonstrates a city investment or program.
- An overview on how Tempe is looking ahead to continue our progress.
- Details on how residents can contribute to building a more sustainable and resilient Tempe.

Tempe
Making waves in the desert

Energy

Tempe can make energy-efficient investments in city operations and support residents, businesses, nonprofits, and utilities in making investments in renewable and clean energy technologies.



Why it matters

Tempe has an opportunity to be a leader in creating a clean energy economy in Arizona. By investing in clean energy and energy-efficient technology, we can improve health outcomes, save money, and create jobs. Energy use accounts for 70 percent of Tempe's municipal carbon emissions and 56 percent of our community emissions. Tempe must transition to a clean energy economy to meet its carbon neutrality goals and to grow an energy economy that works for all Tempeans.

What we are doing

The City of Tempe can reduce municipal energy use by investing in technologies that use less energy and by powering city buildings, streetlights, and water treatment facilities with renewable energy to achieve carbon neutrality in municipal operations by 2050. By becoming carbon neutral, Tempe is setting a precedent for Tempe residents, businesses, and other cities to prioritize investing in energy efficiency.

To be sustainable, the source of the problem must be addressed, which is why we are striving for a clean electrical grid that is not fueled by the nonrenewable sources that pollute our air, our soil, and our water. By investing in and advocating for clean energy technologies, our state and region can grow our economy to support a high quality of life for all Arizonans.

How do we measure progress?

Tempe has carbon neutrality performance measures that guide our programs and budgeting process for community and municipal energy:

Community Carbon Neutrality **(4.18)**

Reduce community Greenhouse Gas (GHG) emissions by 80 percent of 2015 levels by 2050 and achieve community carbon neutrality by 2060.

Baseline: 3,667,560 Metric Tons of CO_2e (MT CO_2e)

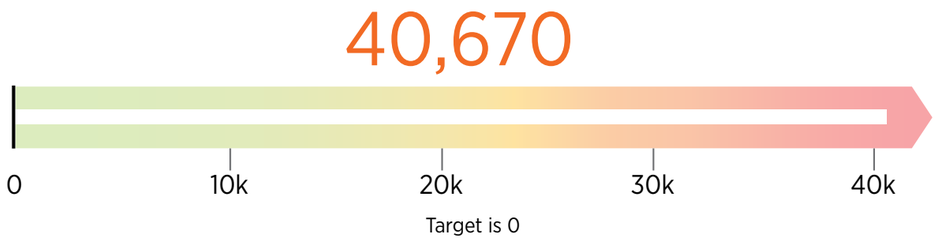
Target: Reduction by 80 percent = 733,512 MT CO_2e by 2050; Carbon Neutrality = 0 MT CO_2e by 2060

Municipal Carbon Neutrality **(4.19)**

Achieve the City Council goal of carbon neutrality in municipal operations by 2050 with a strategy of 100 percent renewable electricity by 2035.

Baseline (2015) and Current: 40,670 MT CO_2e/ Target: Carbon Neutral

Carbon Dioxide Emissions Measured in Metric Tons



Program Highlight:

Johnny G Martinez Water Treatment Plant Solar Project

Johnny G Martinez Water Treatment Plant (JGMWTP) is a water facility that filters 50 million gallons per day, providing clean drinking water to roughly one-half of Tempe residents. In March 2018, the JGMWTP solar project was completed and interconnected, which helped the city reach a milestone of powering 10 percent of city operations with renewable energy. The 1.2 MW DC PV system, installed through a partnership with Tesla, has over 2,000 solar panels on two reservoir roofs at the JGMWTP. This system provides 30 percent of the plant's power needs each year, with an estimated utility savings of $530,000 over the next 20 years. In the first year alone, these solar panels will produce nearly 1.8 million kWh of energy and reduced carbon emissions in city operations by more than 1,280 MT, equivalent to taking 270 vehicles off the road. This project could also eventually add battery storage to make our treatment plant more resilient. These strides towards making Tempe municipal operations energy-efficient can grow the clean energy economy, improve the quality of life for residents, and reduce GHG emissions.

What's Next?

Resilient Energy Hubs

The City of Tempe will partner with SRP and APS to pilot resilient energy hubs to demonstrate how solar and battery storage can be used in the case of an extreme heat emergency. Tempe and our utilities can demonstrate the need for solar with battery storage to support clean and resilient energy solutions in every neighborhood.

Utility-Scale Solar

The City of Tempe will pursue utility-scale solar opportunities with SRP and APS to support their efforts to replace coal power plants and other carbon-emitting energy sources with clean energy solutions, including large solar power plants.

Facilities Sustainability Plan

Internal Services, Engineering and Transportation, and the Office of Sustainability will complete a plan to determine where the City can make clean energy economy investments.

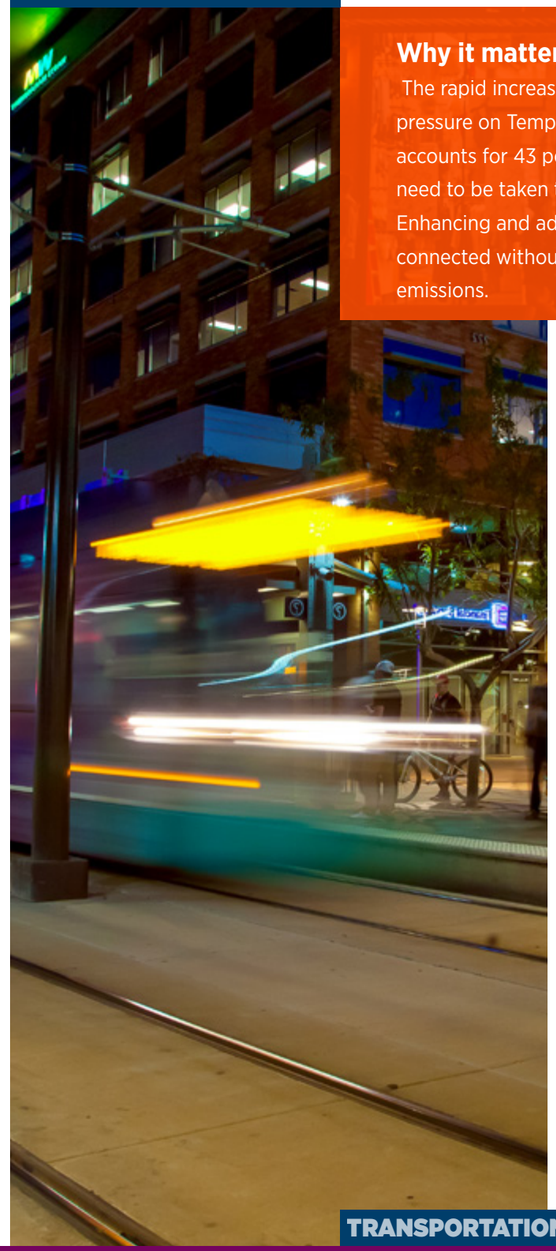
How can you get involved?

- **Residents can participate in the community-wide carbon reduction goal as part of the city's Climate Action Plan by finding ways to reduce energy use at home.**
- **Residents can invest in energy saving and load shifting technologies by working with their local utility company (APS or SRP).**
- **Residents can participate in the Climate Action Plan 2021 Update to communicate the need for investment in the clean energy economy within city budgets and by the utilities themselves.**

Energy

Transportation

The City of Tempe strives to create an accessible, low-carbon, and efficient transportation system that makes public transit more convenient than single-occupancy vehicles.



Why it matters

The rapid increase in development and urban density continuously puts pressure on Tempe's car-centric culture. Considering that transportation accounts for 43 percent of Tempe's Community GHG emissions, actions need to be taken to reduce emissions in our transportation system. Enhancing and adding new public transit options will allow people to be connected without single-occupancy vehicles and the associated GHG emissions.

What we are doing

Investments in low-carbon mobility can lead to reduced air pollution, reduced health risks associated with vehicle emissions, decreased traffic congestion, and reduced deaths and serious injuries from vehicle crashes (in line with Tempe's Vision Zero initiative).

Ultimately, investing in public transit leads to an increase in the overall quality of life in urban areas. It is instrumental to have a strong public transportation network in a sustainable city to ease congestion and to connect community hubs. Tempe will continue to invest in creating the best multimodal transportation system in Arizona.

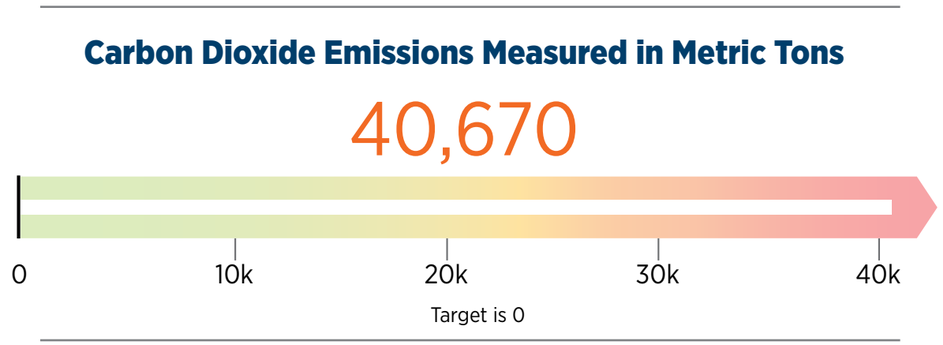
How do we measure progress?

The following performance measures help guide programs and budgeting processes when creating Tempe's multimodal transportation system:

Carbon Neutrality **(4.19)**

Achieve the City Council goal of carbon neutrality in municipal operations by 2050 with a strategy of 100 percent renewable energy by 2035.

Baseline (2015) and Current: 40,670 MT CO_2e // Target: Carbon neutral by 2050



20-minute city **(3.26)**

Achieve a multimodal transportation system (20-minute city) where residents can walk, bicycle or use public transit to meet all basic daily, non-work needs.

Baseline: Under development // Target: Under development // Current: Unavailable

Traffic Delays **(3.27)**

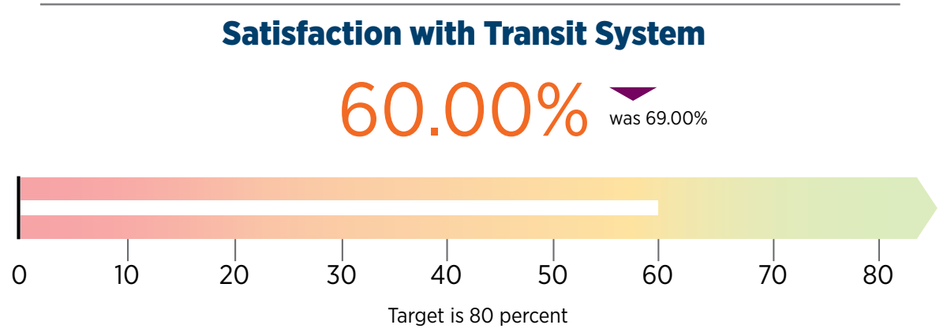
Achieve 5 percent decrease in vehicular delays during rush-hour periods along arterial corridors compared to previous period. (This goal, and historical data, are being researched through MAG.)

Baseline: Under development // Target: 5 percent // Current: Unavailable

Satisfaction with Transit System **(3.29)**

Achieve ratings of "Very Satisfied" or "Satisfied" with the "Overall Satisfaction with Transit System in Tempe" greater than or equal to 80 percent as measured by the City of Tempe Transit Survey.

Baseline: 69 percent (2016) // Current: 60 percent // Target: 80 percent by 2024



Program Highlight:
Tempe Streetcar

The Tempe Streetcar project is the first modern streetcar line in the Valley. It will connect riders to major destinations in Tempe, the city that already has the highest transit ridership per capita in Arizona. In August 2018, the Federal Transit Administration (FTA) approved the initial phase of significant construction to build the system's rail trackway, power systems, and street improvements. On November 28, 2018, the FTA allocated $75 million through the FTA Capital Investment Grants (CIG) to support the project. The three-mile Streetcar will have 14 stops (including two that will link with the regional Valley Metro Rail system) connecting local community hubs, such as downtown Tempe, Arizona State University, historic neighborhoods, new high-density residential, major employers, and activity centers. The Streetcar will give people another option for traveling around Tempe, supporting Tempe's goal of a multi-modal transportation system that focuses on moving people – not cars. When the Streetcar begins operation in 2021, Tempe will add to our robust multimodal transit system.

How can you get involved?

- **Residents, employees, and visitors are encouraged to use alternate forms of sustainable transportation, such as light rail, bus, biking, or walking.**
- **Residents are encouraged to participate in public meetings and online input opportunities to share feedback and contribute in planning new and upcoming transportation projects. Stay current by subscribing to "Tempe Streets" or "Tempe Transit" e-mails at tempe.gov/enews.**
- **Tempe has a 15-member, Council appointed Transportation Commission. The Commission ensures that the city has a balanced transportation system that incorporates all forms of transportation in an interconnected manner while complementing land use, making a positive environmental impact by reducing energy consumption, air pollution and congestion, promoting economic development, providing mobility and accessibility for all persons, and creating a forum for residents to provide input on transportation plans, projects and issues. Tempe.gov/TempeinMotion**

Transportation

What's Next?

TDM/ TMA in Climate Action Plan
Tempe will continue to pursue Transportation Demand Management (TDM) policy options, including the creation of a Transportation Management Association (TMA).

20-Minute City
Tempe will continue to determine gaps in its 20-minute city network and potential ways to improve the City of Tempe's 20-minute city performance.

Streetcar Extension Feasibility Study
Tempe will collaborate with Valley Metro and the City of Mesa to determine potential extensions of the Tempe Streetcar.

City Fleet
Tempe will continue to invest in electric vehicles (EV) and EV charging. Currently, an EV feasibility study is being pursued to determine where charging stations can go throughout the city.

Resilience to Extreme Heat

Investing in a cooler and more shaded Tempe will ensure healthy residents and a strong economy. Tempe can take collective action to invest in green infrastructure and our urban forest so we can build a resilient community for all Tempeans.

Why it matters

Extreme heat threatens the health of Tempe residents and this threat will get more severe in the coming decades. Our high temperatures are further exasperated by the Urban Heat Island (UHI) effect, where the cement and concrete absorbs heat in the day leading to increased temperatures in the urban center compared to its rural surroundings. This prevents the city from cooling off at night and increases the intensity of heat during peak hours.

What we are doing

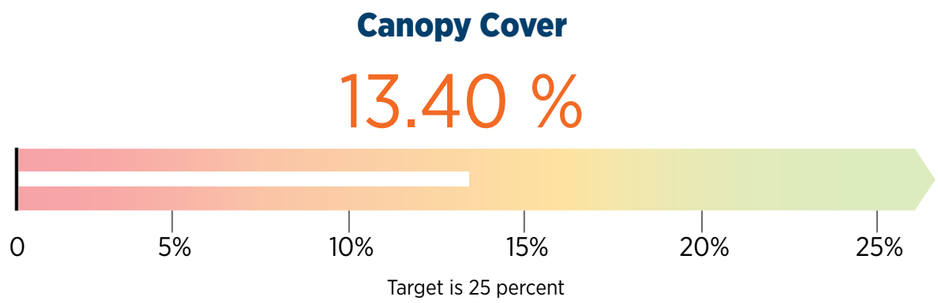
Tempe can improve the city's resilience to extreme heat by preparing buildings, community spaces, and residential areas for rising summer temperatures. This can be done by improving the shade canopy, building resilient energy hubs, and integrating green infrastructure and green building design into future developments to guarantee the city will be safe as temperatures rise. Because heat-related injuries are more common among vulnerable groups, from either the heat itself or from pollution made worse with hotter temperatures, it is vital to invest in green buildings, green infrastructure, and heat-relief programs. Tempe must make investments today that increase our resilience to extreme heat for tomorrow to reduce the worsening impacts of extreme heat and improve our quality of life.

How do we measure progress?

Tempe will ensure programs and budgeting processes cultivate resilience to extreme heat:

Resilience to Extreme Heat
: The Office of Sustainability will recommend a new performance measure for resilience to extreme heat to be adopted in Fall 2020.

Tree and Shade Canopy **(4.11)**
: Achieve a citywide 25 percent tree and shade canopy by 2040.
Baseline: 13.00 percent / Current: 13.4 percent / Target 25 percent



Program Highlight:
Urban Forestry Master Plan

Tempe can reach the City Council Performance Measure of a citywide 25 percent tree and shade canopy by 2040 by increasing our urban forest in three key public spaces: parks and open spaces, streets, and urban hubs. These three areas are cores of commercial and civic activity; therefore transforming these spaces will impact the most residents. Targeting these frequently used areas for strategic tree placement ensures that there is an increase in public space use and that there is an equitable distribution of shade across the city. In addition, growing more of our urban forest supports the 20-minute city Performance Measure, as the city needs to be walkable to improve mobility. The Urban Forestry Master Plan provides the framework to begin cultivating a sustainable urban forest through collaborative engagement among city departments, residents, community groups, and private businesses. In 2019, Tempe hired its first Urban Forester, Richard Adkins. It will be critical to support this position and provide adequate funding for the planting and maintenance of Tempe's urban forest.

What's Next?

Emergency Manager
The city will on-board a new Emergency Manager, who will pursue our efforts on resilience to extreme heat.

Urban Forester
The city has added a new Urban Forester, who will further invest in Tempe's urban forest and implement the Urban Forestry Master Plan.

Health Impact Project
The city will work with ASU researchers to develop guidelines for playgrounds, multi-use paths, and parking lots to ensure they do not overly contribute to extreme heat challenges in the city.

Grants
The city will continue to look at grants that support investments in resilience to extreme heat, including how Tempe neighborhoods can respond to extreme heat.

Heat Relief
The City of Tempe will examine processes, programs, and procedures around extreme heat, including how and where the city can host cooling centers.

How can you get involved?

- **Residents are encouraged to volunteer at urban forestry projects sponsored by the City of Tempe, such as past tree planting events at Rio Salado Park, Esquer Park, and Svob Park.**
- **Residents can take part in the TreeBate program (https://www.tempe.gov/government/municipal-utilities/water/water-conservation/rebates/treebate), which offers a rebate to residential water customers who purchase approved desert-friendly plants and plant them on Tempe residential properties. The city offers a rebate of 100 percent (capped at $75) towards the purchase of desert-friendly plants. This program promotes the beauty, practicality, and water-wise characteristics of desert plants from all over the world.**

Resilience to Extreme Heat

Water

Water is not only a right, but a precious resource that must be managed wisely in the desert. Tempe can take action to conserve water and ensure water security for future generations.

Why it matters

Most assume that we must simply use less water, but this does not capture the whole picture of water management. We must manage water in a way that minimizes threats of water shortage while maximizing efficient, beneficial water use.

What we are doing

It is vital that we encourage efficient water management in our city because it helps us prepare for unforeseen emergencies, like droughts. Becoming more efficient with how much water we distribute reduces overall water usage, as it requires less energy to transport less water; thus, conserving water also helps to conserve energy.

By optimizing our use in these ways, water resources can be allocated so future generations will have their water needs met while also meeting our needs today. Water security can be ensured through innovative water conservation projects and tools to help residents stay cool, save money, and use water responsibly. Tempe will protect water as a right that is slowly becoming a valuable commodity in the face of climate change.

How do we measure progress?

Tempe will facilitate programs and budgeting processes to build upon our successes in saving water:

Water conservation **(4.03)**

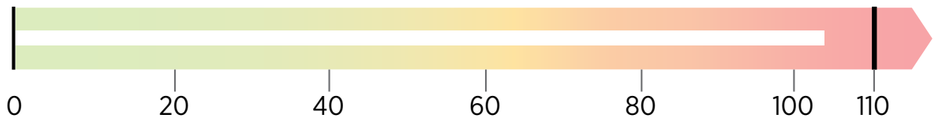
Achieve the Council adopted water conservation goal of less than or equal to 110 gallons of residential water use per capita per day (GPCD).
Baseline: 111 GPCD / Current: 111 GPCD/ Target: 110 GPCD

Water Supply

City staff is looking at options to measure drought resilience efforts

Residential Gallons Per Capita Per Day

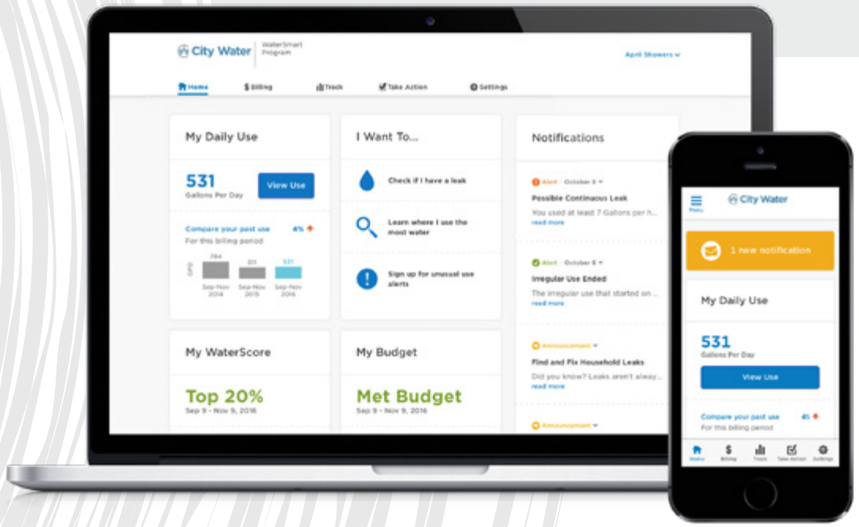
104 was 109



Target is less than or equal to 110 gallons per capita per day

Program Highlight:
WaterSmart Dashboard and Customer Portal

Tempe has begun an advanced water usage monitoring system with Advanced Metering Infrastructure (AMI), which provides the automated technology to enable efficient and electronic collection of water meter reads. Having automated water meters means that water usage can be captured and recorded electronically every hour, instead of monthly manual meter reads that require driving out and visually inspecting each meter. This data can then be accessed by residents and businesses in an online portal, where they can monitor their water usage, pay their water bill, view conservation recommendations, and sign up for leak and high-usage alerts. Portal users can also register to attend workshops on water conservation strategies, such as water-efficient landscaping and irrigation practices. Additionally, this portal allows one to track their hourly and daily water usage, compare it to similar households, and pull up water usage data from past years or months, which gives people the necessary information to make more informed decisions on water conservation in the future. Furthermore, WaterSmart provides staff with an Administrative Dashboard that provides real-time insights through real-time analytics, group messaging features, and basic customer relationship management (CRM) capabilities. The recent implementation of the WaterSmart program improves the city's ability to get water usage data by replacing old water meters with automated ones, and it increases public awareness about personal water use to encourage the adoption of water conservation strategies and technologies.



How can you get involved?

- **Take advantage of the Water Smart portal and use water conservation rebates (tempe.gov/conservation)**
- **Sign up for a free water consultation, rebate, or landscape workshop (all FREE for Tempe water customers), as well as view or order free literature, at www.tempe.gov/conservation.**
- **Learn 100+ ways to save water (wateruseitwisely.com or smarthomewaterguide.org)**
- **Learn about our state's water resources and drought (www.arizonawaterfacts.com)**

Water

What's Next?

Water Consultation Program

The water consultation program has been revamped over the last year to include a home and landscape water budget provided through a Personalized Home Water Report, which is created by staff for each residential customer who receives a one-on-one, on-site water check-up at their home. Each consultation is now also entered into a database that will enable pre- and post-analysis of water usage, comparing the resident's water usage 1 year prior and 1 year after each water consultation. Finally, this next year will feature a "High-Intensity Action Plan" initiative to outreach to the highest water users and partner with them to increase water efficiency.

Utility Rate Study

The city will begin this study in 2020 that will take water conservation into consideration.

Performance Measures

The city is looking into additional performance measures to guide water conservation investments and programs.

Tempe Water Festival

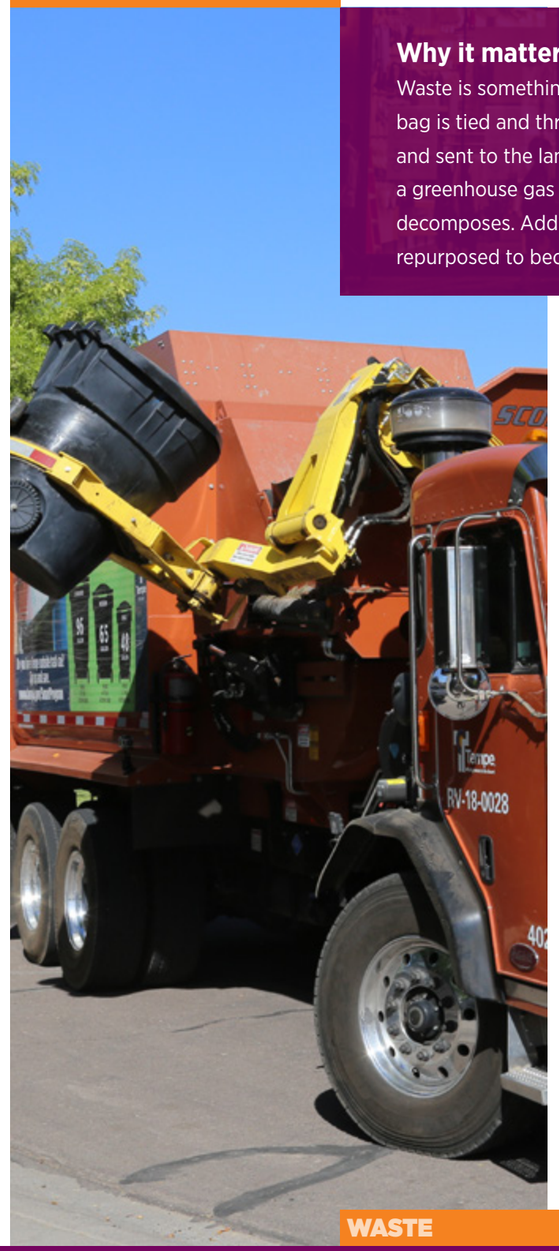
Tempe hosted our 2nd annual Water Festival in October 2019 as part of a semester-long program to help educate students about water conservation through a standards-aligned curriculum that helps teachers impart important skills and knowledge about hydrologic science, geography, and Arizona history.

Irrigation Efficiency Workshops

Tempe will continue to host in-person and online sustainable landscape workshops on rainwater harvesting, tree and shrub care, proper and efficient landscape watering, gardening, and desert lush landscaping.

Waste

Tempe can continue its success with waste diversion by partnering with residents to find new ways to communicate the importance of zero-waste practices.



Why it matters

Waste is something one may never think about again once the plastic bag is tied and thrown into the trash bin, loaded onto the garbage truck, and sent to the landfill. But at the landfill, our trash releases methane, a greenhouse gas 25 times more potent than carbon dioxide, as it decomposes. Additionally, what is currently sent to the landfill can be repurposed to become a resource in the circular economy.

What we are doing

To combat the impacts of waste on our environment, Tempe has a wide variety of Solid Waste programs to improve recycling and composting practices so that trash, recycling, and green waste are disposed of properly. A large component of improving Solid Waste operations is to teach residents more about the recycling methods specific for Tempe, as contaminated recycling results in processing fees four times higher than normal.

In addition to the city saving money by having informed residents, the residents themselves will save money with city incentives, like the SMART program that reduces the cost of curbside pick-up, leading them to learn more about waste reduction strategies and emit less GHG emissions. Investing in better Solid Waste operations is instrumental to keep trash out of the landfill to save the environment, money, and resources.

How do we measure progress?

Tempe will create programs and budgeting processes to improve our waste practices:

Solid Waste Diversion **(4.04)**

Achieve or exceed the Council adopted Solid Waste diversion rates by the year 2020.
Baseline (FY 17/18): Residential – 21.7 percent / Commercial – 9.2 percent / Citywide – 15.1 percent
Current (FY 2019): Residential – 22.8 percent / Commercial – 24.2 percent / Citywide – 23.56 percent
Target: Residential – 40 percent / Commercial – 25 percent / Citywide – 25 percent

Composting Usage **(4.12)**

Achieve a cumulative composting usage across city parks, golf courses, and rights-of-way of 2,000 yards per year.
Baseline: 500 yards / Current: 2,026.44 yards / Target: 2,000 yards by 2020

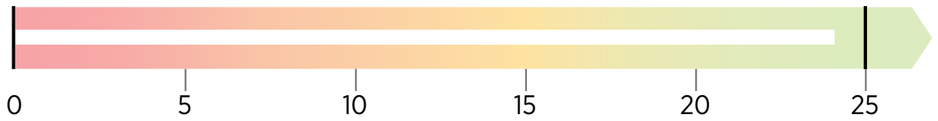
Solid Waste Diversion Rate: Residential (single family)

22.80% ▲ was 21.70%

Target is 40 percent

Solid Waste Diversion Rate: Commercial (commercial +)

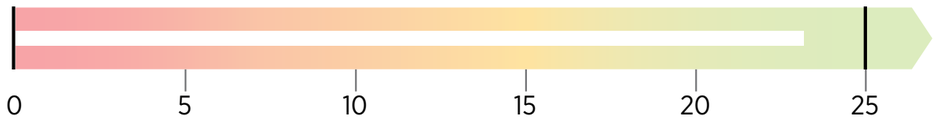
24.20%



Target is 25 percent

Solid Waste Diversion Rate: Citywide

23.56%



Target is 25 percent

Attention City of Tempe residents with curbside trash service!

Program Highlight:

SMART (Save Money and Recycle Tempe)

SMART is a new voluntary program for curbside trash services where residents can save money by choosing a smaller trash bin, thus promoting more recycling, to help the environment. There is an option to downsize to either a 65-gallon or a 48-gallon trash bin from the standard 96-gallon bin, with the standard 96-gallon holding 6-7 white kitchen bags, the medium 65-gallon holding 4-5 kitchen bags, and the small 48-gallon holding 2-3 kitchen bags. As of December 2018, approximately 2,600 residents are taking part in the SMART program by switching to the 65- or 48-gallon trash bins. By taking part in the program, residents can save about $40 per year by switching to the 65-gallon can and nearly $65 per year when switching to the 48-gallon bin. Monthly, these Tempe residents will save a combined $12,000. This program can lead to residents producing less waste, encouraging more of them to recycle, saving them money on their monthly bill, and helping Tempe reach the City Council Performance Measure for residential waste diversion.

What's Next?

Partnerships

The city will continue to look at potential partnerships with the City of Phoenix and neighboring municipalities to tackle local waste and recycling issues together.

Communication

Tempe will continue to seek improvement in our outreach and communication about waste, recycling, and hazardous waste.

How can you get involved?

- **Residents can call 480-350-5860 to order their 48- or 65-gallon SMART trash container.**
- **Residents can stop by the Compost Yard (1001 N. Rio Road, Tempe, AZ 85281) or call 480-350-4311 to get free or discounted compost.**
- **Remember that shredded paper, appliances, electronics, construction waste, building supplies, and scrap metal CANNOT be recycled in Tempe. Keep these products out of the curbside recycling bin and look at www.tempe.gov/HouseholdProducts for more information on where these products can be properly recycled.**
- **In addition to the above items, bagged recyclables CANNOT be recycled. ALWAYS keep recyclables loose.**

Land Use and Built Environment

Tempe is becoming a sustainable city by making investments in transit-oriented development, urban forestry, and urban agriculture.

Why it matters

Reducing our impact cannot happen merely by changing our energy sources and driving electric cars. We must also develop our city in a way that promotes sustainable lifestyles. Carbon reduction and resilience need to become both the enjoyable and convenient choice for Tempe residents.

What we are doing

Tempe will grow up, not out. The Urban Core Master Plan is a signature policy that support sustainable development along the light rail and streetcar corridor. The proposed density bonus program, with points for making investments in carbon reduction and resilience to extreme heat, is showing the way for the development community to create buildings that reduce their environmental impact and prepare Tempe for extreme heat. Tempe's commitment to economic development, housing in our urban core, and innovation hubs can create a livable and walkable city where living a sustainable lifestyle is the norm.

Tempe is also making strides in urban forestry and urban agriculture. Cooling our city and growing food right here in Tempe ensures we are productively using our land, while also improving the quality of life for our residents. Tempe is becoming a beacon for green living and urban forestry in Arizona. With a continued dedication to funding innovative projects and supporting land use and green building policy, Tempe can be a cool and enjoyable urban center for decades to come.

How do we measure progress?

Tempe will facilitate programs and budgeting processes that enable a livable, sustainable city:

Tree and Shade Canopy **(4.11)**

Achieve a citywide 25 percent tree and shade canopy by 2040.

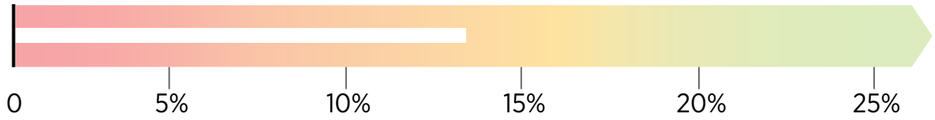
Baseline: 13.00 percent / Current: 13.4 percent / Target 25 percent

Facilities Condition Index **(4.14)**

Achieve an average Facilities Condition Index (FCI) less than or equal to the national benchmark standards.
Baseline (2018): 14.83 percent / Current: 15.15 percent / Target: 10 percent or less by 2030

Canopy Cover

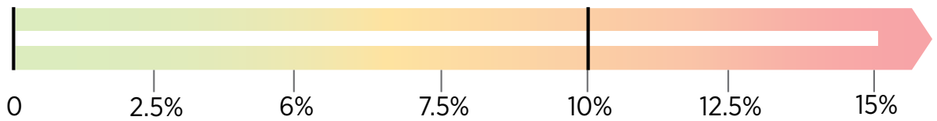
13.40%



Target is 25 percent

Average Facilities Condition Index

15.15% was 14.83%



Target is 10 percent or less

Program Highlight:
Urban Core Master Plan

The Urban Core Master Plan (UCMP) intends to create an urban center that is prosperous, sustainable, and well-planned. In October 2019, the UCMP was proposed as an additional amendment to General Plan 2040, the overarching policy document for the City of Tempe, to modify the Projected Land Use and Projected Density Map. The UCMP will cultivate an active and sustainable Urban Core through coordinating regulations, infrastructure investment, and policies to identify the best location for future developments. In coordination with the Transportation Overlay District and a citywide affordable housing strategy, urban centers can be designed in a comfortable, accessible, and inviting manner, while also increasing density around transportation nodes. By increasing the potential density along selected areas on public transit, Tempe can facilitate the creation of a livable, connected, and sustainable city. Through coordinated investment, quality design, and preservation of historical assets — alongside engaged residents, businesses, and neighborhoods in the planning area — Tempe will be able to stay resilient and sustainable over time by adapting its development to our physical and natural landscapes. The UCMP ensures that the city has policy in place that supports a sustainable city and that we take full advantage to invest in light rail, streetcar, ASU, downtown, and Tempe Town Lake.

How can you get involved?

- **Support local agriculture and farmers markets.**
- **Support local businesses at tempe.gov/MadeInTempe.**
- **Support development and businesses in the urban core.**
- **Get involved in community projects, such as community gardens or Tempe's tree planting events.**

Land Use and Built Environment

What's Next?

Urban Core Master Plan

The City of Tempe adopted the Urban Core Master Plan and will begin implementation.

The City of Tempe will seek Council consideration for an updated Transportation Overlay District (TOD) in 2020. The updated TOD draft contains several sustainability-enhancing elements. Once adopted, the City will begin its implementation.

International Green Construction Code

Community Development and the Office of Sustainability are working to adopt the 2021 International Green Construction Code to give developers the option to build state-of-the-art green buildings in Tempe.

Singh Meadows

Tempe will continue to partner with Singh Meadows, which serves as an example for sustainable land use in our city through a golf course conversion project that has created a local food oasis in the middle of Tempe.

Social Sustainability

Tempe invests in people. Tempe's inclusivity and focus on equity are central to Tempe being a sustainable and resilient city.

Why it matters

True sustainability in Tempe will require that every stakeholder is heard in its policies and programs. Considering that climate change disproportionally affects frontline communities and people of color, city government has the responsibility to meet the needs of all residents and ensure that resources are available to everyone. By focusing on equity, the City can empower all community members to be active and engaged in shapping the future of Tempe.

What we are doing

Tempe strives to embed equity within city operation and investments now and for Tempe's future. Tempe's investments in workforce development, human services, housing, education and recreation are examples of the city's commitment to social sustainability. Efforts to build community resilience and increase the impact of frontline communities on city decision-making are efforts that make Tempe a model city in Arizona for equitable community engagement.

How do we measure progress?

Tempe will put people first in our programs and budgeting processes to ensure equitable opportunity:

Affordable Housing **(4.09)**

"Achieve a Housing Inventory Ratio for Affordable, Workforce, and Market-rate housing categories that meets the recommendations made for a three-person household in the most recent study."
Baseline (2017) and Target: Affordable- 49.3 percent / Workforce – 34.2 percent / Market-rate – 16.5 percent
Current: Unavailable

Disability Social Inclusion **(3.13)**

"Achieve a score of 100 on the self-assessment tool for 'Disability Social Inclusion' in accordance with the Tempe Disability Inclusion Plan (T-DIP) and the National Council on Disability."
Baseline: Under development- Assessment tool developed Fall 2018, Baseline available August 2019
Target: 100
Current: Unavailable

Program Highlight:
Tempe-PRE

Tempe-PRE is a full-day, 5 days/week preschool education program committed to kindergarten readiness for 3- and 4- year old students. This began as a 2-year pilot program in 2017 after City Council was looking to increase access to high-quality preschool for a wide-range of families living in Tempe and neighboring cities. This program gives people in the Valley the capability to send their children to a Pre-K that improves children's typical developmental levels in all domains, such as social-emotional skills, literacy and language, mathematics, and cognitive skills, so they are ready to learn in kindergarten. With a low 9:1 student-to-teacher ratio; Early Childhood Education certified teachers; the use of child-centered, play-based HighScope Preschool Curriculum; and before- and after-school programs at select schools, Tempe is giving children the tools to succeed. In addition, it gives families more-affordable Pre-K education options by offering 20 classrooms across 12 local elementary schools with half-tuition or free tuition for income-eligible Tempe residents. Tempe is striving for equitable access to education at a key developmental stage, allowing children to succeed in kindergarten and in their future.

What's Next?

Equity in Action
A coalition of social justice organizations and leaders will participate in trainings and workshops to collaborate with the city on equitable engagement practices.

ULI Affordable Housing Grant
The Urban Land Use Institute and Vitalyst Health Foundation are hosting workshops to support the implementation of affordable housing plans.

Funding for Youth
Efforts are underway to find a long-term funding stream for Tempe-PRE and other youth programs to ensure that Tempe creates pathways for young people to become productive students and residents.

How can you get involved?

- **Engage in the Equity in Action or ULI Affordable Housing trainings/ workshops to help shape the development of equitable engagement practices.**

Social Sustainability

MOVING FORWARD

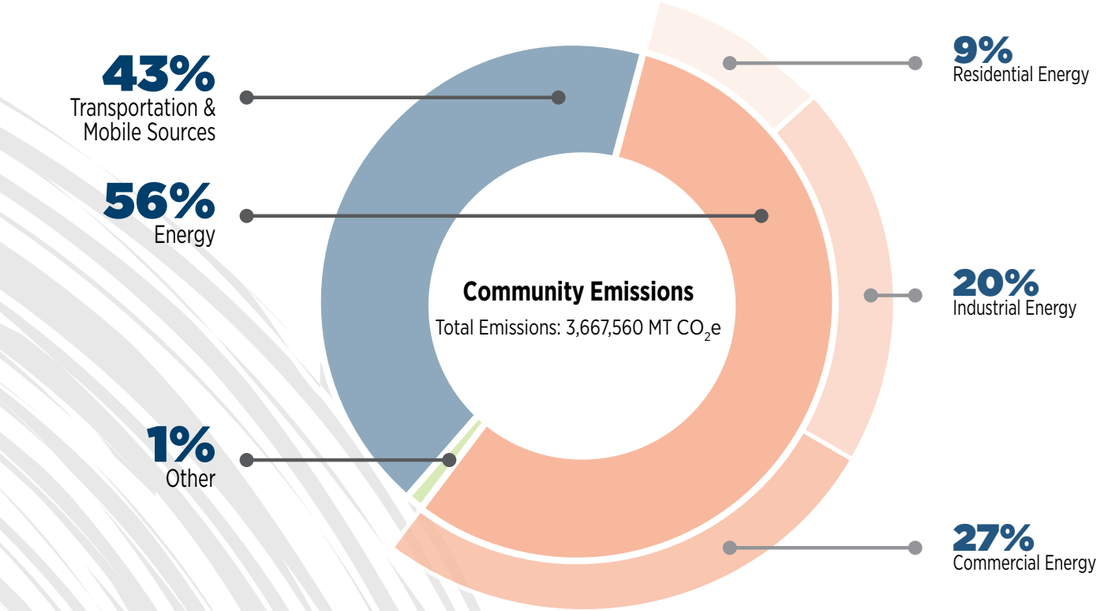
The Office of Sustainability works to embed sustainability and resilience within city operationsfor current and future Tempeans.

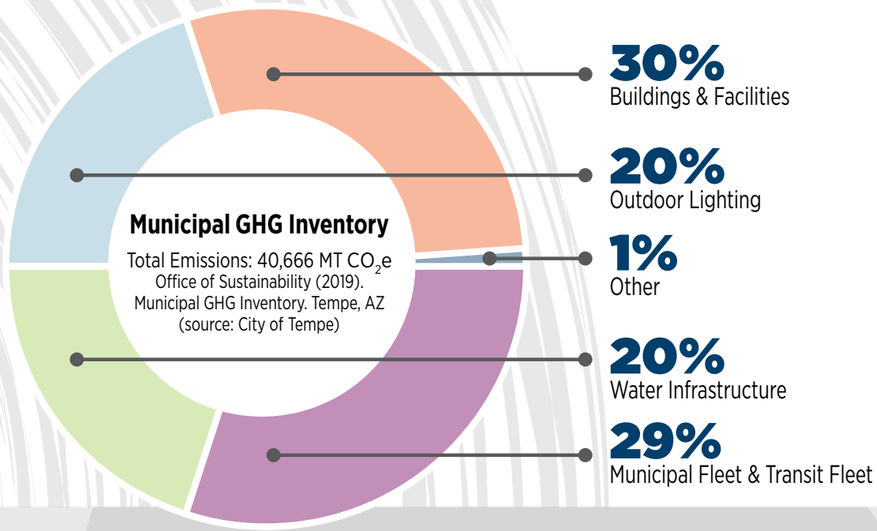
Climate Action Plan 2019

Tempe's first Climate Action Plan is an opportunity for Tempe to take local action on global climate change. Tempe can be a climate action leader in Arizona by reducing its GHG emissions and adapting to our changing climate. The city demonstrated this commitment by joining the Global Covenant of Mayors for Climate and Energy in 2016, which required a GHG inventory to measure Tempe's emissions and create a Climate Action Plan to commit to actions that reduce emissions and respond to the effects of climate change.

Cities produce GHG emissions through their use of energy, water, transportation, food and waste. Emissions are estimated through a GHG emissions inventory, which documents all sources of emissions for the city in a given year. Tempe completed both a community and a municipal emissions inventory in 2015. The community inventory looks at how many metric tons (MT) of GHG are emitted across all residents, businesses, and industries and is used as the baseline for the actions in the Climate Action Plan. The municipal inventory looks only at city operations that will guide Tempe's actions as a city to become more sustainable and resilient.

Tempe
Making waves in the desert





THE TIMELINE FOR ADOPTION OF CLIMATE ACTION PLAN 2019

Climate Action Plan 2019

To address these emissions and adapt to a changing climate, Tempe's Climate Action Plan has two focus areas: Emissions Reduction and Resilience to Extreme Heat.

Emissions Reduction

Tempe can become more livable and economically vibrant by further investing in energy and transportation technologies that reduce GHG emissions. We must invest in transforming how we move around Tempe and how our utilities produce energy.

Energy

Tempe can support businesses and residents in adopting energy upgrades that save money and grow Arizona's clean energy economy.

Transportation

Tempe is already a leader in Arizona for public transit, so we will continue to invest in alternative transportation options to improve our air quality and connect the city without needing single-occupancy vehicles.

Resilience

Urban resilience must be cultivated to respond to threats or shocks in way that allows Tempe to still achieve its sustainability goals. Tempe must adapt to climate change threats that are already impacting our city.

Extreme Heat

By investing in infrastructure that will cool Tempe, we can reduce the negative health, environmental, and economic impacts that arise from increasing temperatures.

Climate Action Plan 2021 Update

The Climate Action Plan 2021 Update provides guiding principles that will improve upon the actions we are taking as a city with our first Climate Action Plan. We will focus on five guiding principles: Fiscal Responsibility, Enterprise, Equity, Engagement, and Effectiveness.

Equity

- Consider people, and underrepresented groups, first in the creation of city programs and policies
- Practice targeted universalism, which means pursuing policies and programs that prioritize underrepresented groups, but that will create benefits for all of Tempe
- Build a culture of belonging where all people feel like they can influence the future of Tempe

Fiscal Responsibility

- Prioritize investments that maximize community benefit
- Provide the cost of inaction when possible
- Consider building the price of carbon into city decision-making

Engagement

- Conduct neighborhood- and school-focused engagements
- Employ creative gaming and virtual engagement platforms
- Create a culture of sharing and community support

Enterprise

- Support businesses in prioritizing clean air through investments in clean energy and transportation
- Inform and incentivize businesses to adopt energy upgrades, sustainable transportation, and green infrastructure practices
- Incubate and accelerate new businesses that support climate action

Effectiveness

- Select evidence-based climate actions known to be effective
- Monitor the impact of climate actions to ensure they have the desired effect
- Partner with Arizona State University to support large-scale research and infrastructure to reduce GHG emissions and increase resilience to the impacts of climate change

CLIMATE ACTION PLAN 2021 UPDATE TIMELINE

November 2019
Adoption of first Climate Action Plan and cement guiding principles for CAP 2021

Spring 2020
Community engagement on guiding principles

Summer 2020
Development of potential CAP 2021 actions

Fall 2020
Community engagement on CAP 2021 actions

Spring 2021
Collect 2020 GHG emissions data

Summer 2021
Develop final draft of CAP 2021

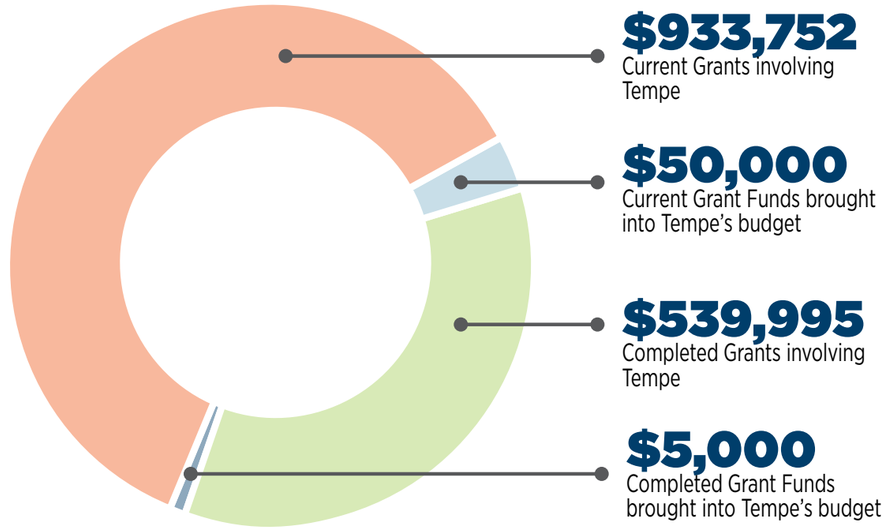
Fall 2021
Public review of final plan and Council adoption

Climate Action Plan 2021 Update Purpose

The Climate Action Plan 2021 Update serves as an opportunity to make sustainable action a fundamental part of living in Tempe. Residents, businesses, students, city staff, and nonprofits have the opportunity to collaborate on the programs, plans, and investments that will ensure Tempe is both livable and a national leader in local climate action. The 2021 Update can take climate action in Tempe to the next level by making it a central aspect of who we are as a city and how we adapt in the future. These guiding principles set the course for future climate action plans and they have already been reflected in different grant projects Tempe has completed and is currently undertaking. By using these guiding principles and building upon lessons learned from grant-funded projects, we can prove that Tempeans can come together to build local solutions.

GRANT OVERVIEW

By collaborating with internal and external stakeholders, Tempe can reach community and municipal goals while creating robust policies and programs.



Tempe
Making waves in the desert

Current Grant Overview

These are the current grant projects being pursued by the City of Tempe to create a sustainable and resilient city. Through these collaborations and initiatives, we will address the five guiding principles that Tempe is prioritizing in the Climate Action Plan 2021 Update.

GLOCULL Enterprise and Engagement	**$430,000** $49,000 delivered to City of Tempe	page 43
TRANSFORM Enterprise and Effectiveness	**In-Kind**	page 44
City-University GSCO III Engagement and Effectiveness	**$98,250**	page 45
Equity in Action Equity and Engagement	**$140,000**	page 46
Green Business Certification Enterprise and Fiscal Responsibility and Engagement	**$60,000**	page 47
Health Impact Project Effectiveness and Equity	**$50,000**	page 48
Green Infrastructure in Hazard Mitigation Plans Effectiveness and Engagement	**$50,000**	page 49
Healthy Babies, Bright Cities Effectiveness and Equity	**$34,000** $1,000 delivered to City of Tempe	page 50
ULI Affordable Housing Equity and Enterprise	**$50,000**	page 51
Local Government and Emergency Management Effectiveness, Equity, Fiscal Responsibility and Engagement	**In-Kind**	page 52
Lemon and Dorsey Green Infrastructure Pilot Project Effectiveness and Fiscal Responsibility	**$21,502**	page 53

GLOCULL (Urban Living Lab)

Advances local food enterprises and sustainable food systems

Key Features

- Funds delivered directly into Tempe's municipal budget from the European Union's Belmont Forum via the National Science Foundation (NSF).
- Pilot projects involve creating business accelerators that build capacity in sustainable food entrepreneurship by making connections among existing and new food enterprises.
- Learning from existing sustainable food business early adopters and using that acquired knowledge with community stakeholders and in cities
- Design a capacity-building program for entrepreneurs to create and run sustainable food businesses, then deliver the program to entrepreneurs and others so that they may learn how to improve their methods.

Description

The GLOCULL project is focused on exploring the local food-energy-water nexus at eight international sites, the Phoenix metro area serving as one of them. The City of Tempe, along with the City of Phoenix and Local First Arizona, have partnered with ASU's School of Sustainability and School for the Future of Innovation in Society to create an accelerator that supports the local sustainable food economy by building capacity, making connections, and facilitating partnerships in and among local food enterprises and actors.

Alignment with Guiding Principles

Enterprise: Facilitating more opportunities for local food businesses to sell their food and grow the local food economy

Engagement: Working with community partners to implement several pilot projects that encourage business systems to adopt more sustainable practices

Future Impacts

- **The business accelerator/incubator will find a permanent home after GLOCULL in order to develop our local food sustainability and Tempe's local food economy.**
- **These pilot projects can serve as a model for sustainable food enterprises to scale and transfer these concepts to other communities across Phoenix and Arizona.**

TRANSFORM

Supports businesses transitioning to sustainable practices and technologies

Description

The goal of this project is to build capacity in existing and start-up small- and medium- sized enterprises (SMEs) to transition businesses to more sustainable practices. The project will create opportunities for shared learning and scaling up solutions.

Alignment with Guiding Principles

Enterprise and Effectiveness: Supporting Tempe to highlight and promote sustainability and climate action within the small business community

Key Features

- Seven-year international grant with city and university partners from around world led by University of Waterloo (Ontario, Canada).
- The partnerships that arise in this program will be comprised of a vibrant network of hubs of research and practice that will explore the role of SMEs in triggering and accelerating sustainability transformations.
- By engaging with, studying, and building capacity within the SME sector, we will deepen the understanding of drivers, barriers, and pathways of sustainability innovation to achieve a decarbonized world.
- Sharing best practices between different SMEs to involve the active participation of various actors.

Future Impacts

- **Aims to contribute to the global movement toward a resilient, inclusive, and competitive low-carbon economy.**
- **Inform the design and implementation of policies at the federal, provincial, and municipal levels that supports SMEs as they innovate on sustainability.**
- **Seeks to transform businesses models with low-carbon technology and social innovations.**

City – University GSCO III

Improves sustainability policy by facilitating collaboration and communication between stakeholders

Description

CapaCities is a grant funded by the Global Consortium for Sustainability Outcomes to support city—university partnerships for sustainability. The grant brings together universities and cities from around the world to share knowledge, tools, and best practices for improving sustainability in cities and improving collaborations between cities and universities. In year 3, the focus is on improving the partnership between Arizona State University and the City of Tempe. This will allow scientific research and teaching to better support long-term sustainability goals of the city by facilitating partnerships in and among local food enterprises and actors.

Key Features

- Awarded $98,250 for 9-1/19-8/31-20, where $19,000 will be spent on Tempe planning and research.
- Partnerships with Portland State University and City of Portland staff to meet about climate action planning, green infrastructure, equity, and improving city-university partnerships.
- Engagement between Arizona State University, Tempe city staff, and the public to begin planning for the Climate Action Plan 2021 Update.

Alignment with Guiding Principles

Engagement: Conducting workshops and public meetings that delve into how cities can further build capacity for sustainability and resilience

Effectiveness: Using evidence-based research to inform sustainable policy

Future Impacts

- **Will support implementing the actions within the Climate Action Plan that was adopted by Tempe City Council on November 7th, 2019.**
- **Further strengthening the collaboration and sharing of best practices between city and university partners.**
- **AudaCITY Partnerships workshop in 2020 to support Tempe—ASU collaboration on the CAP 2021 Update.**

Equity in Action

Centering frontline communities and ensuring equitable engagement practices

Description

The City of Tempe and Vitalyst Health foundation created and funded a three-year process to ensure that Tempe's community engagement and decision-making considers the needs of frontline communities and people of color. The grant pays social justice leaders and organizations to form a coalition that recommends changes to Tempe's community engagement practices. There is funding for the coalition to test new ways of engaging frontline communities by investing in new types of community-based projects. Equity in Action is informed by work in Seattle, Washington; Portland, Oregon; and Providence, Rhode Island to dismantle structural racism in city government processes, policies, and practices.

Key Features

- Funded with $75,000 from the City of Tempe Innovation Fund awarded by City Council and $65,000 from Vitalyst Health Foundation for facilitation and project management.
- Creates a coalition of social justice organizations to advise the city on approaching equity and incorporating the needs of frontline communities and people of color into city decision-making process.
- Supported by a diverse group of city staff from across city departments who have worked with consultants to create pathways for the coalition to engage with the city.
- Will result in pilot projects, a set of recommendations for equitable engagement, and a revised process for an upcoming city planning process (i.e., a more equitable General Plan update).

Alignment with Guiding Principles

Equity: Supports City of Tempe in addressing the needs of frontline communities in order to model equitable engagement and decision making to inform future city plans and programs

Engagement: Provides a new framework and guiding principles for how to approach community engagement in order to receive input from frontline communities and people of color

Future Impacts

- **The effort builds awareness of the need to address white supremacy and structural racism.**
- **The process will contribute to better sustainability problem solving, which is critical for high quality climate action and resilience efforts.**
- **The community engagement approaches will guide the engagement for the Climate Action Plan 2021 Update.**
- **Tempe can inform other Arizona cities on how to center frontline communities and people of color in city decision-making processes.**

Green Business Certification Program

Sustainability actions for local businesses made easy

Description

This is a certification program that promotes sustainable practices in local businesses by providing guidance and resources for them to reduce their environmental impact. Additionally, these businesses are given the platform to promote themselves as sustainable. This allows businesses to implement sustainability efforts and get the recognition they deserve.

Key Features

- Funded with $60,000 as part of the Innovation Fund awarded by City Council.
- Businesses first complete a checklist of questions, get audited by AGBP staff members to ensure compliance, receive a pass or fail grade based on the number of green practices they have in place, and are given a personalized in-depth report from AGBP with recommendations.
- Listing on Green Biz Tracker website and recognition in LFA marketing outlets to attract customers that are seeking out environmentally friendly businesses.

Alignment with Guiding Principles

Enterprise and Fiscal Responsibility: Creating programs that attract sustainable businesses to stimulate our local economy while making environmentally sound investments.

Engagement: Having tools and resources from Arizona Green Business Program (AGBP) and Local First Arizona (LFA) staff members, so businesses are both held accountable and supported when making sustainable choices.

Future Impacts

- **Creates the foundation for Tempe to be recognized as a hub where sustainable businesses are supported**
- **Prepares our business community for the future by involving them in city-wide sustainability goals**
- **Incentivizes sustainability in the market by making the implementation of new technologies competitive but still accessible**

Health Impact Project

Uses data-based approaches to form sustainability policy

Description

The Health Impact Project, funded by the Robert Wood Johnson Foundation and The Pew Charitable Trusts, is a collaboration between the City of Tempe and Arizona State University to collect temperature and public health data during extreme heat days in Summer 2019. This research will help develop safe and sustainable guidelines for playgrounds, multi-use paths, and parking lots that are informed by this heat and health data. This will allow Tempe to be designed in a way that accommodates pedestrian and public comfort while contributing to the city's resilience to extreme heat.

Alignment with Guiding Principles

Effectiveness: Forming policy around evidence-based solutions.

Equity: Using data-informed design approaches to advocate for infrastructure that protects all citizens against extreme heat.

Key Features

- The Citywide Health and Heat Survey will sample more than 400 households in 8 distinct regions throughout Tempe to achieve statistical data representative of the entire city.
- Shade and temperature assessment of multi-use paths and playground equipment around the city will be conducted using a mobile human-biometeorological weather station (MaRTy) to measure temperature, wind speed and UV radiation levels in six directions.
- A community event, Tempe Heat Walk, educated Tempeans about extreme heat and the significance of building design, shade structures, and tree cover.

Future Impacts

- **Prepares Tempe for the inevitable public health effects of extreme heat**
- **Data gathered from the Health Impact project can be used to complement the actions and inform the policy incorporated in the City of Tempe's Climate Action Plan.**

Green Infrastructure in All Hazard Mitigation Plans

Using stormwater harvesting to be more resilient to flooding, drought, and extreme heat

Description

This project seeks to support Tempe's Climate Action Plan in using green infrastructure and stormwater harvesting as a key investment to improve our resilience to flooding, drought and extreme heat. The Environmental Protection Agency (EPA) Region 9 and Federal Emergency Management Agency (FEMA) Region 9 will assist the City of Phoenix, City of Tempe, and Flood Control District of Maricopa County in integrating green infrastructure and low impact development (GI/LID) into their local plan updates for the 2020 Maricopa County Multi-Jurisdictional Hazard Mitigation Plans (MHMP) update.

Key Features

- $50,000 in funding from the EPA and FEMA to pay for technical assistance and support the partnership among the City of Tempe, City of Phoenix, Maricopa County, ASU, and federal agencies.
- Technical assistance to ensure that Tempe and Phoenix have green infrastructure solutions in the 2020 Maricopa County All Hazard Mitigation Plan, which can support application for federal funding for resilience projects.
- The technical assistance and partnerships will expand the use of nature-based tools to mitigate flood risk and achieve the co-benefits of GI/LID, so that co-planning management strategies can enable the use of GI/LID to be institutionalized in city hazard mitigation and stormwater management planning.

Alignment with Guiding Principles

Effectiveness: Supports use of data to build an argument for further investment in green infrastructure.

Engagement: Provides tools and resources to engage regional and local stakeholders in the benefits of green infrastructure investments.

Future Impacts

- **Builds support for wider implementation of green infrastructure solutions on public and private property in Maricopa County.**
- **Models the type of regional collaboration and long-term planning that should become part of the DNA of regional resilience planning efforts.**

Healthy Babies, Bright Cities

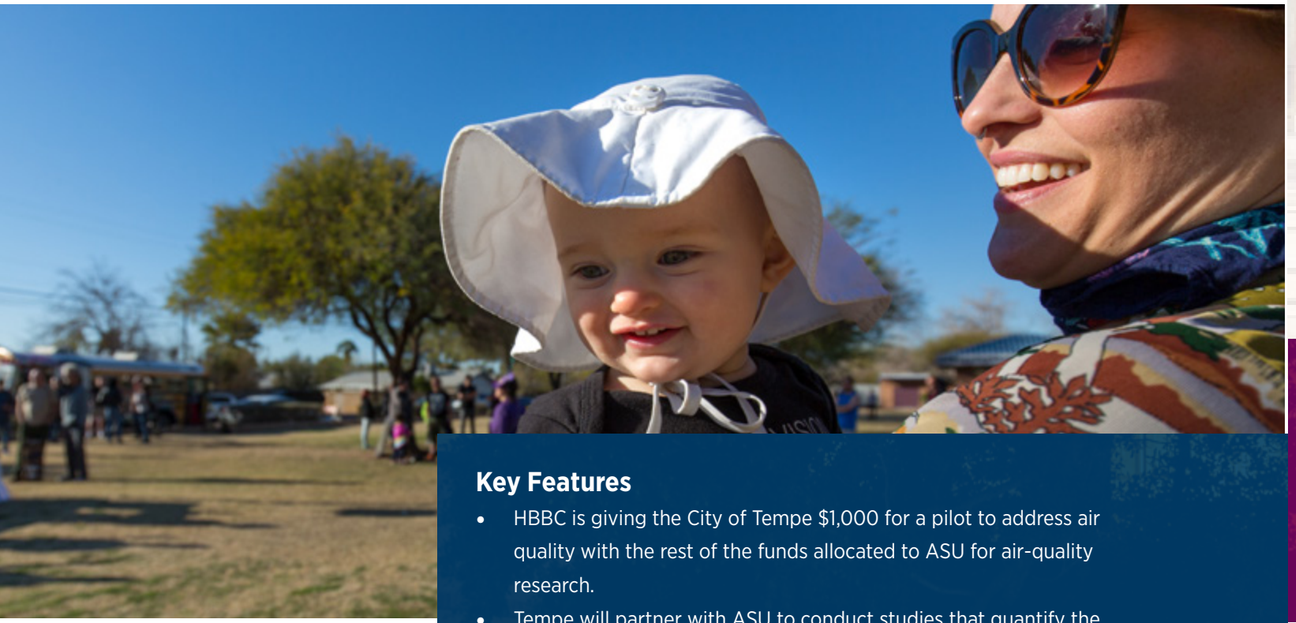
Description

Healthy Babies, Bright Cities (HBBC) is an alliance of scientists, nonprofit organizations, and donors working to create and support initiatives that measurably reduce exposures to neurotoxic chemicals in pregnant people and children younger than 2 years.

Alignment with Guiding Principles

Effectiveness: Ensuring pregnant people and young children are not made vulnerable to the effects of neurotoxins.

Equity: Using evidence-based tactics to make policy decisions that address low air-quality.



Key Features

- HBBC is giving the City of Tempe $1,000 for a pilot to address air quality with the rest of the funds allocated to ASU for air-quality research.
- Tempe will partner with ASU to conduct studies that quantify the impact that vegetative barriers have on air quality.

Future Impacts

- **Assist Tempe by scientifically proving how vegetation decreases the impacts of the urban heat island (UHI) effect, the level of particulates, and the level of ozone.**

ULI Affordable Housing

Description

Tempe can increase workforce and mixed-income housing by identifying both barriers to land use and transportation challenges deeply entangled with urban health and equity outcomes.

Alignment with Guiding Principles

Enterprise and Equity: Creating affordable housing developments that are accessible by public transit

Key Features

- Received $40,000 from the national ULI Building Healthy Places (BHP) Team and $10,000 from Vitalyst Health Foundation
- The AZ task force of multidisciplinary experts will convene public, private, and nonprofit partners to form a toolkit of best practices after local workshops and roundtables with community stakeholders.

Future Impacts

- **The toolkit will be put in a final report to evaluate place-based solutions for housing affordability.**
- **Embedding these community conversations in the development of the toolkit ensures that the solutions determined are reflective of the community's needs.**

Local Government and Emergency Management

Description

The purpose of this study is to explore current practices in emergency management and potential synergies with community resilience, quality of life, sustainability, and long-term initiatives in the City of Tempe.

Alignment with Guiding Principles

Effectiveness, Equity, Fiscal Responsibility and Engagement: Using participatory methods to write the emergency management tasks in a common language that community and institutional stakeholders alike can understand.

Key Features

- The research team conducted a series of interviews with eight City of Tempe departments/offices and two Maricopa County Departments, for a total of 16 interviewees, regarding emergency management practice in local and regional government.
- A series of three panel events will discuss how FEMA-recommended Whole Community Approach for Emergency Management applies to local-level preparedness and disaster recovery.

Future Impacts

- **Creates a better understanding of how the City of Tempe might leverage the position of a new Emergency Manager to more effectively address hazards, respond to emergency events, build community resilience, and further advocate for overarching City visions and strategic priorities.**

Lemon and Dorsey Green Infrastructure Pilot Project

Description

This Green Infrastructure (GI) project has the capacity to capture approximately 9,500 gallons of stormwater each time it rains. This project contributes to a watershed of approximately 45,000 square feet that includes E Don Carlos Ave (from east end of cul-de-sac to S Dorsey Ln) and the east side of S Dorsey Ln (from E Orange St to the project's sidewalk scupper).

Key Features

- The project consisted of two volunteer workshops where volunteers: completed installing rock armoring using 5 ton of rip-rap for the sediment trap and swale; planted 1 tree and 51 supporting plants; and spread 24 cubic yards of Tempe #2 mulch.
- Project supported by Anheuser-Busch for a World Environment Day Volunteer Event along with funding from Arizona State Forestry Division, River Network, and Four Peaks Brewery.

Alignment with Guiding Principles

Fiscal Responsibility and Effectiveness: Installing preventative infrastructure in our neighborhoods to offset the effects of extreme weather.

Future Impacts

- **Will catch rainwater run-off from the surrounding streets and landscape to prevent flooding and ensure effective reuse of rainwater**

Completed Grant Overview

The following grant projects have already been undertaken by the City of Tempe to advance our sustainability goals. Through these collaborations and initiatives, we addressed the five guiding principles that Tempe is also prioritizing in the Climate Action Plan 2021 Update.

GSCO I and II - CapaCities Engagement	**$225,000**	page 55
NLC/Wells Fargo – Future Shocks and City Resilience Engagement	**$10,000**	page 56
USDN Climate Adaptation 3.0 – Game of Extremes and Game of Heat | Engagement, Effectiveness, and Fiscal Responsibility	**$100,000**	page 57
NSF SCC – Smart Connected Communities Effectiveness	**$100,000**	page 58
USDN Marketing in Action Engagement and Effectiveness	**$100,000** $5,000 delivered to City of Tempe	page 59
Rio Salado Green Infrastructure Pilot Project Fiscal Responsibility and Effectiveness	**$4,995**	page 60
Autonomous Vehicles and Smart Mobility Enterprise and Equity	**In-Kind**	page 61

GSCO I and II –CapaCities

Training city staff to collaborate on sustainability and resilience to better work with residents and key stakeholders on climate action.

Key Features

- Funded $125,00 between 3/2017 and 2/2018 for GSCO I, where $19,000 was spent on Tempe engagement and research.
- Funded $100,000 between 3/2018 and 4/2019 for GSCO II, where $22,500 was spent on Tempe engagement and workshops.
- The Future Shocks and Resilience game as well as the AudaCITY game developed with this funding helps to train city staff on how to analyze and create long-term, ambitious climate goals.
- GLOCULL was awarded as an extension of this grant project to further build upon city-university partnerships.

Description

Initially, the CapaCities program focused on developing and implementing game-based workshops to increase city staff's knowledge and awareness of sustainability challenges, opportunities, and ongoing efforts in the city. In the second year, the focus was on the development of Tempe's first Climate Action Plan.

Alignment with Guiding Principles

Engagement: Involved a diverse set of stakeholders from city officials, ASU students and professors, and public forums to build support for climate action in Tempe

Future Impacts

- **This research helped develop the energy and transportation actions in the Climate Action Plan.**
- **This work supported efforts to develop sustainability and problem-solving skills among city staff, key stakeholders, and residents**
- **The training focused on supporting people-centered climate action.**

NLC/Wells Fargo – Future Shocks and City Resilience

Description

In a collaborative game, Tempe city officials and ASU faculty became decision-makers by taking creative approaches to solve complex problems.

Alignment with Guiding Principles

Engagement: Used a creative, non-traditional medium to educate and break down paradigms

Key Features

- Grant funded by the National League of Cities.
- This game was played by 50 people at the City of Tempe Resilience Workshop, which allowed the participants to think about how sustainability and resiliency can be embedded in city decision-making.
- The participants were divided into teams with a set of cards that had categories like assets, such as buildings and personnel; issues, such as lack of walkability and homelessness; priorities, such as financial stability and quality of life; and a shock, such as a terrorist attack or a pandemic. Each team had to create a scenario that would use resources and solve problems in a collaborative way.

Future Impacts

- **Using the game as an opportunity to make deeper relationships through this shared experience**
- **By learning together and thinking of non-traditional solutions to problems, we can examine issues outside the confines of our system to address them holistically and without bias.**

USDN Climate Adaptation Training 3.0

Description

The Urban Sustainability Directors Network (USDN) supported the creation of the Game of Extremes and the Game of Heat to train city staff, residents, and partners on how to collaborate for resilience investments. The grant builds upon previous USDN grants that created the Game of Floods and basic climate adaptation training.

Alignment with Guiding Principles

Engagement and Effectiveness: Made resilience training more fun and memorable, which allowed for community building around resilience planning.

Fiscal responsibility: Taught participants about the importance of investing in resilience by shedding light on the cost of inaction if cities do not adequately invest in resilience.

Key Features

- USDN 2018 Innovation Grant of $100,000 allowed six USDN members to co-create two climate adaption trainings with USDN Climate Resilience Program Director, Kristin Baja, and AECOM.

Future Impacts

- **The Office of Sustainability is using the Game of Heat training to build support for resilience in extreme heat with the Climate Action Plan 2021 Update and in the onboarding of the new Emergency Manager.**

NSF SCC – Smart Connected Communities

Description

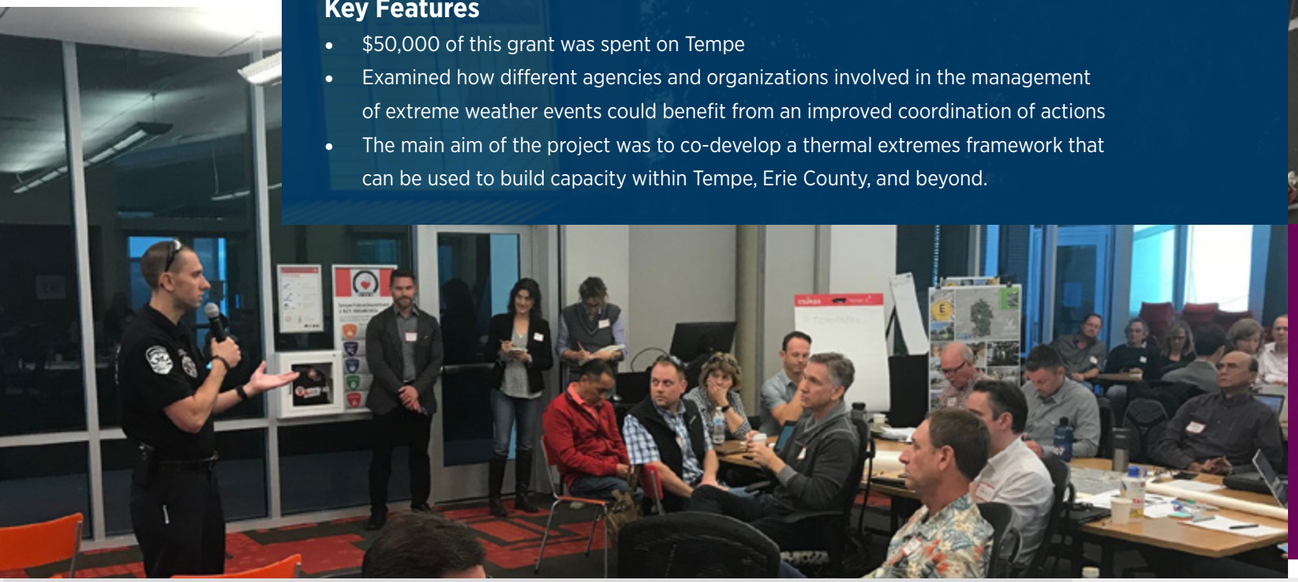
This National Science Foundation (NSF) Smart and Connected Communities (SCC) Planning Grant was a collaborative effort among a core leadership team of stakeholders to examine existing and potential future management practices for extreme heat and cold in the cities of Tempe and Buffalo.

Alignment with Guiding Principles

Effectiveness: Examined interventions alongside other institutions such as Northern Arizona University, the University at Buffalo, City of Tempe, Erie County, City of Buffalo, and the National Weather Service to pool together best practices informed by data to determine efficacy of outcomes.

Key Features

- $50,000 of this grant was spent on Tempe
- Examined how different agencies and organizations involved in the management of extreme weather events could benefit from an improved coordination of actions
- The main aim of the project was to co-develop a thermal extremes framework that can be used to build capacity within Tempe, Erie County, and beyond.



Future Impacts

- **Advocates for smart approaches to thermal extremes that use pragmatic technological systems to inform city policy and intervention.**

USDN Marketing in Action

Description

The City of Tempe participated in a national program to improve how local governments communicate about sustainability issues. Tempe selected the issue of recycling contamination to test new marketing and communication strategies to reduce contamination in our blue recycling bins.

Key Features

- Pilot funding was used to assess contamination in two Tempe neighborhoods to help build a marketing plan for residents to improve city recycling communication.
- Residents were asked to complete an original survey to help city staff identify common recycling misunderstandings. A second survey was given with the secondary round of blue bin checks to determine the impact of the marketing campaign.

Alignment with Guiding Principles

Effectiveness and Engagement: Used public opinion to shape the way we communicate about city processes and involve residents in these processes

Future Impacts

- **Results from this pilot may be used to inform a citywide marketing campaign.**
- **Improving our communication will allow us to achieve our recycling contamination goals.**

Rio Salado Green Infrastructure Pilot Project

Description

This GI project installed two curb cuts with the capacity to capture 900 gallons of stormwater each time it rains. The stormwater will be utilized as a beneficial resource providing water to the desert vegetation planted in and near the infrastructure.

Alignment with Guiding Principles

Fiscal Responsibility and Effectiveness: Installing this preventative infrastructure in our neighborhoods offsets the effects of extreme weather

Key Features

- Twenty-two volunteers planted 3 trees and 29 supporting plants, placed boulders, and installed rip-rap rock around the curb cut openings to create a sediment trap.
- Supported by Anheuser-Busch for a World Environment Day Volunteer Event along with funding from River Network and Four Peaks Brewery

Future Impacts

- **Catches rainwater run-off from the surrounding streets and landscape to prevent flooding and ensure effective reuse of rainwater.**

Autonomous Vehicles and Smart Mobility

Description

The School for the Future of Innovation and Society and Dr. Thad Miller completed a pro-bono project to support a policy scan of the need for autonomous vehicle policies and programs in the City of Tempe.

Alignment with Guiding Principles

Enterprise and Equity: Created guiding principles for how autonomous vehicle technologies contribute to carbon emissions reduction, reduce congestion, and provide equitable transportation solutions.

Key Features

- Conducted interviews with city staff and industry to identify risks and opportunities with the deployment of autonomous vehicles.

Future Impacts

- **This work helped creat a smart mobility playbook to guide the deployment of emerging transportation technologies while ensuring the technologies enhance our transportation system.**

GLOSSARY

CO_2e: Carbon dioxide equivalent; a way to translate other greenhouse gases, like methane, sulfur oxides, and nitrogen oxides, into an equivalent amount of carbon dioxide.

Equity: Considering the intersections within a person's identity, or their personal and societal advantages and disadvantages; the process to reach equality

FY: Fiscal year; the City of Tempe's budget period from July 1 to June 30 of the next year

In-Kind: Donations of good, services, or time instead of giving money directly.

MT: Metric ton; equals approximately 2,205 pounds

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

Sustainability: Balancing the environmental, social, and economic needs of today without compromising those needs for tomorrow

ACKNOWLEDGMENTS

We are deeply thankful for the municipal and community support that went into compiling this document. Below are some of the main contributors who made the Annual Report possible:

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Salt River Project
Arizona Public Service
Arizona Forward
Urban Sustainability Directors Network
ICLEI
Urban Land Institute
National League of Cities
Southwest Energy Efficiency Project (SWEEP)
Global Cities Cool Alliance

Grant Funders

Global Consortium of Sustainability Outcomes (GSCO)
Wells Fargo
Vitalyst Health Foundation
Pew Charitable Trusts
Robert Wood Johnson Foundation
Urban Land Institute (ULI)
Building Healthy Places (BHP)
River Network
Four Peaks Brewery
Urban Sustainability Directors Network (USDN)
National League of Cities
National Science Foundation (NSF)
Arizona State Forestry Division

Want to learn more about sustainability at the City of Tempe?

Check out our website at tempe.gov/SustainableTempe.

For information about Tempe's Sustainability Commission, visit tempe.gov/SustainabilityCommission.

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Sustainable Tempe

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