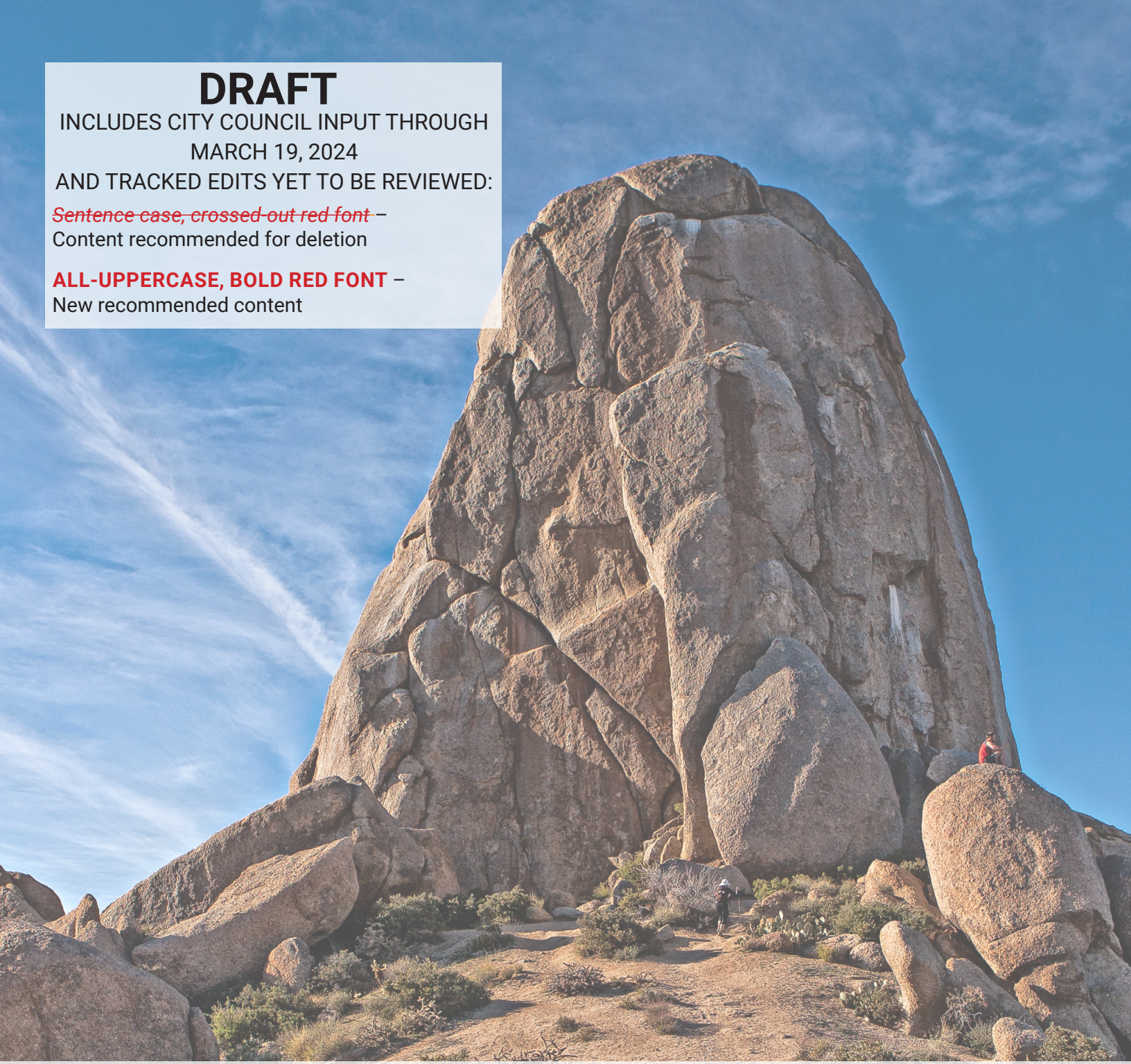

DRAFT

INCLUDES CITY COUNCIL INPUT THROUGH MARCH 19, 2024

AND TRACKED EDITS YET TO BE REVIEWED:

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Content recommended for deletion

ALL-UPPERCASE, BOLD RED FONT –
New recommended content

CITY OF
SCOTTSDALE

COMMUNITY SUSTAINABILITY PLAN

DRAFT

SCOTTSDALE COMMUNITY SUSTAINABILITY PLAN

TABLE OF CONTENTS

LETTER FROM MAYOR ORTEGA

EXECUTIVE SUMMARY

The Scottsdale Community Sustainability Plan (the plan) helps us envision and realize our future as a sustainable, resilient and thriving community that embraces a comprehensive approach for achieving ambitious targets. As imagined by City Council and Scottsdale voters through the approval of the 2035 General Plan, this plan will enhance and expand the work already being done by city staff, residents and businesses. The plan provides a roadmap and specific action steps for achieving long-term targets and will require cohesive implementation by the City of Scottsdale, businesses, civic organizations and individual members of the community.

WHY A SUSTAINABILITY PLAN?

Scottsdale is well-known for livability, unparalleled leisure and world-class amenities. The diversity and natural beauty of Scottsdale's landscapes are among its defining features, and the city has long championed environmental stewardship while maintaining a high quality of life for residents, visitors and businesses.

As Scottsdale nears build-out, expanding our sustainability efforts will be even more important. The city understands that without thoughtful planning and stewardship, our environment and quality of life may be negatively impacted by long-standing practices and systemic trends. The plan's key elements – energy, water, waste, air quality and extreme heat – all improve our natural environment. But the proposed solutions also bring other positive outcomes – including cost savings, health and safety improvements, equity and economic vitality.

SUSTAINABILITY
A SCOTTSDALE GUIDING PRINCIPLE

Over the years, Scottsdale has proactively found creative solutions to environmental challenges and committed to make life better for residents and visitors. The city responded to flooding problems by building the Indian Bend Wash Greenbelt, a series of parks and amenities covering 11 miles in the center of the city, which was also the first non-structural flood control solution in the country.

Over 30,000 acres of desert habitat has been permanently preserved through the Scottsdale McDowell Sonoran Preserve. Meaningful desert open space – whether actively or passively managed – is a fundamental part of Scottsdale's character and is created and maintained with the support of residents, for their benefit and for benefit of the environment. The city uses zoning and other requirements to guide development in desert and mountain areas, through policies like the Environmentally Sensitive Lands Overlay District (ESL). The ESL ordinance requires a percentage of each property be permanently preserved as Natural Area Open Space and that specific environmental features be protected through land use dedications and easements.

Scottsdale pioneered total wastewater reuse and water banking through advanced purification systems, recycling and storing water and reducing reliance on surface water. The Scottsdale Water Campus is home to the Advanced Water Treatment Facility, one of the most sophisticated recycled water facilities in the world and the third permanent facility in the nation permitted as a pilot program for advanced water purification. The AWT is one of the largest potable water purification facilities in the world and can treat up to 20 million gallons of recycled water a day.

Launched in 1998, Scottsdale's first-in-the-state Green Building Program encourages a whole-systems approach through building design and construction to minimize environmental impacts, reduce energy use and improve occupant health. In 2005, City Council adopted a LEED Gold requirement for all public buildings, leading to the construction of the first LEED Platinum certified fire station in the country – Scottsdale Fire Station 602. In 2022, Scottsdale became the first in the state and one of only a few cities nationwide to adopt mandatory 'green' building code requirements by mandating compliance with the International Green Construction Code (IgCC).

SCIENCE & ECONOMICS OF SUSTAINABILITY

The science behind sustainability efforts is compelling. NASA's records and analysis confirm that the climate is warming faster than any time in the past 10,000 years. The use of fossil fuels emits heat-trapping pollution into the atmosphere forming a thick blanket around the Earth, causing our planet to overheat and creating irreversible damage. Models estimate that temperatures may increase another 4.5 to 8 degrees Fahrenheit by 2100,[1] but other changes in our climate are occurring much faster and can already be seen. NASA has compiled datasets that show warming oceans, rising sea levels and more extreme weather events, among a long list of impacts. Extreme heat acts a threat multiplier, worsening air quality and making our climate more arid.

Temperatures Valleywide in July 2023 made it the hottest month ever recorded in a U.S. city — a result of natural variability, the urban heat island effect and climate change.[2] This new record continues a trend of increasing average temperatures going back over a century of data. But averages only tell some of the story, since the number and length of heat waves has also been increasing.[3] The cumulative effect of multiple days of extreme daytime highs also means that nighttime temperatures were uncomfortably high, combining to create a deadly weather phenomenon.

DAILY AIR QUALITY INDEX (AQI) VALUES: OZONE
PHOENIX-MESA-SCOTTSDALE

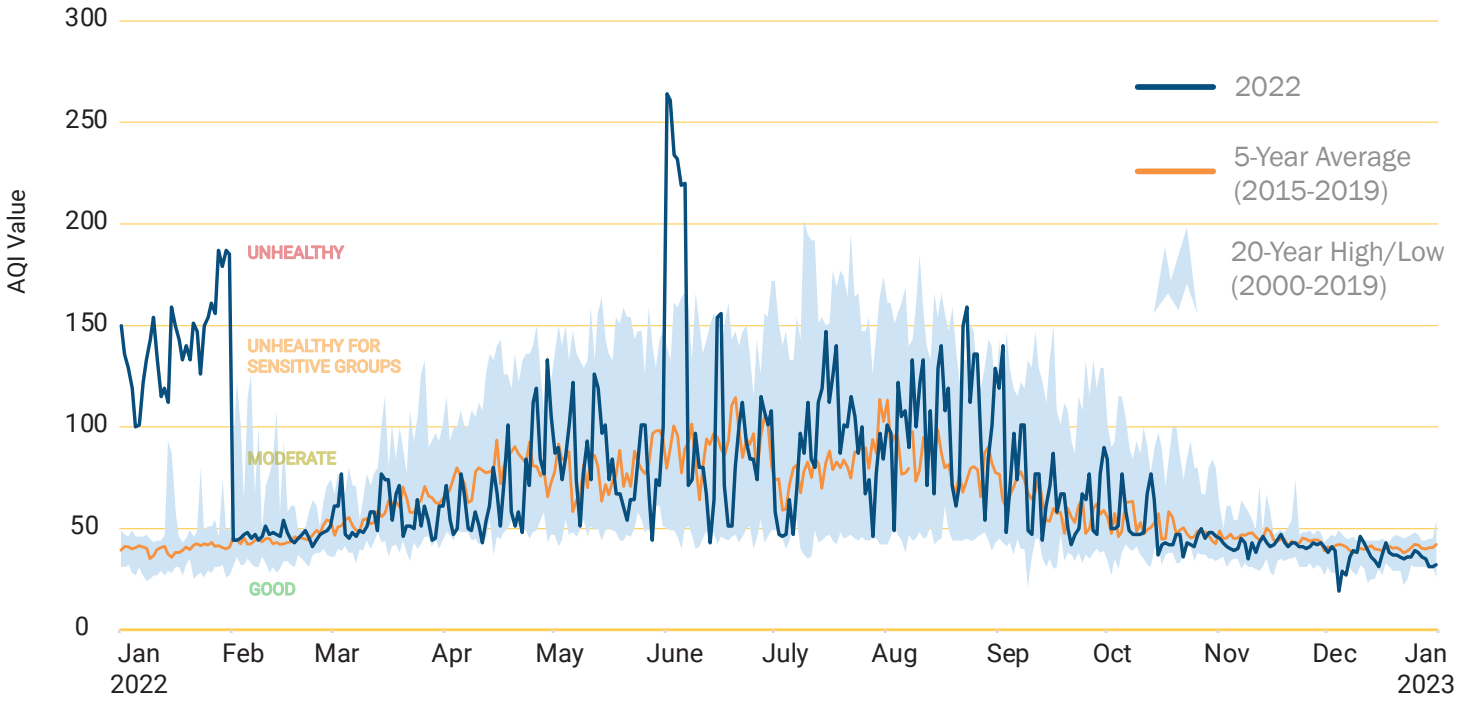


Figure 1. *Source: Air Data - Daily Air Quality Tracker*

The desert southwest is also experiencing one of its worst droughts in 1,200 years. Insufficient rainfall and snowpacks have lowered lake levels, endangered water supplies and impacted soil moisture and vegetation. The over-allocation of Colorado River water supplies, coupled with trends of a hotter and drier climate make protecting water resources essential – and more difficult.

Scientific data helps us understand how our air quality is changing and the resulting health impacts. The region's two biggest concerns are ozone and particulate matter, as these exceed federal health-based standards most frequently. The causes of these pollutants are complex, especially given how far ozone, dust and smoke can travel in the air. Regional air quality has fluctuated in recent years, in part reflecting the influence of extremely hot summers on the number of unhealthy days. In 2022, almost 1 in 3 days exceeded federal air quality standards – 30% or 106 days. In 2020 and 2021, the air quality was in the 'very unhealthy' range for more than two months.

Just as the science of sustainability motivates us to take action, the economics of sustainability help us understand how to get started, guiding the efficient use of resources and the long-term response to climate change. The concept of the 'triple bottom line' means that financial, social and environmental performance should influence decision-making, highlighting how our ecosystem fuels the economy.

Safeguarding a sustainable future for Scottsdale will require investments, both by the city government and by residents and businesses. Innovation and other factors have been driving down the costs of technology like photovoltaic systems (down 80% since 2010), and rebates and grants can also lower upfront costs. Similarly, the prices of renewable energy, electric vehicles and batteries have also dropped.

Failing to act also has costs, highlighting the relationship between a healthy economy and the environment. Extreme heat, poor air quality and drought can affect the economy in a range of ways: health impacts, loss of business when people stay indoors or cut visits short and utility bills squeezing disposable income.

A case-by-case comparison of costs to benefits -- including the cost of doing nothing -- will identify projects that make financial sense. For example, reducing energy and water use often yields favorable cost-benefit ratios, meaning that the cumulative savings from lowered use can exceed the costs in a short period of time.

Support for sustainability in Scottsdale is driven by many factors, including the economic benefits of action. As a city that thrives on innovation, collaboration and sustainable growth, Scottsdale already fosters a business-friendly climate that generates some of the world's most successful companies and entrepreneurs. The beauty and sustainability of the region's natural environment is integral to its economic vitality, with tourism alone having an estimated annual economic impact of $2.5 billion.[4]

A greener future can also be one where residents, tourists and businesses continue to prosper. To sustain our economy, it is essential that we take actions to ensure that our ecosystem is healthy.

FRAMEWORK

To turn this plan into action, Scottsdale has established five priority areas: **Energy**, **Water**, **Waste**, **Air Quality** and **Extreme Heat**. This framework — which grew from the goals and policies for sustainability set in the 2035 General plan — supports the protection of the Sonoran Desert ecosystem and will help attract residents and visitors, providing economic benefits and ensuring a high quality of life.

The plan is an aspirational document and not a mandate, so there are no penalties for not achieving the targets. The indicators and baseline data for each priority show "where we are" and are tied to targets that are "where we want to be." The work builds on existing plans, looking beyond what the city is doing and providing policy direction where efforts are newer or are now more urgent.

These five priority areas sometimes overlap in important ways, so the plan structure facilitates collaboration and reinforces the connections between topics. Tackling the challenges of energy and water consumption and waste generation provide benefits like cost savings, improved health and reduced pollution. These steps also improve air quality and address extreme heat. For example, fewer greenhouse gas emissions mean less polluted air and lower temperatures, which in turn results in less energy needed to cool buildings. Adding desert-adapted trees filters pollutants from the air and provides shade.

Rising temperatures compound a myriad of other interrelated problems, including the drought as hotter temperatures further shrink water supplies. Hotter temperatures increase the frequency and destructiveness of wildfires and draw more moisture from the ground generating intense and frequent haboobs (dust storms). Air quality is degraded as wildfires and haboobs significantly increase concentrations of particulate matter and other pollutants, and heat directly increases the production rate of ground-level ozone. Exposure to extreme heat and air pollution also compounds health impacts.

ENERGY

Maximize the use of renewable energy resources, energy efficiency, and responses to climate challenges.

WATER

Conserve, protect and deliver quality drinking water safely and reliably to the community, now and into the future.

WASTE

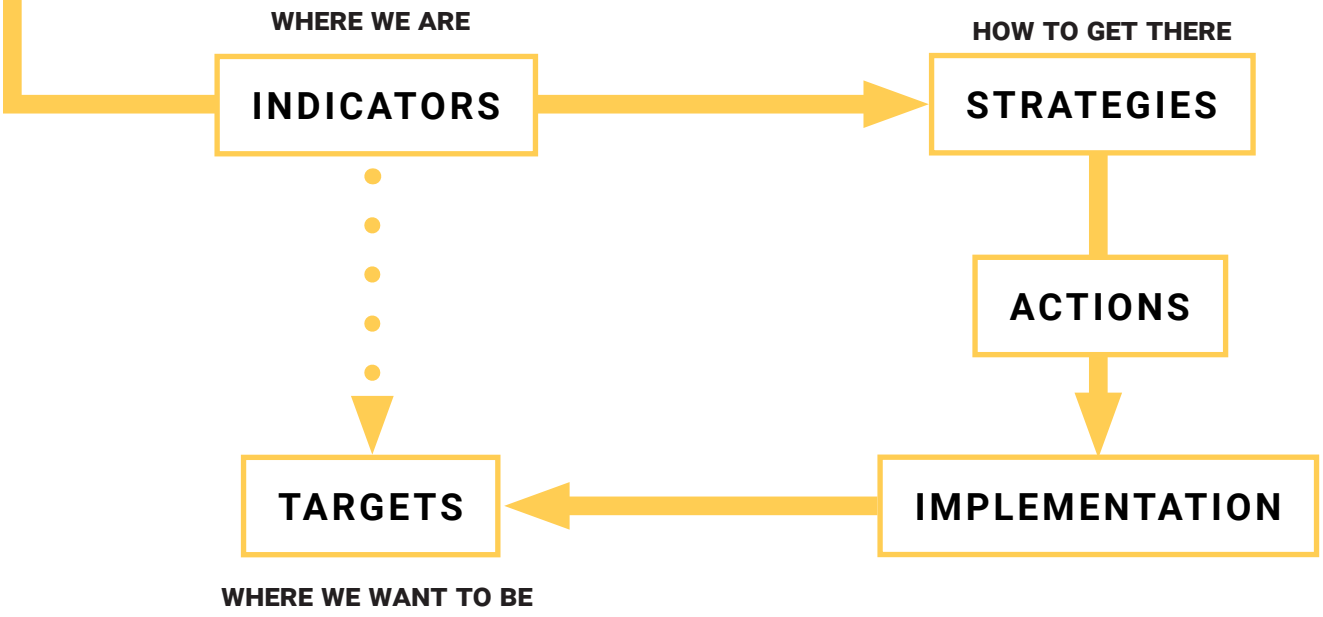
Develop a circular economy approach for materials management and effective citywide diversion of all waste streams.

AIR QUALITY

Reduce contaminants and pollutants to improve air quality and protect community health.

EXTREME HEAT

Ensure that the community prevents, is prepared for, responds to and recovers from extreme heat.



ENERGY

Maximize the use of renewable energy resources, energy efficiency and responses to climate challenges.

Residents and businesses rely on electricity and other energy sources every day to operate computers, cooling appliances and lighting. Much of this energy is provided by regulated utilities and comes from burning fossil fuels like coal or natural gas for electricity, heat and transportation. Using less energy yields cleaner air and health benefits, supports green jobs and generates cost savings. Taking additional steps to use more clean or renewable energy further protects the environment by reducing pollutants and greenhouse gases associated with burning fossil fuels.

ENERGY TARGETS

- Reduce citywide electricity use per square foot by 15% by 2035 (from 2022 levels)
- Reduce municipal electricity use by 15% by 2035 (from 2022 levels) through efficiency measures
- Increase distributed solar capacity citywide to 180 MW by 2030 and to 500 MW by 2040
- Increase municipal solar capacity to 5 MW by 2030
- Reduce citywide greenhouse gas emissions by 45% by 2035 and 90% by 2050 (from 2022 levels)
- Reduce municipal greenhouse gas emissions by 45% by 2035 and 90% by 2050 (from 2022 levels)
- Reduce the average energy burden to 6% or less for all households by 2035
- Increase the percentage of green buildings to 10% of the total by 2035

ENERGY STRATEGIES

NRG 1 Reduce energy use and greenhouse gas emissions.

NRG 2 Improve municipal energy performance.

NRG 3 Reduce energy impacts of the built environment through sustainable building practices and policies.

WATER

Conserve, protect and deliver quality drinking water safely and reliably to the community, now and into the future.

Providing quality drinking water and ensuring adequate water supplies has been a long-standing priority in Scottsdale. As reflected in the recently adopted "Sustainable Water Management Principles," Scottsdale Water thinks and acts strategically with its water resources – from supply, quality, and conservation to recycling and recharge. Staff administers several residential and commercial incentive rebate programs, offers residential outdoor efficiency checks, a commercial audit program, manages ordinance compliance like water waste complaints, and offers water efficiency educational opportunities. Demand for these services has been growing since the activation of Stage 1 of the city's Drought Management Plan.

WATER TARGETS

- Reduce residential water use (gallons per capita per day) to 170 by 2033
- Reduce municipal potable water use by 5% by 2027 (from 2022 levels)
- Reduce irrigation water use for HOA properties by 10% by 2033 (from 2022 levels)
- Reduce commercial water use by 10% by 2033 (from 2022 levels)
- Increase return flow percentage by 10% by 2033, capturing indoor/outdoor efficiency for both residential and commercial customers
- Maximize annual water banking
- Maintain treated groundwater deliveries to Safe Yield levels

WATER STRATEGIES

WTR 1 Ensure water system resiliency.

WTR 2 Reduce municipal water use.

WASTE

Develop a circular economy approach for materials management and effective citywide diversion of all waste streams.

Managing waste better and more efficiently benefits everyone. Recycling or reusing goods reduces the reliance on finite natural resources and yields cost savings by buying less and avoiding landfill fees. Solid Waste trucks will drive fewer miles on city streets, litter is reduced, jobs can be created and fewer landfills need to be built and maintained. Because of these benefits, achieving 'zero waste' has become a common long-term target for municipalities and organizations. Sustainable materials management (SMM) goes beyond diversion to maximize environmental benefits and extend the life cycle of products and materials by keeping them in circulation as long as possible. This approach looks at extraction of resources, design, production and use of products, as well as end-of-life management and disposal. One application of SMM is the creation of a circular economy, which "reduces material use, redesigns materials and products to be less resource intensive, and recaptures 'waste' as a resource to manufacture new materials and products."

WASTE TARGETS

- Reduce landfill refuse per single-family household by 25% by 2030 and 90% by 2040 (from 2022 levels)
- Reduce landfill refuse citywide by 90% by 2040
- Reduce municipal landfill refuse by 35% by 2030 and 90% by 2040 (from 2024 levels) *(excludes municipal green landscaping debris hauled under city contract)*
- Achieve a 35% diversion rate by 2030 (single-family households)
- Achieve a 90% diversion rate by 2040 (citywide)
- Achieve a 35% diversion rate by 2030 and a 90% diversion rate by 2040 (municipal waste)
- Increase the percentage of Solid Waste Services commercial accounts that recycle to 40% by 2030
- Achieve a diversion rate from the brush and bulk waste stream of 50% by 2030 and 90% by 2040
- Divert 15,000 tons annually of citywide organic waste from the landfill by 2030 and 30,000 tons annually by 2040 *(excludes brush and bulk and municipal green landscaping debris hauled under city contract)*
- Maintain a recycling contamination rate below 10% by 2025 and below 5% by 2045

WASTE STRATEGIES

WST 1 Increase diversion rates.

WST 2 Strengthen local markets for recycled content, recyclable and reusable materials.

WST 3 Expand opportunities for diverting organic waste from the landfill.

WST 4 Reduce waste generation.

AIR QUALITY

Reduce contaminants and pollutants to improve air quality and protect community health.

Like many metropolitan areas, Scottsdale has been working for years to improve air quality. The region's two biggest concerns are ozone and particulate matter (PM), as these exceed federal health-based standards most frequently. The causes of these pollutants are complex, given the number of sources and how far both can travel in the air. Particulate matter, classified as small (PM-2.5) or large (PM-10), usually occurs as blowing dust or smoke from fires or fireworks. Ground-level ozone is created when nitrogen oxides, volatile organic compounds, and sunlight react, making ozone primarily a summer issue.

AIR QUALITY TARGETS

- Reduce unhealthy air days in Scottsdale by 2030
- Reduce hospitalizations for pollution-related health events (per 100,000 population) by 2030
- Reduce municipal fleet fuel use by 10% by 2030 and 40% by 2050 (from 2023 levels)
- Increase number of publicly available charging ports four-fold by 2027 and ten-fold by 2030 (from 2023 levels)

AIR QUALITY STRATEGIES

AQ 1 Clean Scottsdale's air.

AQ 2 Support adoption of electric and other alternative fuel vehicles.

EXTREME HEAT

Ensure that the community prevents, is prepared for, responds to and recovers from extreme heat.

Temperatures in 2023 set records for extreme heat: regionally, for the hottest July and the most heat-related fatalities, and globally, for the hottest year ever. Located in the Sonoran Desert, Scottsdale and other Valley cities are experiencing a trend of increasing average temperatures going back over a century of data. But averages only tell some of the story, since the number and length of heat waves has also been increasing.[5] The cumulative effect of multiple days of extreme daytime highs also makes nighttime temperatures uncomfortably high, combining to create a deadly weather phenomenon.

These long and hot summers impact human health, quality of life and economic vitality. Increased heat results in added energy use and higher air conditioning. Staying indoors during extreme heat is not always an option, and the impact of people deferring work, shopping or other activities can have a negative impact on the economy.

EXTREME HEAT TARGETS

- Reduce average July day- and night-time air temperatures by 2030
- Reduce surface temperatures by 2030 in the Greater Airpark, Old Town and McDowell Road/ Scottsdale Road growth areas
- Reduce hospitalizations for heat-related health events (per 100,000 population) by 2030
- Increase tree and shrub canopy to 20% by 2030 and 25% by 2040

EXTREME HEAT STRATEGIES

HT 1 Expand heat relief communication and education.

HT 2 Protect people from the health effects of extreme heat.

HT 3 Identify urban design improvements including structured shade and built environment.

HT 4 Plant more trees and implement other nature-based solutions.

IMPLEMENTATION

The city of Scottsdale will take the lead on implementing the Community Sustainability Plan and be a catalyst for further action by the private sector, non-profits and community members. Achieving sustainability for Scottsdale requires a common vision and engagement from the whole community to prioritize effective solutions. Implementation of the plan will be strategic and strive to maximize the benefits for all Scottsdale residents and visitors. The plan is designed to be a living, working document that will focus our resources and collective action where it will be most impactful.

The city will take important steps to ensure continuous evaluation and improvement:

1. Produce an annual progress report that includes a section chronicling city achievements and data.
2. Formally update the plan every three years.

Implementing some of the plan's 15 strategies and 91 actions will begin immediately, while others will start later or evolve and be revised over time. Implementation will require that specific project plans be developed for each action, identifying costs, personnel needs, barriers and milestones.

An implementation table for each priority shares four elements for each action:

Time Horizon For Completion: Quick Win,* 1-3 years, 3-10 years or Ongoing

Lead Agencies & Partners: Additional partners will likely be added during project development

Costs: Costs are estimated and may change during project development or implementation
$ -- **Low** ($0 - $50,000)
$$ -- **Moderate** ($50,001 - $250,000)
$$$ -- **High** (Over $250,000)

Benefits:


Environmental (air quality, carbon emissions, waste reduction, drought relief)


Economic ($ savings, attracting businesses and tourism)


Social (health & safety, quality of life, equity)

* After initial implementation, "quick wins" may transition to "ongoing" programs.

WHAT CAN YOU DO?

The city of Scottsdale hopes that residents, businesses and non-profits are also motivated to improve the world around them. Work with us and support one of the actions in the plan or be innovative and start your own project! Here are some places to get started:

The plan provides specific actions for achieving long-term goals and will require efforts by city government and members of the community. In each section, the “What Can You Do?” graphics will include more interesting tips and suggestions — check them out!

The CoolClimate Network offers a simple tool to help you understand your personal environmental impact. They even have a version for businesses. Use the calculators to see what kinds of changes you can make to your travel, buildings and shopping and make a pledge to act.

Engage your family, neighbors and co-workers about sustainability. Ask them questions about what concerns them the most and tell them what you’re doing to make an impact. Conversations about the environment can help people connect over shared values.

Scottsdale may not be a large city, but our position as a respected tourist destination in a unique desert environment has always shaped our commitment to being good environmental stewards. This is not the end of our planning but rather a starting point for a continued sustainability journey — join us!

ENDNOTES

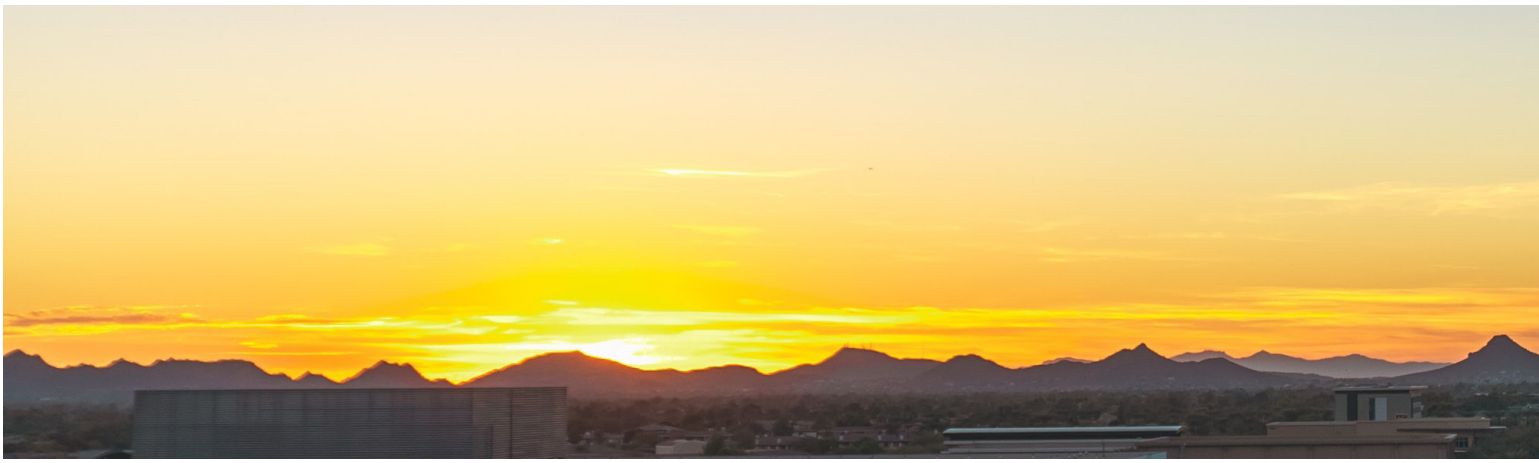
1 "Is it too late to prevent climate change?" NASA Global Climate Change.

2 "Phoenix just posted the hottest month ever observed in a U.S. city," Washington Post.

3 "Arizona Then and Now: Summer heat," *Arizona Republic*, 07/28/2016.

4 Scottsdale Tourism Study - Visitor Statistics," City of Scottsdale, September 2022.

5 "Arizona Then and Now: Summer heat," *Arizona Republic*, 07/28/2016.



WHY A SUSTAINABILITY PLAN?

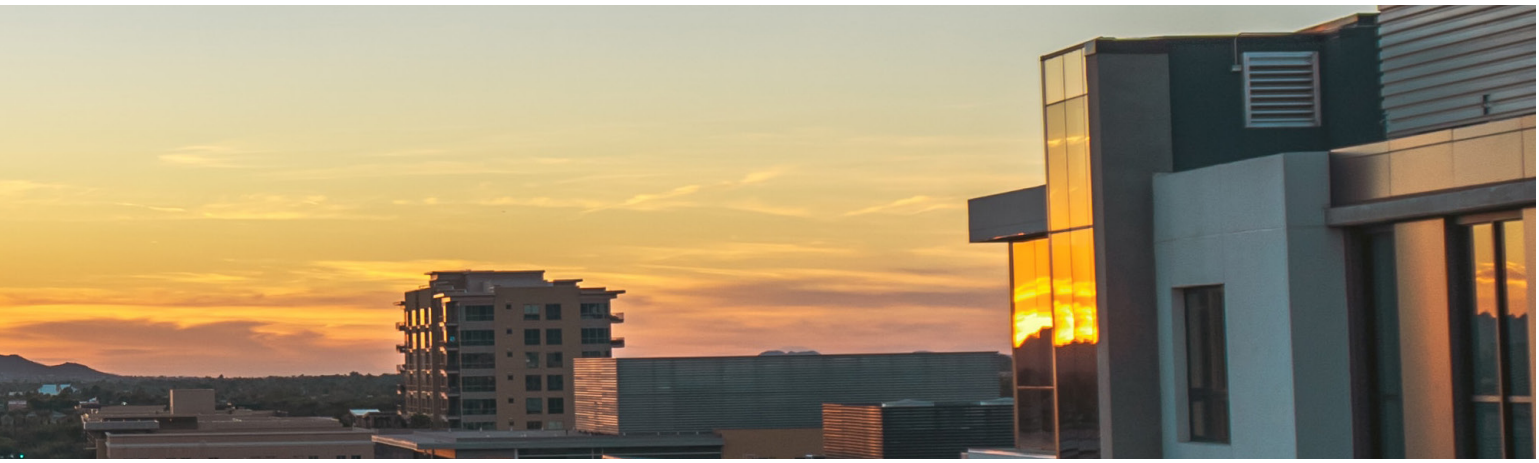
Scottsdale is well-known for livability, unparalleled leisure and world-class amenities. The diversity and natural beauty of Scottsdale's landscapes are among its defining features, and the city has long championed environmental stewardship while maintaining a high quality of life for residents, visitors and businesses. The public consistently agrees the "overall quality of natural environment in Scottsdale" is essential or very important.[1]

> *"Sustainability is a condition of living that enables the present generation to enjoy social wellbeing, a vibrant economy and a healthy environment, without compromising the ability of future generations to enjoy the same."*
>
> - Scottsdale General Plan 2035, page 280

As Scottsdale nears build-out, expanding our sustainability efforts is even more important. The city understands that without thoughtful planning and stewardship, our environment and quality of life may be negatively impacted by long-standing practices and systemic trends – including drought, extreme heat, air pollution and economic and social inequities. The worsening impacts of climate change compel further sustainability action by Scottsdale.

The benefits of planning for sustainability in Scottsdale are numerous. The plan's key elements – energy, water, waste, air quality and extreme heat – all improve our natural environment. But the proposed solutions also bring other positive outcomes – including cost savings, health and safety improvements, equity and economic vitality. ~~We know these benefits outweigh the upfront costs because we already see community members taking similar action.~~

The city will need to work in partnership with residents and businesses to succeed. The plan builds on Scottsdale's legacy of effective, resident-centered governance and sound economic management. The plan provides a roadmap and specific action steps for achieving long-term goals and will require cohesive implementation by the City of Scottsdale, businesses, civic organizations and individual members of the community.



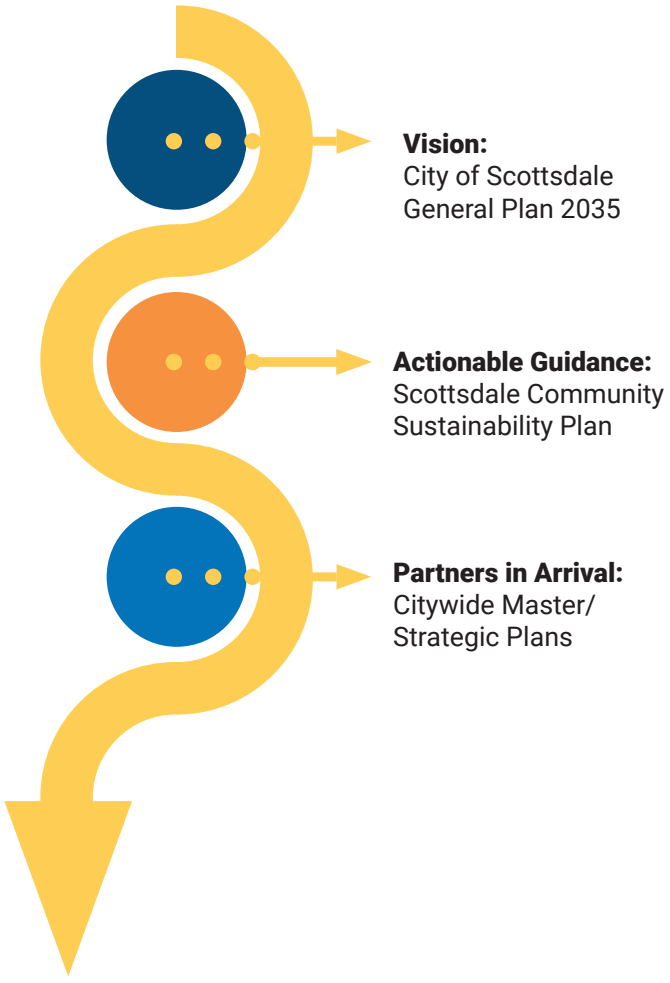
With this plan, Scottsdale embraces a comprehensive approach to achieving ambitious targets and commits to being held accountable for those actions. This Community Sustainability Plan – as imagined by City Council and Scottsdale voters through the approval of the 2035 General Plan – enhances and expands the work already being done by city staff, residents and businesses. Starting from the 'vision' of the General Plan, the plan complements others already in place to achieve targets and implement new programs.

Scottsdale may not be a large city, but our position as a respected tourist destination in a unique desert environment has always shaped our commitment to being good environmental stewards. This is not the end of our planning but rather a starting point for a continued sustainability journey -- join us!

"Sustainability can be summarized as our stewardship of natural capital for future generations, going well beyond economic and environmental development to embrace health care, urbanization, energy, materials, agriculture, business practices, social services and government… Sustainability is a concept with as much transformative potential as justice, liberty, and equality."

- Dr. Michael Crow, President, Arizona State University

ROADMAP



SUSTAINABILITY ~~IS NOT NEW TO~~ A SCOTTSDALE **GUIDING PRINCIPLE**

Scottsdale's sustainability journey goes back decades and has fortified the city's legacy as a place of innovation. "Seek Sustainability" was one of the guiding principles in the 1996 CityShape General Plan. And Scottsdale's commitment to environmental stewardship was again reaffirmed in the General Plan 2035, which identifies five core elements of sustainability and the environment – Open Space, Environmental Planning, Conservation, Water Resources and Energy. As part of a commitment to livability and quality of life, Scottsdale prioritizes services and facilities for residents, including 43 parks, four public libraries and eight resource centers.

> *"Keep Scottsdale safe, wild & beautiful. Maintain Scottsdale's small town feel."*
>
> *"100% supportive of a Sustainability Plan for City of Scottsdale"*
>
> - Resident feedback on the draft Sustainability Plan

Over the years, Scottsdale has proactively found creative solutions to environmental challenges and committed to make life better for residents and visitors. The city responded to flooding problems by building the Indian Bend Wash Greenbelt, a series of parks and amenities covering 11 miles in the center of the city, which was also the first non-structural flood control solution in the country.

Over 30,000 acres of desert habitat have been permanently preserved through the Scottsdale McDowell Sonoran Preserve. Currently, 37% of Scottsdale's footprint is open space (public and private including the Preserve). Meaningful desert open space – whether actively or passively managed – is a fundamental part of Scottsdale's character and is created and maintained with the support of residents, for their benefit and for the benefit of the environment.

The city uses zoning and other requirements to guide development in desert and mountain areas, through policies like the Environmentally Sensitive Lands Overlay District (ESL). The ESL ordinance requires a percentage of each property be permanently preserved as Natural Area Open Space and that specific environmental features be protected through land use dedications and easements. Character Area Plans, like those for Desert Foothills and Dynamite Foothills, support these goals.

Scottsdale pioneered total wastewater reuse and water banking through advanced purification systems, recycling and storing water and reducing reliance on non-renewable surface water. The Scottsdale Water Campus is home to the Advanced Water Treatment Facility (AWT), one of the most sophisticated recycled water facilities in the world and the third permanent facility in the nation permitted as a pilot program for advanced water purification (AWP). The AWT is one of the largest potable water purification facilities in the world and can treat up to 20 million gallons of recycled water a day.

Launched in 1998, Scottsdale's first-in-the-state Green Building Program encourages a whole-systems approach through building design and construction to minimize environmental impacts, reduce energy use and improve occupant health. **IN 2005, CITY COUNCIL ADOPTED A LEED GOLD REQUIREMENT FOR ALL PUBLIC BUILDINGS,** leading to the construction of the first LEED Platinum certified fire station in the country – Scottsdale Fire Station 602. In 2022, Scottsdale became the first in the state and one of only a few cities nationwide to adopt mandatory 'green' building code requirements by mandating compliance with the International Green Construction Code (IgCC).

Achieving these large and difficult milestones has not kept the city from undertaking other projects and initiatives that reflect Scottsdale's forward-thinking approach to desert living. The city's Xeriscape Garden serves as an inspiration to residents and developers, demonstrating just how a beautiful a water-wise, natural desert landscape can be. The community science programs offered by the McDowell Sonoran Conservancy protect biodiversity, mitigate invasive plants and restore ecological balance. The Scottsdale Public Library even 'checks out' seeds and citizen science kits to make hands-on learning accessible to all.

Additionally, municipal operations model good stewardship practices for the whole city. The city partners with utilities to reduce our use of electricity on high-demand days and has installed solar panels at the North Corporation Yard complex. Solar installation will proceed with new covered parking lots with solar panels. LED installations continue throughout our facilities and low-consumption fixtures, flush valves, showerheads, metering faucets, cooling tower controllers and bottle fillers are used to conserve water.

Other practices also model municipal leadership:

- In 2005, Scottsdale became the first city in the country to require all new city buildings to be certified at the LEED[2] Gold standard or higher.
- Responding to a call to reduce water use by 5% between 2021 and 2022, the city saved 38 million gallons through conservation and turf removal, exceeding its goal with a 6% overall reduction.
- Parks & Recreation increased their efforts, with use dropping to 25% below the allotment from the Arizona Department of Water Resources. Specifically in 2022, the city converted over 140,000 square feet of non-functional/non-recreational turf to xeriscape, saving more than 5.3 million gallons of water annually.
- The city also saved almost 4 million gallons of water from 40 city-maintained sites through irrigation controllers that shut off watering during summer monsoon rain events.
- Two recent city events–the 2023 State of the City Address and the 2022 Employee Awards—were zero waste functions, achieving more than 93% diversion from the landfill.

THE SCIENCE OF SUSTAINABILITY

The science behind sustainability efforts is compelling. NASA's records and analysis confirm that the climate is warming and warming faster than any time in the past 10,000 years. Average temperatures are up two degrees Fahrenheit, mostly in the last 40 years, and driven by emissions of carbon dioxide and other human activities.[3] Most of these emissions result from burning fossil fuels for electricity, heat and transportation. The result is an amplification of the natural greenhouse gas effect that is essential for the Earth to be habitable, resulting in more heat trapped in the atmosphere.

Models estimate that temperatures may increase another 4.5 to 8 degrees Fahrenheit by 2100,[4] but other changes in our climate are occurring much faster and can already be seen. NASA has compiled datasets that show warming oceans, rising sea levels and more extreme weather events, among a long list of impacts. Extreme heat acts a threat multiplier, worsening air quality and making our climate more arid.

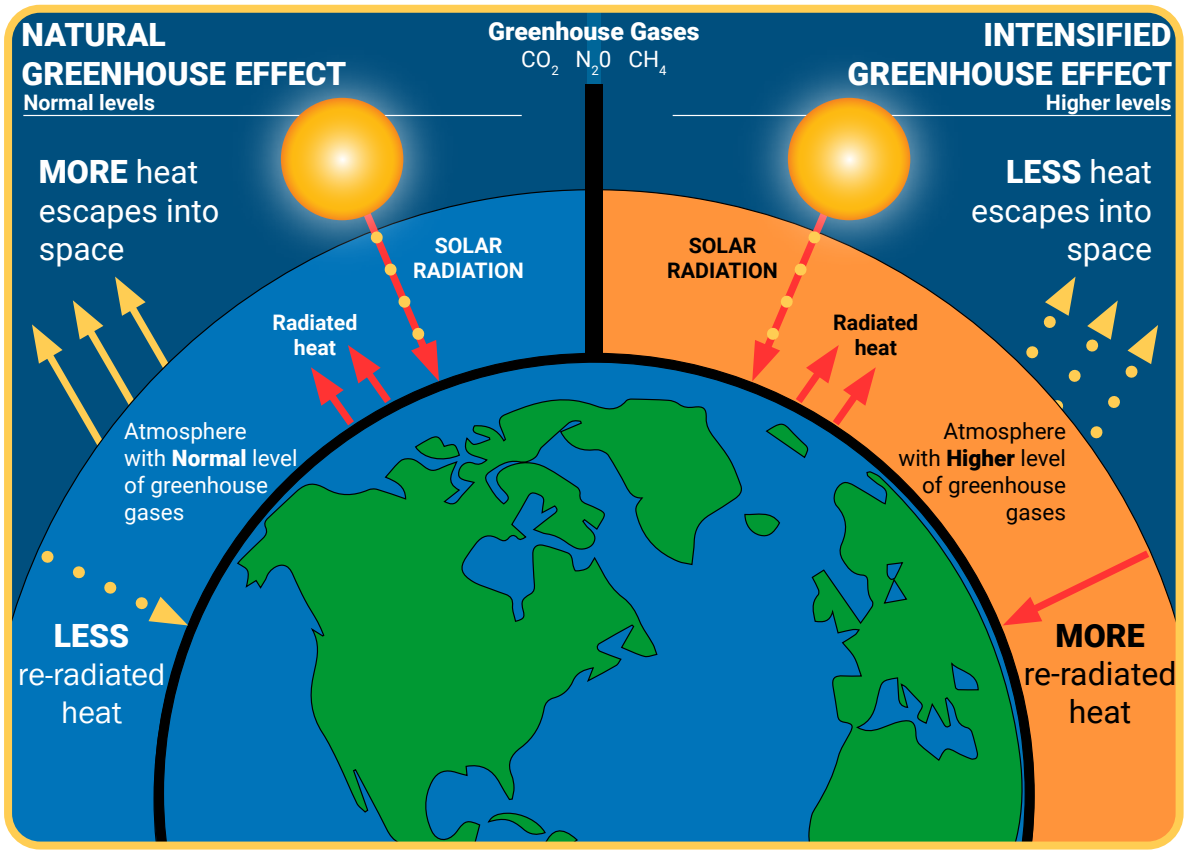


Figure 1. *Source: National Park Service*

"The implications of the science around climate change are alarmingly clear. The link between greenhouse gases and climate change is now well established, and scientists are gaining a greater understanding of what the Earth might look like if it were to warm by 1.5°C, 2°C [2.7°F, 3.6°F], or more."

- Deloitte, "Act Now: Future Scenarios and the Case for Equitable Climate Action"

Temperatures Valleywide in July 2023 made it the hottest month ever recorded in a U.S. city — a result of natural variability, the urban heat island effect and climate change.[5] This new record continues a trend of increasing average temperatures going back over a century of data. But averages only tell some of the story, since the number and length of heat waves has also been increasing.[6] The cumulative effect of multiple days of extreme daytime highs also means that nighttime temperatures were uncomfortably high, combining to create a deadly weather phenomenon.

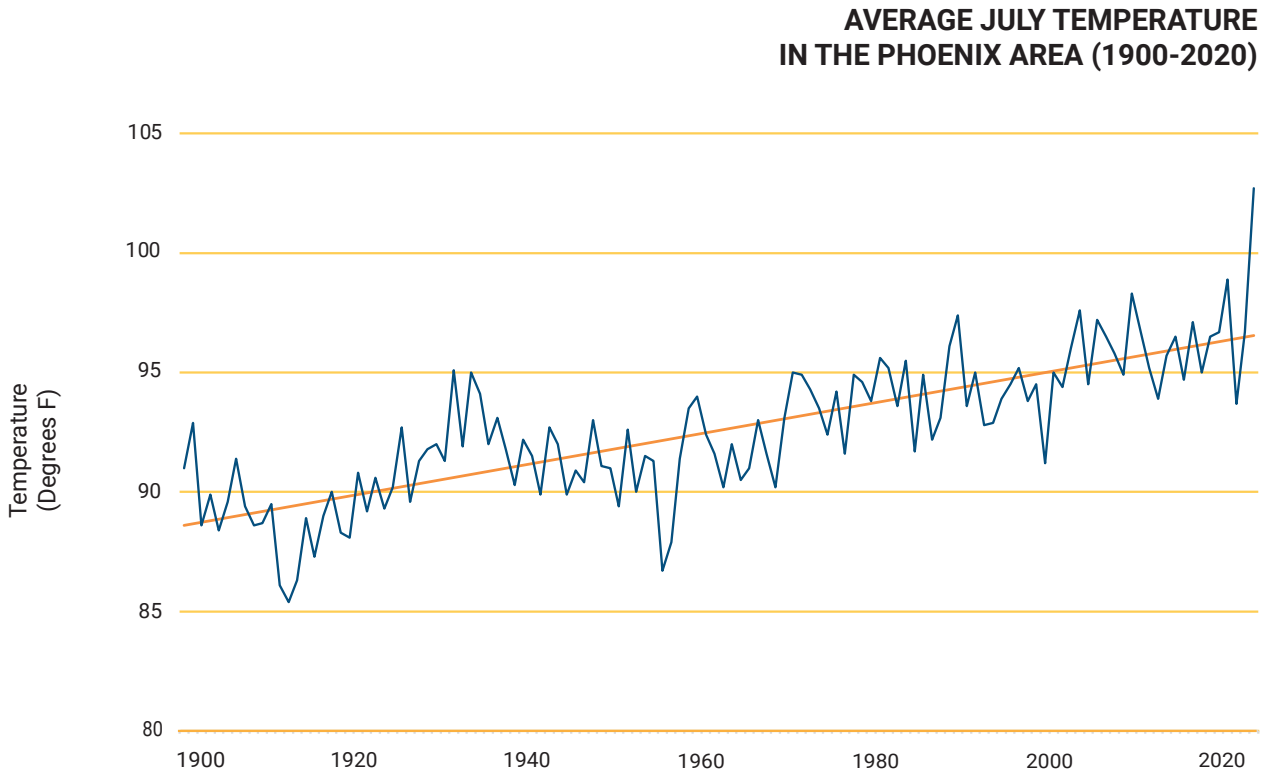


Figure 2. *Source: National Weather Service NOWData, Phoenix Area, Monthly Summarized*

The desert southwest is also experiencing one of its worst droughts in 1,200 years. Insufficient rainfall and snowpacks have lowered lake levels, endangered water supplies and impacted soil moisture and vegetation. The Arizona Department of Water Resources monitors drought conditions using precipitation and streamflow data, compares annual data to a 40-year historical record and publishes weekly reports on the status and level of the drought. Similarly, both Scottsdale and the Central Arizona Project assess the impacts of the drought on predicted water supply and react accordingly. The over-allocation of Colorado River water supplies, coupled with trends of a hotter and drier climate make protecting water resources essential — and more difficult.

Scientific data helps us understand how our air quality is changing and the resulting health impacts. The region's two biggest concerns are ozone and particulate matter (PM), as these exceed federal health-based standards most frequently. The causes of these pollutants are complex, especially given how far ozone, dust and smoke can travel in the air. Regional air quality has fluctuated in recent years, in part reflecting the influence of extremely hot summers on the number of unhealthy days. In 2022, almost 1 in 3 days exceeded federal air quality standards – 30% or 106 days (Figure 1). In 2020 and 2021, the air quality was in the 'very unhealthy' range for more than two months.

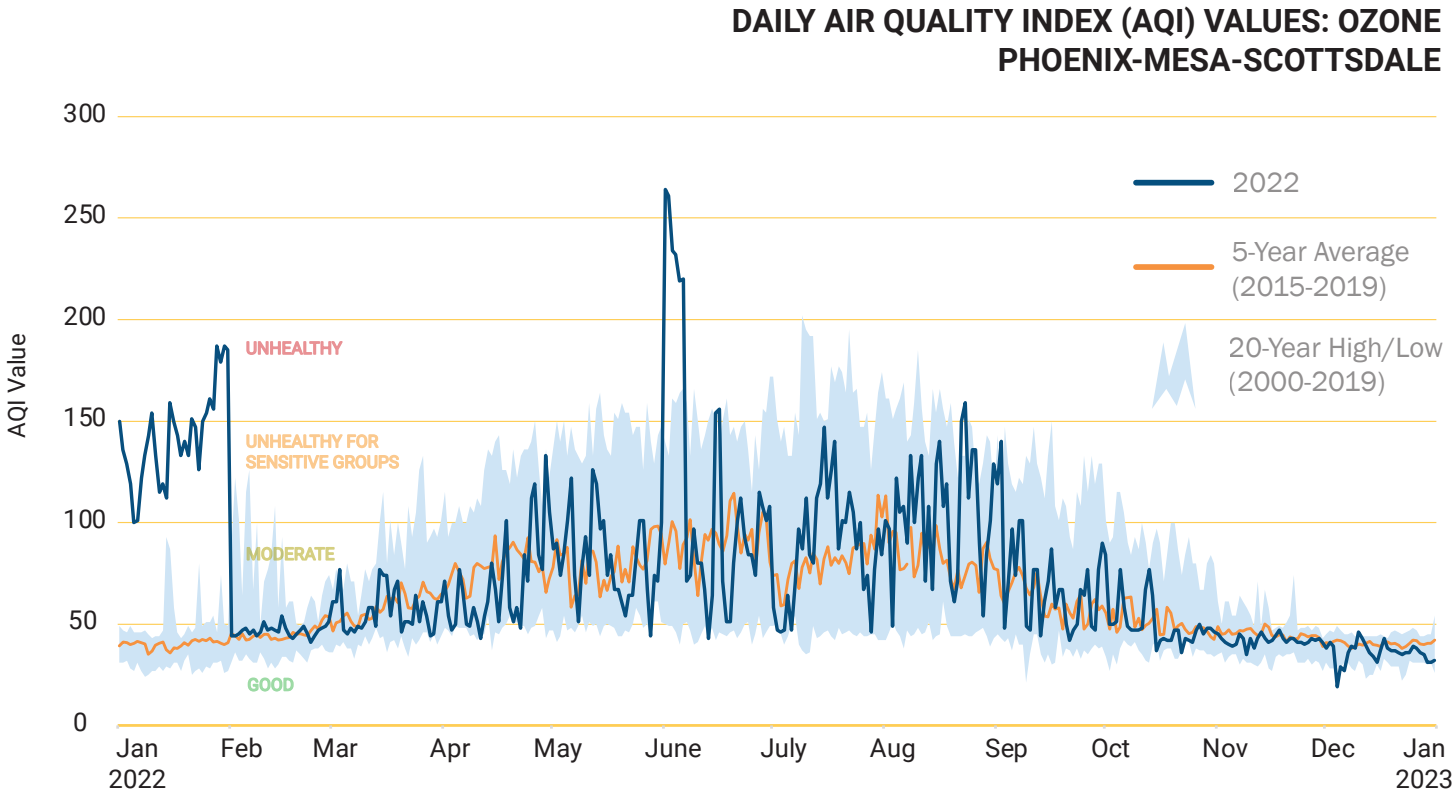


Figure 3. *Source: Air Data - Daily Air Quality Tracker*

Now is the time to act. NASA reports that 97 percent of climate scientists "agree that humans are causing global warming and climate change,"[7] and almost 7 out of 10 people locally agree that global warming is happening.[8] To preserve Scottsdale as a highly livable city that is environmentally and economically healthy, we are responding with mitigation and resiliency solutions to these challenges.

> *"Climate change will impact water prices, food prices, housing prices…energy prices, it will impact our quality of life, our health, our jobs and economy."*
>
> - Resident feedback on the draft Sustainability Plan

THE ECONOMICS OF SUSTAINABILITY

Just as the science of sustainability motivates us to take action, the economics of sustainability help us understand how to get started, guiding the efficient use of resources and the long-term response to climate change. The concept of the 'triple bottom line' means that financial, social and environmental performance should influence decision-making, highlighting how our ecosystem fuels the economy.

Safeguarding a sustainable future for Scottsdale will require investments, both by the city government and by residents and businesses. Innovation and other factors have been driving down the costs of technology like photovoltaic systems (down 80% since 2010), and rebates and grants can also lower upfront costs. Similarly, the prices of renewable energy, electric vehicles and batteries have also dropped.

A case-by-case comparison of costs to benefits -- including the cost of doing nothing -- will identify projects that make financial sense. Reducing energy and water use often yields favorable cost-benefit ratios, meaning that the cumulative savings from lowered use can exceed the costs in a short period of time. Benefits to consumers can be quantified – like reduced utility bills and maintenance costs when utilizing longer-lasting lightbulbs – or be more subjective as when occupants are more comfortable. A seminal work by McKinsey identified numerous negative-cost options for improving energy efficiency in buildings and appliances, which are recommended as quick wins.[9]

Another way to assess the economics of policies is through life cycle analysis, by analyzing the costs and benefits of an item from production to end-of-life disposal. For solid waste, this involves different calculations for different efforts. Reusing items can save money by deferring expenditures. For recycling, there are tradeoffs like the environmental cost of mining for bauxite versus the collection and recycling costs of aluminum. Overall, the region-specific costs of transportation and maintenance of landfills should also influence sound decision-making.

Similarly, the utility staff in Gilbert commissioned a report to examine the overall impact on rates of reducing water demand. This analysis of avoided costs quantified the impacts of conservation over 20 years and found that water rates are 5.8% lower than they would have been without the per capita reductions. The conclusion was that by conserving water, customers avoided the higher costs of building new infrastructure to deliver and treat additional water supplies.[10]

Macerich [which owns and operates Scottsdale Fashion Square and Kierland Commons] "aims to set the bar for sustainability in the real estate industry by operating properties with purpose that "walk the walk" in stewarding resources for the shopping centers' guests, investors, tenants, industry partners, employees, communities and the planet."

Failing to act also has costs, highlighting the relationship between a healthy economy and the environment. Extreme heat, poor air quality and drought can affect the economy in a range of ways: health impacts, loss of business when people stay indoors or cut visits short and utility bills squeezing disposable income.

A recent study by The Nature Conservancy (TNC) evaluated the impacts of extreme heat in the Phoenix area across five indicators of human and economic wellbeing: mortality, morbidity, labor productivity, roadway infrastructure and energy demand. On the low end of the estimated range, the economic consequences of inaction would average $1.9 billion between 2020 and 2059. The largest source of these costs was heat-related mortality ($898 million) and labor productivity losses ($855 million).[11]

The TNC study also analyzed the return on investment for two solutions – adopting cool roofs for 100% of buildings in the area and increasing the urban tree canopy to 25% by 2050. For each, the accumulated benefits were estimated to exceed the upfront costs after 4-5 years, even without including benefits like reduction in air pollution or reduced stormwater runoff.[12]

Another study in the journal Science evaluated the economy-wide impacts of different future warming scenarios and found that Maricopa County would see a 5-10% drop in gross domestic product by the end of the century (Figure 2).[13] The Atlantic Council similarly examined broad economic impacts and calculated that losses from decreased labor productivity would exceed $5 million per year by 2050 in Maricopa County and that occupational injuries due to human heat stress could be as high as 15,000 per year.[14]

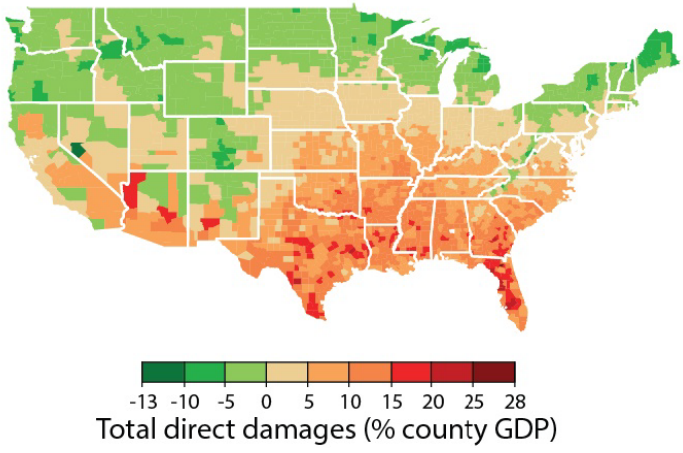


Figure 4. *Source: Estimating economic damage from climate change in the United States," Science, Hsiang et al, June 2017*

- *33 percent of companies list improving operational efficiency and lowering costs as a top reason for addressing sustainability*
- *94 percent say their companies have integrated sustainability into strategic planning*
- *53 percent say company performance on sustainability is at least somewhat important to attracting and retaining employees*

- McKinsey & Company survey

Support for sustainability in Scottsdale is driven by many factors, including the economic benefits of action. As a city that thrives on innovation, collaboration and sustainable growth, Scottsdale already fosters a business-friendly climate that generates some of the world's most successful companies and entrepreneurs. The beauty and sustainability of the region's natural environment is integral to its economic vitality, with tourism alone having an estimated annual economic impact of $2.5 billion.[15] A recent study found that 64% of visitors to Scottsdale cited 'beautiful scenery' as a key factor in deciding to visit.[16]

As individual projects are identified to move the city closer to its goals, an analysis of costs and benefits will be used to set priorities. A greener future can also be one where residents, tourists and businesses continue to prosper. To sustain our economy, it is essential that we take actions to ensure that our ecosystem is healthy.

"The rapidly escalating costs of continuing greenhouse gas emissions continue to outpace the costs of mitigation (future citizens considered), and we bear responsibility to plan and implement aggressive mitigation."

- Resident feedback on the draft Sustainability Plan

OUR COMMUNITY VALUES

Scottsdale established Community Values to guide implementation of the goals of the 2035 General Plan. The Community Sustainability Plan reflects these values as it stewards the natural environment, protects human health and advances the social and economic well-being of the community for the present and future generations.

Respect Character and Culture

Enhance and protect Scottsdale's unique features, neighborhood identity, character, livability, southwestern heritage, and tourism through appropriate land uses and high standards for design. Create vibrant and attractive places that accommodate a variety of ages and incomes and support the arts and multicultural traditions.

Conserve and Preserve the Environment

Lead the region in the stewardship and sustainable management of the Sonoran Desert environment and conservation of natural resources and open spaces for the visual, physical, and personal enrichment of everyone.

Collaborate and Engage

Promote strong, visionary leadership that is transparent, responsive, and efficient; collaborates regionally; respects and honors our community values; recognizes the benefit of interactive community involvement and volunteerism; and embraces citizens as active partners in decisions that affect their neighborhoods and city.

Foster Well-Being

Promote a culture of lifelong physical and mental health, safety, and well-being for residents, visitors, employers, and employees. Foster social connectivity across cultural and generational boundaries by cultivating a welcoming environment; respecting human dignity; and recognizing and embracing citywide and regional diversity.

Connect the Community

Connect all community members within the city and to the region by striving for cost-effective, adaptable, innovative, safe, and efficient mobility options. Connectivity and mobility involve more than getting people from here to there, connectivity and mobility influence the form and comfort of urban communities.

Revitalize Responsibly

Vigorously evaluate the short- and long-term impacts of development and redevelopment decisions to ensure that public and private investment work collaboratively to support and maintain the unique features and local identity that make Scottsdale special, and contribute positively to the community's physical, fiscal, and economic needs and high quality of life.

Advance Innovation and Prosperity

Embrace a diverse and innovative economy to sustain our high quality of life through a variety of businesses, health and research institutions, and educational, technological, tourism and cultural elements.

HOW THE PLAN WAS DEVELOPED

The Scottsdale Community Sustainability Plan is an important part of the city's commitment to a more sustainable future; it implements creative solutions and solves environmental challenges. The City Council included adoption of a sustainability plan as part of the city's 2022 and 2024 organization strategic plans, and it was identified as an element of the General Plan 2035 implementation.

GETTING STARTED

Work on the plan began in June 2021, with support of the Rob and Melani Walton Sustainability Solution Service (ASU) and with input from the Scottsdale Environmental Advisory Commission (SEAC) and other community members. ASU researchers interviewed city personnel, researched best practices and frameworks and collected ideas about possible actions at community meetings, resulting in an initial draft plan.

CITY COUNCIL DIRECTION

Beyond driving the creation of the sustainability plan, City Council feedback at five Work Study Sessions resulted in a sharp focus on the priorities, a push to develop baseline metrics and set numeric targets, and the need to include the costs and benefits of action. The discussion at these sessions included a range of specific input on topics and requested the use of narratives to tell a story about why sustainability is important.

SCOTTSDALE ENVIRONMENTAL ADVISORY COMMISSION (SEAC)

SEAC has been involved in the plan development from the beginning, sharing their valuable expertise and reviewing plan drafts. Input from this seven-member public body has shaped the plan framework and message, ensured the plan reflects the character of Scottsdale and set our sights high to achieve aspirational targets.

COMMUNITY ENGAGEMENT

The city has been committed to a broad public input process with outreach to residents, boards and commissions and other stakeholders for their feedback. Staff and subject matter experts have provided their guidance and ideas along the way. Two sets of community meetings were held in May and October 2022 in conjunction with a public questionnaire to elicit feedback on an early draft and on overall priorities. As interim drafts were posted online and discussed at public meetings, additional input was gathered and incorporated into the plan. A final draft was posted for public review before City Council adoption.

See Acknowledgments for more information on city departments and Boards and Commissions who contributed to the plan.

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FRAMEWORK & PRIORITIES

FOR A SUSTAINABLE, RESILIENT & THRIVING SCOTTSDALE

To turn this plan into action, Scottsdale has established five priority areas for becoming a sustainable, resilient, and thriving community: **Energy**, **Water**, **Waste**, **Air Quality** and **Extreme Heat**. This framework — which grew from the goals and policies for sustainability set in the 2035 General plan (see Appendix A for a detailed list) — supports the protection of the Sonoran Desert ecosystem and will help attract residents and visitors, providing economic benefits and ensuring a high quality of life.

THIS PLAN IS AN ASPIRATIONAL DOCUMENT AND NOT A MANDATE, SO THERE ARE NO PENALTIES FOR NOT ACHIEVING THE TARGETS. ~~For each priority, targets will be set and strategies and actions identified that help achieve the target.~~ **THE INDICATORS AND BASELINE DATA FOR EACH PRIORITY SHOW "WHERE WE ARE" AND ARE TIED TO TARGETS THAT ARE "WHERE WE WANT TO BE."** The work builds on existing plans (see Appendix B), looking beyond what the city is doing and providing policy direction where efforts are newer or are now more urgent. The structure facilitates collaboration and reinforces the connections between the topics.

~~The Scottsdale Community Sustainability Plan helps us envision and realize our future as a sustainable, resilient, and thriving community. The five Priorities are Scottsdale's most pressing matters, and the section on each Priority includes Strategies, Indicators, Targets, and Actions.~~

THESE FIVE PRIORITY AREAS SOMETIMES OVERLAP IN IMPORTANT WAYS, SO THE PLAN STRUCTURE FACILITATES COLLABORATION AND REINFORCES THE CONNECTIONS BETWEEN THE TOPICS. TACKLING THE CHALLENGES OF ENERGY AND WATER CONSUMPTION AND WASTE GENERATION PROVIDE BENEFITS LIKE COST SAVINGS, IMPROVED HEALTH AND REDUCED POLLUTION. THESE STEPS ALSO IMPROVE AIR QUALITY AND ADDRESS EXTREME HEAT. FOR EXAMPLE, FEWER GREENHOUSE GAS EMISSIONS MEAN LESS POLLUTED AIR AND LOWER TEMPERATURES, WHICH IN TURN RESULTS IN LESS ENERGY NEEDED TO COOL BUILDINGS. ADDING DESERT-ADAPTED TREES FILTERS POLLUTANTS FROM THE AIR AND PROVIDES SHADE.

Strategies are goal-oriented and provide general guidance to help us address the Priority. They are carried out through specific Actions.

Indicators allow baselines to be determined and progress to be measured. Indicators link Priorities and **Targets** – defining **where we are today** and **where we would like to be in the future**.

Actions provide specific direction to achieve the Targets.

Implementation sections for each Priority detail when work will be accomplished and who will lead the efforts.

In total, the 15 strategies and more than 91 actions in this plan reflect a comprehensive action plan for Scottsdale. Some are extensions of programs and initiatives that are already well-developed, while others are completely new and need to be started from scratch.

ENERGY

Maximize the use of renewable energy resources, energy efficiency and responses to climate challenges.

WATER

Conserve, protect and deliver quality drinking water safely and reliably to the community, now and into the future.

WASTE

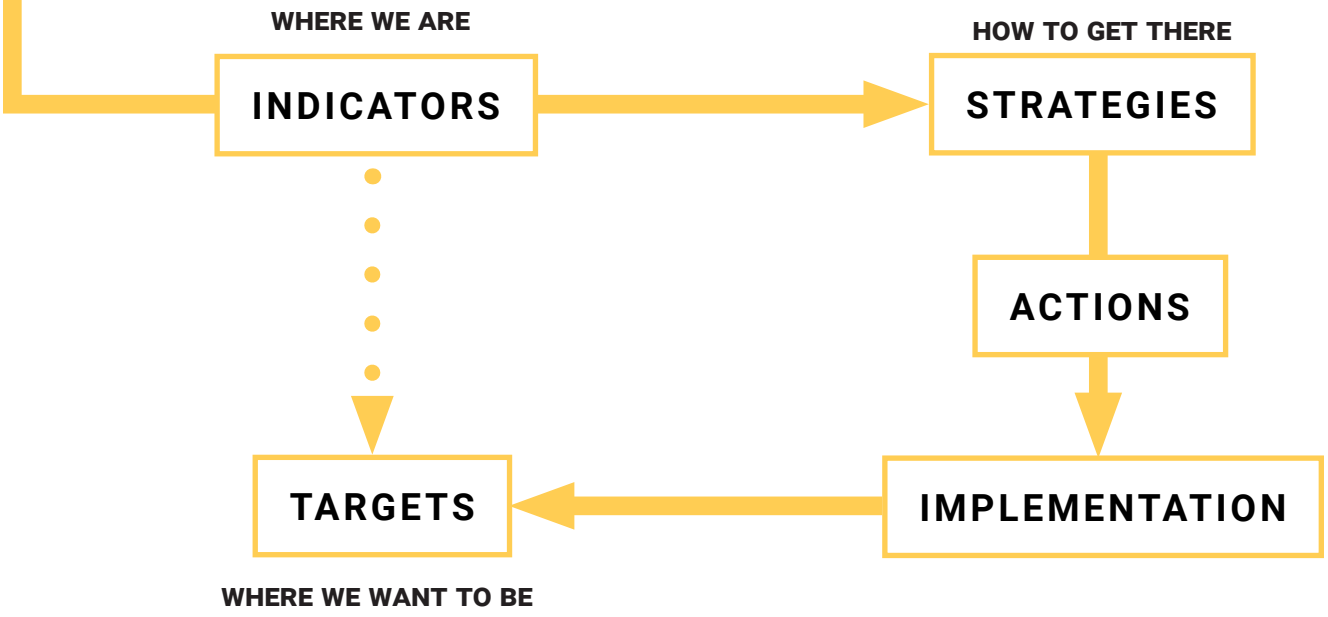
Develop a circular economy approach for materials management and effective citywide diversion of all waste streams.

AIR QUALITY

Reduce contaminants and pollutants to improve air quality and protect community health.

EXTREME HEAT

Ensure that the community prevents, is prepared for, responds to and recovers from extreme heat.



WHAT HAPPENS NEXT

IMPLEMENTATION

The city of Scottsdale will take the lead implementing the Community Sustainability Plan and be a catalyst for further action by the private sector, non-profits and community members. Achieving sustainability for Scottsdale requires a common vision and engagement from the whole community to prioritize effective solutions. Implementation of the plan will be strategic and strive to maximize the benefits for all Scottsdale residents and visitors. The plan is designed to be a living, working document that focuses our resources and collective action where it will be most impactful.

Implementing some of the plan's 15 strategies and 91 actions will begin immediately, while others will start later or evolve and be revised over time. Implementation will require that specific project plans be developed for each action, identifying costs, personnel needs, barriers and milestones. Timelines for completion of programs will vary, and the City Council may fund or not fund programs at any time. The city will seek funding for priority projects and identify possible City Code updates to address key strategies.

An implementation table for each priority shares four elements for each action:

Time Horizon FOR COMPLETION: Quick Win,* 1-3 years, 3-10 years or Ongoing

Lead Agencies & Partners: Additional partners will likely be added during project development

Costs: Costs are estimated and may change during project development or implementation

$ -- **Low** ($0 - $50,000)
$$ -- **Moderate** ($50,001 - $250,000)
$$$ -- **High** (Over $250,000)

Benefits:

- Environmental (air quality, carbon emissions, waste reduction, drought relief)
- Economic ($ savings, attracting businesses and tourism)
- Social (health & safety, quality of life, equity)

City staff will also work to address capacity-building and cross-cutting efforts. Efforts are underway to identify staff and community champions for sustainability, increase awareness of sustainability solutions and expand community engagement. An employee Green Team is also working on specific projects to improve internal operations.

Implementation of the sustainability plan will focus on accountability and will be accomplished with a high level of transparency and stakeholder participation.

* After initial implementation, "quick wins" may transition to "ongoing" programs.

ADMINISTRATION
There will be three important ways the city administers the plan to ensure continuous evaluation and improvement:

1. Produce an annual report that includes updates on implementation of actions, progress toward sustainability goals including data on the indicators and a section specifically chronicling city achievements and data. The reports will be presented annually to City Council and will discuss possible amendments to the plan.

2. Formally update the plan every three years, providing an opportunity to include new strategies and actions and amend existing ones as well as update targets to reflect new opportunities and progress made.

3. Track operating and capital spending on sustainability-related work and operational savings and project rebates in partnership with the City Treasurer.

SCHEDULE OF ANNUAL REPORTS & PLAN UPDATES

YEAR 0	YEARS 1 & 2	YEAR 3	YEARS 4 & 5	YEAR 6
Adoption	Annual Reports	Annual Report	Annual Reports	Annual Report
		Plan Update		Plan Update

WHAT CAN YOU DO?

The city of Scottsdale hopes that residents, businesses and non-profits are also motivated to improve the world around them.

Work with us and support one of the actions in the plan or be innovative and start your own project! Here are some places to get started:

WHAT IS MY IMPACT?

The CoolClimate Network offers a simple tool to help you understand your personal environmental impact. They even have a version for businesses. Use the calculators to see what kinds of changes you can make to your travel, buildings and shopping and make a pledge to act.

TALK ABOUT IT!

Engage your family, neighbors and co-workers about sustainability. Ask them questions about what concerns them the most and tell them what you're doing to make an impact. Conversations about the environment can help people connect over shared values.

LEARN MORE ABOUT WHAT SCOTTSDALE IS DOING

Go to ScottsdaleAZ.gov and search "sustainability" to find out more about the latest initiatives and how you can be part of the solution.

SUGGESTIONS FROM THE COMMUNITY

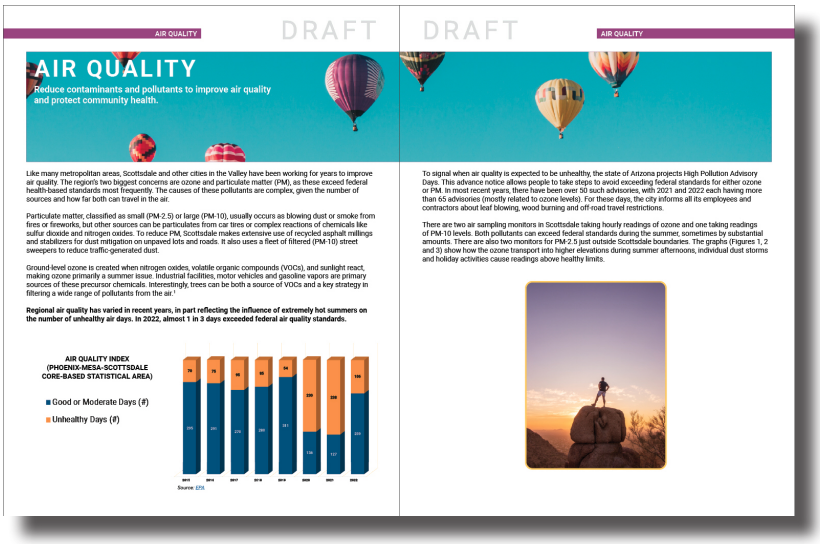
- Support farmers' markets
- Plant trees
- Use light colored roofs
- Replace non-porous pavement with porous pavement to absorb water
- Carpool or use alternative forms of transportation to get around the city
- Don't water lawns in the afternoon when most of it gets evaporated
- Install pool motor timers and variable speed pumps for pools
- Don't heat pools all winter long
- Donate to your favorite cause
- Volunteer in your neighborhood or for a city project

OTHER RESOURCES

Tips from ASU
Sustainable travel tips
Eco-tourism in the desert
Sustainable books to read
Ways to reduce food waste
Hiking in the desert
Sustainability health tips
Another good list of simple tips
Sustainable fashion tips

READ THE PLAN

The plan provides specific actions for achieving long-term goals and will require efforts by city government and members of the community. In each section, the "What Can You Do?" graphics will include more interesting tips and suggestions – check them out!



AIR QUALITY

DRAFT

AIR QUALITY

Reduce contaminants and pollutants to improve air quality and protect community health.

Like many metropolitan areas, Scottsdale and other cities in the Valley have been working for years to improve air quality. The region's two biggest concerns are ozone and particulate matter (PM), as these exceed federal health-based standards most frequently. The causes of these pollutants are complex, given the number of sources and how far both can travel in the air.

Particulate matter, classified as small (PM-2.5) or large (PM-10), usually occurs as blowing dust or smoke from fires or fireworks, but other sources can be particulates from car tires or complex reactions of chemicals like sulfur dioxide and nitrogen oxides. To reduce PM, Scottsdale makes extensive use of recycled asphalt millings and stabilizers for dust mitigation on unpaved lots and roads. It also uses a fleet of filtered (PM-10) street sweepers to reduce traffic-generated dust.

Ground-level ozone is created when nitrogen oxides, volatile organic compounds (VOCs), and sunlight react, making ozone primarily a summer issue. Industrial facilities, motor vehicles and gasoline vapors are primary sources of these precursor chemicals. Interestingly, trees can be both a source of VOCs and a key strategy in filtering a wide range of pollutants from the air.[1]

Regional air quality has varied in recent years, in part reflecting the influence of extremely hot summers on the number of unhealthy air days. In 2022, almost 1 in 3 days exceeded federal air quality standards.

AIR QUALITY INDEX (PHOENIX-MESA-SCOTTSDALE CORE-BASED STATISTICAL AREA)

- Good or Moderate Days (#)
- Unhealthy Days (#)

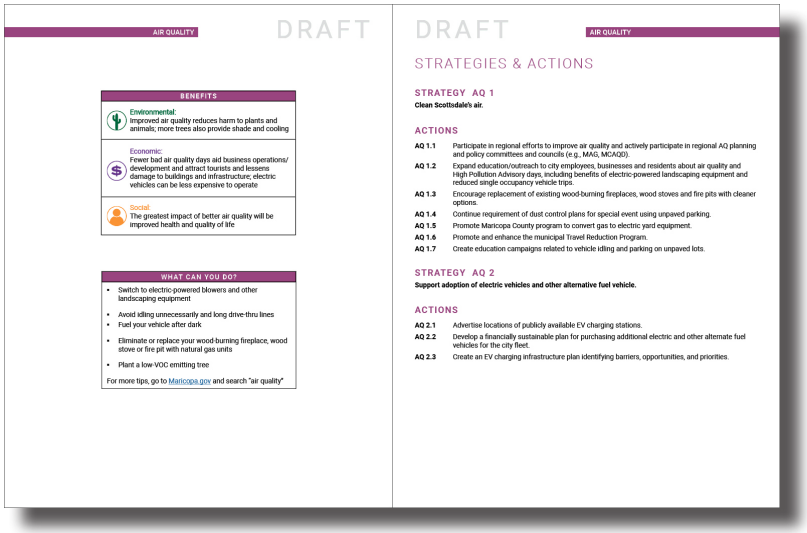
Source: EPA

AIR QUALITY

DRAFT

To signal when air quality is expected to be unhealthy, the state of Arizona projects High Pollution Advisory Days. This advance notice allows people to take steps to avoid exceeding federal standards for either ozone or PM. In most recent years, there have been over 50 such advisories, with 2021 and 2022 each having more than 65 advisories (mostly related to ozone levels). For these days, the city informs all its employees and contractors about leaf blowing, wood burning and off-road travel restrictions.

There are two air sampling monitors in Scottsdale taking hourly readings of ozone and one taking readings of PM-10 levels. Both pollutants can exceed federal standards during the summer, sometimes by substantial amounts. There are also two monitors for PM-2.5 just outside Scottsdale boundaries. The graphs (Figures 1, 2 and 3) show how the ozone transport into higher elevations during summer afternoons, individual dust storms and holiday activities cause readings above healthy limits.



AIR QUALITY

DRAFT

BENEFITS

Environmental:
Improved air quality reduces harm to plants and animals; more trees also provide shade and cooling

Economic:
Fewer bad air quality days aid business operations/development and attract tourists and lessens damage to buildings and infrastructure; electric vehicles can be less expensive to operate

Social:
The greatest impact of better air quality will be improved health and quality of life

WHAT CAN YOU DO?

- Switch to electric-powered blowers and other landscaping equipment
- Avoid idling unnecessarily and long drive-thru lines
- Fuel your vehicle after dark
- Eliminate or replace your wood-burning fireplace, wood stove or fire pit with natural gas units
- Plant a low-VOC emitting tree

For more tips, go to Maricopa.gov and search "air quality"

AIR QUALITY

DRAFT

STRATEGIES & ACTIONS

STRATEGY AQ 1

Clean Scottsdale's air.

ACTIONS

AQ 1.1 Participate in regional efforts to improve air quality and actively participate in regional AQ planning and policy committees and councils (e.g., MAG, MCAQD).

AQ 1.2 Expand education/outreach to city employees, businesses and residents about air quality and High Pollution Advisory days, including benefits of electric-powered landscaping equipment and reduced single occupancy vehicle trips.

AQ 1.3 Encourage replacement of existing wood-burning fireplaces, wood stoves and fire pits with cleaner options.

AQ 1.4 Continue requirement of dust control plans for special-event using unpaved parking.

AQ 1.5 Promote Maricopa County program to convert gas to electric yard equipment.

AQ 1.6 Promote and enhance the municipal Travel Reduction Program.

AQ 1.7 Create education campaigns related to vehicle idling and parking on unpaved lots.

STRATEGY AQ 2

Support adoption of electric vehicles and other alternative fuel vehicle.

ACTIONS

AQ 2.1 Advertise locations of publicly available EV charging stations.

AQ 2.2 Develop a financially sustainable plan for purchasing additional electric and other alternate fuel vehicles for the city fleet.

AQ 2.3 Create an EV charging infrastructure plan identifying barriers, opportunities, and priorities.

"Do all the good you can. By all the means you can. In all the ways you can. In all the places you can. At all the times you can. To all the people you can. As long as ever you can."

- Anonymous

ENDNOTES

1 "The National Community Survey: Scottsdale, AZ Report of Results 2023," p. 10; "essential" or "very important" responses = 85% in 2023.

2 Leadership in Energy and Environmental Design

3 "How Do We Know Climate Change is Real?" NASA Global Climate Change: Evidence.

4 "Is it too late to prevent climate change?" NASA Global Climate Change.

5 "Phoenix just posted the hottest month ever observed in a U.S. city," Washington Post.

6 "Arizona Then and Now: Summer heat," *Arizona Republic*, 07/28/2016..

7 "Do scientists agree on climate change?" NASA Global Climate Change, Questions.

8 "Yale Climate Opinion Maps 2021," February 23, 2022; Estimated % of adults who think global warming is happening for Congressional District 6 = 68%.

9 "Reducing US greenhouse gas emissions: How much at what cost?" McKinsey, December 1, 2007.

10 "Water Conservation Keeps Rates Low in Gilbert, Arizona," Alliance for Water Efficiency, June 2017.

11 TNC, 2021: Economic Assessment of Heat in the Phoenix Metro Area [deBoer, A. Schwimmer, E, McGregor, A. Adibi, S. Kapoor, A. Duong, S. Love, J. Bonham-Carter, C. Lindquist, J.] In Phoenix, AZ.

12 TNC, 2021: Economic Assessment of Heat in the Phoenix Metro Area [deBoer, A. Schwimmer, E, McGregor, A. Adibi, S. Kapoor, A. Duong, S. Love, J. Bonham-Carter, C. Lindquist, J.] In Phoenix, AZ.

13 "Estimating economic damage from climate change in the United States," Science, Hsiang et al, June 2017.

14 "Extreme heat: The economic and social consequences for the United States," Adrienne Arsht-Rockefeller Foundation Resilience Center, Atlantic Council, August 31, 2021.

15 "Scottsdale Tourism Study - Visitor Statistics," City of Scottsdale, September 2022.

16 "Longwoods Advertising Effectiveness Report," City of Scottsdale, May 2023.

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ENERGY

Maximize the use of renewable energy resources, energy efficiency and responses to climate challenges.

Residents and businesses rely on electricity and other energy sources every day to operate computers, cooling appliances and lighting. Much of this energy is provided by regulated utilities and comes from burning fossil fuels like coal or natural gas for electricity, heat and transportation.

Using less energy yields cleaner air and health benefits, supports green jobs and generates cost savings. For example, efficient appliances and heating/cooling equipment can reduce the utility bill for the average household by $500 per year. Taking additional steps to use more clean or renewable energy further protects the environment by reducing pollutants and greenhouse gases.

The use of fossil fuels emits heat-trapping pollution into the atmosphere forming a thick blanket around the Earth, causing our planet to overheat and creating irreversible damage. NASA's records and analysis confirm that the climate is warming and warming faster than any time in the past 10,000 years. Average temperatures are up two degrees Fahrenheit, mostly in the last 40 years, and driven by emissions of carbon dioxide and other human activities.[1] The result is an amplification of the natural greenhouse gas effect (which is essential for the Earth to be habitable) resulting in more heat trapped in the atmosphere.

Models estimate that temperatures may increase another 4.5 to 8 degrees Fahrenheit by 2100,[2] but other changes in our climate are occurring much faster and can already be seen. NASA has compiled datasets that show warming oceans, rising sea levels and more extreme weather events, among a long list of impacts. Temperature increases also act as a threat multiplier, worsening air quality and making our climate more arid.

The Fifth National Climate Assessment documents how greenhouse gas emissions have been falling nationwide, but not fast or far enough. As a result, water resources in the Southwest region will continue to be threatened by a drier and hotter climate. The extreme heat also reduces crop yields, increases wildfire risk and impacts human and ecosystem health.[3]

Two important ways to transition to fossil-free energy involve installing more renewable energy like wind or solar and improving the efficiency of buildings and transportation.

Arizona is ranked 5th in the nation for the total capacity of solar energy,[4] and Scottsdale's potential rooftop capacity is over 2,000 megawatts (MW).[5] Current installations of distributed solar in the city are over 90 MW, generating enough electricity to power more than 14,000 homes for an entire year.

Energy efficiency – reducing the amount of energy needed to provide products and services – is a proven way to move toward a cleaner environment and to save money. The features of a building can significantly impact finances, operational costs, health, safety and comfort. For example, adding insulation to a building or upgrading windows keeps a house cooler and lowers energy bills. Arizona ranks in the middle tier when graded against other states on a range of factors related to adoption of energy efficient policies and practices.[6] Scottsdale's residents used more than 3.9 million megawatt hours (MWh) of electricity in 2022, which is 50% more per capita than the amount used in Phoenix.

The City of Scottsdale has begun to address energy efficiency through impactful and cost-efficient initiatives. Scottsdale's first-in-the-state Green Building Program encourages a whole-systems approach through design and construction to minimize environmental impacts and reduce the energy consumption of buildings while contributing to occupant health. The program led to the construction of the first LEED Platinum certified fire station in the country – Scottsdale Fire Station 602. We are auditing more than 50 buildings, participate in demand response programs and offer Residential and Commercial Solar Guidelines. It is notable that the treatment and transport of water represents a large portion of municipal electricity use.

The city gathered a large amount of data to understand better how energy is used in Scottsdale, focused on the years between 2018 and 2022. As part of the process to develop an inventory of greenhouse gas emissions, trends in the use of electricity and natural gas were analyzed, and a basic forecast model was developed to guide policy choices.

Citywide, electricity purchased from utilities has remained fairly constant since 2018, but would have been 4% higher without the solar installations on houses and businesses. For 2022, total energy use equaled 16,232 kilowatt hours (kWh) per capita and 9.2 kWh per square foot of building space. **The amount of solar energy installed on homes and businesses – commonly called distributed solar – has almost doubled since 2018 (up 90%) driven mostly by the residential sector.** In 2022, over 90 megawatts (MW) of distributed solar systems were installed in the city (78 MW residential and 12 MW commercial) including 350 kilowatts on municipal property.

CITYWIDE ELECTRICITY USE
(THOUSANDS MEGAWATT HOURS - MWh)

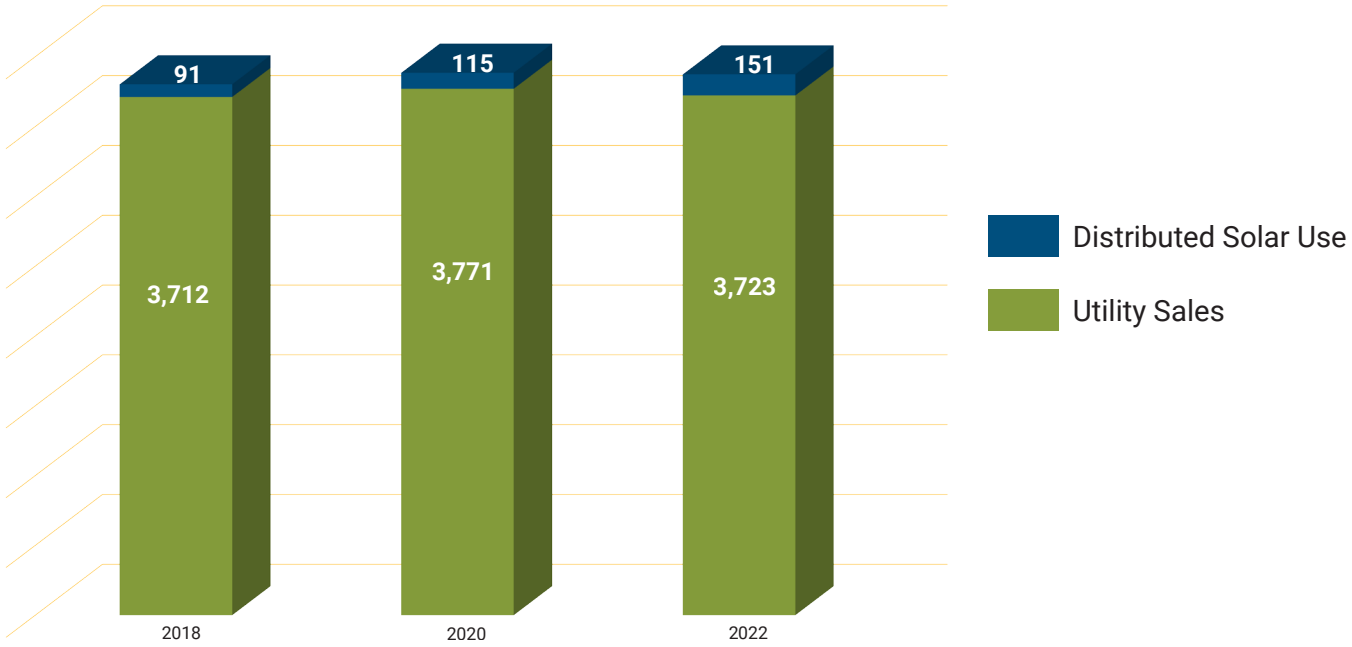


Figure 1. Source: ASU/NAU Scottsdale GHG Inventory

INDICATOR

Citywide electricity use (2022 = 3,874,290 megawatt hours or 9.2 kWh/ft^2)

TARGET

Reduce citywide electricity use per square foot by 15% by 2035 (from 2022 levels)

DISTRIBUTED SOLAR CAPACITY (MEGAWATTS)

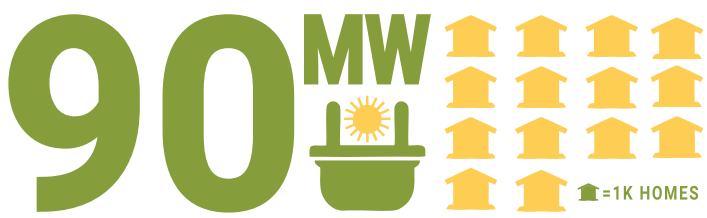


Figure 2. Source: ASU/NAU Scottsdale GHG Inventory

INDICATOR

Distributed solar capacity (2022 = 90.1 megawatts citywide; 350 kilowatts municipal)

TARGET

- Increase distributed solar capacity citywide to 180 MW by 2030 and to 500 MW by 2040
- Increase municipal solar capacity to 5 MW by 2030

In the same timeframe, municipal electricity use dropped slightly driven by energy efficiency improvements and increased numbers of staff working from home. In 2022, municipal natural gas use rose by ~~27%~~ 15% to ~~625,185~~ 675,004 therms, due to new or repaired facilities coming online. **Citywide natural gas use rose slightly (up 2.6%) to 49,779,824 therms.**

INDICATOR

Municipal electricity use (2022 = 280,021 megawatt hours)

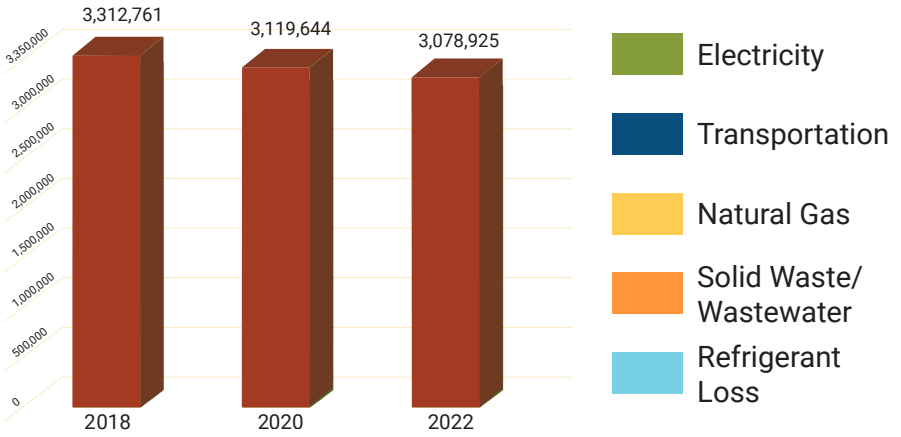
TARGET

Reduce municipal electricity use by 15% by 2035 (from 2022 levels) through efficiency measures

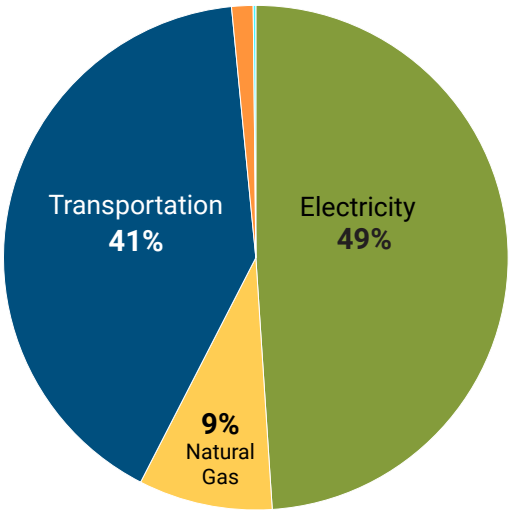
Between 2018 and 2022, citywide greenhouse gas emissions decreased by 7% to 3,078,925 MT CO_2e.* The majority of these emissions were the result of electricity use (49%), with transportation (41%) also being an important contributor. Other sources include natural gas (9%), solid waste and wastewater (1.4%) and refrigerant loss (0.2%).

GHG emissions have decreased over a period of population and economic growth for a variety of reasons: different sources of electricity (as utilities have switched to natural gas and solar), increased energy efficiency in buildings and increased solar installations on homes and businesses. It is possible that emissions may rebound given the post-pandemic economic recovery.

CITYWIDE GREENHOUSE GAS EMISSIONS (MT CO_2e)



CITYWIDE GREENHOUSE GAS EMISSIONS BY SOURCE (2022)



Less than 2% each: Solid Waste/Wastewater, Refrigerant Loss

Figure 3. Source: ASU/NAU Scottsdale GHG Inventory

INDICATOR

Citywide greenhouse gas emissions (2022 = 3,078,925 metric tons CO_2 equivalent)

TARGET

Reduce citywide greenhouse gas emissions by 45% by 2035 and 90% by 2050 (from 2022 levels)

* Scottsdale's citywide GHG emissions inventory was conducted in accordance with the GHG Protocol for Cities BASIC level reporting requirements. The municipal operations GHG emissions inventory was conducted according to the Local Government Operations Protocol. Both protocols are the international standard for conducting citywide and municipal operations GHG emissions inventories, respectively. The "2022 Greenhouse Gas Emissions Inventory" documents in more detail how emissions were calculated, which sources are included in the BASIC level reporting and how the forecasting model was created.

During the same time period, emissions from Scottsdale's municipal operations decreased roughly ~~10%~~ 11% to ~~184,299~~ 181,584 MT CO_2e (or 6% of the citywide total).* Because the city's emissions are mostly driven by electricity use in buildings (~~61%~~ **62%**), 2020 emissions were markedly lower during pandemic-related shutdowns but also reflect efforts to improve the energy efficiency of our buildings. Waste-related emissions (23%) play a larger role than citywide, due to municipal collection of residential waste and treatment of water. Other sources of emissions are transportation (8%), natural gas (~~3%~~ **2%**), refrigerant loss (3%) and transmission and distribution (T&D) losses (2%).

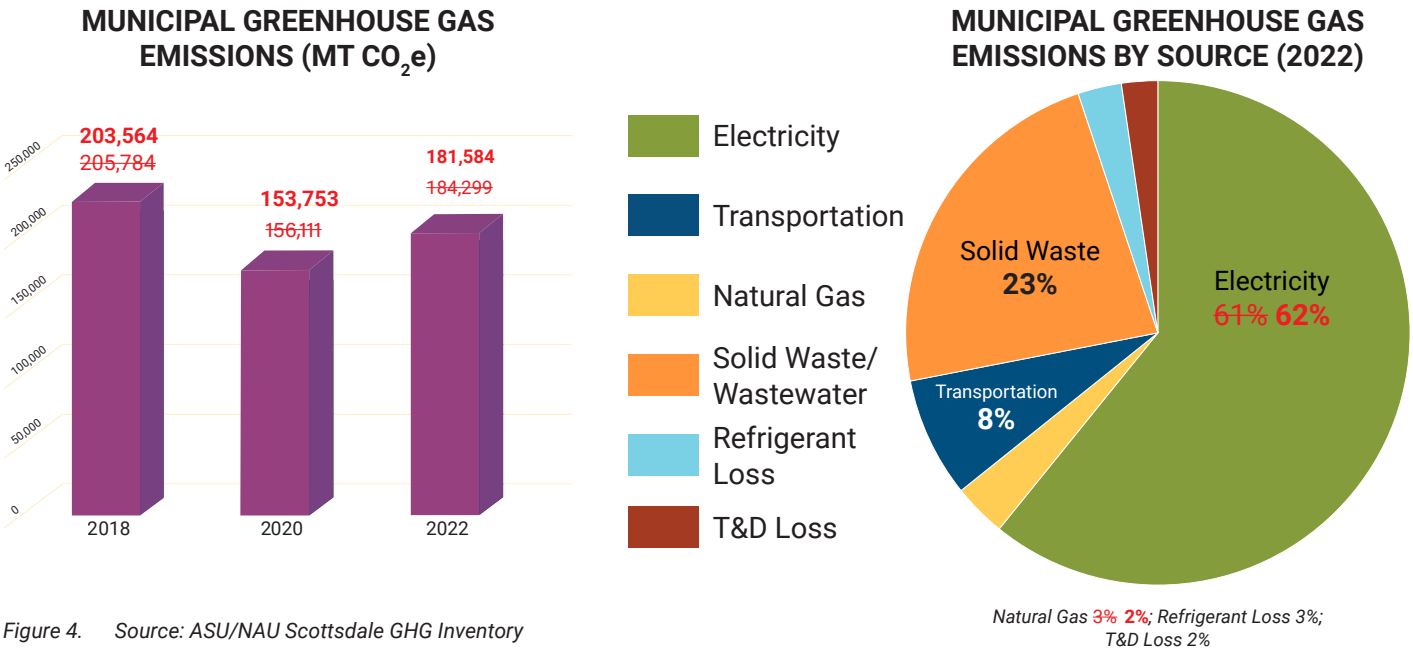


Figure 4. Source: ASU/NAU Scottsdale GHG Inventory

Natural Gas ~~3%~~ 2%; Refrigerant Loss 3%; T&D Loss 2%

INDICATOR

Municipal greenhouse gas emissions (2022 = ~~184,299~~ **181,584** metric tons CO_2 equivalent)

TARGET

Reduce municipal greenhouse gas emissions by 45% by 2035 and 90% by 2050 (from 2022 levels)

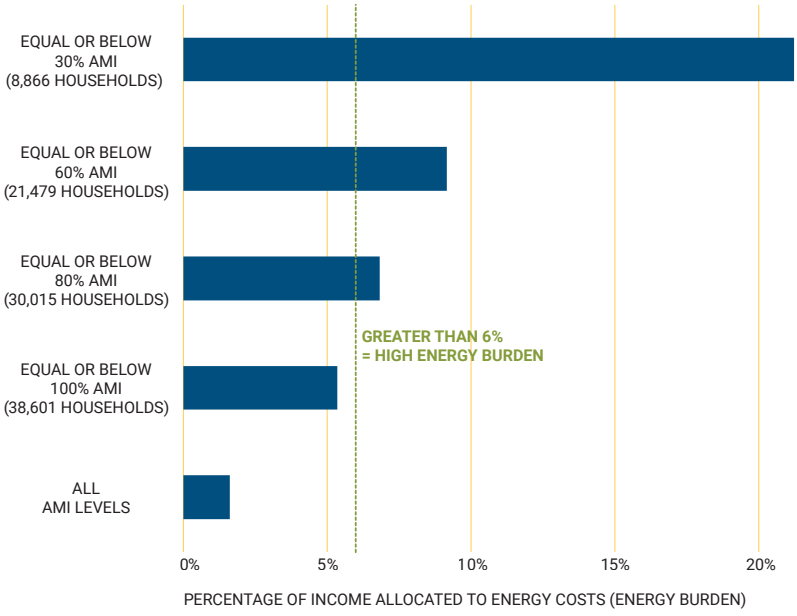
As part of the process to estimate the inventory of greenhouse gas emissions, Scottsdale also developed a forecasting model to analyze current trends at the community, state and national levels and use this information to estimate future community-level GHG emissions in Scottsdale. The model builds on the inventory and uses other sources of trend data to help estimate future energy pathways. To maintain simplicity and clarity, the model concentrates on the most significant sources of citywide emissions.

Given the inherently unpredictable nature of technological advancements, policy changes and a myriad of other factors that influence future conditions, the model's results should be viewed as directional indicators rather than absolute certainties, more offering a compass than a map. The future is uncertain, and the model's results need to be interpreted with this in mind. The forecast model looked at five scenarios: baseline, accelerated renewable energy development, increased energy efficiency, electric vehicle growth and all-of-the-above.

For each scenario, assumptions were made about key variables like advances in vehicle technology or predicted changes in the electrical grid. Model projections were then calculated out to year 2050, showing possible pathways to guide strategic planning. The baseline scenario is used as a point of comparison for the impact of interventions in the other four policy scenarios. One insight from the model is that electric vehicle growth can have a high impact on reducing emissions below the baseline scenario.

While the city has pursued energy efficiency in facilities and operations, such efforts may not be easy for all residents. Energy burden is the percentage of household income spent on energy expenses. A household's energy burden is considered high if it is above 6% and severe if above 10%. **The average energy burden for all households in Scottsdale is 2%. However, households making 80% or less than the area median income (AMI) have an average energy burden above 6%, with that number rising to 21% for households below 30% of the AMI.** As one way to address this problem, the Scottsdale Community Assistance Office oversees Housing Rehabilitation Programs that remodel older homes to be more energy efficient and make repairs for the health and safety of income qualified residents.

2016 ENERGY BURDEN BY % OF AREA MEDIAN INCOME (AMI)



INDICATOR

Average energy burden by income bracket (2022 = 21% for households below 30% of area median income)

TARGET

Reduce the average energy burden to 6% or less for all households **by 2035**

Figure 5. Source: Office of State & Community Energy Programs (https://www.energy.gov/scep/slsc/lead-tool); data accessed August 2023

The number of green buildings – those that comply with IgCC, LEED, Scottsdale Green Building Program or Green Rehab guidelines – has been steadily increasing and is expected to rise more quickly with the adoption of mandatory green construction codes. Currently, just under 2% of all buildings have met a green building standard.

INDICATOR

Number of green buildings (2022 = 1,588 out of 96,703 or 2% of total)

TARGET

Increase the percentage of green buildings to 10% of the total by 2035

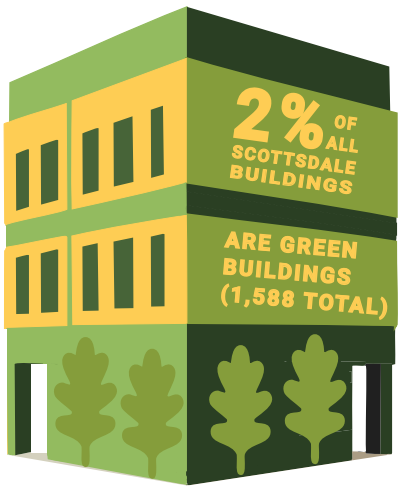


Figure 6. Sources: City of Scottsdale, FEMA

BENEFITS

Environmental:
Improved air quality and lower greenhouse gas emissions; mitigation of the impacts of increased temperatures and extreme weather

Economic:
Reducing energy use and installation of solar lowers costs for households and businesses and increases investment in clean energy businesses

Social:
Lowered energy burden for low-income households; improved indoor air quality; **INCREASED RESILIENCY TO POWER OUTAGES**

WHAT CAN YOU DO?

- Install a photovoltaic system on your roof or over a parking lot
- Conduct an energy audit of your building or use the APS 'energy analyzer' or SRP's 'energy manager'
- Clean or replace all HVAC filters regularly
- Investigate utility rebates and tax incentives for energy efficient equipment
- Purchase Energy Star appliances
- As light bulbs burn out, replace them with LED bulbs.

For more tips, visit the U.S. Department of Energy or go to Scottsdaleaz.gov and search "green building"

STRATEGIES & ACTIONS

STRATEGY NRG 1

Reduce energy use and greenhouse gas emissions.

ACTIONS

NRG 1.1 Promote energy efficiency improvements for existing residential and commercial properties especially for lower income households; educate property owners on utility and other incentives.

NRG 1.2 Develop guidance on ways to reduce utility bills.

NRG 1.3 Provide education for homeowners about solar financing options.

NRG 1.4 Consider free solar permits for residential installations.

NRG 1.5 Increase participation in state weatherization program.

NRG 1.6 Update greenhouse gas inventory at least every three years and expand to include refrigerant emissions; estimate impact of strategies and actions on emissions.

NRG 1.7 Publicly report on greenhouse gas emissions and reduction strategies.

NRG 1.8 Educate the public on the impacts of climate change and mitigation strategies.

NRG 1.9 Increase awareness of 811 and other ways to reduce accidental leaks or releases from natural gas lines.

STRATEGY NRG 2

Improve municipal energy performance.

ACTIONS

NRG 2.1 Employ a citywide energy management system and track city energy use.

NRG 2.2 Increase the number of large city-owned buildings connected to the energy management system.

NRG 2.3 Conduct energy audits and assessments for all municipal buildings.

NRG 2.4 Continue to convert streetlight systems, park lighting and other civic lighting to LED technology.

NRG 2.5 Dedicate staff resources to managing energy programs.

NRG 2.6 Develop a master plan for solar development on city-owned properties, including battery and other storage capacity.

NRG 2.7 Share information on savings achieved through municipal solar installations.

NRG 2.8 Evaluate joining utility green power programs, establishing city-utility partnership agreements and/or the use of microgrids.

NRG 2.9 Continue to participate in utility demand response programs; identify other opportunities to contribute to grid resiliency.

NRG 2.10 Join EPA Green Power Partnership.

NRG 2.11 EXPAND MUNICIPAL ON-SITE RENEWABLE ENERGY GENERATION AND STORAGE CAPACITY, FOCUSING ON LARGE USERS AND CRITICAL FACILITIES.

STRATEGY NRG 3

Reduce energy impacts of the built environment through sustainable building practices and policies.

ACTIONS

NRG 3.1 Adopt and implement energy and green construction codes that advance efficient construction practices to address affordability and regional characteristics.

NRG 3.2 Support code requirements for new residential construction to install solar systems or be 'solar ready.'

NRG 3.3 Strengthen enforcement of all building codes.

NRG 3.4 Encourage installation of solar panels when a new roof or deep retrofit occurs.

NRG 3.5 Continue LEED Gold requirement for new civic structures.

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY NRG 1 **Reduce energy use and greenhouse gas emissions.**					
NRG 1.1	Promote energy efficiency improvements for existing residential and commercial properties.	Quick win	**Lead**: OEI **Partners**: Utilities, residents, businesses	$	Cost savings Lower emissions/ energy burden
NRG 1.2	Develop guidance on ways to reduce utility bills.	1-3 years	**Lead**: OEI **Partners**: Utilities, residents, businesses	$	Cost savings Lower emissions/ energy burden **RESILIENCY**
NRG 1.3	Provide education for homeowners about solar financing options.	1-3 years	**Lead**: OEI	$	Cost savings Lower emissions **RESILIENCY**
NRG 1.4	Consider free solar permits for residential installations.	1-3 years	**Lead**: OEI, Plan Review	$	Cost savings Lower emissions
NRG 1.5	Increase participation in state weatherization program.	1-3 years	**Lead**: Community Services **Partners**: OEI, State of Arizona, residents	$-$$$	Cost savings Lower emissions/ energy burden
NRG 1.6	Update greenhouse gas inventory at least every three years.	3-10 years	**Lead**: OEI	$$	Lower emissions
NRG 1.7	Publicly report on greenhouse gas emissions and reduction strategies.	1-3 years	**Lead**: OEI	$	Lower emissions
NRG 1.8	Educate the public on the impacts of climate change and mitigation strategies.	Quick win	**Lead**: OEI **Partners**: Residents, businesses	$	Lower emissions
NRG 1.9	Increase awareness of ways to reduce accidental leaks or releases from natural gas lines.	1-3 years	**Lead**: OEI	$	Lower emissions

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY NRG 2 Improve municipal energy performance.					
NRG 2.1	Employ a citywide energy management system and track city energy use.	3-10 years	**Lead**: Facilities	$$-$$$	Municipal savings Lower emissions
NRG 2.2	Increase the number of large city-owned buildings connected to the energy management system.	1-3 years	**Lead**: Facilities	$$-$$$	Municipal savings Lower emissions
NRG 2.3	Conduct energy audits and assessments for all municipal buildings.	1-3 years	**Lead**: Facilities	$$-$$$	Municipal savings Lower emissions
NRG 2.4	Continue to convert lighting to LED technology.	Ongoing	**Lead**: Facilities, Transportation & Streets	$$-$$$	Municipal savings Lower emissions
NRG 2.5	Dedicate staff resources to managing energy programs.	3-10 years	**Lead**: Facilities	$$	Municipal savings Lower emissions
NRG 2.6	Develop a master plan for solar development on city-owned properties, including battery and other storage capacity.	3-10 years	**Lead**: Facilities	~~$$-$$$~~ **$$$+**	Municipal savings Lower emissions **RESILIENCY**
NRG 2.7	Share information on savings achieved through municipal solar installations.	1-3 years	**Lead**: Facilities	$	Municipal savings Lower emissions **RESILIENCY**
NRG 2.8	Evaluate joining utility green power programs, establishing city-utility partnership agreements and/or the use of microgrids.	1-3 years	**Lead**: OEI **Partners**: Utilities	$	Municipal savings Lower emissions
NRG 2.9	Continue to participate in utility demand response programs.	Ongoing	**Lead**: Facilities, Water	$	Municipal savings Lower emissions **RESILIENCY**

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
NRG 2.10	Join EPA Green Power Partnership.	1-3 years	**Lead**: OEI	$	Lower emissions
NRG 2.11	**EXPAND MUNICIPAL ON-SITE RENEWABLE ENERGY GENERATION.**	**3-10 YEARS**	**LEAD: FACILITIES PARTNERS: OFI, WATER**	**$$$+**	**MUNICIPAL SAVINGS LOWER EMISSIONS RESILIENCY**
STRATEGY NRG 3 Reduce energy impacts of the built environment through sustainable building practices and policies.					
NRG 3.1	Adopt and implement energy and green construction codes that advance efficient construction practices.	3-10 years	**Lead**: OEI, Plan Review	$	Cost savings Local jobs
NRG 3.2	Support code requirements for new residential construction to install solar systems.	1-3 years	**Lead**: OEI, Plan Review	$	Cost savings Local jobs **RESILIENCY**
NRG 3.3	Strengthen enforcement of all building codes.	Ongoing	**Lead**: OEI, Plan Review	$	Cost savings Local jobs
NRG 3.4	Encourage installation of solar panels when a new roof or deep retrofit occurs.	1-3 years	**Lead**: OEI, Plan Review	$	Cost savings Local jobs **RESILIENCY**
NRG 3.5	Continue LEED Gold requirement for new civic structures.	Ongoing	**Lead**: OEI, Plan Review	$$-$$$	Cost savings Local jobs

ENDNOTES

1 "How Do We Know Climate Change is Real?" NASA Global Climate Change: Evidence.

2 "Is it too late to prevent climate change?" NASA Global Climate Change.

3 U.S. Global Change Research Program, "Fifth National Climate Assessment," and "28. Southwest" 2023.

4 "State Solar Spotlight: Arizona," Solar Energy Industries Association. https://www.seia.org/sites/default/files/2022-09/Arizona%20State-Factsheet- 2022-Q3.pdf.

5 "Rooftop Solar Potential," Google Environmental Insights, accessed 1/5/2024.

6 "2022 State Energy Efficiency Scorecard," ACEEE, December 2022.

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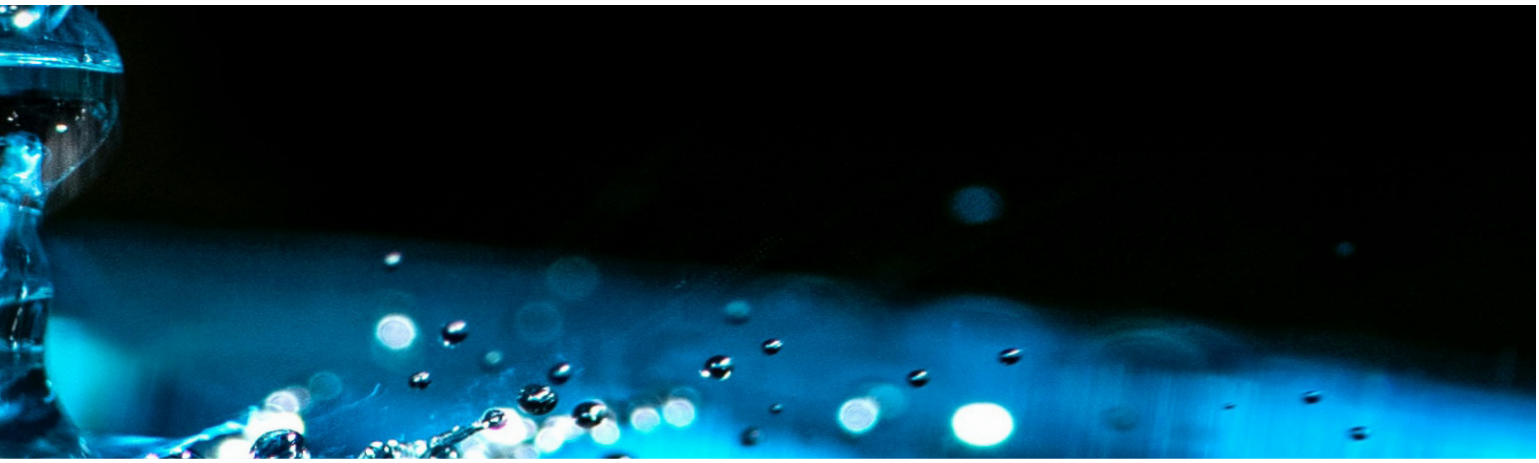
WATER

Conserve, protect and deliver quality drinking water safely and reliably to the community, now and into the future.

Providing quality drinking water and ensuring adequate water supplies has been a long-standing priority in Scottsdale. As reflected in the recently adopted "Sustainable Water Management Principles," Scottsdale Water thinks and acts strategically with its water resources – from supply, quality, and conservation to recycling and recharge. Staff works around the clock to ensure your drinking water surpasses all federal, state and local water quality regulations. ~~In fact, water from your tap must pass much more stringent standards than bottled water.~~

The city has a long record of substantial infrastructure investments and community water conservation programs. Staff administers several residential and commercial incentive rebate programs, offers residential outdoor efficiency checks, a commercial audit program, manages ordinance compliance like water waste complaints, and offers water efficiency educational opportunities. Demand for these services has been growing since the activation of Stage 1 of the city's Drought Management Plan.

In fiscal year 2023 residential and commercial turf conversion rebates incentivized removal of 440,000 square feet of grass – an almost 425% increase from the previous year and a 250% increase over the five-year average. In the same year, homeowner associations' (HOAs) consultations and recommendations grew by 175% and have proven to yield significant water savings. With the large number of HOAs in Scottsdale, a target of 100% consultation across HOA communities is ambitious. Residential outdoor water efficiency checks also grew by 160% when compared to the previous five years.



When looking at total potable water demand data over the last decade and a half, a steady slight decrease in total demand and an increase in the number of accounts tells the story of conservation and increased efficiency.

In 2021, the city enacted Stage 1 of its Drought Management Plan and in doing so also requested all customers voluntarily reduce water consumption by at least 5%.[1] The conservation work has paid off. Even during the hottest month on record (July 2023), water use dropped in Scottsdale, saving 7% when compared to July 2022 and nearly 18 million gallons of water.[2]

While these accomplishments have placed the city in a positive position related to its water resources, addressing the challenges of the future will require an even more substantial effort. The over-allocation of Colorado River water supplies, coupled with trends of a hotter and drier climate make protecting water resources essential. The current megadrought, which started in 2000, is the worst in 1,200 years and has impacted reservoir levels on the Colorado River[3] and Central Arizona Projects water supplies.

In 2022, Scottsdale Water customer accounts totaled more than 70,000 acre-feet of potable water or 62 million gallons per day of safe, reliable drinking water. **Total water use is on a downward trend even as the number of connections has increased by 9% (Figure 1).**

SCOTTSDALE WATER TRENDS
POTABLE WATER DEMAND (ACRE-FEET)

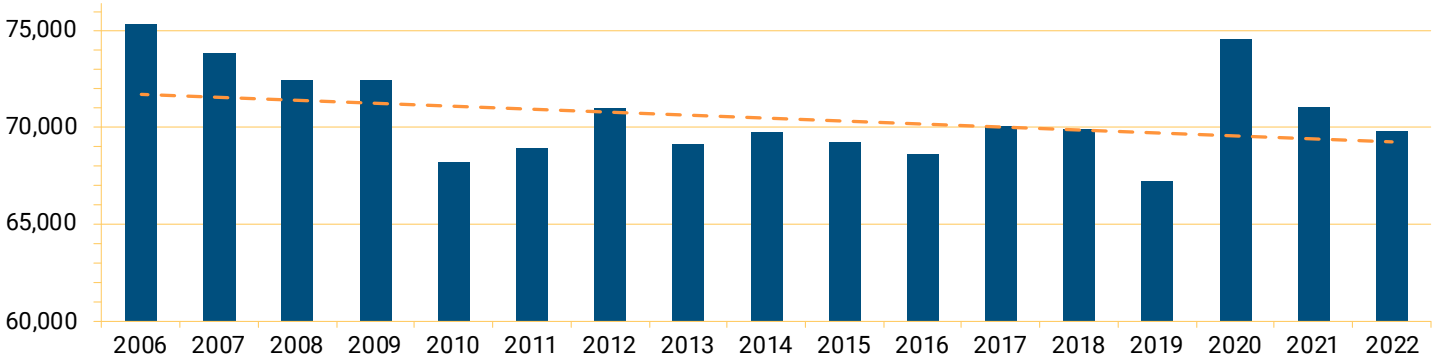


Figure 1. Source: Scottsdale Water

In 2022, the average residential customer (which comprise of almost 90 percent of the active water accounts) used 13% less water than in 2000 or 199 gallons per capita per day (gpcd) for residential water use (Figure 2).

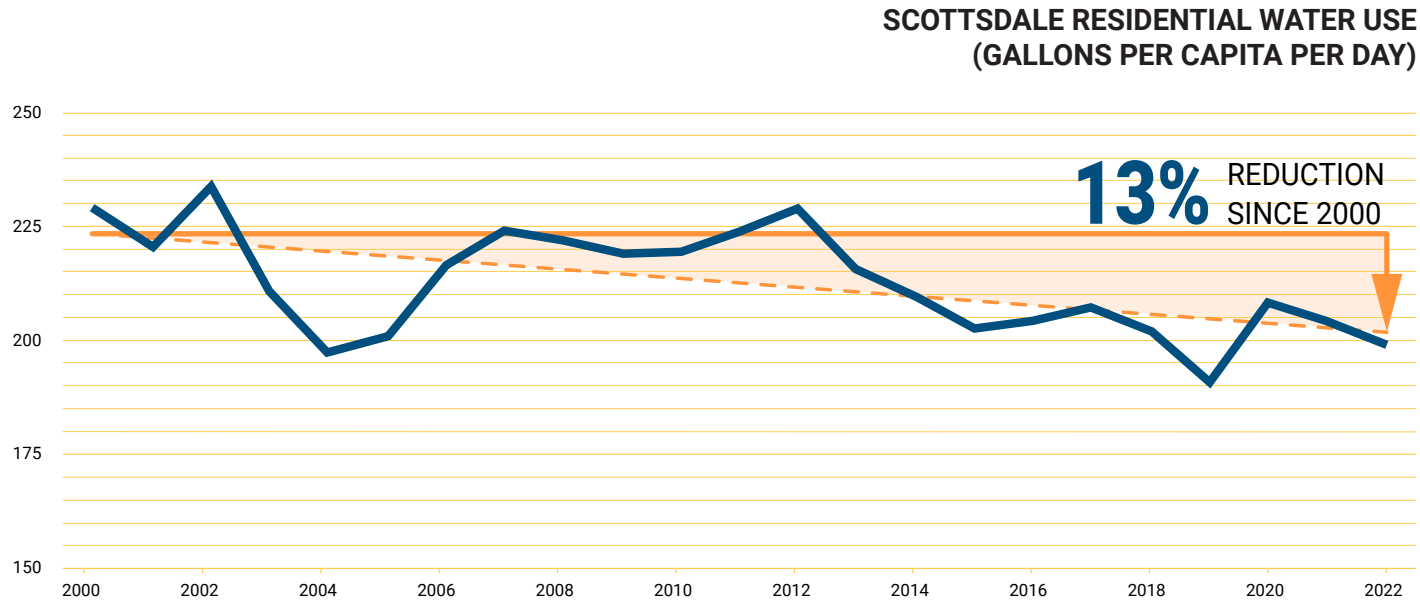


Figure 2. Source: Scottsdale Water

INDICATOR

Gallons per capita per day of residential water use (2022 = 199 gpcd)

TARGET

Reduce residential water use (gallons per capita per day) to 170 by 2033

Municipal water use represents around 2% of total potable city use and has dropped almost 10% since 2017. Scottsdale Facilities and Parks & Recreation have been proactively working to reach optimal and efficient water use in city-owned buildings and in the provision of services to the community.

INDICATOR

Gallons of municipal water use (2022 = 438,172,762 gallons)

TARGET

Reduce municipal potable water use by 5% by 2027 (from 2022 levels)

Scottsdale Water has targeted improvements in the amount of water used by Multi-Family Residential (MFR) customers and their HOAs to irrigate their common areas with water-use budgets, rebates and tips for overall water efficiency.

INDICATOR	TARGET
Gallons of irrigation water use for HOA properties (2022 baseline data to be established in a future annual report)	Reduce irrigation water use for HOA properties by 10% by 2033 (from 2022 levels)

Commercial water use has been relatively stable even during periods of economic growth. Future efforts will focus on developing strategies for efficiencies for existing users without affecting the ability to build Scottsdale's economy.

INDICATOR	TARGET
Gallons of commercial water use (2022 = 3,818,311,019)	Reduce commercial water use by 10% by 2033 (from 2022 levels)

The overall conservation trends hold no matter the size of the meter for the single-family homes. Average residential water use varies by meter size and by season. **The number of total customers has grown since 2014, but demand has decreased, showing that growth has not affected water use (Figure 3).**

AVERAGE WATER USE, SINGLE-FAMILY RESIDENTIAL (GALLONS USED PER METER SIZE)

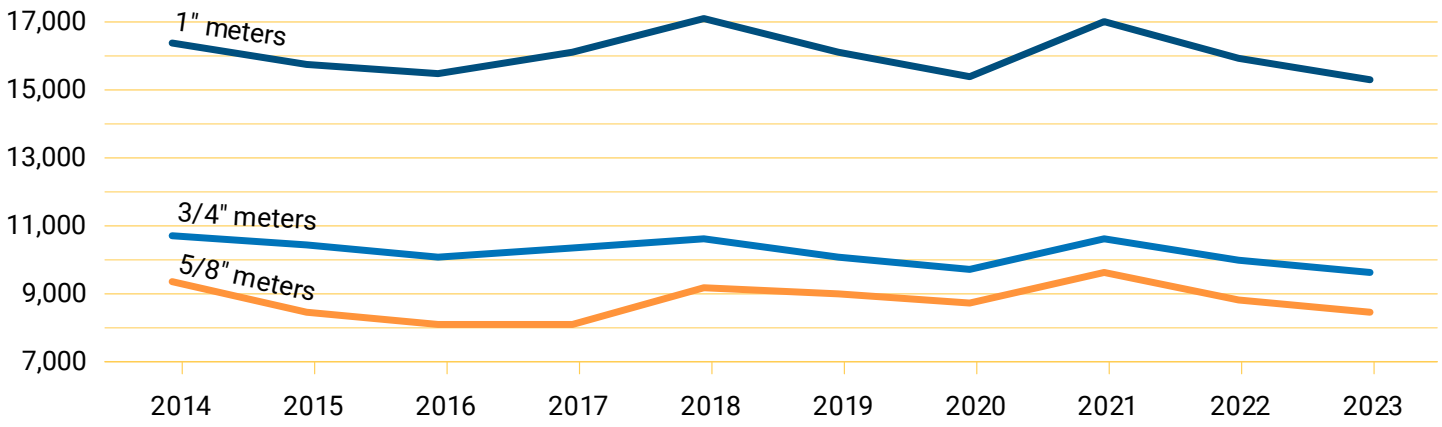
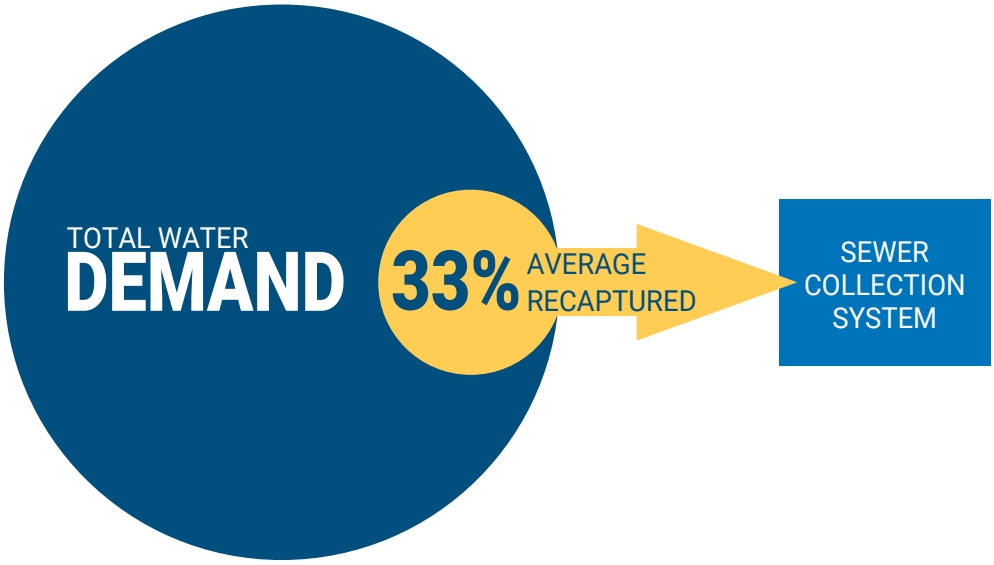


Figure 3. Source: Scottsdale Water

Scottsdale Water was the first Arizona water utility to implement indirect potable reuse with the Advanced Recycled Purified Water (ARPW) infrastructure at the Advance Water Treatment facility (AWT). The AWT is one of the largest and most sophisticated indirect potable reuse facilities in the world and, in 2019, became the third plant in the nation and the first in Arizona to be permitted for direct potable reuse.

Scottsdale's reclamation system has approximately 1,500 miles of sewer collection lines and over 40 lift stations. For decades, Scottsdale has used 100 percent of its recycled wastewater for beneficial, non-potable reuse or recharge. As a part of Scottsdale water resources portfolio, a portion of Advanced Recycled Purified Water (ARPW) is recharged into the aquifer as a kind of savings account to be able to recover it in groundwater wells in times of prolonged drought and shortage. Another portion of the ARPW is delivered to turf facilities through the Reclaimed Water Distribution System (RWDS). Another use of a portion of Scottsdale's wastewater is to deliver it to the 91st Avenue Wastewater Treatment where it is used for the cooling tower at Palo Verde Nuclear Generating station and the Tres Rios Wetlands.

Of the total amount of water that is delivered to customers, approximately 33% is currently "returned" to the sewer system. Future decreases in outdoor use and increases in irrigation efficiency would lead to a high percentage of overall "return" flow. As an indicator of conservation for all customers, the city seeks to increase the return flow percentage over what has been seen in the last 10 years.



INDICATOR	TARGET
Return flow or wastewater captured in the sewer collection system (2022 = 33% of total potable water demand)	Increase return flow percentage by 10% by 2033, capturing indoor/outdoor efficiency for both residential and commercial customers

Scottsdale has excelled at proactive long-range planning to ensure safe and adequate water supplies and best management practices on water conservation efforts, total wastewater reuse, and water banking. Scottsdale helps ensure quality water supplies by reclaiming or reusing water, recharging excess to the aquifer, and treating groundwater. **The amount of groundwater delivered has remained fairly constant and kept to an internal target of Safe Yield.**

INDICATOR

Gallons of groundwater treated (2022 = 1,823 million gallons)

TARGET

Maintain treated groundwater deliveries to Safe Yield levels

SINCE THE LATE 1990s

250,000

ACRE-FEET OF WATER

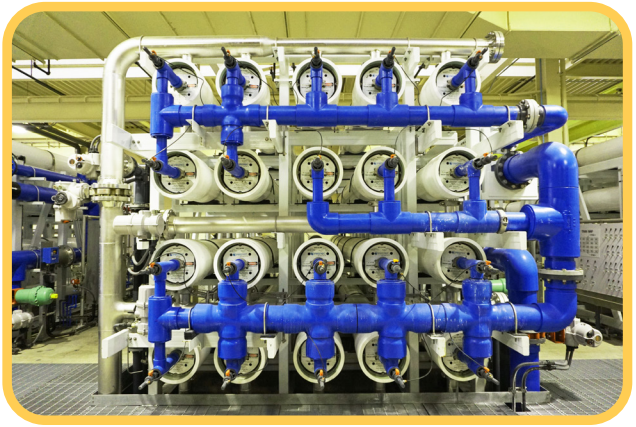
BANKED

INDICATOR

Gallons of water recharged in aquifer (2022 = 250,000 acre feet)

TARGET

Maximize annual water banking



BENEFITS

Environmental:
Using water efficiently brings a level of relief from the drought and reduced carbon emissions by using less energy to pump and treat water

Economic:
More secure water supplies aid business operations/ development and attract tourists; conservation means lower water bills for customers

Social:
Clean and secure drinking water for all residents supports health & equity

WHAT CAN YOU DO?

- Use the WaterSmart app to monitor use and leak notifications
- Convert non-functional turf (grass) areas to desert-adaptive landscapes
- Consider a WaterSense Smart Irrigation controller upgrade
- Understand your landscape water needs
- Plant native and drought tolerant plants
- Replace faucets, showerheads, and toilets with WaterSense-labeled fixtures

For more tips, go to ScottsdaleAZ.gov and search “water”

STRATEGIES & ACTIONS

STRATEGY WTR 1

Ensure water system resiliency.

ACTIONS

WTR 1.1 Communicate the leak detection benefits of registering for the online visualization portal and leak alerts (WaterSmart), aiming to double participation by 2025.

WTR 1.2 Encourage removal of privately-owned non-functional/non-recreational turf through education and turf removal rebates.

WTR 1.3 Promote improvements to irrigation equipment and plumbing fixtures for residential and commercial customers.

WTR 1.4 Expand water conservation programs focused on homeowners associations (HOAs).

WTR 1.5 Review water use and conservation in development projects through the framework of the Scottsdale Sustainable Water Management Principles.

WTR 1.6 Showcase and benchmark best practices of water efficient buildings & landscaping.

WTR 1.7 Encourage site development strategies that incorporate green infrastructure, low impact development, and stormwater harvesting.

WTR 1.8 Develop strategies to encourage efficient water practices for commercial businesses.

WTR 1.9 Ensure all water meters converted to Automatic Meter Infrastructure.

WTR 1.10 Conduct water efficiency consultations with all HOAs by 2033.

STRATEGY WTR 2

Reduce municipal water use.

ACTIONS

WTR 2.1 Remove non-functional/non-recreational turf at city facilities and retrofit municipal irrigation systems to smart controllers.

WTR 2.2 Monitor leaks and implement advanced drip irrigation systems.

WTR 2.3 Maintain high-efficiency toilets and faucets in city buildings.

WTR 2.4 Install new cooling tower controllers in all municipal facilities by 2025.

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY WTR 1 **Ensure water system resiliency.**					
WTR 1.1	Communicate the benefits of registering for WaterSmart.	Ongoing	**Lead**: Water **Partners**: Customers	$	Customer savings
WTR 1.2	Encourage removal of privately-owned turf.	Ongoing	**Lead**: Water **Partners**: Customers, HOAs, landscapers	$-$$	Customer savings
WTR 1.3	Promote improvements to irrigation equipment and plumbing fixtures.	Ongoing	**Lead**: Water **Partners**: Customers, HOAs, landscapers	$	Customer savings
WTR 1.4	Expand HOA water conservation programs.	Ongoing	**Lead**: Water **Partners**: HOAs	$-$$	Customer savings
WTR 1.5	Utilize Scottsdale Sustainable Water Management Principles in development review.	Quick win	**Lead**: Water **Partners**: Developers	$	Customer savings
WTR 1.6	Showcase and benchmark water efficient buildings & landscaping.	Ongoing	**Lead**: Water **Partners**: Customers, developers, landscapers	$	Customer savings
WTR 1.7	Encourage sustainable site development strategies.	Ongoing	**Lead**: Water, OEI **Partners**: Residents, developers	$	Nature Reduced flooding
WTR 1.8	Develop efficient water practices for businesses.	1-3 years	**Lead**: Water **Partners**: Commercial customers	$-$$	Customer savings
WTR 1.9	Convert water meters to Automatic Meter Infrastructure.	Ongoing	**Lead**: Water **Partners**: Customers	$	Customer savings
WTR 1.10	Conduct HOA water efficiency consultations.	3-10 years	**Lead**: Water **Partners**: HOAs	$	Customer savings

ACTION	TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY WTR 2 Reduce municipal water use.				
WTR 2.1 Remove non-functional/ non-recreational turf at city facilities and retrofit municipal irrigation systems to smart controllers.	Ongoing	**Lead**: Parks & Rec	$-$$	Municipal savings
WTR 2.2 Monitor leaks and implement advanced drip irrigation systems.	Ongoing	**Lead**: Parks & Rec	$	Municipal savings
WTR 2.3 Maintain high-efficiency toilets and faucets in city buildings.	Ongoing	**Lead**: Facilities	$	Municipal savings
WTR 2.4 Install new cooling tower controllers in municipal facilities.	Quick win	**Lead**: Facilities	$	Municipal savings

ENDNOTES

1 "Scottsdale asking water users to use 5% less, conserve more amid water shortage," ABC15 Arizona, January 12, 2022.

2 "Scottsdale shows reduced water use during hottest month on record," City of Scottsdale, August 14, 2023.

3 "Rapid intensification of the emerging southwestern North American megadrought in 2020–2021," Nature Climate Change, Williams, Cook and Smerdon, Vol 12, March 2022.

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WASTE

Develop a circular economy approach for materials management and effective citywide diversion of all waste streams.

Managing waste better and more efficiently benefits everyone. Recycling or reusing goods reduces the reliance on finite natural resources and yields cost savings by buying less and avoiding landfill tipping fees. Solid waste trucks will drive fewer miles on city streets, litter is reduced, jobs can be created, and fewer landfills need to be built and maintained. Increasing recycling, changing how vendors package their goods and offering compost receptacles reduces the pressure on landfills, saves energy and lessens upstream pollution from manufacturing.

Because of these benefits, achieving 'zero waste' has become a common long-term target for municipalities and organizations. While the overall goal – a holistic approach to minimizing the amount of waste sent to landfills – is often similar, precise definitions vary and sometimes include different waste streams. Most follow familiar principles to 'reduce, reuse, recycle' and often define zero waste as a 90% reduction or diversion rate.[1]

Sustainable materials management (SMM) goes beyond diversion to maximize environmental benefits and extend the life cycle of products and materials by keeping them in circulation as long as possible. This more holistic approach looks at extraction of resources, design, production and use of products, as well as end-of-life management and disposal (Figure 1) and identifies actions that reduce impacts on soils, water, the air we breathe and ecosystems.

One application of SMM is the creation of a circular economy, which "reduces material use, redesigns materials and products to be less resource intensive, and recaptures 'waste' as a resource to manufacture new materials and products. " This circularity provides an important framing as Scottsdale works to become a more sustainable city.

LIFE CYCLE OF MATERIALS AND PRODUCTS

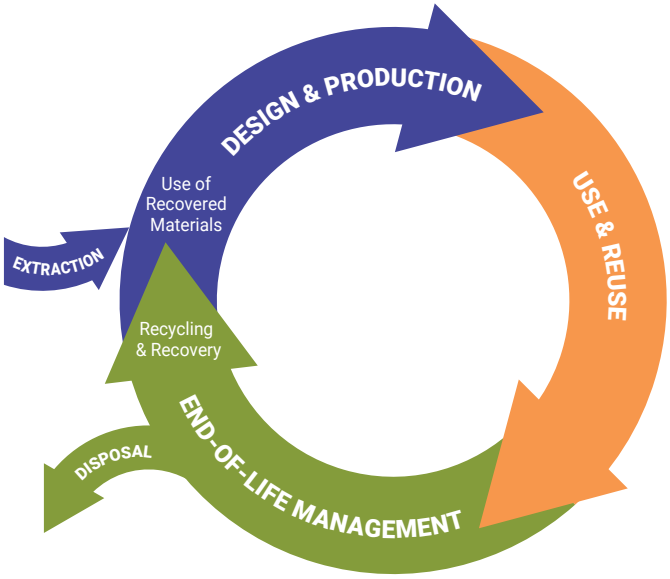


Figure 1. Source: Materials Management in Oregon

The 2018 Community Solid Waste Reuse and Recycling Strategic Plan set eight policy objectives to guide the work of Scottsdale Solid Waste Services. These policies are driven by the community's values and vision as represented in General Plan 2035. Together, they provide a comprehensive approach to meeting community expectations for how Scottsdale will approach the reduction, reuse, collection, recovery and disposal of solid waste materials generated within the city, while adhering to the sustainability ethic that is so important to our residents. As a companion document to this Scottsdale Community Sustainability Plan, the Strategic Plan includes detailed objectives for each of its policies and steps that can be taken to realize those goals.

Historically, members of the Scottsdale community have supported and embraced efforts to divert waste from the landfill. Scottsdale Solid Waste Services has provided single-stream recycling collection to all single-family homes since 1996. Each residential customer is also provided monthly pickup of bulk items and uncontained brush (landscaping debris). Finally, as part of the base single-family service fee, residents can also receive on-call move-in box collection, appliance collection, household hazardous waste collection and participate in quarterly e-waste drop-off events.

Scottsdale Solid Waste Services maintains a contractual agreement with the Salt River Landfill (SRL) for the disposal of refuse. The estimated operational lifespan of the landfill extends through 2035, with ongoing efforts by the SRL to prolong the facility's utility beyond this period. Waste is transported by the department either directly to the Salt River Landfill or to the Scottsdale Transfer Station, where it is consolidated into larger transport vehicles destined for the landfill. In addition, the Salt River Landfill Complex houses a Materials Recovery Facility, which the city employs for processing recyclable materials.

Like most municipalities, the city is motivated to divert material from the landfill in part by limited landfill space. When the Salt River Landfill reaches the end of its lifespan, the City will have to use alternative sites that are up to four times further away, meaning more fuel, labor, vehicle wear and air pollution. Bringing less waste to the landfill helps extend its usable life, avoiding future costs associated with opening a new landfill. Annie Leonard, the creator of "The Story of Stuff," said it best: "*When we throw anything away it must go somewhere*."

There are multiple providers of material management services in Scottsdale. Single-family residences and city facilities are serviced by Scottsdale Solid Waste Services. The commercial sector, which includes multi-family housing and businesses, is mostly serviced by private haulers but can also choose to contract with the city.

Unlike residents of single-family households, Scottsdale's multi-family complexes and other commercial customers do not automatically receive recycling service. A quarter of Scottsdale's residents live in multi-family housing, so it is important to find effective methods to increase diversion and reduce waste in these communities. This need is underscored by the fact that, at the beginning of 2024, only 18% of the city's 1,150 commercial account customers recycled.

Construction and demolition (C&D) debris represents a significant portion of the waste generated in Scottsdale and the surrounding region. Nationwide, the Environmental Protection Agency (EPA) reports that 600 million tons of C&D waste were generated in 2018, more than twice the amount of municipal solid waste generated.[2] Scottsdale Solid Waste Services can provide roll-off containers for landfill disposal of C&D debris. Private haulers are also very active in this sector, with only limited data reported to the city. Private haulers and other service providers also offer options for recycling and reuse of construction materials and salvaged building materials. Of note, building code changes in 2023 in Scottsdale now require that all commercial projects achieve at least a 50% diversion of nonhazardous construction, demolition and deconstruction waste material.

Materials management planning is hampered by many data gaps. Data on landfill refuse, recycling and organics diversion from municipal facilities is incomplete, but will be estimated starting in 2024 based on existing data and periodic waste audits. In the commercial sector, the city has little data from private haulers for commercial spaces and multi-family housing.

In fiscal year 2022/23, Scottsdale Solid Waste Services collected 61,814 tons of landfill refuse (black containers) and 22,903 tons of recycling (mauve containers) from single-family residential households. The combined 84,717 tons was 10% less by weight than in 2009, in part due to lighter recyclables as more plastic is used today. **At the same time, the amount of landfill refuse collected per household is down almost 13% to under 1,500 pounds**. These numbers include waste collected by the city for single-family household but excludes other waste streams not collected weekly. In FY 2022/23, Scottsdale Solid Waste Services also collected 20,263 tons of brush and bulk from single-family households.

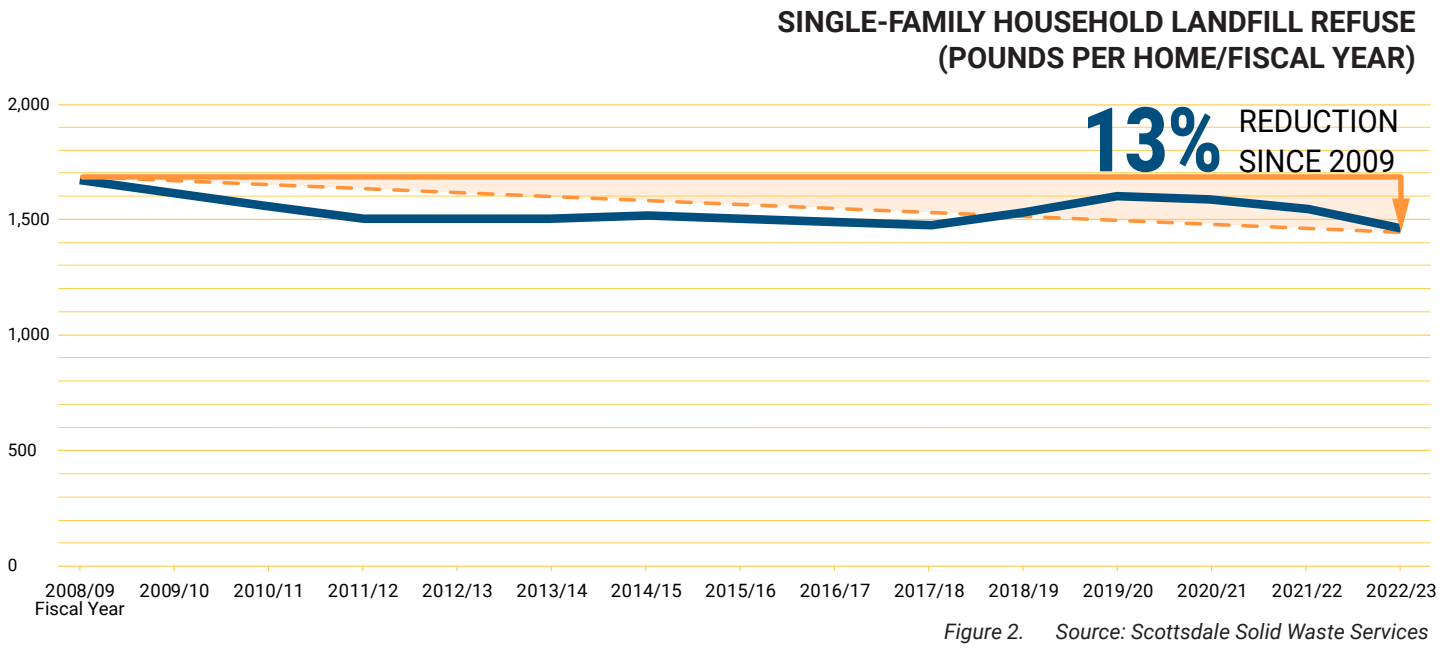


Figure 2. Source: Scottsdale Solid Waste Services

INDICATOR	TARGET
Pounds of landfill refuse per single-family household (2022-2023 = 1,465 pounds)	Reduce landfill refuse per single-family household by 25% by 2030 and 90% by 2040 (from 2022 levels)

INDICATOR	TARGET
Tons of landfill refuse citywide (Baseline data to be established in a future annual report)	Reduce landfill refuse collected citywide by 90% by 2040

INDICATOR	TARGET
Tons of municipal landfill refuse collected (Baseline data to be established in a future annual report)	Reduce municipal landfill refuse by 35% by 2030 and 90% by 2040 (from 2024 levels) *(excludes municipal green landscaping debris hauled under city contract)*

A key component of sustainable materials management is diversion. Diversion is any action that keeps waste out of the landfill, from well-known actions like recycling or composting to reuse and waste prevention.

Source reduction is the design, manufacture, distribution, sale, purchase, and use of materials in ways that reduce the quantity or toxicity of waste generated. Source reduction preempts the need to collect, process and dispose of materials by preventing their generation in the first place. Examples of source reduction practices include: repairing or refurbishing, purchasing in bulk, choosing reusable over single-use and donating unwanted items with useful life remaining.

In addition, while the subject of refuse and recycling collection generally prompts images of large trucks driving down the streets emptying containers along the way, there are many alternatives available within the community, including textile collection drop-off points, retail outlets accepting used light bulbs, batteries, motor oil, or plastic grocery bags for proper disposal, and thrift stores and other markets for reusable items.

Scottsdale Solid Waste Services provide weekly recycling pickup for approximately 84,000 single-family homes. The city's contracted recycling facility operator sorts recyclable materials by commodity and sells them through various markets, with a portion of the revenues coming back to the city. While this revenue does not always provide a positive revenue stream after accounting for the costs of collection and transportation, it does provide environmental savings over the alternative of landfill disposal. The same could potentially be true for other recyclable commodities outside of the curbside single-stream recycling program.

In fiscal year 2022/23, single-family residential households diverted 27% of the material by weight from disposal in the landfill through recycling, a rate that has held steady for several years. This rate is equal to recycling tonnage (mauve containers) divided by the sum of landfill refuse and recycling tonnages (black and mauve containers) and does not include any organics diversion[3]. Currently the methodology for calculating diversion rates is not consistent across Valley cities, so comparisons are difficult. Scottsdale is a leader in the Valley in diversion, although there is room for significant improvement.

Figure 3. Source: Scottsdale Solid Waste Services

INDICATOR

Diversion rates
(FY 2022-2023 = 27% for single-family residents)

(BASELINE DATA FOR CITYWIDE AND MUNICIPAL WASTE TO BE ESTABLISHED IN A FUTURE ANNUAL REPORT)

TARGETS

- Achieve a 35% diversion rate by 2030 (single-family households)
- Achieve a 90% diversion rate by 2040 (citywide)
- Achieve a 35% diversion rate by 2030 and a 90% diversion rate by 2040 (municipal waste)

INDICATOR

Percentage of Scottsdale Solid Waste Services commercial accounts that recycle
(FY 2022-2023 = 18%)

TARGET

Increase the percentage of Scottsdale Solid Waste Services commercial accounts that recycle to 40% by 2030

Organic material – mostly yard and food waste – in the waste stream is another great opportunity for diversion. Nationally, approximately 349 pounds of food waste is generated per person each year, with the majority ending up in landfills. Food waste reduction saves consumers money, conserves resources associated with the production of wasted food and reduces methane emissions from landfills.

Just like with 'reduce, reuse, recycle' for overall waste, there are multiple ways to reduce food waste. A study from the State of Oregon looked at ways to prioritize prevention of food waste, generating a helpful hierarchy from prevention to rescue, recovery and disposal (*Figure 4*). Some of these actions are difficult to quantify but are still important waste management tools. Horse manure from the WestWorld equestrian center and Scottsdale's many horse properties could also be diverted.

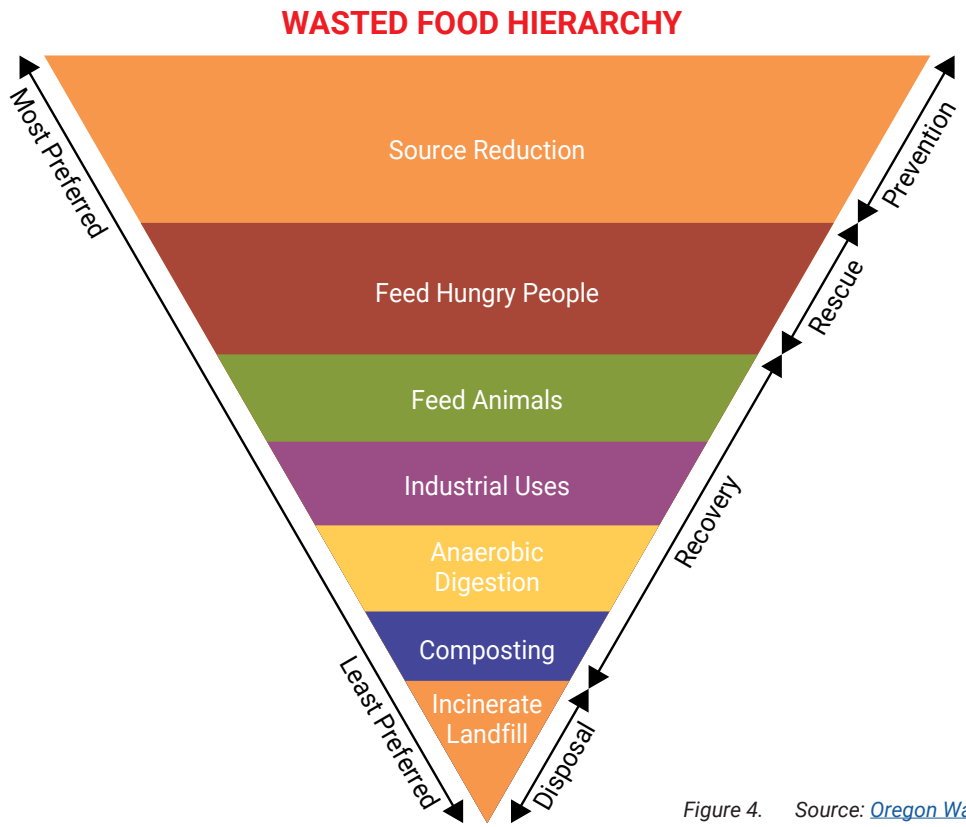


Figure 4. Source: Oregon Wasted Food Study

INDICATOR

BRUSH AND BULK DIVERSION RATE (FY 2022-2023 = 0 %)

INDICATOR

Tons of organic waste diverted from landfill (Baseline data to be established in a future annual report)

TARGETS

Achieve a diversion rate from the brush and bulk waste stream of 50% by 2030 and 90% by 2040

Divert 15,000 tons annually of citywide organic waste from the landfill by 2030 and 30,000 tons annually by 2040 *(excludes brush and bulk and municipal green landscaping debris hauled under city contract)*

Single-family residents can dispose of yard waste, including grass clippings, tree trimmings and other organic material, during their monthly brush and bulk pickup. Usually, this waste is mixed with other materials, either before pickup or in the city's collection vehicles. The city is currently exploring ways to separate brush from bulk waste as part of the transfer station expansion. Here, commercial landscapers will be able to dispose of their organic materials. As of 2024, there is no available data on diversion of organic materials from these private haulers.

For recycling and organics diversion to be most effective, the materials need to be properly sorted. Mixing trash or items soiled with food or liquids with recycling or using plastic bags for collecting recyclables cause recycling facility shutdowns, reduce the market value of commodities and raise the city's costs. The Salt River Landfill maintains a separate green (yard) waste disposal area where loads with minimal non-organic contamination are diverted from the landfill. For organic waste, contamination leads to increased costs or even entire loads being redirected back to the landfill.

In 2019, the contamination rate for mixed recyclables sent by Scottsdale Solid Waste Services to the recycling facility was 14%, calculated through annual audits by the recycling facility operator. Similar rates for other Valley cities range from 12% to 30%.

INDICATOR

Recycling contamination rate (2019 = 14%)

TARGET

Maintain a recycling contamination rate below 10% by 2025 and below 5% by 2045

BENEFITS

Environmental:
Generating less waste extends the life of landfills, lowers the risk of litter and reduces air, land and water pollution; diverting organics reduces methane production

Economic:
A circular economy reduces demand for raw materials, creates new jobs and decreases waste hauling and disposal costs

Social:
A cleaner city reduces the impacts of landfills on more vulnerable communities; more convenient diversion options improve quality of life

WHAT CAN YOU DO?

- Switch to reusable bags and water bottles instead of single-use plastics.
- Compost your food scraps and yard waste.
- Learn what items you can recycle in Scottsdale to prevent recycling contamination. Look for drop-off locations for items that are difficult to recycle.
- Switch to digital documents to reduce paper use both at work and home.
- Donate reusable items as an alternative to bulk pickup.
- Support local businesses by shopping locally.

For additional advice, visit ScottsdaleAZ.gov and search for “solid waste”

STRATEGIES & ACTIONS

STRATEGY WST 1

Increase diversion rates.

ACTIONS

WST 1.1 Encourage addition of recycling infrastructure in existing commercial and multi-family housing.

WST 1.2 Promote commercial and multi-family recycling.

WST 1.3 Support implementation of code requirements for diversion of construction and demolition waste for commercial projects.

WST 1.4 Work to make city-sponsored events zero waste.

WST 1.5 Develop a green event program and resources for event planners.

WST 1.6 Host an expo with vendors to promote and educate about green event options.

WST 1.7 Investigate ways to encourage private haulers to bring recycling to the transfer station.

WST 1.8 Expand the transfer station to include permanent household hazardous waste and electronics collection, a Swap Shop, and organic waste diversion facilities.

WST 1.9 Conduct waste characterization studies.

WST 1.10 Investigate ways to improve data collection from private haulers and for municipal waste.

STRATEGY WST 2

Strengthen local markets for recycled content, recyclable and reusable materials.

ACTIONS

WST 2.1 Adopt municipal green purchasing policies that prioritize purchasing based on sustainability practices and reduced waste generation.

WST 2.2 Attract circular economy companies and entrepreneurs

WST 2.3 Encourage innovative reuse of materials.

STRATEGY WST 3

Expand opportunities for diverting organic waste from the landfill.

ACTIONS

WST 3.1 Establish a green or organic waste drop-off program.

WST 3.2 Promote organic waste diversion.

WST 3.3 Promote composting by food retailers and the food service industry.

STRATEGY WST 4

Reduce waste generation.

ACTIONS

WST 4.1 Promote donation of reusable items through City media channels and education campaigns, prioritizing recovery over landfill disposal.

WST 4.2 Expand reuse of surplus municipal goods.

WST 4.3 Educate on the benefits of reusable and compostable packaging and bags.

WST 4.4 Create a program to reuse building materials.

WST 4.5 Educate HOAs, homeowners, property managers, and landscapers about reducing the volume of landscaping debris generated.

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY WST 1 **Increase diversion rates.**					
WST 1.1	Encourage addition of recycling infrastructure.	1-3 years	**Lead**: OEI **Partners**: Property Owners	$-$$$	Less waste Municipal savings
WST 1.2	Promote commercial and multi-family recycling.	1-3 years	**Lead**: Solid Waste **Partners**: Businesses, residents	$-$$	Less waste Municipal savings
WST 1.3	Support implementation of code requirements for diversion of construction and demolition waste.	Quick win	**Lead**: OEI **Partners**: Developers	$	Less waste Municipal savings
WST 1.4	Work to make city-sponsored events zero waste.	Quick win	**Lead**: Solid Waste **Partners**: Parks & Recreation, Tourism, Stadium, Scottsdale Arts, attendees	$-$$	Less waste
WST 1.5	Develop a green event program and resources for event planners.	Ongoing	**Lead**: Solid Waste **Partners**: Event planners	$	Less waste
WST 1.6	Host an expo with vendors to promote and educate about green event options.	1-3 years	**Lead**: Solid Waste **Partners**: Event planners, city-owned venues, vendors	$-$$	Less waste
WST 1.7	Encourage private haulers to bring recycling to the transfer station.	1-3 years	**Lead**: Solid Waste **Partners**: Private haulers	$$	Less waste
WST 1.8	Expand the transfer station.	1-3 years	**Lead**: Solid Waste **Partners**: Capital Projects	$$$+	Less waste Resident convenience
WST 1.9	Conduct waste characterization studies.	Quick win	**Lead**: Solid Waste **Partners**: ASU	$	Less waste Increased composting
WST 1.10	Investigate ways to improve data collection.	1-3 years	**Lead**: Solid Waste **Partners**: Private haulers	$$	Less waste Municipal savings

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY WST 2 **Strengthen local markets for recycled content, recyclable and reusable materials.**					
WST 2.1	Adopt municipal green purchasing policies based on sustainability practices and reduced waste generation.	1-3 years	**Lead**: Purchasing **Partners**: Solid Waste	$-$$$	Less waste Local jobs
WST 2.2	Attract circular economy companies and entrepreneurs.	3-10 years	**Lead**: Economic Development	$	Less waste Local jobs
WST 2.3	Encourage innovative reuse of materials.	1-3 years	**Lead**: Solid Waste **Partners**: Residents, businesses	$	Less waste Local jobs
STRATEGY WST 3 **Expand opportunities for diverting organic waste from the landfill.**					
WST 3.1	Establish a green or organic waste drop-off program.	3-10 years	**Lead**: Solid Waste **Partners**: Capital Projects	$$$+	Less waste Business savings
WST 3.2	Promote organic waste diversion.	Quick win	**Lead**: Solid Waste **Partners**: Communications	$$	Less methane Local jobs
WST 3.3	Promote composting by food retailers and the food service industry.	1-3 years	**Lead**: Solid Waste **Partners**: Restaurants, grocery stores	$-$$	Less methane

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY WST 4 **Reduce waste generation.**					
WST 4.1	Promote donation of reusable items.	1-3 years	**Lead**: Solid Waste **Partners**: Non-profits	$-$$	Less waste
WST 4.2	Expand reuse of surplus municipal goods.	1-3 years	**Lead**: Purchasing **Partners**: Solid Waste, City departments	$	Less waste Municipal savings
WST 4.3	Educate on the benefits of reusable and compostable packaging and bags.	Ongoing	**Lead**: Solid Waste **Partners**: OEI, Communications	$-$$	Less waste Resident savings
WST 4.4	Create a program to reuse building materials.	3-10 years	**Lead**: OEI **Partners**: Developers, Construction industry, Deconstruction and reuse organizations	$$$	Less waste Cost savings
WST 4.5	Educate about reducing the volume of landscaping debris generated.	Quick win	**Lead**: Solid Waste **Partners**: AMWUA, Desert Botanical Garden	$	Less waste

ENDNOTES

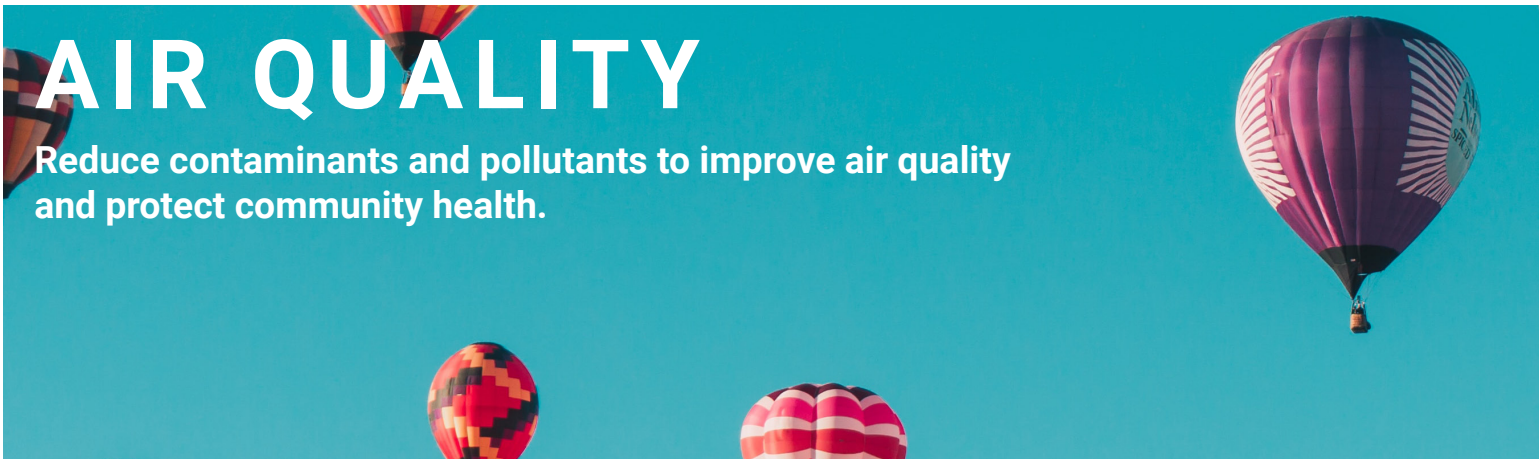
1 "How Communities Have Defined Zero Waste," U.S. Environmental Protection Agency.

2 This same methodology will be used for calculating the diversion rate for municipal waste, but composting and diversion of brush and bulk items will be included in the citywide diversion rate.

3 "Advancing Sustainable Materials Management: 2018 Fact Sheet," U.S. Environmental Protection Agency.

AIR QUALITY

Reduce contaminants and pollutants to improve air quality and protect community health.



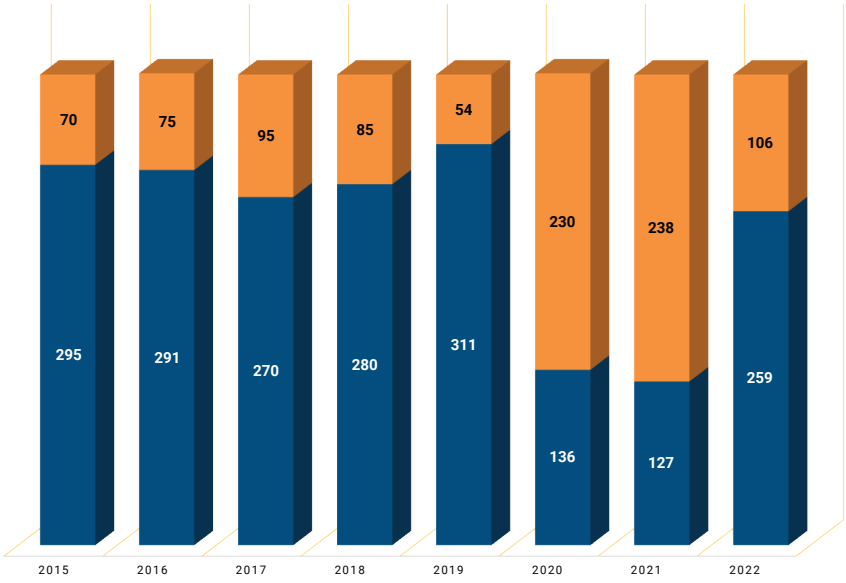
Like many metropolitan areas, Scottsdale and other cities in the Valley have been working for years to improve air quality. The region's two biggest concerns are ozone and particulate matter (PM), as these exceed federal health-based standards most frequently. The causes of these pollutants are complex, given the number of sources and how far both can travel in the air.

Particulate matter, classified as small (PM-2.5) or large (PM-10), usually occurs as blowing dust or smoke from fires or fireworks, but other sources can be particulates from car tires or complex reactions of chemicals like sulfur dioxide and nitrogen oxides. To reduce PM, Scottsdale makes extensive use of recycled asphalt millings and stabilizers for dust mitigation on unpaved lots and roads. It also uses a fleet of filtered (PM-10) street sweepers to reduce traffic-generated dust.

Ground-level ozone is created when nitrogen oxides, volatile organic compounds (VOCs), and sunlight react, making ozone primarily a summer issue. Industrial facilities, motor vehicles and gasoline vapors are primary sources of these precursor chemicals. Interestingly, trees can be both a source of VOCs and a key strategy in filtering a wide range of pollutants from the air.[1]

Regional air quality has varied in recent years, in part reflecting the influence of extremely hot summers on the number of unhealthy air days. In 2022, almost 1 in 3 days exceeded federal air quality standards.

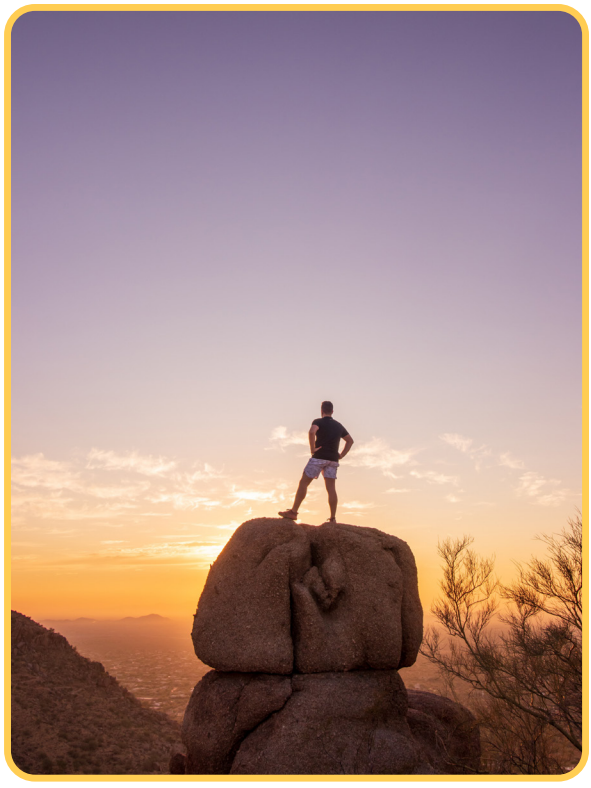
AIR QUALITY INDEX (PHOENIX-MESA-SCOTTSDALE CORE-BASED STATISTICAL AREA)

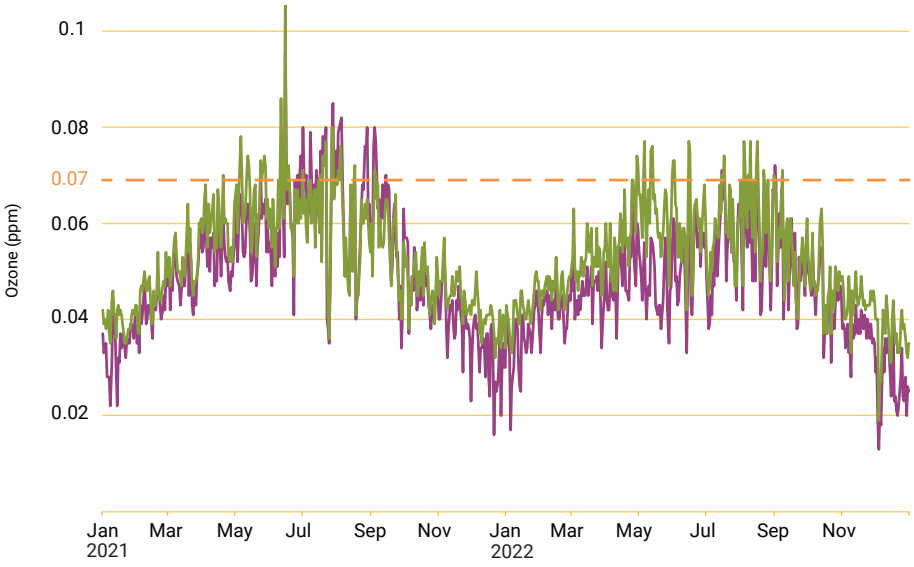


Source: EPA

To signal when air quality is expected to be unhealthy, the state of Arizona projects High Pollution Advisory Days. This advance notice allows people to take steps to avoid exceeding federal standards for either ozone or PM. In most recent years, there have been over 50 such advisories, with 2021 and 2022 each having more than 65 advisories (mostly related to ozone levels). For these days, the city informs all its employees and contractors about leaf blowing, wood burning and off-road travel restrictions.

There are two air sampling monitors in Scottsdale taking hourly readings of ozone and one taking readings of PM-10 levels. Both pollutants can exceed federal standards during the summer, sometimes by substantial amounts. There are also two monitors for PM-2.5 just outside Scottsdale boundaries. The graphs (Figures 1, 2 and 3) show how the ozone transport into higher elevations during summer afternoons, individual dust storms and holiday activities cause readings above healthy limits.





OZONE 8-HR MAXIMUMS 2021 - 2022

South Scottsdale 8-Hr Max.

Pinnacle Peak 8-Hr Max.

8-Hr Avg. National Ambient Air Quality Standard

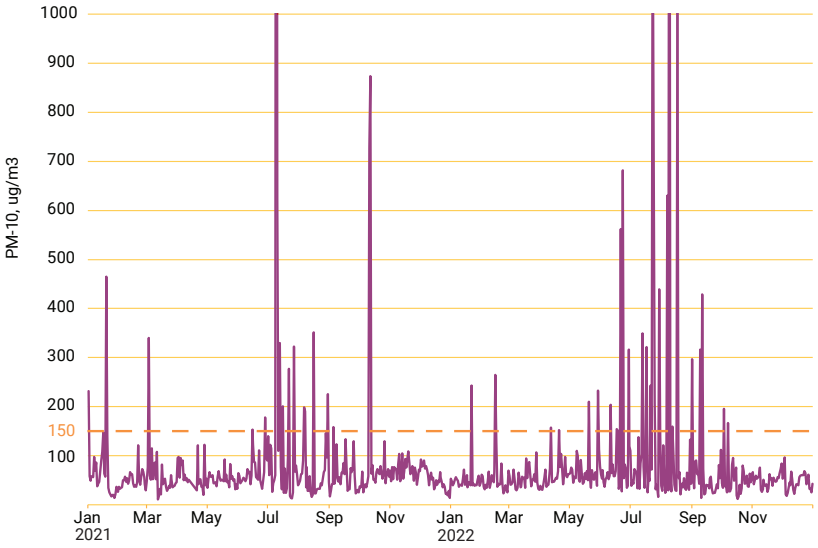
Figure 1.
Source: Maricopa County Department of Air Quality

PM-10 DAILY MAXIMUMS 2021 - 2022

South Scottsdale PM-10 Daily Max.

24-Hr National Ambient Air Quality Standard

Figure 2.
Source: Maricopa County Department of Air Quality



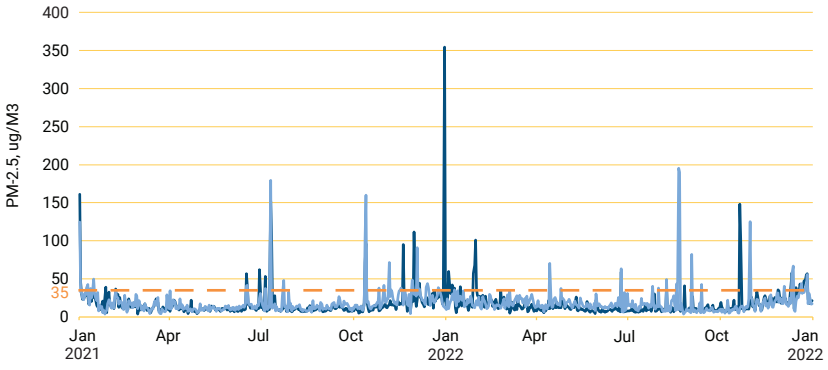
PM-2.5 DAILY MAXIMUMS 2021 - 2022

North Phoenix PM-2.5 Daily Max.

Tempe PM-2.5 Daily Max.

24-Hr National Ambient Air Quality Standard

Figure 3.
Source: Maricopa County Department of Air Quality



INDICATOR

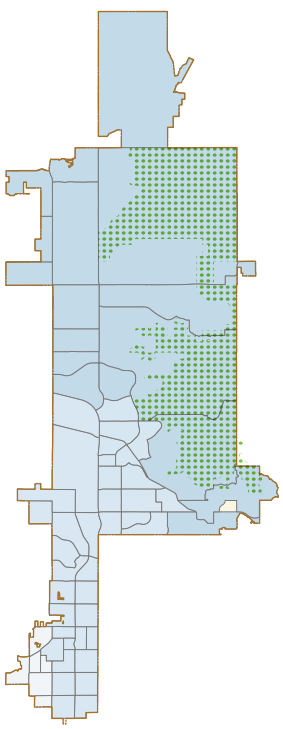
Regional good to moderate air days (#)
(2022 = 259 days)

TARGET

Reduce unhealthy air days in Scottsdale by 2030

Extensive modeling demonstrates that every part of the city can be exposed to poor air quality, although not always at the same time for the same pollutant.

May 2022



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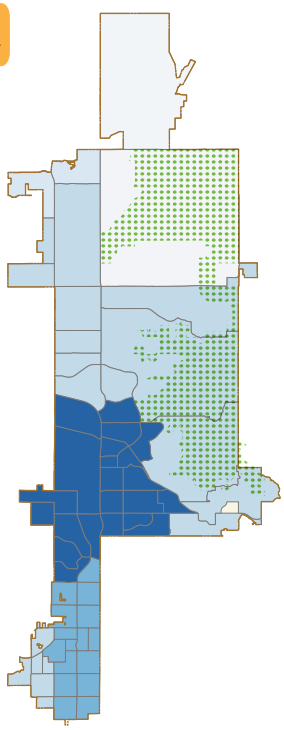

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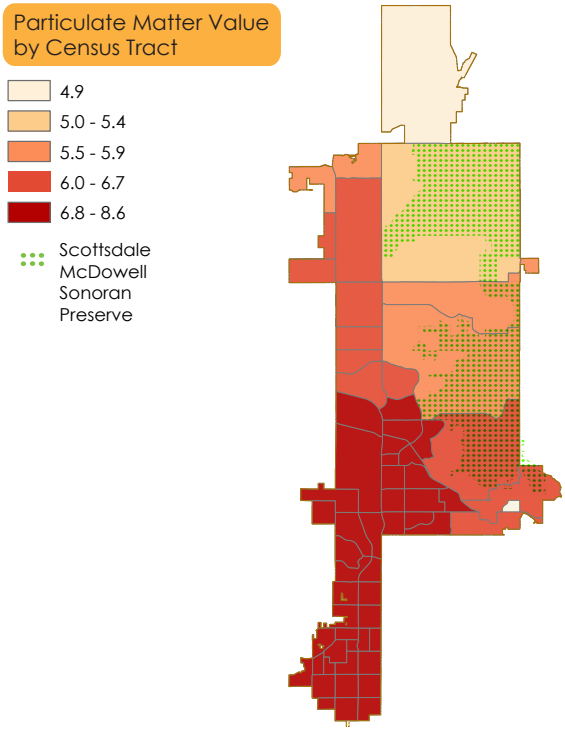


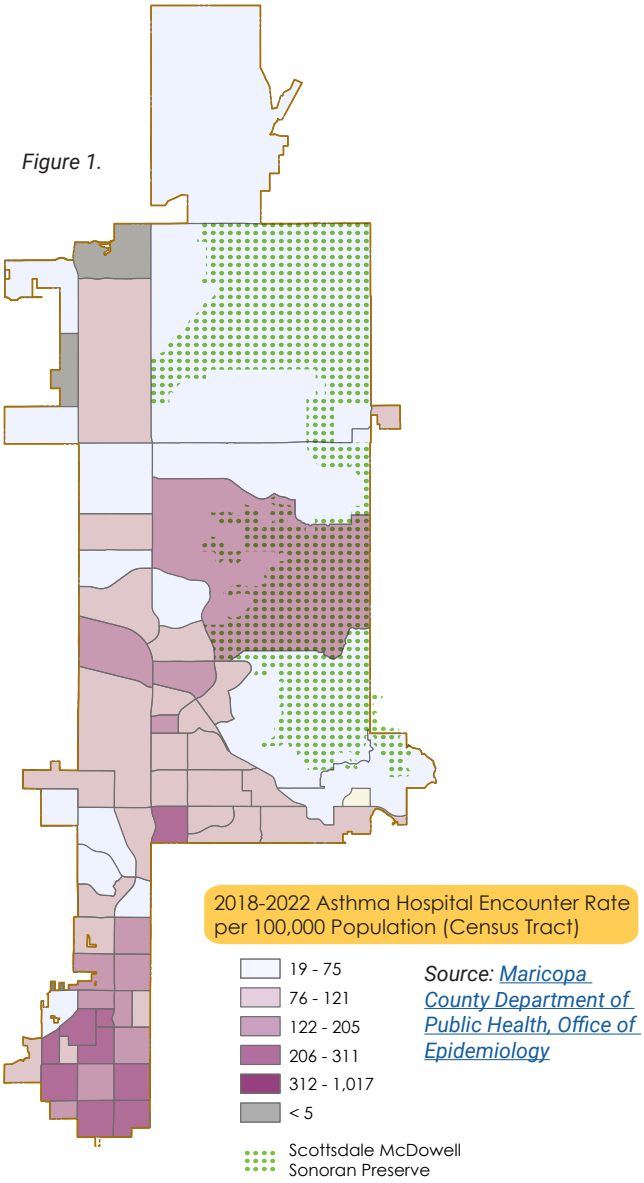
Source: City Health Dashboard

Ozone can aggravate a range of health issues, including asthma, COPD and heart disease, compounding how extreme heat can also influence their incidence and severity. **Maricopa County tracks illnesses and deaths for these disorders, which have fluctuated over time. Asthma illnesses in Scottsdale per 100,000 population are lower than in the rest of Maricopa County (Table 1), and hospital encounters (2018-2022) are concentrated in census tracts in south and central Scottsdale (Figure 1).**

Table 1. Incidents among Scottsdale residents, per 100,000 population, AND TOTAL FREQUENCY

	2018	2019	2020	2021	2022
Asthma illnesses	210.1 (517)	196.7 (493)	115.3 (294)	121.6 (310)	156.1 (398)
COPD illnesses	335.7 (795)	287.7 (682)	185.5 (443)	148.2 (347)	163.5 (398)
COPD deaths	50.0 (112)	61.9 (121)	57.7 (124)	47.8 (107)	~~N/A~~ 41.6 (106)
Heart disease illnesses	2,766.8 (6,807)	2,740.6 (6,868)	2,375.0 (6,056)	2,678.5 (6,830)	2,755.7 (7,027)
Heart disease deaths	217.5 (535)	224.3 (562)	231.0 (589)	251.0 (640)	~~N/A~~ 245.1 (625)

Figure 1.



INDICATOR

Number of hospitalizations for pollution-related health events per 100,000 population in Scottsdale (2021 = 2,948.3)

TARGET

REDUCE HOSPITALIZATIONS FOR POLLUTION-RELATED HEALTH EVENTS (PER 100,000 POPULATION) BY 2030

Scottsdale has been an active partner with Maricopa County and neighboring cities to formulate, adopt and implement laws and codes that have dramatically improved air quality Valleywide. Even as population and vehicle travel has increased, ozone levels have decreased by 13 parts per billion since 2000, and precursor emissions have decreased by over 50 percent from 2011 through 2020 according to the Maricopa Association of Governments.

However, federal standards for ozone are tightening due to an improved understanding of the health effects, and Phoenix currently has the fifth-worst ozone levels in the country.[2] Because of the extended transport of air pollutants from outside the Valley, improving air quality requires regional cooperation and a long-term commitment to taking daily steps to reduce emissions. Failure to meet the Clean Air Act standards can have economic repercussions, since the tighter standards may trigger regulations that could discourage growth of new, large businesses.

The city follows and reinforces federal, state and county requirements. It also commits to additional steps to support cleaner air for residents and visitors related to vehicles. **Scottsdale has reduced the environmental impact of its municipal vehicles by switching to compressed natural gas (CNG) as a fuel source and by using less gasoline and diesel fuel. Total fleet fuel use is down ~~3%~~ 7% since 2016.** The Fleet and Solid Waste departments significantly reduce vehicle miles through sophisticated route optimizations. Relatedly, the Transportation and Streets Department champions the use of van pool and bus pass programs by employees.

INDICATOR	TARGET
Gallons of gasoline, diesel and CNG used in municipal vehicles ~~(2022 = 1,389,541 GALLONS)~~ (2023 = 1,379,942 GALLONS)	Reduce municipal fleet fuel use by 10% by 2030 and 40% by 2050 (from 2023 levels)

Supporting the regional transition to electric and other alternate fuel vehicles can also improve air quality. **The number of publicly available electric vehicle charging ports in Scottsdale has increased dramatically, up 18% in just one year, reflecting residents and business interest in this technology.** This trend reflects the economics of electric vehicles, which can be $50 less expensive for a full charge versus a tank of gasoline.[3]The city also plans to install electric vehicle (EV) charging stations in at least five locations.

INDICATOR	TARGET
Number of publicly available electric vehicle charging ports ~~(2022 = 306 PORTS)~~ (2023 = 360)	Increase the number of publicly available charging ports four-fold by 2027 and ten-fold by 2030 (from 2023 levels)

BENEFITS

Environmental:
Improved air quality reduces harm to plants and animals; more trees also provide shade and cooling

Economic:
Fewer bad air quality days aid business operations/ development and attract tourists and lessens damage to buildings and infrastructure; electric vehicles can be less expensive to operate

Social:
The greatest impact of better air quality will be improved health and quality of life

WHAT CAN YOU DO?

- Switch to electric-powered blowers and other landscaping equipment
- Avoid idling unnecessarily and long drive-thru lines
- Fuel your vehicle after dark
- Eliminate or replace your wood-burning fireplace, wood stove or fire pit with natural gas units
- Plant a low-VOC emitting tree

For more tips, go to Maricopa.gov and search “air quality”

STRATEGIES & ACTIONS

STRATEGY AQ 1

Clean Scottsdale's air.

ACTIONS

AQ 1.1 Participate in regional efforts to improve air quality and actively participate in regional AQ planning and policy committees and councils (e.g., MAG, MCAQD).

AQ 1.2 Expand education/outreach to city employees, businesses and residents about air quality and High Pollution Advisory days, including benefits of electric-powered landscaping equipment and reduced single occupancy vehicle trips.

AQ 1.3 Encourage replacement of existing wood-burning fireplaces, wood stoves and fire pits with cleaner options.

AQ 1.4 Continue requirement of dust control plans for special event using unpaved parking.

AQ 1.5 Promote Maricopa County program to convert gas to electric yard equipment.

AQ 1.6 Promote and enhance the municipal Travel Reduction Program.

AQ 1.7 Create education campaigns related to vehicle idling and parking on unpaved lots.

STRATEGY AQ 2

Support adoption of electric and other alternative fuel vehicles.

ACTIONS

AQ 2.1 Advertise locations of publicly available EV charging stations.

AQ 2.2 Develop a financially sustainable plan for purchasing additional electric and other alternate fuel vehicles for the city fleet.

AQ 2.3 Create an EV charging infrastructure plan identifying barriers, opportunities, and priorities.

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY AQ 1 **Clean Scottsdale's air.**					
AQ 1.1	Participate in regional efforts.	Ongoing	**Lead**: OEI **Partners**: Maricopa County	$	Health
AQ 1.2	Expand education/outreach about air quality.	Quick win	**Lead**: OEI **Partners**: Residents, businesses, employees	$	Health
AQ 1.3	Encourage replacement of existing wood-burning units.	1-3 years	**Lead**: OEI **Partners**: Residents, developers	$	Health
AQ 1.4	Continue requirement of dust control plans for special events.	Ongoing	**Lead**: Tourism **Partners**: Event planners	$	Health
AQ 1.5	Promote Maricopa County program to convert gas to electric yard equipment.	Quick win	**Lead**: OEI **Partners**: Maricopa County	$	Health
AQ 1.6	Promote and enhance the municipal Travel Reduction Program.	Ongoing	**Lead**: Transportation & Streets **Partners**: Employees, Maricopa County, Valley Metro	$	Health Fuel savings
AQ 1.7	Create education campaigns related to vehicle idling and parking on unpaved lots.	Ongoing	**Lead**: OEI, Transportation & Streets	$	Health Fuel savings

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY AQ 2 **Support adoption of electric and other alternative fuel vehicles.**					
AQ 2.1	Advertise locations of publicly available EV charging stations.	Quick win	**Lead**: OEI	$	Health Fuel savings
AQ 2.2	Develop a plan for purchasing additional alternate fuel vehicles.	3-10 years	**Lead**: Fleet **Partners**: Other city departments	$-$$$	Health Municipal savings
AQ 2.3	Create an EV charging infrastructure plan.	1-3 years	**Lead**: OEI **Partners**: Other city departments	$-$$	Health Fuel savings

ENDNOTES

1 Read more about the benefits of trees and Scottsdale's strategies to increase tree canopy in the Heat section.

2 "Phoenix ranks 5th in ozone pollution, but a new report finds fewer bad air days overall," Updated April 22, 2023, Arizona Republic.

3 "Is it cheaper to refuel your EV battery or gas tank? We did the math in all 50 states," Updated August 14, 2023, Washington Post.

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EXTREME HEAT

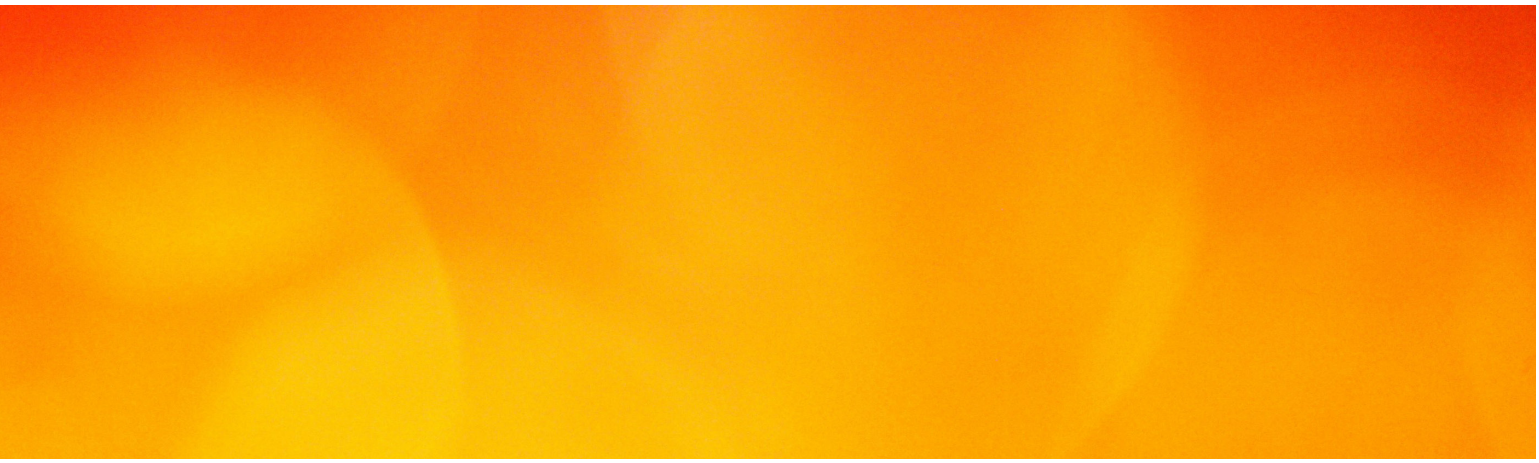
Ensure that the community prevents, is prepared for, responds to and recovers from extreme heat.

Temperatures in 2023 set records for extreme heat: regionally, for the hottest July and the most heat-related fatalities, and globally, for the hottest year ever. Located in the Sonoran Desert, Scottsdale and other Valley cities are experiencing a trend of increasing average temperatures going back over a century of data. But averages only tell some of the story, since the number and length of heat waves has also been increasing.[1] The cumulative effect of multiple days of extreme daytime highs also makes nighttime temperatures uncomfortably high, combining to create a deadly weather phenomenon.

These long and hot summers impact human health, quality of life and economic vitality. Increased heat results in added energy use and higher air conditioning costs. Staying indoors during extreme heat is not always an option, and the impact of people deferring work, shopping or other activities can have a negative impact on the economy. Pets, wildlife and plants are also affected by the heat. Even the region's iconic saguaro cacti lost arms and died in large numbers during the heat wave in July 2023.

Rising temperatures compound a myriad of other interrelated problems, including the drought as hotter temperatures further shrink water supplies. Hotter temperatures increase the frequency and destructiveness of wildfires and draw more moisture from the ground generating intense and frequent haboobs (dust storms). Air quality is degraded as wildfires and haboobs significantly increase concentrations of particulate matter and other pollutants, and heat directly increases the production rate of ground-level ozone.

Exposure to extreme heat and air pollution also compounds health impacts. One study found the risk of death from all causes increased 6% on days with extreme high temperatures, 5% on days with high concentrations of fine particulate matter and 21% on days with both conditions present. When cause of death was isolated to cardiovascular and respiratory, the increased risk in co-exposure conditions was even higher – 30% and 38%, respectively.[2]



NOAA records show that Scottsdale is experiencing an upward trend in air temperatures both during the day and at night. This rise can be seen in average summer temperatures as well as the highest temperatures each month.

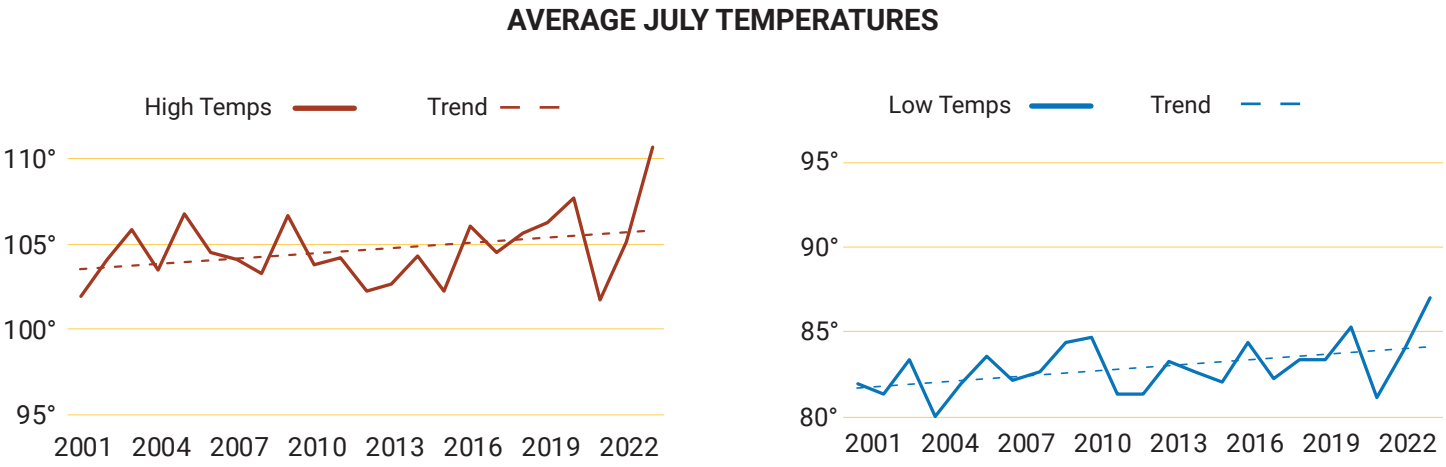


Figure 1. Source: Air temperature data from National Weather Service (https://www.weather.gov/wrh/Climate?wfo=psr)

The number of excessively hot days and nights is also increasing, indicating that the heat season is getting longer. Comparing recent averages (2015-2023) to earlier years (2001-2014), there are now 5-8 additional days each year with extreme heat.

Table 1. Annual Summarized Data: Scottsdale Airport Weather Station

	2001-2014 Average	2015-2023 Average	Maximum (year observed)
Number of Days 110+	8	16	30 (2023)
Number of Nights 90+	2	7	20 (2023)

Table 1. Source: NOAA Online Weather Data

INDICATOR

Average air temperatures, July

(2023 average high = 110.7°F)
(2023 average low = 87.1°F)

TARGET

Reduce **AVERAGE JULY** day- and night-time air temperatures by 2030

INDICATOR

Average surface temperatures, Summer

(2020 average Greater Airpark = 129.0°F)
(2020 average Old Town = 129.5°F
(2020 average McDowell Road / Scottsdale Road = 131.4°F)

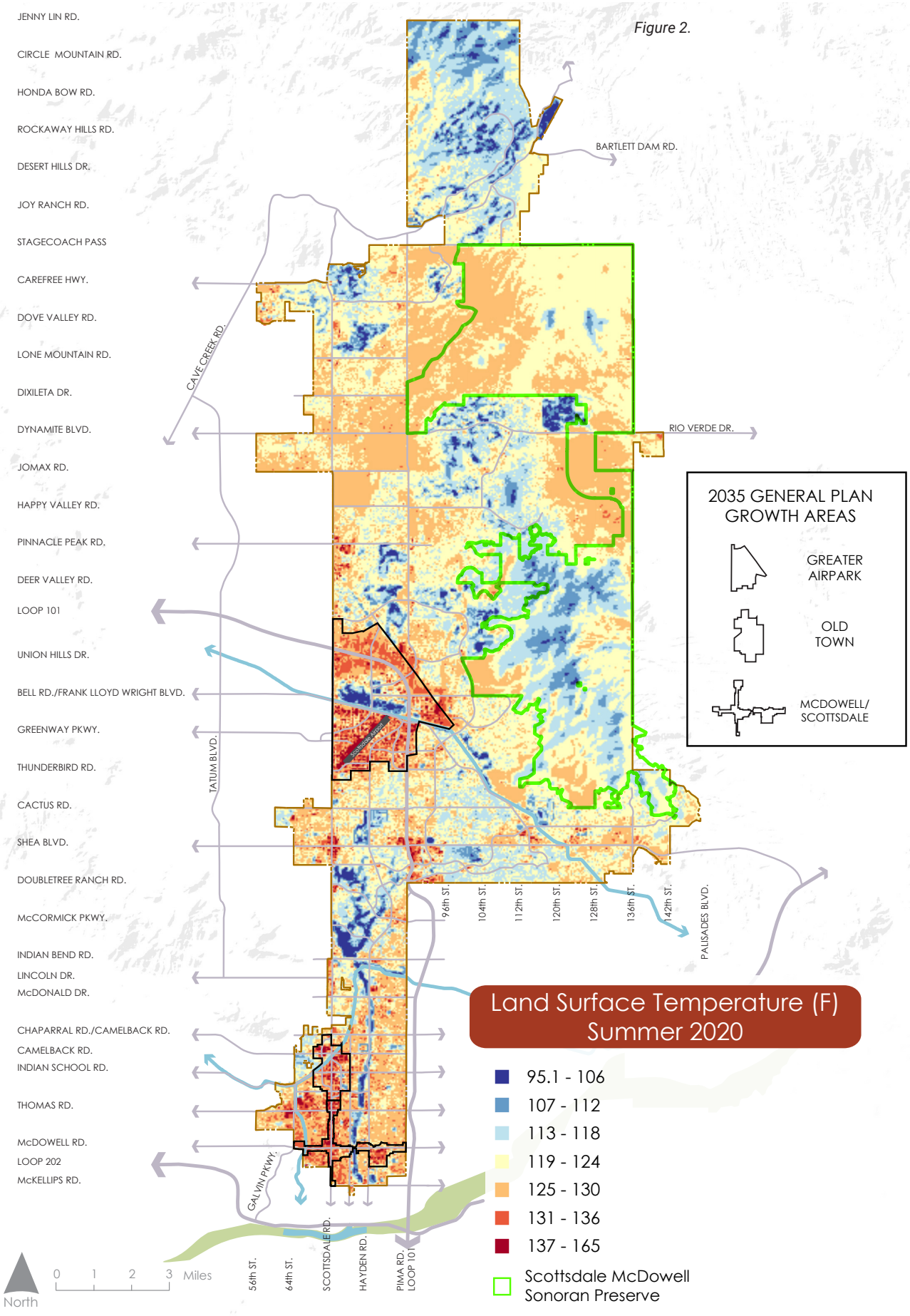
TARGET

Reduce surface temperatures by 2030 in the Greater Airpark, Old Town and McDowell Road/ Scottsdale Road growth areas

Another way to measure heat is using land surface temperature. Satellite imagery has been used to compile a map of the hottest areas in the city, based mostly on 2020 summer data (*Figure 2*). Unlike the NOAA data based on air temperatures, these data record the temperatures of the highest surface, like the street or a rooftop. There is a feedback loop between these two ways of measuring heat, since hot surfaces contribute to the urban heat island effect that raises air temperatures.

Surface temperatures vary substantially across Scottsdale, ranging between 95.1°F and 165.5°F. The average temperature for the entire City was 122.5°F, but three areas were higher, which generally align with General Plan 2035 designated Growth Areas: the Greater Airpark, Old Town and McDowell Road/Scottsdale Road. In fact, the average in McDowell Road/Scottsdale Road was almost 10 degrees higher (131.4°F) than the rest of the city.

Figure 2.



Source: [Cooler Scottsdale Study]

Exposure to extreme heat can impact the body's ability to cool itself, harming vital organs or aggravating existing conditions like heart disease. When night-time temperatures are also higher than normal, these health impacts are amplified. Those experiencing homelessness can be the most vulnerable, but heat-related deaths can also occur indoors if the air conditioning is broken or set too high due to inability to pay. Seniors can start feeling the health effects of heat at lower temperatures, so may be more physically vulnerable than others.

In Scottsdale, heat-related mortality and illnesses resulting in hospitalization are lower than in other parts of Maricopa County and have varied over time. Data do not include illnesses that were not treated at a hospital. It is not possible to map whether these deaths and illnesses are in the hottest areas of the city, due to privacy reasons and data limitations.

Table 2. Incidents per 100,000 population and total frequency

	2018	2019	2020	2021	2022
Heat Deaths					
Maricopa County Residents	**3.2 (138)**	**3.8 (165)**	**6.2 (273)**	**6.0 (267)**	**7.4 (328)**
Scottsdale Residents	**3.7 (9)**	**1.6 (**)**	**3.9 (10)**	**3.1 (8)**	**2.8 (7)**
Heat Illnesses					
Maricopa County Residents	**43.8 (1,861)**	**44.2 (1,912)**	**39.6 (1,748)**	**43.7 (1,927)**	**52.5 (2,318)**
Scottsdale Residents	**31.3 (77)**	**33.5 (84)**	**26.7 (68)**	**27.5 (70)**	**36.1 (92)**

*Table 2. Source: Maricopa County Department of Health ** suppressed to protect confidentiality*

INDICATOR

Heat-related morbidity and mortality resulting in hospitalization, per 100,000 population

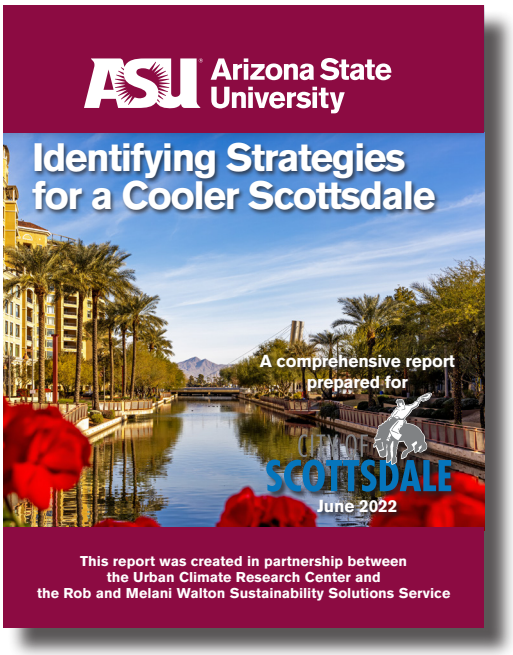
(2022 deaths = 2.8)
(2022 illnesses = 36.1)

TARGET

Reduce hospitalizations for heat-related related health events (per 100,000 population) by 2030

In 2020, the city partnered with Arizona State University to assess patterns of urban heat in Scottsdale. The result was the Identifying Strategies for a Cooler Scottsdale (Cooler Scottsdale) study that analyzed heat mitigation and management efforts including tree planting and structured shade. The report offers goals and specific strategies to reduce temperatures in the City and make it more comfortable for residents and visitors including:

1. Increase tree canopy, particularly along frequently traveled pedestrian walkways and along the south and west facades of buildings.
2. Reduce the land area of exposed dark asphalt, dark roofs and other hot surfaces.
3. Improve and increase pedestrian shade amenities through building-integrated and free-standing shade structures, particularly along frequently traveled walkways and in locations that support public transportation.



The study found that 19 of the city's 20 hottest census block groups are in Southern Scottsdale. In addition, census block groups with higher average incomes had lower land surface temperatures. Land surface temperature decreased by more than 1°F for each $10,000 increase in mean per capita income.

As summers grow hotter due to the urban heat island effect and climate change, more strategies are needed to make Scottsdale cooler and to help people manage with the heat, especially in previously developed areas like Southern Scottsdale. The City's "Beat the Heat" program brings summer relief for homebound seniors. This program serves two equally important functions. First, the city serves homebound seniors with heat relief items to help keep them cool during the summer. Second, staff and volunteers assess the needs of our vulnerable seniors and help connect them to any needed resources.

Grant-funded programs also assist low to moderate income households with home weatherization and repair or replacement of AC units. There are eight citizen assistance centers, senior centers and libraries operating as cooling centers or hydration stations, and the city partners with nonprofits to provide day relief centers that give refuge from the outdoors and navigation for additional services.

Protecting city employees who work outdoors is another important part of the response to extreme heat. Most city departments hold safety meetings and adjust schedules to deal with the summer heat, although there is not a standardized citywide policy. Parks and Recreation Maintenance staff utilize a buddy system during the summer to spot employees suffering from heat-related health problems arising during the working period. The city is monitoring potential new guidance from the state to prevent these types of workplace injuries.

As discussed in the Cooler Scottsdale study, a primary way to reduce heat is through shade and cooler surfaces. Currently, 37% of Scottsdale is open space (public and private including the McDowell Sonoran Preserve). Through land management policy including the Environmentally Sensitive Lands Overlay District (ESL), the city uses zoning and other requirements to guide development in its desert and mountain areas. The ESL ordinance requires that a percentage of each property be permanently preserved as Natural Area Open Space (NAOS). The city also manages developed open spaces, like the Indian Bend Wash Greenbelt and other parks.

A third way to measure heat is mean radiant temperature (MRT). MRT is a measure of the heat load on the human body at a given time and location, based on direct, diffuse and reflected thermal and solar radiation. MRT can be a better indicator than air temperature of heat-related mortality, heat stress and thermal comfort. Compared to full exposure, MRT is:

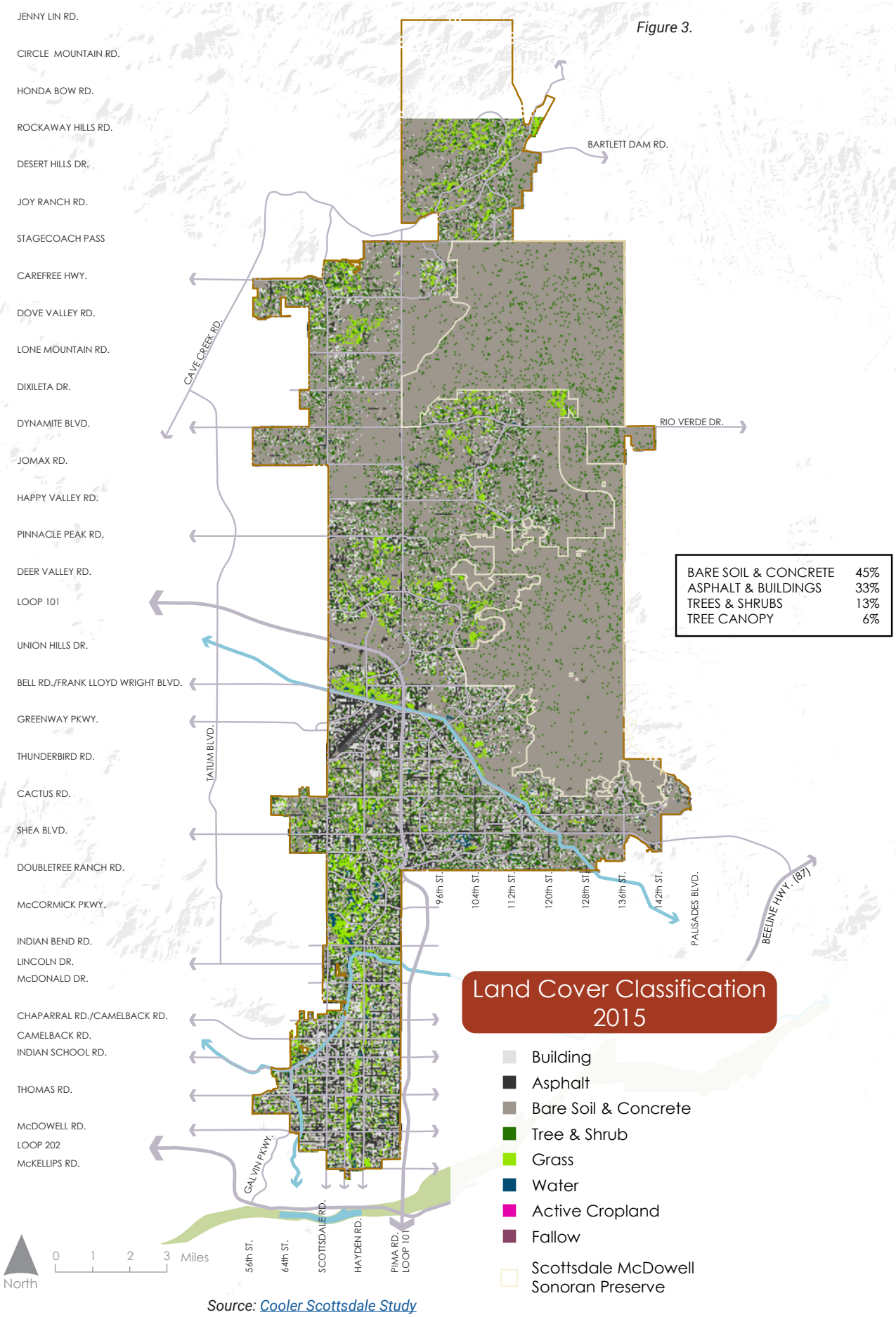
- Approximately 55°F lower under mature, fully leafed trees in Old Town and on Waterfront
- Approximately 30°F lower under mature, desert-adapted trees
- Up to 50°F lower under bus stops with full, wide shade structures

Shaded, light-colored and pervious pavement materials store less heat and have lower surface temperatures compared to conventional hardscape design. Unshaded, dark and impervious pavement materials, such as asphalt, can reach peak summertime surface temperatures of 120–150°F. These surfaces transfer heat downward to be stored in the pavement subsurface, where it is re-released as heat at night. The solar reflectance index (SRI) is a measure of a surface's ability to reflect and emit solar heat. For example, a standard black surface SRI value is 0 and a standard white surface is 100. Surfaces made of materials with a high SRI are often referred to as "cool surfaces." These surfaces can remain approximately 50 to 60°F cooler than traditional materials during peak summer weather. An example is roofing materials. Traditional roofing surfaces can reach summer peak temperatures of 150 to 185°, while a "cool roof" transfers less heat into the building, yielding energy savings and a more comfortable indoor environment.

To capture the potential for shade and cooler surfaces, the Cooler Scottsdale study analyzed land cover in Scottsdale using remote sensing and data from aerial imagery captured in 2015 (*Figure 3*). Six land cover types were examined: building, asphalt, bare soil & concrete, tree & shrub, grass and water. Darker surfaces – like buildings and paved surfaces – will tend to be hotter unless they are partially or fully shaded (including by installing solar panels). Greener areas, whether trees, shrubs or grass, will be cooler and can provide important air quality benefits.

13% of Scottsdale is covered with trees and shrubs, with larger percentages being asphalt and buildings (33%) or bare soil and concrete (45%). The amount of green landscape varies across the city, and tree canopy coverage is as low as 6% in south Scottsdale. These differences in surface type are also visible in the earlier map of average surface temperature.

Figure 3.



Source: Cooler Scottsdale Study

Scottsdale has already begun to increase the number and health of our trees and will continue these efforts through the development of a Shade and Tree Plan. Parks and Recreation maintains an inventory of trees on city property and works to increase tree plantings. The Shade and Tree Plan will also address existing trees, since tree or natural shade needs to be periodically replaced due to storm damage and lack of proper maintenance or watering.

The city has also enacted design guidelines, plans and code related to shade and heat. Design guidelines for Old Town Scottsdale strongly recommend shaded or covered walkways, and guidelines for commercial development set minimum requirements for tree planting including trees for shade in parking lots. Mandatory commercial green building codes adopted in 2022 also require “cool roofs” and not less than 50% of site hardscape (like walkways and parking areas not covered by solar energy systems) be shaded or meet one of the other heat island effect mitigation options.

INDICATOR

Percentage of tree and shrub canopy

(2015 = 13%)

TARGET

Increase tree & shrub canopy to 20% by 2030 and to 25% by 2040

WHILE HEAT MITIGATION MEASURES ARE IMPORTANT, THEY DO NOT ADDRESS THE ROOT CAUSES OF INCREASINGLY HOTTER TEMPERATURES. STRATEGIES, ACTIONS AND TARGETS TO AVOID GETTING HOTTER ARE OUTLINED IN OTHER SECTIONS OF THIS PLAN.

BENEFITS
Environmental: Increased tree canopy cover provides ecosystem services, reduction of stormwater runoff and improved air quality; shading that uses solar panels also decreases emissions
Economic: Reducing the need for air conditioning cuts energy costs; providing shade and addressing worker safety reduces health care costs and encourages economic activity
Social: Reducing daytime and nighttime temperatures improves health and quality of life, especially when actions are focused on those most vulnerable to the heat

WHAT CAN YOU DO?

- Plant a tree or volunteer at a tree-planting event
- Stay hydrated and wear loose, lightweight, light-colored clothing
- Check on a friend or neighbor when the temperature rises
- Lighten the color of your roof and other hardscaped surfaces
- Let the city know if you see any maintenance needs for trees or shade structures in the public right-of-way
- Install solar screens or window coverings to reduce solar gains

More tips are available in the Cooler Scottsdale study

STRATEGIES & ACTIONS

STRATEGY HT 1

Expand heat relief communication and education.

ACTIONS

HT 1.1 Engage employees and residents in creative ways on needed response to heat options, especially in the hottest areas.

HT 1.2 Collaborate with regional, statewide, and national governmental and other entities on best practices on heat mitigation engagement strategies.

HT 1.3 Expand communication on locations of cooling and hydration centers in the city.

HT 1.4 Support and expand existing outreach programs like “Beat the Heat.”

STRATEGY HT 2

Protect people from the health effects of extreme heat.

ACTIONS

HT 2.1 Expand response strategies for extreme heat and increase the number of cooling centers; explore the value of pop-up cooling stations.

HT 2.2 Seek grant or other funding for supplies for cooling centers.

HT 2.3 Seek grant or other funding for weatherization, green rehab and air conditioner repair/replacement programs for low-income households.

HT 2.4 Develop partnerships with local utilities for weatherization and tree planting programs.

HT 2.5 Create Resiliency Hubs for neighborhoods with higher populations of seniors and lower income residents.

HT 2.6 Develop a more robust and detailed plan for large scale heat disaster response including power grid failure.

HT 2.7 Review municipal guidelines for heat protection for employees.

STRATEGY HT 3

Identify urban design improvements including structured shade and built environment.

ACTIONS

HT 3.1 Support private and public strategies to reduce the area of exposed dark asphalt, dark roofs and other hot surfaces.

HT 3.2 Promote cool roofs and sidewalks and other cool infrastructure technologies and options.

HT 3.3 Promote shading for site hardscape on existing commercial and multifamily developments.

HT 3.4 Identify areas most impacted by the heat island effect and prioritize mitigation for these areas to reduce heat impacts.

HT 3.5 Coordinate heat and shade work with other active plans such as the Old Town Character Area Plan.

STRATEGY HT 4

Plant more trees and implement other nature-based solutions.

ACTIONS

HT 4.1 Increase tree canopy and building-integrated or free-standing shade structures through a Shade and Tree Plan; study the value of shade on a return-on-investment basis and balance benefits of natural shade and water usage.

HT 4.2 Encourage use of desert-adapted trees to support heat reduction and water conservation strategies.

HT 4.3 Investigate an urban forestry program to balance shade and water use and to ensure trees are maintained (including in city parks).

HT 4.4 Study options to improve proper tree maintenance and replacement near commercial and multifamily buildings.

HT 4.5 Partner with non-profits, volunteers, and businesses to plant more trees especially in underserved or older neighborhoods and in areas of high pedestrian activity; evaluate a 'matching tree' initiative.

HT 4.6 PLANT TREES IN APPROPRIATE LOCATIONS TO ACCOMMODATE GROWTH.

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY HT 1 **Expand heat relief communication and education.**					
HT 1.1	Engage employees and residents on response options.	Quick win	**Lead**: OEI **Partners**: Employees, residents	$	Health
HT 1.2	Collaborate with other governments and entities on best practices.	Ongoing	**Lead**: OEI **Partners**: Other government agencies	$	Health
HT 1.3	Expand communication on locations of cooling and hydration centers in the city.	Quick win	**Lead**: Human Services **Partners**: OEI, Arizona Department of Health Services	$	Health Equity
HT 1.4	Support and expand existing outreach programs like "Beat the Heat."	1-3 years	**Lead**: Human Services	$-$$$	Health Equity
STRATEGY HT 2 **Protect people from the health effects of extreme heat.**					
HT 2.1	Expand response strategies, increase number of cooling centers, explore pop-up cooling stations.	3-10 years	**Lead**: Human Services **Partners:** OEI	$$-$$$	Health Equity
HT 2.2	Seek grant or other funding for supplies for cooling centers.	1-3 years	**Lead**: Human Services **Partners:** OEI	$-$$$	Health Equity
HT 2.3	Seek grant or other funding for weatherization, green rehab and air conditioner repair/replacement programs for low-income households.	3-10 years	**Lead**: Human Services **Partners:** OEI	$$$	Health Cost savings
HT 2.4	Develop partnerships with local utilities for weatherization and tree planting programs.	1-3 years	**Lead**: OEI **Partners:** Utilities	$	Health Cost savings

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
HT 2.5	Create Resiliency Hubs for neighborhoods with higher populations of seniors and lower income residents.	3-10 years	**Lead**: OEI **Partners:** Human Services	$$$	Health Equity
HT 2.6	Develop a more robust and detailed plan for large scale heat disaster response including power grid failure.	3-10 years	**Lead**: Emergency Management	$	Safety
HT 2.7	Review municipal guidelines for heat protection for employees.	1-3 years	**Lead**: OEI **Partners:** Facilities, Parks & Rec	$	Health
STRATEGY HT 3 Identify urban design improvements including structured shade and built environment.					
HT 3.1	Support private/public strategies to reduce hot surfaces.	1-3 years	**Lead**: OEI **Partners:** Planning & Development, developers, residents	$	Health
HT 3.2	Promote cool infrastructure technologies and options.	Ongoing	**Lead**: Planning & Development/OEI **Partners:** Developers, residents	$	Health Cost savings
HT 3.3	Promote shading for site hardscape on existing commercial and multifamily developments.	1-3 years	**Lead**: Planning & Development **Partners:** Developers, businesses	$-$$$	Health Cost savings
HT 3.4	Identify areas most impacted by the heat island effect and prioritize mitigation for these areas.	Ongoing	**Lead**: OEI	$	Health
HT 3.5	Coordinate heat and shade work with other active plans.	Ongoing	**Lead**: OEI/Planning & Development	$	Health

ACTION		TIME HORIZON	LEAD AGENCY(IES) & PARTNERS	COSTS	BENEFITS
STRATEGY HT 4 Plant more trees and implement other nature-based solutions.					
HT 4.1	Increase tree canopy and shade structures through a Shade and Tree Plan	3-10 years	**Lead**: OEI **Partners:** Multiple city departments	$$$	Health Air quality
HT 4.2	Encourage use of desert-adapted trees to support heat reduction and water conservation strategies.	Ongoing	**Lead**: OEI/Parks & Rec **Partners:** Planning & Development, Scottsdale Water	$$$	Health Air quality
HT 4.3	Investigate an urban forestry program to balance shade and water use and to ensure trees are maintained.	1-3 years	**Lead**: Parks & Rec	$$$	Health Air quality
HT 4.4	Study options to improve proper tree maintenance and replacement near commercial and multifamily buildings.	Ongoing	**Lead**: Parks & Rec **Partners:** OEI, Planning & Development	$-$$$	Health Air quality
HT 4.5	Partner to plant more trees.	Ongoing	**Lead**: Parks & Rec **Partners:** OEI, Planning & Development	$-$$$	Health Air quality
HT 4.6	**PLANT TREES IN LOCATIONS THAT ACCOMMODATE GROWTH.**	**ONGOING**	**LEAD: PARKS & REC PARTNERS: OEI, PLANNING & DEVELOPMENT**	**$**	**HEALTH AIR QUALITY**

ENDNOTES

1 "Arizona Then and Now: Summer heat," *Arizona Republic*, 07/28/2016.

2 "The Effects of Coexposure to Extremes of Heat and Particulate Air Pollution on Mortality in California: Implications for Climate Change," American Journal of Respiratory and Critical Care Medicine, Volume 206, Issue 9.

GLOSSARY

A

Advanced Water Purification (AWP) – The process at the Advanced Water Treatment Facility (AWT) that uses recycled water from the city's conventional water reclamation plant and further treats it through ozonation, membrane ultrafiltration, reverse osmosis and ultraviolet photolysis.

Advanced Water Treatment Facility (AWT) – The Scottsdale Water Campus is home to the Advanced Water Treatment Facility (AWT), the first permanent facility in Arizona permitted as a pilot program for advanced water purification (AWP).

Alternative Energy or Fuel – Energy sources that do not rely on fossil fuels, such as, sunlight and wind.

B

Built Environment – Human-made elements including, buildings, structures, roads, canals, paths, and trails, that together create the physical character of an area or community.

C

Character Area Plan (CAP) – The second level of Scottsdale's three-level General Plan structure that guides more detailed planning, land use, and character for a defined sub-area of the city.

Circular Economy – In the linear economic model, products are made, used, and disposed of in the landfill. The circular economy is an alternative model of production and consumption in which resources are kept in use for as long as possible to extract maximum value, then recovered to regenerate new materials. This is achieved through intentional design of products and systems and by employing reuse, leasing, sharing, repair, refurbishment, remanufacturing, and recycling. The circular economy minimizes waste, pollution and carbon emissions and conserves energy, water, and other resources.

City-wide – Occurring or extending throughout Scottsdale, including everyone who lives here.

Conservation – (1) The controlled use and systematic protection of a resource, including environmental or cultural resources; or (2) To use something sparingly so as not to exhaust supplies.

Cool roof/surface – A roof that is either painted white, shaded or covered in vegetation (green roof), or covered with solar panels.

D

Design Guidelines – Non-mandatory provisions that steer the design of buildings and are used by staff, the city's boards and commissions, and City Council for evaluating projects. Design guidelines are usually applied in a particular area or to a particular use to protect investment or establish a unifying look for an area. Typical guidelines might focus on building orientation, architectural details, and streetscape considerations.

Distributed Solar/Generation – Using small sources of electrical power, such as solar, micro-turbines, fuel cells, or other generating devices, at designated sites to meet individual customer energy load. These sources (i.e., generators) are sized to match a specific load, such as a house, industry, or community.

Diversion rate – A diversion rate is the proportion by weight of all material diverted from the landfill to the total of all waste material generated, expressed as a percentage.

Drought – Three or more consecutive years of less-than-average rainfall.

Drought Management Plan – The City of Scottsdale Water Resources Department management program of responses to drought and/or shortage conditions.

E

Electric Vehicle (EV) – A car or truck that runs solely on an electric motor, with no internal combustion
engine.

Energy Burden – The percentage of gross household income spent on energy costs

Effluent – Wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall.

Environmentally Sensitive Lands (ESL) – Land in Scottsdale with unique and sensitive natural features, including mountains and hills, large rock formations, native landscapes, archeological and historical sites, significant washes, Scenic Corridors, wildlife habitats, and land with special hazards.

Environmentally Sensitive Lands Ordinance (ESLO) – A set of zoning regulations originally adopted by the City of Scottsdale in 1991 (and subsequently revised) to guide future development in the desert and mountain areas of Scottsdale. The Ordinance includes standards to ensure that new construction will be compatible with the natural beauty of the area.

Extreme heat – A period of at least 2-3 days of high heat with temperatures above 90 degrees, according to the Arizona Emergency Information Network.

F

Fossil Fuels – Buried, combustible geologic deposits of organic materials, formed from decayed plants and animals, that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the earth's crust over millions of years. Fossil fuels are generally considered "non-renewable" energy sources.

G

General Plan – The Scottsdale General Plan is a comprehensive, long-range plan consisting of community goals and policies setting forth objectives, principles and standards for the state mandated elements of land use, circulation, open space, growth areas, environmental planning, cost of development, water resources, conservation (natural resources), recreation, public services and facilities, public buildings, housing, conservation, rehabilitation and redevelopment, safety, bicycling, energy, and neighborhood preservation and revitalization. In addition, the Scottsdale General Plan includes community-created elements for economic vitality, character and design, community involvement, arts and culture, tourism, and a healthy community.

Green Building – The practice of increasing the efficiency of building resource use, including energy, water, and materials, while also reducing negative effects on human health and the environment during the building's lifecycle through site layout, building design, construction, operation, maintenance, and removal. In this plan, green buildings are defined as those that comply with IgCC, LEED, Scottsdale Green Building Program or Green Rehab guidelines.

Greenhouse gas (GHG) – A gas that contributes to the greenhouse effect by absorbing infrared radiation (like carbon dioxide and methane), usually emitted upon combustion of fossil fuels for energy.

Greenhouse effect – According to NASA, the greenhouse effect is when heat is trapped near Earth's surface by greenhouse gases.

Growth Areas – Areas of the community that best accommodate future growth allowing increased focus on creating or enhancing transportation systems and infrastructure coordinated with development activity.

H

Heat Island – The phenomenon involving elevated temperatures in urban/suburban areas as compared with outlying rural/undeveloped surroundings. Heat islands are generally caused by reduced vegetation, solar heat absorption, material heat capacity, use of energy, and building spacing.

High Pollution Advisory – The Arizona Department of Environmental Quality issues high pollution advisories (HPA) on days when air pollution levels are expected to exceed federal health standards.

Homeowners' Association (HOA) – An organization initially established by developers of residential subdivisions. Control of the entity is transitioned to a board of home owners. An HOA is typically responsible for administration of the subdivision's codes, covenants and restrictions (CC&Rs), and other property controls for maintaining a safe and quality environment and design uniformity. Most neighborhoods built in Scottsdale after 1980 have HOAs.

I

International Green Construction Code (IgCC) – The International Green Construction Code establishes minimum regulations for building systems and site considerations using prescriptive and performance-related provisions and is developed collaboratively by the International Code Council, the American Institute of Architects (AIA), ASHRAE, the US Green Building Council (USGBC) and the Illuminating Engineering Society (IES).

J

K

Kilowatt (kW) – A unit of measure of electrical power equal to 1,000 watts (capacity).

Kilowatt hour (kWh) – A measure of energy consumption equal using 1,000 watts for one hour (use).

L

Landfill waste – The amount of total waste generated that is sent to the landfill.

LED – Light-emitting diode, an energy-efficient lighting source.

LEED – Leadership in Energy and Environmental Design, a green building certification program.

Low-Impact Infrastructure, Green Infrastructure – An approach to stormwater management that mimics the natural hydrology of a site and uses captured stormwater run-off. This contrasts with conventional methods that convey stormwater offsite as quickly as possible to regional drainage facilities. The low-impact model views stormwater as a resource, reduces stormwater runoff, uses natural systems for filtration, and helps protect ecologically sensitive areas within a development.

M

Maricopa Association of Governments (MAG) – The Maricopa Association of Governments provides a forum for local governments working together on issues that affect the lives of everyone in the greater Phoenix region.

Maricopa County Air Quality Department (MCAQD) – The Maricopa County Air Quality Department works to improve air quality throughout the county.

(Scottsdale) McDowell Sonoran Preserve – A permanently protected preserve of Sonoran Desert and mountains with the purpose of maintaining scenic views, protecting wildlife and desert plant habitat, and preserving archaeological and historical resources and sites, while providing public access for educational and passive outdoor recreational opportunities. Upon completion, Scottsdale's Preserve will consist of about one-third of the city's land mass.

Mean radiant temperature (MRT) – MRT is a measure of the heat load on the human body at a given time and location, based on direct, diffuse and reflected thermal and solar radiation.

Megawatt (kW) – A unit of measure of electrical power equal to 1,000,000 watts (capacity).

Megawatt hour (kWh) – A measure of energy consumption equal using 1,000,000 watts for one hour (use).

Municipal – Associated with or owned by Scottsdale.

Multi-Family Housing – 1) A building, or part of a building, designed for occupancy by three (3) or more families; or 2) A housing variety associated with high- and moderate-density development within Suburban, Urban, and Mixed-Use Neighborhood land uses. Multi-family housing may be owner or renter occupied.

N

Native Plants – Plants indigenous to an area or from a similar climate and requiring little or no supplemental irrigation once established.

NASA – The National Aeronautics and Space Administration, a U.S. government agency.

NOAA – The National Oceanic and Atmospheric Administration, a U.S. government agency.

Natural Area Open Space (NAOS) – Areas of undisturbed natural desert, but may include revegetated areas.

Natural Resource – A feature or phenomenon in nature that enhances the quality of human life, including land, water, air, vegetation, geology, animal habitat, and topography.

O

Open Space – Any parcel or area of water or land that is essentially unimproved and devoted to an open space use for the purpose of (1) the preservation of natural resources; (2) the managed production of resources; (3) outdoor recreation; or (4) public health and safety.

Organic Waste – Any waste material that is biodegradable.

P

Particulate Air Pollution – A mixture of large and fine solid particles and liquid droplets found in the air.

Porous pavement – Paving surfaces that allow stormwater to percolate and infiltrate into the soil or layers below.

Q

R

Recharge, Groundwater – The natural or human-induced process of infiltration and percolation of rainwater, surface water, or treated wastewater, from land areas, streams, or engineered methods through permeable soils into aquifers that provide underground storage.

Reclaimed Water – Wastewater that is treated to remove solids and certain impurities to a level that is suitable for such uses as turf irrigation, landscape application, water features, and aquifer recharge.

Recycling – The recovery of materials such as paper, glass, plastic, metals, construction and demolition material and organics from the waste stream, along with the transformation of those materials to make new products, thereby reducing the use of virgin raw materials. Recycling includes three steps which create a continuous loop: 1) collection and processing of recyclable materials, 2) manufacturing new products from recycled materials, and 3) purchasing products with recycled content.

Renewable Energy Source – Energy sources that do not rely on fossil fuels, including, sunlight and wind.

Resiliency Hubs – Community-serving facilities augmented to support residents and coordinate resource distribution and services before, during, or after a natural hazard event (Urban Sustainability Directors'
Network)

S

Scottsdale Environmental Advisory Commission – A City Council appointed citizen commission to advise the Council on issues related to preservation and enhancement of the environment.

Scottsdale Sustainability Steering Team – A group of city staff advising the City Manager and making
recommendations on issues related to sustainability and the environment, as defined in the General Plan 2035. Operationally, the team provides a forum to elevate to leadership important or citywide issues that impact the achievement of sustainability goals.

Safe Yield – A groundwater management goal to achieve and maintain a long-term balance between the annual amounts of groundwater extracted and recharged in the aquifer.

Sensitive Design Principles – Program and documents aimed at strengthening the focus on design in the community, promoting coordination of the city's design-related efforts and resources, and guiding discussion of design-related issues.

Solid Waste – Unwanted or discarded solid, liquid, semisolid or contained gaseous material. Commonly referred to as "trash" or "garbage." As a general category, however, solid waste includes many items that are not "trash," such as metal, paper products, glass, and other recoverable resources.

Stormwater, Stormwater Runoff – Water generated from rain, snowmelt, or drainage. Runoff is generated when precipitation flows over land or impenetrable surfaces (e.g., asphalt) and does not absorb into the ground. As runoff flows over the land, it accumulates debris, chemicals, sediment, and other pollutants that may adversely affect water quality, if untreated.

Sustainability – For the purposes of the General Plan, sustainability is a condition of living that enables the present generation to enjoy social well-being, a vibrant economy, and a healthy environment, without compromising the ability of future generations to enjoy the same.

T

U

Unhealthy air day – A day when the air quality index (AQI), an indicator of overall air quality, is above 100.

V

Volatile organic compound (VOC) – VOCs are gases that are emitted from certain solids or liquids, some of which may have short- and long-term adverse health effects.

W

Wastewater – The used or effluent water from homes, communities, and businesses. It includes both domestic and commercial sewage and contains multiple types of pollutants.

Water Conservation – Any beneficial reduction in water loss, use, or waste. This includes water management practices and programs that improve the use and/or efficiency of water, functional process, and behavior.

Watershed – The area of land where all of the water underneath it, or draining off it, goes to the same place. All areas of Scottsdale drain into the larger Salt River and Gila River watersheds. Some areas of the community drain to smaller tributaries, including the Verde River, the Indian Bend Wash, and other minor watersheds.

X

Xeriscape – Landscaping or gardening that reduces or eliminates the need to irrigate.

Y

Z

Zero Waste – The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health.

NEW SECTION

DRAFT

APPENDICES

Appendix A: Related Scottsdale General Plan 2035 Goals

Energy	Energy Element Goal E 1 - Become a net-zero community Goal E 2 - Reduce energy consumption Goal E 3 - Promote energy efficiency Goal E 4 - Increase energy efficiency of city facilities Goal E 5 - Develop renewable energy sources Environmental Planning Element Goal EP 2 - Demonstrate environmental stewardship Goal EP 5 - Encourage environmentally sound design Goal EP 8 - Plan, prepare, adapt for climate impacts Conservation Element Goal CONSV 1 - Achieve a sustainable balance Public Buildings Element Goal PB 1 - Provide safe, accessible, and adaptable public buildings Goal PB 2 - Design, construct, & renovate public buildings
Water	Environmental Planning Element Goal EP 6 - Surpass water quality standard Water Resources Element Goal WR 1 - Ensure long-term water supplies Goal WR 2 - Prepare for climatic impacts Conservation Element Goal CONSV 3 - Protect watersheds Goal CONSV 4 - Conserve water
Waste	Environmental Planning Element Goal EP 4 - Expand recovery, reuse, and recycling Public Services & Facilities Element Goal PSF 1 - Maintain an innovative solid waste system
Air Quality	Environmental Planning Element Goal EP 3 - Improve air quality Goal EP 8 - Plan, prepare, adapt for climate impacts
Extreme Heat	Environmental Planning Element Goal EP 7 - Reduce heat islands Safety Element Goal S 1 - Prevent hazards Goal S 2 - Prepare for emergencies Goal S 3 - Deliver emergency response

NEW SECTION

APPENDICES

Appendix B: Existing Plans and Programs

Energy & Air Quality

- Commercial Solar Guidelines (2019)
- Design Standards and Policy Manual (2018)
- Sensitive Design Principles (2001)
- Energy & Green Building Programs
- Environmental Compliance

Water

- Sustainable Water Management Principles (2022)
- Integrated Water Resources Master Plan (2022)
- Drought Management Plan (2021)
- Scottsdale Water Strategic Plan (2019-2024)
- Water Conservation and Other Programs

Heat

- Strategies for a Cooler Scottsdale (2022)
- Emergency Preparedness Jurisdictional Project Summary (2018; 2021)
- Extreme Heat Resources

Waste

- Community Solid Waste and Recycling Strategic Plan (2018)
- Solid Waste Programs

NEW SECTION

SUSTAINABILITY TIMELINE

2024: Scottsdale Community Sustainability Plan
2023: Solar infrastructure is added to the North Corporation Yard
2023: Natural grass in front yards of new single-family homes prohibited
2022: Adopted mandatory Green Construction Code for commercial and multifamily buildings
2021: 2035 General Plan approved by voters
2020: Began installing LED streetlights
2019: Water Campus is first in Arizona to be permitted for direct potable reuse
2019: Scottsdale received ASU inaugural Resilience Prize
2019: Preserve reaches current size of 30,500 acres
2017: Traffic signal coordination began
2016: First class of the Scottsdale Water Citizen Academy
2012: Adoption of voluntary incentivized green construction code
2011: Named a Gold Level Bicycle Friendly Community
2010: Began installing LED traffic signals
2009: Fire Station 602 – city's first LEED Platinum certified building
2008: Xeriscape Garden, a 5.5-acre demonstration garden, opens
2008: Compressed natural gas fueling infrastructure is added to public works facilities
2007: Granite Reef Senior Center – city's first LEED certified building (Gold)
2005: First city in the country to require new municipal buildings to be LEED Gold certified
2003: City's first energy code adoption for residential and commercial construction
2002: 2001 General Plan adopted by voters
2000: Transportation Management Center became operational
2000: Establishment of Sensitive Design Principles for new development
1999: First Sustainability Indicators Report produced ("Scottsdale Seeks Sustainability")
1998: Water Campus (the largest public works project in city history to date) started operations
1998: Green Building Program established as first in Arizona and fifth in the country
1996: Solid Waste Transfer Station is constructed
1996: Scottsdale begins curbside recycling collection program
1996: CityShape 2020 included guiding principle to "Seek Sustainability"
1995: Voters approved tax to fund expansion of Preserve
1994: Scottsdale McDowell Sonoran Preserve created
1993: First component of the city's Intelligent Transportation System installed to reduce congestion
1993: Sustainability resident board created (now Scottsdale Environmental Advisory Commission)
1991: Environmentally Sensitive Lands Overlay District ordinance adopted
1982: Water Conservation Office is formed
1982: Scottsdale named a Tree City USA
1981: Native Plant Ordinance passes
1980: Scottsdale Trolley makes first run
1970s: Indian Bend Wash Greenbelt constructed
1969: First mechanical garbage truck constructed by city staff (Godzilla)
1967: Eldorado Park, Scottsdale's first major park, is built.

NEW SECTION

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Environmental Initiatives
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Economic Development
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Police
Fire Department and Emergency Management
Public Works
Transportation and Streets
Solid Waste
Facilities Parks & Recreation
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Community Services
Water
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CITY OF
SCOTTSDALE

COMMUNITY SUSTAINABILITY PLAN