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Introduction

The Board of Supervisors’ commitment to sustainability reached new heights in June and July of 2017 when it passed two landmark climate resolutions (2017-39 and 2017-51). These policies directed the County to uphold the United States’ greenhouse gas emissions pledge to the Paris Agreement and authorized staff to align its Sustainable Action Plan for County Operations (SAPCO) with the Agreement’s objectives. The resulting updated plan, adopted in 2018, provides a simplified yet comprehensive framework of new sustainability goals to meet the Paris Agreement while strengthening the County’s ability to address regional current and future climate risks.

Pima County’s baseline performance towards its new SAPCO targets is organized by the following focus areas:

**USING THIS REPORT**

Throughout this report, you will see various icons attached to each SAPCO target. These icons represent the types of targets in SAPCO and how we will achieve each one.

- **Hard target.** These targets have specific, quantifiable goals.
- **Monitoring target.** Fulfillment of these targets require year-to-year monitoring and reporting.
- **Maintain or expand target.** These targets are achieved when we maintain or improve our baseline-year performance.

**Who is the Green Geek?**

The Green Geek is Pima County’s sustainability expert, here to answer your questions. Look for her throughout this report for clarifying or background information. She even has her own monthly Q&A column, published in the Pima County FYI public newsletter!
## AVERAGE TEMPERATURE¹ (°F)

![Temperature Graph]

**Source:** https://www.ncdc.noaa.gov/cag/county/mapping/2/tmin/202009/4/value

## DAYS OVER 100°F²

![Days Graph]

**Source:** https://www.wrh.noaa.gov/twc/climate/Tucson100s/Tucson100s_yearly.php

## SUMMERTIME NIGHT (MINIMUM) TEMPERATURE¹ (°F)

![Night Temperature Graph]

*Minimum temperatures are used as proxies for summertime night temperatures.

¹ Source: https://www.ncdc.noaa.gov/cag/county/mapping/2/tmin/202009/4/value

² Source: https://www.wrh.noaa.gov/twc/climate/Tucson100s/Tucson100s_yearly.php
**RAINFALL¹ (INCHES)**

![Rainfall Graph]

**DROUGHT STATUS** *(FROM LOCAL DROUGHT IMPACT GROUP 2021 ANNUAL REPORT)²*

**Short-Term Drought Status:** Short-Term Drought Status: The 2021 Water Year (Oct. 2020 – Sept. 2021) started with *Extreme drought*, *Severe drought*, and *Moderate drought* radiating from east to west Pima County in that order. By mid-October 2020, however, *Exceptional drought* (17 percent) was introduced into eastern Pima County and 61 percent of the county was categorized as being in *Extreme drought*. By mid-November *Exceptional drought* had spread farther west to cover 60 percent of eastern Pima County. From mid-November until mid-July, 61 percent of Pima County remained in *Exceptional drought*, 18 percent in *Extreme drought*, and 21 percent in either *Severe* or *Moderate drought*.

In July 2021, conditions in Pima County significantly improved, however. *Exceptional drought* dropped to 0 percent with *Extreme drought* covering 78 percent of the County. Improvements continued throughout the July and into August with *Extreme drought* declining to 19 percent and *Severe drought* to 67 percent. By August 2021, *Severe drought* was downgraded to *Moderate drought* conditions across nearly all the County. By mid-September, 40 percent of Pima County had shifted to *Abnormally Dry conditions* on both the eastern and western halves, with the remainder of central Pima County in *Moderate drought*.

**Long-Term Drought Status:** From October 2020 to December 2020, western Pima County was in *Severe drought* worsening to the east with *Extreme drought*. By January, *Extreme drought* had expanded in the western areas with isolated areas of *Severe drought*. Drought conditions continued to expand through the dry months leading into the monsoon season with expansion of *Extreme drought* across Pima County and *Exceptional drought* in eastern Pima County.

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¹ Source: https://www.ncdc.noaa.gov/cag/county/mapping/2/tmin/202009/4/value
Noteworthy Accomplishments

SUCCESSFUL RANCH TRANSITIONS
BRING LIGHT TO DIFFICULT TIME OF DROUGHT

Exceptional drought throughout Pima County and the entire southwest region of the United States paints a challenging scene for ranchers raising livestock on rangelands for ultimate beef production. By the end of 2020, most ranch managers had reduced their cattle herds by 40% to 70%, and some have taken all cattle off their respective ranches until rangeland conditions improve. In the spring of 2021, Range Program Manager, Vanessa Prileson and her team of dedicated staff visited each of the 12 ranches managed by long-standing Pima County ranch stewardship partners to evaluate rangeland conditions, and measure cool season precipitation levels. Working together with ranchers, Prileson and her team are determining whether more reductions are necessary, or if current stocking rates should continue based on a combination of cool season precipitation levels, field and remote sensing data. Pima County’s Range Management Program staff are working with ranch managers to ensure that cattle and wildlife have adequate access to water on all ranches, in some cases installing emergency water improvement projects where necessary.

One bright light amidst this ongoing drought is the successful transition of the Diamond Bell Ranch from Tom Chilton, a legacy rancher with whom Pima County has worked with almost 15 years, to beginning ranchers Jack Urbanek and John Crowder of J & J Livestock. Chilton is a dedicated land steward, rancher and long-standing partner with Pima County dating back to the initial implementation of the Sonoran Desert Conservation Plan (SDCP). Tom has provided a consistent presence and contact on the land that has made the Diamond Bell Ranch an icon for ranch and biological conservation in the Altar Valley. Jack, John and Pima County will benefit from Tom’s deep knowledge of the land, grazing strategies, plant communities and ranch infrastructure during this management transition.
SANTA CRUZ RIVER AT SILVERBELL ACCESS CONTROL PROJECT

Through the years, the west side of the Santa Cruz River between Ina Road and El Camino Del Cerro Road has been frequently and illegally used as an Off Highway Vehicle (OHV) destination and for illegal dumping. In 2018, the Regional Flood Control District (RFCD) began fencing sections of this reach with a new OHV resistant fence design constructed of two 3/8” cables to deter unauthorized access, effectively keeping further damage from occurring to this area. The final phase of the project was completed in September 2021 with the installation of 5,652 feet of fencing and three emergency vehicle gates with pedestrian access. As a result, numerous important cultural and natural resources along the Santa Cruz River are now protected from OHV traffic and dumping, while pedestrians, bicyclists and horseback riders are safe from OHVs accessing the newly constructed Loop path.
Pima County’s Commitment to the Paris Agreement:
Reduce current greenhouse gas emissions from County operations by 26%–28% below 2005 levels (Pima County’s commitment to U.S. 2017 target) and an aspirational goal of reaching 50-52% below 2005 levels, which is now the U.S. new science-based 2030 target.

What does this mean?
By FY 2025-2026, Pima County emissions should not exceed 78,832 MT CO₂e

What is The Paris Agreement?
The Paris Agreement, signed in 2016, is a landmark international accord that addressed climate change by aiming to mitigate climate-altering emissions, adopt climate adaptation strategies and assist vulnerable developing countries.

The United States signed the Agreement in 2015, committing to emission reductions of 26% - 28% below its 2005 levels (106,530 MT CO₂e for Pima County). When the U.S. rescinded this commitment in 2017, Pima County joined hundreds of local municipalities and counties who came out in support of maintaining our nation’s pledge to the Agreement. The United States has since reinstated its commitment in 2021 with a new science-based carbon reduction target of 50% - 52% below 2005.

PIMA COUNTY EMISSIONS PROJECTIONS¹

¹ This graph illustrates total emissions from carbon sources (see page 9). Projections are based on 2% annual emissions increase, in accordance with historical trends. Estimated emissions are based on ‘business as usual’ conditions (i.e. does not account for electrifying fleet, waste reduction, idle reduction). Estimated emissions do account for the use of prospective renewable energy from the utility, based on projected emissions factors provided in SAPCO’s Baseline reporting year (i.e. FY18/19).

² The spike seen in the projected emissions for FY2021 is attributed to the estimated 2% increase of emissions from the previous year with no change to the utility’s emissions factors (i.e. no change to the number of renewable projects online) from the previous year. The utility forecasted an increase of renewable energy projects starting FY 2023, as seen by the decrease of emissions following the spike.
WHERE DO OUR EMISSIONS COME FROM?

There are four main sources of carbon emissions for Pima County operations:

- Wastewater operations and treatment emissions
- Buildings & Facilities operations emissions
- Solid Waste Generation emissions
- Fleet Services emissions

Emissions Breakout FY20/21

BUILDINGS & FACILITIES VS. WASTEWATER TREATMENT & OPERATIONS EMMISIONS

- Total square footage: 6,174,923 ft²
- Total Emissions (MT CO₂e): 44,763 MT CO₂e
- FY2021 Current Year: 43,218 MT CO₂e
SUCCESS STORY

Pima County has several initiatives in place with the goal of reducing carbon emissions. For example, County departments were tasked with the goal of reducing vehicle idle hours by 15% over a two-year period; 26 out of 32 departments met the goal in fiscal year 2021! The success of the idle reduction program can be attributed to several factors including: Easy access to idling data; simplifying tracking and reporting; continuous education regarding the importance of idle reduction; and most importantly, County drivers supporting the clean environment initiative. Progress continues to be made with the replacement of internal combustion engine vehicles with electric or hybrid models. At the close of fiscal year 2021, the County fleet composition included 101 electric sedans, 66 hybrid sedans, 6 light duty hybrid trucks and 44 Ford Explorer Police Interceptor Hybrid vehicles.
BUILDINGS, FACILITIES AND WASTEWATER TREATMENT

**Target 1**
Reduce carbon emissions from County facilities and wastewater treatment by 50%

**FY20/21 (Metric Tons CO₂e):** 87,981.03

Solar offset¹ (MT CO₂e): 10,438.81

COUNTY VEHICLE FLEET

**Target 2**
Reduce carbon emissions from County fleet by 10% in non-electric vehicles

**FY20/21 (Metric Tons CO₂e):** 5,608.13

**Target 3**
Replace up to 120 gas sedan vehicles with fully electric vehicles (EVs)

**FY20/21 (cumulative # EVs):** 97

SOLID WASTE²

**Target 4**
Reduce carbon emissions from solid waste generation by 10%

**FY20/21 (Metric Tons CO₂e):** 2,682.52

¹ The total amount of County-generated solar energy consumed by buildings and facilities for FY20/21 was 17,660,485 kWh. The hypothetical emissions associated with this usage were calculated to provide the solar offset value. The total decrease of emissions due to solar generation are already incorporated into the emissions calculations for the fiscal year.

² Solid waste emissions represent landfill emissions directly associated with the decomposition of organic material and NOT emissions associated with the fossil fuel used to transport the waste.
SUCCESS STORY

Pima County continues to increase its use of reclaimed water to support healthy, recreational activities. In 2020, Pima County used 1,338 acre-feet of its reclaimed water entitlement on county parks and sports fields. That’s an increase of 439 acre-feet or 32 percent from 2019. With the addition of 12 new soccer fields at Kino Sports Complex connected to the regional reclaimed water system, reclaimed water use increased twofold. County venues that support turf fields for youth sports irrigated with reclaimed water include Brandi Fenton Memorial Park, Rillito Regional Park, George Mehl Foothills Park, Mike Jacobs Sports Park and Kino Sports Complex.
BUILDINGS, FACILITIES AND WASTEWATER TREATMENT

Target 5
Reduce potable water use across all County facilities by 15%

FY20/21 (gal/ft²): 144

GROUNDWATER REPLENISHMENT

Target 6
Monitor the use of reclaimed water for groundwater recharge

3,077 Acre-feet of the County’s allocation of reclaimed water used for groundwater recharge (based on 2020 calendar year)

FY18/19: 2,563 acre-feet
**CHAPTER 3**

**Landscapes**

**NATURAL AREAS**

**Target 7**
Conserve native wildlife, plants, natural areas, and watershed function

**FY20/21:**
1. **25.33 miles** of perennial and intermittent streamflow on Regional Flood Control District (RFCD) and County fee lands. **Baseline: 34.69**

2. Groundwater Depths
   a. **70.8 ft** – Santa Cruz River (Upstream of Canoa Ranch Headquarters) **Baseline: 66.3**
   b. **23.4 ft** – Cienega Creek (Midpoint of the Cienega Creek Natural Preserve) **Baseline: 19.3**
   c. **84.2 ft** – Canada Del Oro (Near Golder Ranch Drive) **Baseline: 72.7**
   d. **25.8 ft** – Tanque Verde Creek (At Houghton Road) **Baseline: 39.2**
   e. **113.4 ft** – Lower Santa Cruz River (Downstream of Sunset Road bridge) **Baseline: 100.2**
   f. **33.1 ft** – San Pedro River (At Bingham Cienega Natural Preserve) **Baseline: 25.6**

3. **462 acres (SAPCO total: 6,072 acres)** of additional natural habitat conserved. **Baseline: 4,758**

4. **153 additional County acres** protected within AGFD linkages (annual, change driven by acquisitions). **Baseline: 461**

5. **83.91 additional acres** of Important Riparian Areas (IRA) on Regional Flood Control District (RFCD) and County fee lands. **Baseline: 16,011.89 acres**

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1. Data below provides values for FY19/20 followed by the cumulative totals in parenthesis (as calculated from FY18/19), where applicable.
2. Monitoring changes in groundwater depths can help managers identify climate change driven impacts on our local watershed. If the depth to ground water is a higher number than the baseline, it means ground water depths are lower, indicating drought and dropping water levels. Lower numbers mean the water table is improving becoming higher indicating water replenishment.
Target 8
Manage natural areas for resilient ecosystems

FY20/21:
1. 4,847.44 acres (SAPCO total: 12,631 acres) treated for invasive/exotic plants. 
   Baseline: 5,051.49
2. 75 restoration projects (SAPCO total: 134 projects). This includes: restoration of erosion, fencing, supplemental water for wildlife, treatment and prevention. Baseline: 0

CULTURAL RESOURCES

Target 9
Protect and conserve historical sites, historic buildings, archaeological sites, traditional cultural places, and cultural landscapes

FY20/21:
1. 1,748 additional acres (SAPCO total: 3,689 acres) surveyed on County conservation fee lands. Baseline: 1,910
2. 62 additional (SAPCO total: 139) Cultural resources identified on County conservation fee lands. Baseline: 19
3. 96 additional (SAPCO total: 316) AZ State Parks Site Steward monitoring days. Baseline: 200
4. 9 additional (SAPCO total: 89) Cultural resources monitored. Baseline: 80
5. 6 additional (SAPCO total: 17) Cultural resources protected by active management plans. Baseline: 11

Target 10
Promote public outreach and education

FY20/21: 7 additional (SAPCO total: 25) tours and presentations on County conservation lands. Baseline: 12

1 Data below provides values for FY19/20 followed by the cumulative totals in parenthesis (as calculated from FY18/19), where applicable.
CHAPTER 3: LANDSCAPES

URBAN AREAS

Target 11
Plant at least 10,000 more trees

FY20/21: 1,668 (SAPCO total: 4,409)

Target 12
Install at least 40 more acres of green infrastructure

FY20/21 (acres): 10.7 (SAPCO total: 27.4)

Target 13
Maintain or increase acreage of restored habitat, vegetation and turf supported by renewable water

FY20/21: 17.4 (SAPCO total: 34.1) acres served by non-potable water. Baseline: 0

FOOD SYSTEMS

Target 14
Maintain or expand number of County properties with Farmer’s Markets

FY20/21: 1 sites. Baseline: 1

Target 15
Maintain or expand number of County sites with community or heritage gardens

FY20/21: 3 sites. Baseline: 3

1 Data below provides values for FY20/21 followed by the cumulative totals in parenthesis (as calculated from the baseline year FY 18/19), where applicable.
Target 16
Maintain or expand number of acres under grazing management on County managed ranches

FY20/21: 88 (SAPCO total: 189,185) acres. Baseline: 156,259

Target 17
Maintain or expand number of County acres under food crop production on County and Flood Control District lands

FY20/21: 7 acres. Baseline: 409

Target 18
Maintain or expand County-managed food and nutrition programs and associated technical training

FY20/21: Data not available. Baseline: 8 programs

Target 19
Maintain or expand number of County acres with natural open space areas that produce edible native plant foods

FY20/21: Data not available. Baseline: Data not available

Target 20
Maintain or expand food heritage sites or activities

FY20/21: 7 activities. Baseline: 7

Target 21
Maintain or expand number of County sites with composting and soil carbon amendment practices

FY20/21: 3 sites. Baseline: 3

1 Due to COVID-19, there were restrictions in measuring and/or obtaining this data.
SUCCESS STORY

With the onset of the COVID-19 pandemic, stay-at-home plans and social distancing, the Procurement Department recognized that its physical contract document process must be updated. Internal Procedure PO-DPT-54 and Countywide Procedure PO-52 were implemented, and the former manual signature process became nearly entirely digital for electronic approval / signature when awarding and amending contractual agreements approved by the Procurement Director.

In addition to promoting the safety of Procurement and County staff during the pandemic, the additional benefit of drastically reducing staff time and paper waste was realized.
SOLID WASTE

**Target 22**
Reduce volume/weight of landfill waste by 20%

**FY20/21 (US tons):** 7,948

**Target 23**
Recycle industrial waste by 100%

**FY19/20**
- **2,234** Tires.  
  **FY18/19:** 2,563
- **2,066** Car Batteries.  
  **FY18/19:** 701
- **5,100** Gallons of Waste Oil.  
  **FY18/19:** 5,400
- **70,565** Pounds of Waste Metal.  
  **FY18/19:** 67,001
- **600** Gallons of Coolant.  
  **FY18/19:** 0

GREEN PURCHASING

**Target 24**
Increase percentage of Preferred Products purchased by the County by 20%

**FY20/21 (products):** 20,640
SUCCESS STORY

In 2020, the Office of Sustainability and Conservation (OSC) working in partnership with Gina Murphy-Darling aka Mrs. Green and Dr. Sandra Bernal of the University of Arizona’s College of Architecture, Planning & Landscape Architecture, launched a new online sustainability training and engagement series for employees, called THRIVE.

This program emphasizes the role of collaboration as well as individual action in live-learning workshops to teach employees about everything from carbon footprints to waste reduction.

By arming the 25 participants with the knowledge they need in order to help the county become more sustainable, the program helps them feel like part of a solution to the world’s most urgent problem.

“We wanted to ignite people’s passions and get them engaged,” said Gina Murphy-Darling, the founder and CEO of Mrs. Green’s World, a locally based organization dedicated to educating the public about sustainability.

Participants who completed the training are invited to join the Green Stewards Program, where they can help build a thriving “culture of sustainability” at Pima County. THRIVE will be offered again in early 2022, contact SustainabilityPrograms@pima.gov to learn more!
WORKPLACE PREPAREDNESS

Target 25
100% of employees complete emergency trainings (annual)

FY20/21: Program is currently in development

PERSONAL PREPAREDNESS

Target 26
100% of employees download emergency checklist and information handouts (annual)

FY20/21: Program is currently in development