Pima CAN!

Climate Action Now! for Pima County, AZ

PIMA COUNTY

Priority Climate Action Plan

February 2024

CITY OF TUCSON

ORO VALLEY
ARIZONA

SOUTH TUCSON
THE PUEBLO WITHIN A CITY

GREAT SEAL OF THE TOHONO O'ODHAM NATION
1937-1986

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Definitions and Acronyms

American Federation of State, County, and Municipal Employees (AFSCME) Union

American Lung Association (Arizona)

Arizona Department of Environmental Quality (ADEQ)

Arizona Department of Fire and Forestry (AZDFF)

Arizona Department of Transportation (ADOT)

Arizona Public Interest Research Group (AZ PIRG)

Aviation gasoline (Avgas)

Battery energy storage systems (BESS)

Black, Indigenous, and People of Color (BIPOC)

Bureau of Reclamation (BOR)

Business as Usual (BAU)

Central Arizona Project (CAP)

City of Tucson Environmental Services Department (COTES)

City of Tucson Environmental & General Services Department (EGSD)

Climate Action and Adaption Plan (CAAP)

Climate Action Advisory Committee (CAAC)

Climate Action Executive Team (CAET)

Climate Action Plan for County Operations (CAPCO)

Climate Change Coalition (UC3)

Climate and Economic Justice Screening Tool (CEJST)

Climate Pollution Reduction Planning Grant (CPRG)

Code of Federal Regulations (CFR)

Community-based organizations (CBOs)

Comprehensive Climate Action Plan (CCAP)

Compressed Natural Gas (CNG)

Department of Energy (DOE)

Departments of Transportation (DOTs)

Dorothy “Dot” Kret Advocate (DKA) Jobs

Electric vehicles (EV)

Energy Efficiency and Renewable Energy (EERE)

Environmental Justice (EJ)

Environmental Protection Agency (EPA)

Facilities Management (FM)

Fiscal Year (FY)

Fuels and Financial Analysis System – Highways (FUELS/FASH)

Gas Collection and Control System (GCCS)

Global Warming Potential (GWP)

Global Warming Potential (GWP)

Greenhouse Gas (GHG)

Greenhouse Gas Emissions Inventory (GHG EI)

Heating, Ventilation, and Air Conditioning (HVAC)

Highway User Revenue Fund (HURF)

House of Neighborly Service (HNS)

Housing and Urban Development (HUD)

Inflation Reduction Act (IRA)

Inter-Governmental Agreement (IGA)

International Brotherhood of Electrical Workers (IBEW)

IPCC 5th Assessment Report (AR5)

Ironwood Tree Experience (ITE)

Iskashitaa Refugee Network (IRN)

Joint Apprenticeship and Training Committees (JATC)

Landfill Gas (LFG)

Leadership in Energy and Environmental Design (LEED)

Lesbian, gay, bisexual, transgender, and queer (LGBTQ)

Light-emitting diodes (LED)

Low-income and disadvantaged communities (LIDAC)

Maricopa Association of Governments (MAG)

Metropolitan Planning Organizations (MPOs)

Metropolitan Statistical Area (MSA)

Motor Vehicle Emissions Simulator (MOVES)

Multi-Craft Core Curriculum (MC3)

Municipal Solid Waste (MSW)

National Electric Vehicle Infrastructure (NEVI)

Non-governmental Organization (NGO)

Non-methane organic compounds (NMOC)

Operations and Maintenance (O&M)

Pascua Yaqui Tribe (PYT)

Photovoltaic solar (PV)

Physicians for Social Responsibility (PSR)

Pima Association of Governments (PAG)

Pima County Code (PCC)

Pima County Community and Workforce Development (CWD)

Pima County Department of Environmental Quality (PDEQ)

Pima County Natural Resources, Parks, & Recreation (NRPR)

Pima County Regional Flood Control District (RFCD)

Pima County Regional Wastewater Reclamation Department (RWRD)

Pima County Sustainable Action Plan for County Operations (SAPCO)

Pima Regional Electric Vehicle Charging Access Partnership (REVCAP)

Priority Climate Action Plan (PCAP)

Quality Assurance Project Plan (QAPP)

Renewable Natural Gas (RNG)

Request for proposal (RFP)

Residential, Commercial, and Industrial (RCI)

Resilient and Efficient Code Implementation (RECI)

Solar Energy System (SES)

Southwest Gas Corporation (SWG)

Sustainable Tucson, Southwest Energy Efficiency Project (SWEEP)

The Intergovernmental Panel on Climate Change (IPCC)

The Los Reales Sustainability Campus (LRSC)

Tohono O'odham Nation (TON)

Tohono O'odham Utility Authority (TOUA)

Tucson Electric Power (TEP)

Tucson International Airport (TIA)

Tucson Resilient Together (TRT)

Undocumented migrant border crosser (UBC)

Union Pacific Railroad (UPRR)

United Cerebral Palsy of Southern Arizona (UCP)

United States Department of Agriculture (USDA)

University of Arizona's Water & Energy Sustainable Technology (WEST) Center

Waste heat recovery (WHR)

Wastewater Reclamation Facility (WRF)

Water resource recovery facilities (WRRF)

Workforce Innovation and Opportunities Act (WIOA)

Technical Nomenclature and Metrics

Acre-foot (AF)

Annual Electricity Generation Emission Factor = sum (Fractions x Unique Generation Factor)

Biological nutrient removal (BNR)

Carbon Dioxide (CO2)

Carbon Dioxide Equivalents (CO2e)

Carbon Monoxide (CO)

Centrum cubic feet (CCF)

Dissolved oxygen (DO)

Fraction = Annual MWh (by Plant/Fuel type)/Total Annual Electricity Generation (MWh)

Hazardous air pollutants (HAP)

Heat equivalent to 100,000 British Thermal Units (therms)

Hydrofluorocarbons (HFCs)

Kilowatt (kW)

Kilowatt-hour (kWh)

Kilowatt-hour per acre-foot (KWh/AF)

Methane (CH4)

Metric tons of carbon dioxide equivalents (MTCO2e) emission reductions

Nitrous Oxide (N2O)

Nitrogen Oxides (NOX)

Particulate matter (PM)

Perfluorocarbon (PFC)

Square Feet (sq ft)

Standard cubic feet per minute (scfm)

Sulfur dioxide (SO2)

Sulfur Hexafluoride (SF6)

Total Area in Acres (A)

Total Area in kilometers squared (km2)

Trichloroethylene (TCE)

Unit of weight measurement equal to 2000 pounds (tons)

Vehicle Miles Traveled (VMT)

Volatile organic compounds (VOC)

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1. Introduction

1.1 CPRG overview

The Pima County Department of Environmental Quality (PDEQ) was awarded a $1 million four-year Climate Pollution Reduction Planning Grant (CPRG) from the Environmental Protection Agency (EPA) to develop plans to reduce greenhouse gas (GHG) emissions and other harmful air pollution within the Tucson Metropolitan Statistical Area (MSA), located in Pima County, Arizona. Pima County chose to participate in the CPRG program because it will allow the region to work with community partners to reduce GHG emissions, ultimately improving air quality to protect public health, while addressing long-standing environmental injustices and providing opportunity through building a clean energy economy.

PDEQ established a coalition of local jurisdictional partners including the City of Tucson, City of South Tucson, Town of Oro Valley, and the Tohono O'odham Nation to develop this Priority Climate Action Plan (PCAP). The purpose of this PCAP is to identify the sources and sectors of GHG emissions within the Tucson MSA, determine the priority measures that can be implemented in the near term to reduce GHG emissions, while simultaneously addressing environmental injustices, empowering community-driven solutions in overburdened communities, and delivering cleaner air for the residents of Pima County. PDEQ conducted a broad stakeholder engagement process, including the development and implementation of a public survey for Pima County residents, a business survey for business owners and leaders, and worked with local community-based organizations (CBOs), as planning grant subrecipients, to collect input from residents who live in low-income and disadvantaged communities (LIDAC). PDEQ also worked with the Pima Association of Governments (PAG) to utilize their 2021 Greenhouse Gas Emissions Inventory (GHG EI) as the base year GHG EI and collected project submissions from a wide variety of Pima County Departments and local jurisdictional partners to develop a detailed list of projects that are included in this PCAP. PDEQ and PAG staff utilized ICLEI-Local Governments for Sustainability ClearPath cloud-based emissions management software to develop the base year EI and GHG emissions reductions projections for the years 2025-2030 and 2030-2050, in order to estimate the regional GHG emissions benefit of implementing each of these projects. This PCAP also outlines the co-pollutant and LIDAC benefits analysis of the proposed measures, as well as the review of authority to implement each measure and the intersection with other funding opportunities that could potentially provide additional resources toward implementation.

CPRG Planning Grant recipients are required to submit three deliverables over the four-year planning period:

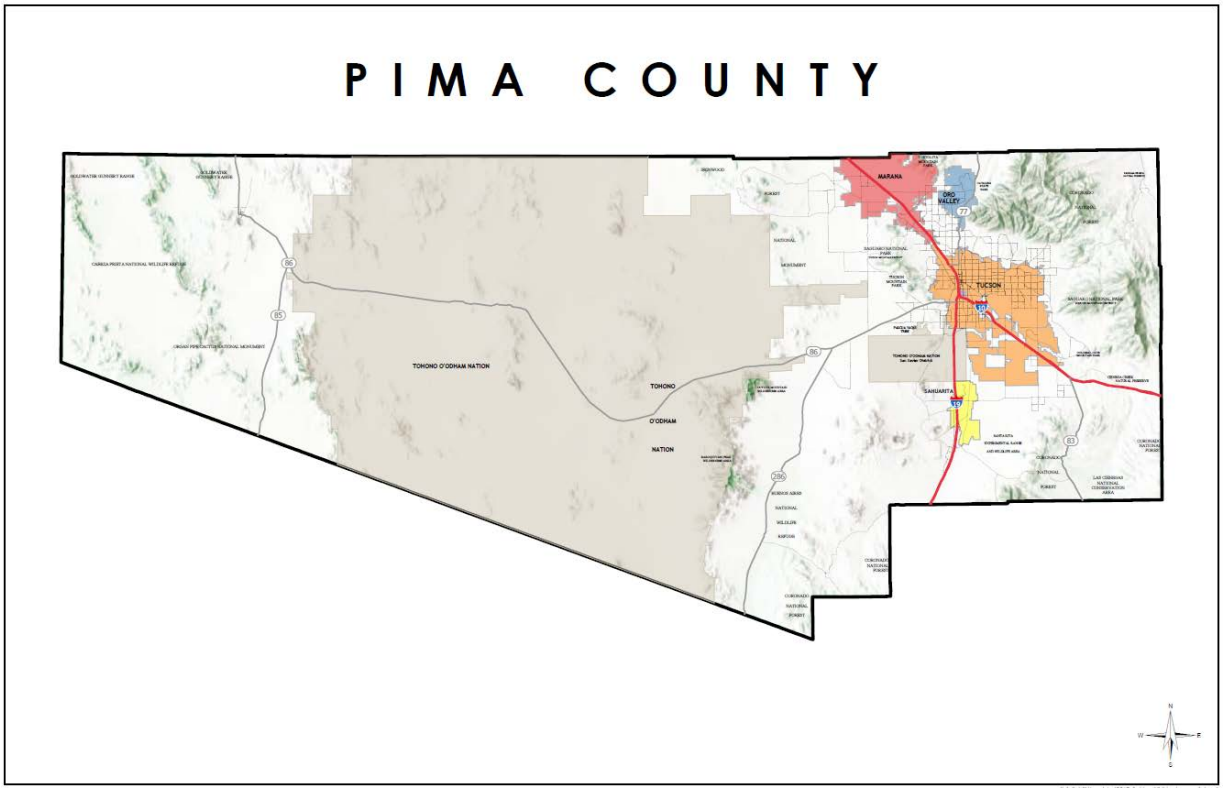
1. A Priority Climate Action Plan (PCAP), due March 1, 2024
2. A Comprehensive Climate Action Plan (CCAP), due July 19, 2025
3. A Status Report, due July 31, 2027

This document fulfills the PCAP deliverable for the Tucson MSA under the EPA CPRG Planning Grant program.

1.2 Scope of the PCAP

The Tucson MSA encompasses all of Pima County, which is the second largest county in Arizona, with a geographic area of over 9,200 square miles of diverse terrain, including a dense urban area, smaller exurban areas, and remote rural areas. The county is part of the Sonoran Desert, which is characterized by scarce water and increasingly extreme summer heat. According to the 2020 US Census, the population of Pima County is 1,0052,030, with approximately half of the Pima's population residing in the City of Tucson. Pima County's per capita income in 2021 dollars was $33,016, with almost 15% of the total population living in poverty. Pima County lags the national average per capita income of $37,638 and the percentage of people nationally living in poverty (12.8%). The City of Tucson has a per capita income of $26,373 and almost 20% of its population living in poverty. Two federally recognized Native American tribes, the Tohono O'odham Nation (TON) and the Pascua Yaqui Tribe (PYT), comprise important components of the population. The TON includes 36,291 members who occupy tribal lands in the region. TON encompasses 2.8 million acres and 4,460 square miles, making it the second-largest reservation in Arizona in both population and geographical size. The per capita income for the TON is $16,601, about two-fifths of the United States, with approximately 40% of its population living below the poverty line. PYT, with approximately 19,000 members, has 4,000-5,000 members living on its 2,200-acre reservation located southwest of Tucson. Pima County also shares with Mexico 125 miles of the 370-mile Arizona-Mexico international border. The border is home to a large amount of private and commercial traffic and is considered an important trade zone. This trade is an important source of income and economic vitality for many of the small towns that are located near it.

Figure 1: Map of Pima County/Tucson MSA



The sectors outlined within the PAG 2021 GHG EI are Stationary Energy (includes Electric Power and Commercial and Residential Buildings Sectors), Transportation, Waste and Materials Management, Industrial Processes (cement production), Energy Transport, and an 'Other' category that includes the energy used by the Central Arizona Project (CAP) to transport drinking water within the Tucson MSA. Ninety percent of GHG emissions in Pima County are from the stationary energy and transportation sectors, therefore, the measures outlined in this PCAP focus heavily on those sectors.

1.3 Approach to Developing the PCAP

On September 5, 2023, the Pima County Board of Supervisors approved the acceptance of the CPRG planning grant and sent a media release announcing the launch of this effort.

Existing Climate Resolutions and Plans

Pima County Sustainable Action Plan

Pima County implemented its first Sustainable Action Plan in 2007, marking the first such initiative in Arizona to establish measurable goals and concrete actions aimed at promoting environmentally friendly practices within internal operations and facilities. The County's commitment to sustainability continued through the adoption of three climate resolutions:

In 2017, two resolutions (2017-39 and 2017-51) were successfully passed. The Pima County Sustainable Action Plan for County Operations (SAPCO 2018-2025) was subsequently developed with valuable input from department directors and staff experts and was formally adopted by the Board of Supervisors in 2018. The Plan is organized into chapters dedicated to Carbon, Water, Landscapes, Materials, and Workforce. Each chapter outlines specific targets based on baseline measurements from Fiscal Year (FY) 2018-2019, which were derived from a thorough analysis of the County's energy and water consumption, fleet data, waste generation, and GIS assessments of land use.

Most recently, the Board passed Climate Resolution 2022-25 on May 3, 2022, which responded to the urgent global call to reduce carbon emissions and increase climate resiliency. The FY 2022 SAPCO Annual Report offers a concise assessment of the accomplishments made thus far and proposes recommended actions to ensure Pima County remains proactive in responding to the climate risks confronting the region.

In FY 2021, a County executive team identified implementation strategies that Pima County could pursue to achieve SAPCO's targets. Throughout FY 2022, this group worked with the University of Arizona's Center for Climate Adaptation Science and Solutions to further refine the list of potential strategies to a short list of high priority strategies for Carbon, Water, Landscapes, Materials, and Workforce. The resulting strategic priorities, dubbed "Big Fixes," are implementable actions with the potential to provide a high return in helping to reduce emissions. These strategies, largely focused on mitigation, provide a roadmap for grant seeking and project development efforts through FY 2025. Some big fixes currently being implemented include increasing solar installations at County facilities, increasing energy and water efficiencies in County buildings, replacing County fleet vehicles with electric vehicles and installation of charging stations, and natural open space conservation, green infrastructure, and increased tree planting.

To date, efforts from this list have been pursued by various departments in areas related to reduction of carbon emissions through energy efficiencies in wastewater operations and in County buildings, which

together account for most of the County's operational carbon emissions. In addition, ongoing County efforts to conserve natural open space serve to reduce the heat island effect, retain watershed function, and allow for the sequestration of carbon.

City of Tucson Climate Action Team

The City of Tucson Manager organized the initial Climate Action Team (CAT). The CAT, composed of 16 staff members from across the different departments and the City Manager's Office, meets regularly to advance the implementation of the Tucson Resilient Together (TRT) Plan. The CAT is led by the City's Chief Resilience Officer (CRO), who reports directly to the City Manager and works closely with Deputy City Manager and Assistant City Manager.

Since June of 2022, the City of Tucson has run the Climate Action Report, a monthly email, that informs residents about citywide climate projects. The report, reaching close to 4,500 recipients, will adopt new metrics to track TRT progress. CAT members are collaborating with the IT Department and Esri to develop the comprehensive monitoring system with internal and external Key Performance Indicators (KPIs) and a public-facing Dashboard.

City of Tucson Support for Youth Employment

The City of Tucson supports investing in youth employment training and professional development in environmental and climate-related careers. Some programs the city has invested in include:

Youth Climate Action Leaders Program at Tucson Clean & Beautiful (TCB) – This program provides youth and young adults with career development and peer mentorship to enhance community resilience through climate action projects in heat-vulnerable neighborhoods impacted by Covid-19.

Youth Tree Leader Program at Tucson Clean & Beautiful (TCB) – This program trains youth on tree care, tree planting techniques, creating future climate and environmental stewards. This program is partially funded through the private donations received in Mayor Romero's Tucson Million Trees initiative. The City's $5M

Grow Tucson Project, funded by the U.S. Department of Agriculture (USDA) will support the Youth Tree Leaders, as well as several other positions through the grant period.

City of Tucson Climate Action Achievements

The City of Tucson has also been a leader in Pima County addressing climate change and committing to reducing GHG emissions. Since 2020, the City of Tucson has been making strides in advancing climate work. Key achievements by the City of Tucson are listed below:

- **February 2024:** The City of Tucson, in partnership with the University of Arizona and the Pima County Health Department, hosted a Heat Planning Summit with over 110 participants from diverse sectors, to be better prepared and coordinated for the summer heat.
- **January 2024:** The City of Tucson launched the Food Cycle at Home pilot program.
- **December 2023:** The City of Tucson created and rolled out the first City of Tucson's Tree Standards and Best Practices, setting clear expectations for tree work, providing benchmarks for internal staff and city contractors.
- **Oct 2023:** The City of Tucson is awarded a $800,000 FEMA Preparedness Grant for resilience hub planning.

- **Sept 2023:** Mayor Romero introduces Heat Protection Ordinance for City employees, to be ready for next summer.
- **Sept 2023:** The City of Tucson is awarded a $5M federal grant to create more green spaces, invest in workforce development, and support community engagement to ensure the benefits of trees are equitably distributed.
- **Sept 2023:** The City of Tucson hires its first-ever Chief Resilience Officer
- **Sept 2023: The** City of Tucson's *One Water 2100 plan* comes before Mayor and Council for review
- **Aug 2023:** The City of Tucson's Urban Forestry Program completes the Tree Best Practices and Standards, to be ready for implementation in fall of 2023.
- **July 2023**: The City of Tucson's Urban Forestry Program completes the Community Forest Action Plan, implementation to begin fall of 2023. The plan was funded by Arizona Department of Fire and Forestry (AZDFF) and guided by a stakeholder working group.
- **July 2023:** The City of Tucson is awarded a $21.4M federal grant to purchase 39 new compressed natural gas buses, phase out its remaining diesel bus fleet.
- **July 2023:** The City of Tucson, in partnership with New Buildings Institute, local jurisdictions, state agencies, researchers, industry partners, and community-based groups are being awarded $3.5M from the Department of Energy's Resilient and Efficient Code Implementation (RECI) to develop southwest climate-adapted building code that addresses affordability.
- **May 2023**: The City of Tucson's EV Readiness Roadmap receives Arizona Forwards' 2023 Crescordia Environmental Excellence Award in the Climate Action Solutions category.
- **May 2023:** Mayor Romero signed a groundbreaking water conservation agreement with the Bureau of Reclamation (BOR) and the Central Arizona Project (CAP), making Tucson one of the first cities in Arizona to leave a significant allocation of Colorado River water in Lake Mead.
- **May 2023:** Mayor and Council made transit fares permanently free.
- **April 2023:** Mayor and Council pass implementation strategy directing resources to take near term actions to advance over 50% of actions in TRT in the areas of Climate Leadership and Governance; Energy, Transportation and Land use; Resource Recovery and Management; and Community Resilience.
- **April 2023:** The City of Tucson celebrated 30 years as a Tree City and received Growth Award for expanding urban forestry program.
- **April 2023:** Mayor Romero inaugurates the City of Tucson's first ever TREE Center with the capacity to grow 5,000 desert adapted trees and plants. The TREE Center supports Mayor Romero's Tucson Million Trees initiative.
- **March 2023:** Tucson Mayor and Council adopt City's climate action plan, Tucson Resilient Together.
- **Feb 2023:** The City of Tucson's Urban Forestry Program supported Stephen Addison receiving his Arborist Certification through the International Society of Arboriculture, and Tree Risk Assessment Qualification, thus expanding our urban forestry program capacity.
- **Jan 2023:** Mayor and Council approved the City's first Green Fleet Transition Plan to advance the EV Readiness Roadmap and transition the City's light duty fleet to electric.
- **Oct 2022** – Mayor and Council allocate $900,000 to create a Solar Empowerment Program to improve access to solar power for low-income families.

- **May-Nov 2022**: The City of Tucson carries out community engagement for climate action plan, including: 13 community dialogues, 2 large public workshops, 9 pop up events, 2 community organizations and business sector meetings.
- **Aug 2022:** Mayor and Council require new multi-family and commercial buildings to be EV-ready.
- **Aug 2022:** Sun Tran is awarded a $12M Federal Transit Administration Low or No Emission grant for 10 electric buses for Sun Tran, seven electric vehicles for Sun Van, two electric vehicles for a new transit route to the Sabino Canyon Recreation Area, and to install five dual-sided charging bays at the Sun Tran north yard, four Sun Van charging stations, and one charging station dedicated for the Sabino Canyon service.
- **Feb 2022:** Mayor and Council allocate $250,000 to develop the City's first ever Tree Inventory and a request for proposals results in contracting with Davey Resource Group. The Tree Inventory will be completed Fall 2023 and data integrated in 2024.
- **Feb 2022:** Mayor and Council adopt the final Electric Vehicle (EV) Readiness Roadmap which provides a foundation to advance EV adoption city-wide.
- **Feb 2022:** City of Tucson selects nationally recognized firm Buro Happold to develop the city's first ever Climate Action and Adaption Plan (CAAP).
- **Jan 2022:** The City of Tucson expanded their partnership with Pima County SmartScape to include a condensed SmartScape course for any City of Tucson employee who works with landscape and trees in some capacity. After completing this course, City of Tucson staff are also qualified to take advanced SmartScape courses including Urban Forestry and Green Infrastructure.
- **Jan 2022:** Mayor and Council permitted casitas, or Accessory Dwelling Units to support energy-efficient infill development and more affordable housing options.
- **Jan 2022:** The City of Tucson and the Arizona Department of Environmental Quality inaugurate the Central Tucson PFAS Project to prevent the chemicals from impacting additional water sources.
- **December 2021:** City of Tucson officially opens the SHARP facility to recharge and store up to 1.3 billion gallons of recycled water annually in the local aquifer.
- **November 2021:** The City of Tucson launches the Santa Cruz River Heritage Project Irvington Outfall Site, extending the length of the flowing river to restore native wetlands, support native plants and animals, and replenish Tucson's underground aquifers will be replenished for future generations.
- **October 2021:** The City launches first five 40 foot zero-emissions electric buses, partners with TEP to install its charging infrastructure, and incorporates workforce development.
- **Aug 2021:** Every City department that manages trees as assets now have Standard Operating Procedures related to tree pruning and removal.
- **July 2021:** Mayor and Council rename Los Reales Landfill to Los Reales Sustainability Campus, embrace waste as an asset
- **July 2021:** Mayor and Council commit the City of Tucson becoming a Zero Waste City by 2050.
- **June 2021:** Mayor and Council pass EV ready code amendment requiring all new one-to two family dwellings to have at least one EV-ready space.
- **March-July 2021:** Mayor Romero and Climate Change Coalition (UC3) partners develop and implement 12 climate listening session resulting in over 1300 unique comments.

- **May 2021:** City of Tucson adopted the SolarAPP+ system allowing for same-day solar permits. Since its adoption, the City has already issued 4,371 permits using SolarAPP+, resulting in 29,927 kilowatts approved and an estimated 4,451 hours saved on initial permit reviews.
- **May 2021:** The Urban Forestry Program Manager forms an interdepartmental team to collaborate on urban forestry issues that cross multiple city departments.
- **Feb-May 2021:**
- Mayor partners with the University of Arizona's UC3 to issue an online climate action community survey.
- Mayor and Council adopt the EV Readiness Roadmap *draft* (April 2021).
- **Feb 2021 –** Mayor Romero joins 1t.org US Chapter Stakeholder Council to inform the strategic direction of the US Chapter of 1t.org
- **Dec 2020 –** The City of Tucson is recognized by the US Conference of Mayor's 2020 Mayors Climate Protection Awards for the Santa Cruz River Heritage Project.
- **Nov 2020:** The City of Tucson hires its first ever Urban Forest Program Manager.
- **Oct 2020:** Mayor Romero was given the honors of reintroducing the Gila topminnow into the flowing waters of the Santa Cruz River in downtown Tucson.
- **Sept 2020:** Mayor and Council declare Climate Emergency, commit the city to carbon neutrality by 2030 and develop a climate action plan that centers frontline communities.
- **June 2020:** Sun Tran is awarded $3.8M FTA Low or No Emission grant for 5 E-Buses.
- **April 2020:** Sun Tran pilots its first electric bus via lease to test its performance for 10 months.
- **April 2020:** City of Tucson partners with UArizona Compost Cats to open a new compost facility at Los Reales Sustainability Campus.
- **April 2020:** Mayor Romero launches it nature-based climate initiative, Tucson Million Trees, to increase tree cover in heat vulnerable communities.
- Mayor and Council adopt Tree Equity Score Map.
- **Feb 2020:** Mayor and Council adopt an ordinance to officially create the Storm to Shade program.
- **Feb 2020:** Mayor Romero joins Climate Mayors and hires Climate and Sustainability Policy Advisor.
- **Jan 2020:** Mayor and Council identify need for climate action plan, implementation strategy.

Inter-and Intra-Governmental Coordination

Shortly after PDEQ received the CPRG planning grant award, County staff and leadership notified all jurisdictional leaders of the opportunity and invited them to join the regional climate planning coalition. The City of Tucson, City of South Tucson, Town of Oro Valley, and Tohono O'odham Nation confirmed their interest in joining the coalition to be a part of this regional effort. PDEQ staff then began hosting monthly, then bi-weekly, meetings to discuss goals and objectives and implement a realistic timeline that the required tasks could be accomplished. At each meeting, PDEQ and each jurisdictional representative provided an update of their activities, including community and stakeholder engagement, possible projects that each jurisdiction could implement, and the GHG EI work efforts. In February 2024, the project lists that each jurisdiction chose to include were finalized.

PDEQ also participated in biweekly meetings with Governor Hobbs' Office of Resiliency, alongside other state partners, including Maricopa Association of Governments (MAG), the City of Phoenix, Arizona tribal

partners that also received planning grants, and hired consultants. These meetings served as an opportunity to share progress, discuss how the state and local plans can complement each other, and suggest project ideas that could be included in the State PCAP.

In alignment with the receipt of the CRPG planning grant award, and engagement with regional coalition partners and the State, the County has formed an internal interdisciplinary team to address the County's comprehensive climate priorities – as set forth in the Climate Resolutions, SAPCO, CPRG, and any future planning / operationalizing of climate action priorities. The Climate Action Executive Team (CAET) is currently comprised of leadership representatives from over 20 County departments, and is championed by the Pima County Administrator's Office, to foster the growth and the enterprise approach to climate action and investment. The team with expertise in, and direct oversight of, environmental quality, sustainability, transportation, water (flood control and wastewater), facilities (management and project design), parks, and fleet management experts, coupled with public health, finance, grants management, information technology, communications, workforce, and economic development experts - with opportunity for growth and expansion.

The CAET began meeting in Fall of 2023, and swiftly championed the Climate Action Advisory Committee (CAAC) – a dedicated team of staff with subject matter expertise, appointed by the representative department directors, to support and grow the climate initiatives across the County, as directed by the Executive Team. Throughout the fall, the teams developed core tenets, identified other departmental inclusion to support capacity and direction for climate action priorities, thus bolstering the 'enterprise approach' to climate goals. Qualitative feedback was gathered (from the County Climate Teams), in tandem with surveys deployed by PDEQ and data collected by CBOs, to align the climate priorities for the region and the County. Initial findings from the County's Climate Action teams determined the direction of the County-directed initiatives; specifically, GHG reductions, water priorities, resilience to extreme heat and transportation / air quality. The qualitative feedback on how the County can impact these priorities was largely directed to energy efficiency, renewable energy, buildings and materials, water / land-use, and waste.

The collaborative approach to this initiative assures comprehensive planning and alignment with areas of focus that are consistent with regional priorities, and consistent with community feedback. This providing direction for development of the County-championed efforts to determine the best projects for their departments to include in the PCAP, and most effectively reduce GHG emissions within the next five years.

In November 2023, the team-at-large had their first workshop to propose the County PCAP projects, implementation strategy, and discussed the potential for GHG emissions reductions. The workshop provided a forum to refine and finalize all PCAP proposals through early 2024, with specific and targeted desirable outcomes. This work culminated in early 2024, with a full coalition and community Regional PCAP Climate Meeting in early February. This meeting had over 50 unique participants from the Coalition (County, cities, towns, tribe), the CBOs who conducted LIDAC community engagement, and the Climate Action Teams from the County. It offered the opportunity to present essential feedback from both the public survey data and CBOs. This feedback paralleled the presentation of the final projects from the County, the City of Tucson, Town of Oro Valley, and the City of South Tucson. The regional meeting was designed to triangulate the project planning effort and align it with the regional priorities, as highlighted

in the community survey data, and applied practical project alignment, to assure the PCAP best meets the needs of the community and demonstrates a measurable reduction in GHGs for the region.

In gleaning critical details about the community priorities and alignment with the project proposals, attendees engaged in feedback gathering pertaining to possible intersections of these projects with public health, workforce opportunities, and specific impact on LIDAC Communities. The results from the regional meeting highlighted a series of themes and calls to action to support the investment in the PCAP projects. One key and common theme was engaging our youth across the region. This theme was present across each sector, project, and prevalent across the presentations of the community feedback. Suggestions ranged from youth programming, facilitating a youth climate summit, paid internships, and education programs.

Across all sectors, pertaining to the public health nexus, there was an overarching theme for the proposed PCAP projects; that investment in these projects would improve respiratory illness risk factors, improve indoor and ambient air quality, and create adaptivity to greener sectors, aligning with overall public health recommendations. Adjacent to those prevalent themes, there was a nexus to the mental health impact of climate change, especially to youth populations and LIDAC. Similarly, the call for more complete planning – e.g., green spaces, composting, vegetation, both in roadways and facilities, would help improve public health and safety.

Across the workforce nexus of all proposed PCAP projects, all sectors highlighted the need for greater partnerships with regional organizations or capacity-building within the jurisdictional organizations to fortify the workforce pipeline. Specifically, upstream approaches for exposure to green jobs, enhancing job training programs and apprenticeship opportunities, and bolstering the opportunity for job placement upon completion of training. Feedback also highlighted the opportunity for youth to become a targeted community for these efforts and the need to intentionally expose young people to green workforce job opportunities through events, internships, apprenticeships, or collaborative educational opportunities. This theme was often coupled with the longer-term investment in workforce training programs (either government aligned or through existing training programs) to enhance the amount of internships or apprenticeships available, and job training and placement opportunities.

Themes associated with LIDAC communities were directed at access to these initiatives, education on opportunities, and adapting climate initiatives to the community around them. These comments were coupled largely with assurances that disproportionately affected communities continue to understand resources available for their residential spaces, commutes, and community spaces. There was also directed feedback to adapt projects to systematic improvements within these communities, such as large-scale transit, community spaces, and safe and complete streets. There should be ample communication about programs, credits, or investments that communities can make on an individual level. Overarchingly, there was approval of projects whose proximity to LIDAC would greatly benefit the GHG reduction and overall air quality and health of these census tracts.

The inter- and intragovernmental activities, partnerships, and engagement has been essential to align a regional effort, and best champion the needs and priorities of the community. This has also enabled the partnership to build capacity and align project and program goals with already established Climate plans, resolutions, and existing directives toward comprehensive climate action.

2. Community Engagement Activities

2.1 Outreach Objectives and Methods

Objectives

PDEQ utilized a variety of methods to identify and engage key stakeholders, with particular emphasis on LIDAC populations. PDEQ staff developed six outreach objectives to help clearly identify the outreach goals:

1. To assess if/how Pima County residents believe climate change is impacting their lives.
2. To understand if/how Pima County residents are already taking actions to reduce their GHG emissions (carbon footprint) and/or adapt to climate change.
3. To determine how accessible certain actions are by which they can adapt to climate change and reduce GHG emissions from their homes or businesses and determine what opportunities would allow them to do more.
4. To understand what would encourage Pima County residents to take action to reduce their emissions from their transportation activities.
5. To determine Pima County resident's interest in participating in workforce development opportunities focused on reducing GHG emissions and/or adapting to climate change.
6. To educate the public on climate change, the process that Pima County is taking to address it, and how they can participate in being a part of the solution.

Website

PDEQ worked with the Pima County Communications Department to create a dedicated website for all CPRG-related information (www.pima.gov/climateplan). A new platform called "Zencity Engage" was utilized for this website because it is designed to assist County departments with community engagement efforts, making it easier to collect input from community members, make data driven decisions, and transparently share the results, processes, and decisions. The website includes information on the CPRG planning efforts, a planning timeline, a summary of CBO projects and final reports, results of the public and business surveys, a link to sign up for future newsletters to stay informed throughout the process, and links to other opportunities under the Inflation Reduction Act. The Engage platform also provided translation into multiple languages through Google translate.

Community Survey

PDEQ staff created a community survey with questions that were specifically designed to meet the outlined objectives. PDEQ also consulted with a pro-bono survey and evaluation expert at the University of Arizona to ensure the questions would allow for the data collected to meet the objectives, as well as ensure that it was at a basic knowledge level that would be understandable by community members with variable education and backgrounds. The final survey was posted on the website from November 16 - December 31, 2023. PDEQ worked with internal and external community partners to disseminate the survey to Pima County residents. Methods for disseminating this survey included:

- Posted on Pima County's social media pages
- Included in Pima County newsletters

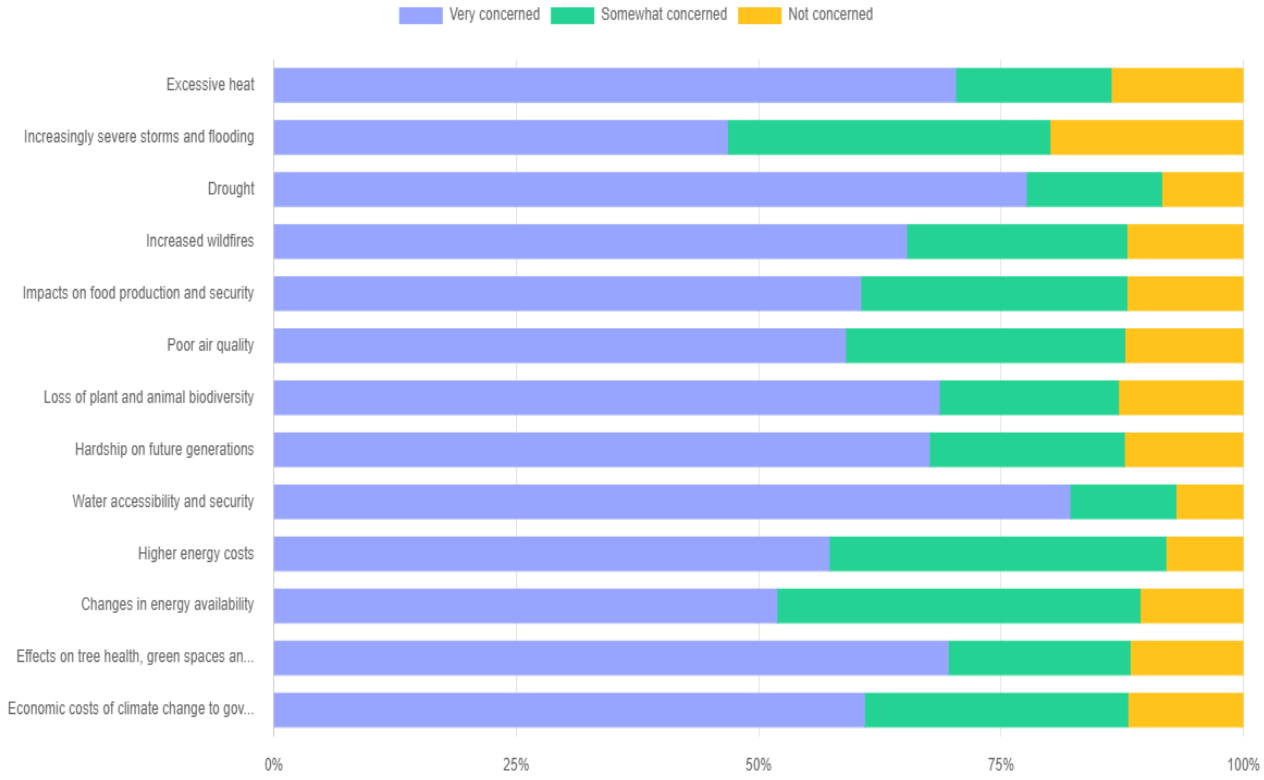
- Coalition partners disseminated through their communication networks, including their public newsletters
- The Pima County Public Library posted on their social media sites, newsletters, and sent an email through their listserv
- Created a printed postcard (in English and Spanish) with a QR code that links directly to the survey and distributed at community events, County landfills and transfer stations, public libraries and posted in County buildings
- KOLD channel 13 aired a story on the public survey on October 16, 2023, and a follow-up story on the on-going CPRG efforts on February 6, 2024
- Provided information at the Tucson Estates Community Night on November 15, 2023
- Presented to the Green Valley Council Environmental Committee on December 14, 2023
- Arizona Transportation Builders Association sent an announcement to their members
- The Arizona State University Sustainable Cities Network announced in their Info of Interest Newsletter
- The Arizona Journal of Environmental Law and Policy announced through their blog
- The Tucson Citizen's Climate Lobby announced through their newsletter
- Emails were sent to 48 community organizations, including the University of Arizona Office of Sustainability, Tucson and Sunnyside Unified School District Boards, Pima Community College, local food banks, the Arizona Youth Climate Coalition, and others
- Provided information at the launch of the new Environmental Justice (EJ) West Center at the University of Arizona

Figure 2: Survey Promotion Postcards (English/Spanish)

More than 2,000 responses from Pima County residents were submitted. After the survey closed, the results were posted on the website and are still available to view. Several survey questions included open-ended questions to provide respondents with an opportunity to include input that was not included in the multiple-choice questions. In order to consolidate that information, FMR Associates (currently under contract with PDEQ for other survey work) was hired to cross-tabulate the results of the open-ended questions with demographic information and provided a detailed summary of the points that were mentioned by the respondents. That summary is also available to the website.

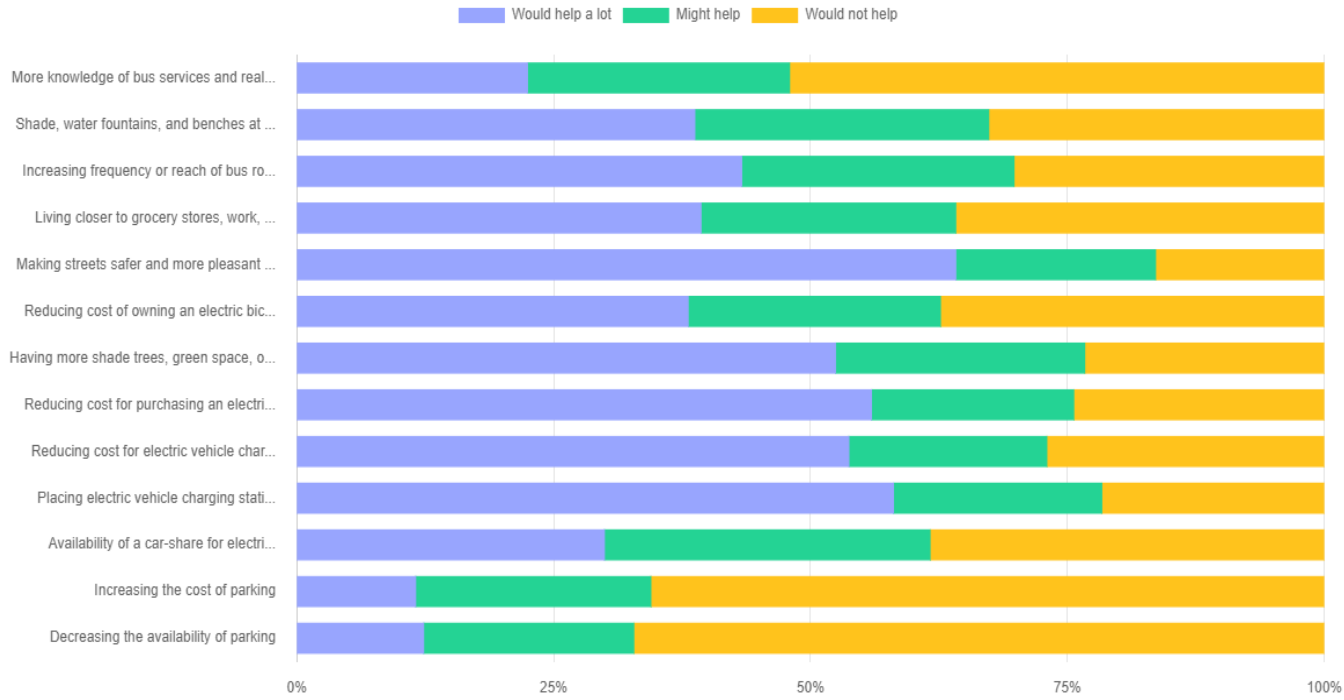
Below are the results of two of the community survey questions. All of the survey results are available on Pima County's Climate Plan website.

Figure 3: Community Survey Results for question: "How concerned are you about each of the following potential and known effects of climate change?"



Most residents are concerned about the effects of climate change, with particular emphasis on water accessibility and security, and drought, which came out as the top concerns, followed closely by excessive heat and impacts on tree health and plant and animal biodiversity. At the lower end, changes in energy availability and higher energy costs are still a cause for concern, but not as pronounced as the aforementioned issues.

Figure 4. Community Survey Results for question: "43% of GHG emissions in Pima County come from motor vehicles. What would help you reduce emissions from driving a motor vehicle?"



The majority of respondents believe that making streets safer and more pleasant for walking and biking, and the placement of electric vehicle charging stations throughout the region, would significantly help in reducing emissions. Therefore, shifting focus towards improving pedestrian and electric vehicle infrastructure could support emission reduction efforts.

Business and Industry Survey

A survey for business owners and managers was also developed to assess the outlined objectives from a business owner/manager perspective. The survey was open on the website from December 12-31, 2023, and 15 were completed. Methods for disseminating this survey included:

- Emailed it to all of the businesses who hold an air quality permit with PDEQ
- Asked the local Chambers of Commerce (Tucson, Hispanic, Marana, Black, LGBTQ+) to distribute through their networks
- Asked Local First Arizona, Mrs. Green's World, Downtown Tucson Partnership, Arizona Rock Products Association, 4th Avenue Merchant's Association, AFSCME Union, the Southern Arizona Management Society to distribute through their networks

The survey revealed that businesses located in Pima County are engaged in various practices to reduce air pollution and greenhouse gas emissions, such as using solar panels and energy-efficient lighting. Pima County businesses also show strong recycling practices and provide flexible working opportunities to employees to minimize commuting emissions. These survey results are also available on the Pima County Climate Plan website.

2.2 Reaching Low-Income and Disadvantaged Communities (LIDAC)

Prosperity Initiative

Pima County experiences above-average poverty rates, including nearly 15% in Pima County and 20% in the City of Tucson. In an effort to reduce generational poverty and increase individual and community wealth, the Pima County Board of Supervisors adopted the Prosperity Initiative on December 5, 2023. Included in this initiative are a wide-ranging set of policies developed by a task force made up of representatives from several County and City of Tucson departments, all incorporated cities and towns and the Tucson Indian Center. The group held more than 180 small group meetings with many groups, including nonprofit and business leaders and people with lived experience. The group also met regularly with two sociologists from the University of Arizona to review ideas and relevant research.

The result is a robust set of 13 policies in the areas of housing, health, education, transportation, workforce development, job quality, small business, financial capability, neighborhood reinvestment, and digital connectivity. The initiative also recommended that implementing these policies be informed by three cross-policy strategies: centering family voice and participating in the development of policies, programs and practices, building a more climate-resilient community while reducing environmental harm to low-income areas, and reducing and preventing crime in neighborhoods.

LIDAC Outreach Efforts - Community Based Organizations

There are an incredible number of government programs and non-profit organizations that are dedicated to assisting residents who live in LIDAC communities to ensure that they can meet their daily needs, while living in a harsh desert environment. PDEQ chose to partner with those governments and CBOs to reach stakeholders in LIDACs for CPRG planning efforts.

On October 16, 2023, PDEQ released a Notice of Solicitation for subrecipient grant proposals to assist with effectively obtaining LIDAC community-led information and gain important feedback that could help formulate specific programs and projects to include in the PCAP. A virtual technical assistance session was held on October 23, 2023, to answer questions about the solicitation and it closed on November 3, 2023. Despite the very tight workplan timeframe and the fact that the work was to be accomplished during the holiday season, PDEQ received nine proposals and ultimately selected five, including one government and four CBOs. The community engagement commenced on November 13th and was completed on January 15th. Below is a summary of their efforts:

CITY OF TUCSON

City of Tucson – Our Climate Future

Demographic: The Our Climate Future project successfully engaged a diverse demographic, encompassing individuals of varied ages and racial backgrounds across distinct socioeconomic strata. The participating households reflected a spectrum of compositions, including single-person, family, senior, group, and transitional households. The target population reached were individuals with lower to median income levels, lower educational attainment, lower rates of homeownership, and is primarily composed of Black, Indigenous, and People of Color (BIPOC) households.

Engagement Strategies: The City of Tucson conducted 180 surveys, engaging individuals through community spaces, door-knocking, and direct connections with Ambassadors and community-based organizations. Approximately 80% of residents approached agreed to participate in the surveys. They organized five listening sessions with 75 residents from five distinct target communities, utilizing their community engagement contact database. Invitations were extended to individuals and families within the target communities, including those who had participated in previous engagement programs and newcomers interested in their reinvestment programming. These listening sessions provided valuable insights into climate and pollution issues. Childcare, food, and gift card incentives were identified as significant factors for engagement. Participants, both familiar with previous engagement programs and new attendees, actively contributed to discussions, expressing their top climate issues, concerns, actions, and future possibilities to reduce greenhouse gas emissions. The sessions also shed light on the current low carbon footprint of community members' lifestyles. Discussions about greenhouse gas emissions prompted interest in reducing energy costs, with potential benefits in lowering greenhouse gas emissions. The exchange of ideas and suggestions during these conversations inspired individuals to reconsider their practices, aiming to reduce energy and water consumption.

Reach: ~255 people

Findings: Key findings from the listening sessions emphasize participants' strong desire to improve recycling practices and effectively manage waste. Specialized training aimed at enhancing energy efficiency holds potential benefits for apartment management and landlords. Focused discussions on food insecurity revealed a keen interest among community members in cultivating their own food. These conversations also unveiled the interconnected nature of environmental injustice, with participants sharing experiences of other injustices they were facing. Residents drew connections between climate and environmental degradation, highlighting their vulnerability while traveling on roadways and emphasizing the broader impact on various aspects of their lives. Notably, concerns about excessive heat emerged as participants, or individuals they know, work outdoors during the summer months, underscoring the significance of climate issues in their daily experiences.

Direct Advocacy and Resource Center – Inclusive Voices: Understanding the Impact of Climate Pollution on People with Disabilities and Older Adults

Demographic: Individuals with disabilities and seniors in unincorporated Pima County and the Cities of Tucson and South Tucson, Towns of Marana, Sahuarita, Oro Valley, and rural areas.

Outreach methods: Direct Center called 194 current and former participants and community members, sent 2,215 individual emails, sent 2,707 mass emails to 1,856 individuals, and documented 18,060 impressions on social media. Six weekly e-blasts went to approximately 150 employment agency partners including: Goodwill of Southern AZ, Marana Health Center, Easter Seals Blake Foundation, DKA Jobs, Old Pueblo Community services, Beacon Group, Banner Health, Primavera Foundation, The Centers for Habilitation, Pascua Yaqui, Cope Community Services, La Frontera, Community Partners Inc., Arizona Complete Health, Veteran’s Association, United Way Tucson, Arizona Department of Economic Security,

Intermountain Centers, UCP of Southern Arizona, and Tucson Unified School District. Additional strategies included an e-newsletter article, tabling at community events, announcements/blogs on their website, and offering an incentive to those who provided feedback. Direct obtained feedback/suggestions from 1,178 individuals through one-on-one interactions, community events, a focus group (17 participants), and an online survey based on the PDEQ public survey.

Reach: ~5,600 people

Findings: Top concerning issues included excessive heat (81.14%), drought (66%), poor air quality (64.4%), water accessibility and security (61%). Common features currently in participants' homes to help reduce greenhouse gas emissions/pollution are energy efficient appliances (69%) and ceiling fans to circulate air (62.3%). The primary actions being taken now to help reduce greenhouse gas emissions/pollution are reusing and/or recycling to reduce waste (67%) and limiting use of private auto (53%).

Ironwood Tree Experience – Youth for Clean, Green Communities

Demographic: A diverse group of primarily middle and high school students from Arizona Department of Education Title I-A schools:
Youth (13-25 years old) = 65 participants;
Adults (26 and older) = 37 participants;
Children (0-12 years old) = 1.

Outreach methods: Ironwood Tree Experience tabled at community events, incorporated a teacher professional development session, promoted the CPRG public survey, created a customized survey, facilitated one-on-one and focus group interviews, sent emails, posted on social media, and provided incentives to participants (gift cards, gift bags).

Reach: ~2,500

Findings: A majority of respondents reported knowing about climate change somewhat well or very well and have learned about climate change through their school, documentaries, films, or television and social media. Most respondents report excessive heat and high energy costs. 45% of respondents feel hopeful for the future, yet 56% responded, "No" or "not sure" they feel hopeful about the future of the environment. Three quarters of the respondents feel connected to people in their community, 82% feel connected to the environment where they live, 29% say they understand the impacts of climate change on the environment and 45% say they understand a good amount. Excessive heat, higher energy costs, drought, poor air quality, and impacts on animal biodiversity are already affecting them.

Iskashitaa Refugee Network (IRN) – Study of Resettled Refugees' Awareness of Climate Pollution and Environmental Sustainability Practices

Demographic: Current and former refugees, asylum seekers, resident immigrants, variety of ethnic groups that speak different languages, mostly low-income renters.

Outreach methods: IRN modified the PDEQ survey to examine baseline knowledge of pollution reduction activities, climate change, and environmental sustainability among refugees, in a simple format that would inform both our internal educational programs, and for PDEQ and other external stakeholders. Prior to releasing the survey, they gathered educational materials that would inform the respondents about energy-savings and low-income utilities programs, some of which were developed internally. When necessary, interpreters were available. They incorporated photo illustrations in the survey to help them understand the concepts better. Participants were recruited through in-person interviews and IRN and partner events, email, newsletters, weekly educational programs, and provided gift cards as incentives to participate.

Reach: 106

Findings: Participants use energy-saving habits, such as adjusting internal temperatures and turning off lights, but do not always associate energy-saving behavior with lower electric bills. Excessive heat impacts their transportation options, such as walking or using transit. They are concerned about higher energy and water bills and health concerns, such as more allergies, and they realize they have less access to shade from trees. They want more education about environmental issues and money-saving strategies. Participants want more access to community gardens and composting sites and are interested in job opportunities with low barriers of entry.

YWCA of Southern Arizona- City of South Tucson Open House for Climate Resiliency and Preparedness

Demographic: Residents of South Tucson, low-income, mostly Latino – Spanish speaking, youth, and seniors

Outreach methods: YWCA held three in-person events at the House of Neighborly Service (HNS), including two workshops by Physicians for Social Responsibility (PSR) on building resilient neighborhoods, which educated participants on surviving excessive heat events during power outages. Environmental Education Exchange, who conducted a 90-minute workshop, in Spanish, on how to weatherize your home against winter weather, as well as a two-hour open house specific only to filling out the surveys on paper (translated in Spanish) and online. Both workshops included take-home materials for the attendees, such as workbooks and guides on heat and health from PSR, and both workshops included time for attendees to discuss personal concerns about climate. Tucson Electric Power provided a box of energy efficiency products and informational materials for workshop attendees. Climate Tucson held four weekly Zoom meetings to discuss the CPRG survey and what

attendees would like to see from the county and the city going forward. Climate Tucson sent out announcements to its 315 Tucson-wide members on Meetup and a personal mailing list of approximately 150. They also provided gift cards as incentives to participate.

Reach: ~800

Findings: It was evident that increasing heat and surviving high temperatures are a major concern particularly among those still relying on evaporative coolers. People want more information from the county about climate and safety specific to their circumstances. Participants were very appreciative that their voices were being heard. All participants were concerned about climate change and there was no age or gender limit to those concerned about climate change. The younger people believed there were opportunities to educate their peers in activities such as organic gardening. Comments included the need for the county to better position jobs around actual climate impacts and solutions.

Public Interest Groups

PDEQ also received substantive comments from a wide variety of public interest groups, including The American Lung Association (Arizona), Arizona Public Interest Research Group (AZ PIRG), Sustainable Tucson, Southwest Energy Efficiency Project (SWEEP), and U.S. Green Building Council. A collective of organizations (including Sierra Club, Vote Solar, VetsFWD, and Arizona Alliance for Retired American, among others) also submitted a comment letter. Suggestions from these groups included:

- Support for transitioning local government vehicles to electric
- Coordinate and accelerate EV charging infrastructure
- Expand PDEQ's Cut Down Pollution lawn and garden equipment emissions reduction program
- Retrofit local government, schools, and non-profit buildings to be more energy efficient
- Incentivize small business electrification
- Adopt low-to-Zero-energy and green building codes and practices that prioritize new construction of affordable housing
- Expand funding for voluntary industrial decarbonization demonstration projects
- Reduce Passenger vehicle miles traveled
- Utilize IRA clean energy tax credits that now allow public entities to benefit through "direct payment" of their value.
- Improve outreach and opportunities for energy efficiency retrofits and appliance electrification projects
- Fund virtual power plan demonstration projects with equitable benefits
- Prioritize reducing food waste via food loss prevention, food rescue/donation, and organics composting
- Convene citizens and stakeholders to ensure that their constituents understand the IRA opportunities that are available.
- Lean on advocates, non-governmental organization (NGO) partners, and trade organizations to help navigate the funding opportunities and guide implementation of measures identified in the PCAP.
- Energy Audits: Identify county owned buildings falling in the top 25% tier of energy consumption. Submit energy audits for those buildings as a priority.
- Energy Conservation: Demonstrate reduction in building energy use in all buildings owned/operated by the county.

- Provide energy and building code related training and education to staff.
- Participate in the Resilient Southwest Building Code Collaborative, convened by the City of Tucson.
- For jurisdictions that haven't yet registered, consider using the Leadership in Energy and Environmental Design (LEED) for Cities & Communities framework and certification program to assess progress on sustainability issues and plan for the future.

3. Greenhouse Gas Emissions Inventory

3.1 2021 Base Year Emissions Inventory

The 2021 base year is based upon a Regional GHG Inventory compiled by the regional Metropolitan Planning Organization (MPO), Pima Association of Governments (PAG), for the eastern Pima County region for 2016-2021. The PAG Regional GHG Inventory did not include on-road transportation emissions from gasoline and diesel fuel used in western Pima County and was expanded to include emissions from all of Pima County to meet requirements of the PCAP. The inventory used the most current data, tools and methodology and complies with the ICLEI USA *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions v.1.2*. ICLEI-USA ClearPath cloud-based emissions management software was used to develop the community GHG emissions inventory for the Tucson MSA (Pima County) for calendar year 2021. Each inventory component tracks the production of the three major GHGs: carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O). These are expressed as carbon dioxide equivalents (CO2e) based on global warming potential (GWP) values. GWP values are established through global scientific consensus by the Intergovernmental Panel on Climate Change (IPCC). As climate science continues to develop, the GWPs of gases are updated. The values were assessed over 100-year time frames and this inventory uses the IPCC 5th Assessment Report (AR5) values of 28 for CH4 and 265 for N2O.

Figure 5. 2021 Base Year Greenhouse Gas (GHG) Inventory

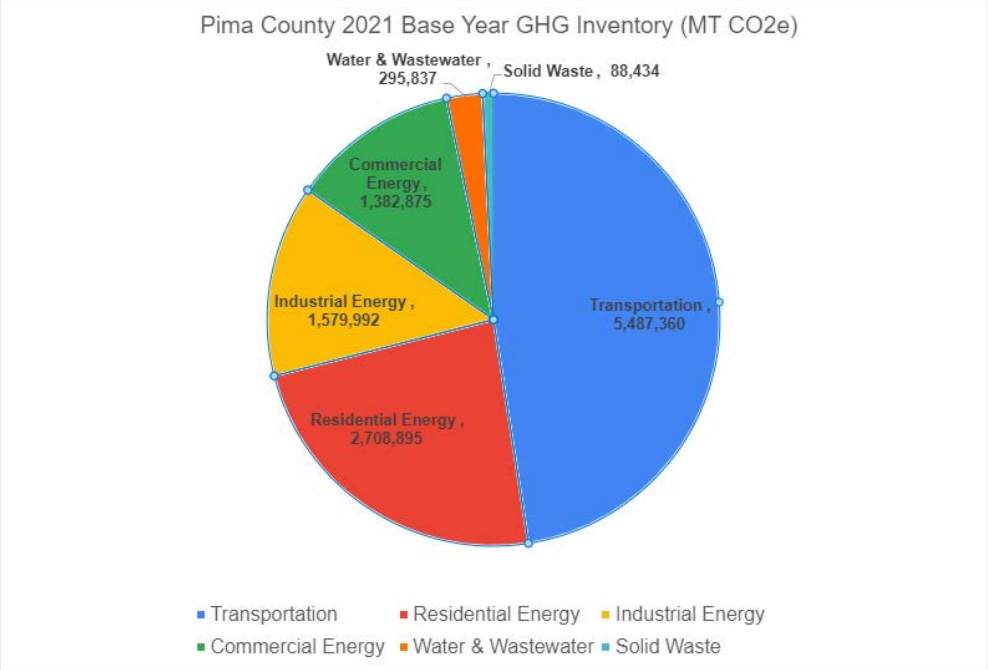


Table 1. 2021 Pima County Regional Greenhouse Gas Emissions by Sector

Sector	GHG Emissions	
	MTCO2e	Percentage
Transportation	5,487,360	48%
Residential Energy	2,708,895	23%
Industrial Energy	1,579,992	14%
Commercial Energy	1,382,875	12%
Water & Wastewater	295,837	3%
Solid Waste	88,434	1%

The U.S. Community Protocol for Accounting and Reporting of GHG Emissions requires the following activities of a basic level inventory: community electricity use; residential and commercial stationary combustion; on-road passenger and freight motor vehicle travel; energy use for potable and wastewater treatment and distribution and community-generated solid waste. ICLEI's U.S. Community Protocol for Accounting and Reporting of GHG Emissions does not use scopes as a framework for categorizing emissions because the organization-related definitions of scopes for corporate accounting do not translate to the community scale in a manner that is clear and consistently applicable as an accounting framework. The central categorizations of emissions used in the Community Protocol are sources located within the community boundaries and community activities that result in creation of GHG emissions directly or indirectly.

This inventory does not track all sources of GHG emissions generated in the region, such as hydrofluorocarbons (HFCs), perfluorocarbon (PFC) refrigerants, sulfur hexafluoride (SF6), fugitive emissions from natural gas distribution, and emissions from agriculture-related activities, or account for all sinks (a reduction in atmospheric GHG emissions by storing carbon in another form) but was designed to track emissions resulting from the actions and activities of communities in Pima County. The goal is to quantify the major GHG emission sources that are the result of activities under the control or influence of the Pima County communities.

PDEQ staff followed the process outlined in the Quality Assurance Project Plan (QAPP) to assess the data for quality and completeness. The approach was evaluated to ensure the methods were appropriate and have been applied correctly to the analysis, that there were no inconsistencies, and items were transposed correctly. This would include verifying entries in ClearPath matching with source material. The review included checking for accuracy the units of measure and conversions, calculations, and data sets. Clear results and reasonable conclusions were assessed.

The GHG Inventory includes emissions credited to the communities of Tucson, South Tucson, Marana, Oro Valley, Sahuarita, the Tohono O'odham Nation, Pascua Yaqui Tribe and unincorporated Pima County. Included are emissions from stationary energy use by residential, commercial and industrial sector (electricity and natural gas), transportation (on-road, non-road vehicle use, locomotive and aircraft), waste (solid and wastewater reclamation), industrial processes (cement production), Central Arizona Project (CAP) water energy use (Other) and energy industry natural gas transport.

Transportation

On-road

On-road vehicles include private and commercial vehicles such as motorcycles, cars, trucks, vans, SUVs, tractor trailers and transit buses. In 2023, FHWA finalized a rulemaking *for Performance of the National Highway System, Greenhouse Gas Emissions Measure* in which state departments of transportation (DOTs) and MPOs establish declining CO2 targets and methods for the measurement and reporting of GHG emissions associated with transportation. The methodology for estimating GHG emissions measures tailpipe emissions on all public roads by utilizing the Fuels and Financial Analysis System – Highways (FUELS/FASH) records of motor fuel sales within the state and multiplying the total fuel type volumes by a CO2 factor for each fuel type.

The approach of using fuel sales as a direct indicator of GHG emissions is more straightforward than a modeling approach such as EPA's Motor Vehicle Emissions Simulator (MOVES) and was utilized to derive on-road GHG emissions. The Arizona Department of Transportation (ADOT) tracks sales of on-road fuels by county as part of the Highway User Revenue Fund (HURF) program and provided fuel sales data in Pima County for 2021. The geographic isolation of cities and towns within the boundaries of Pima County allows for accurate estimations using the fuel sales methodology for gasoline and diesel fuel.

Compressed Natural Gas (CNG) transportation fuel usage data was provided by Southwest Gas (SWG). CNG, gasoline and diesel fuel GHG emissions were derived from *ClearPath* using emission factors for each respective fuel type.

Nonroad

Nonroad vehicles include mining and construction equipment and offroad vehicles. The majority of fuel utilized by these vehicle types is red-dyed diesel fuel. Red-dyed diesel fuel is not taxed, and sales are tracked by the HURF program.

Locomotives

Emissions from locomotive travel within Pima County was calculated using diesel consumption data submitted by Union Pacific Railroad (UPRR) staff and a diesel emission factor (0.01 metric tons CO2e/gallon) embedded in the *ClearPath* model.

Aircraft

Volumes of Jet A fuel use were collected from the various airport staff for the Marana Airport, Ryan Airfield, Tucson International Airport (TIA) and Davis-Monthan Air Force Base. Aviation gasoline (Avgas) sales are tracked through the HURF program and were provided by ADOT. Emissions were calculated using the Avgas and Jet A fuel emission factors found in the *ClearPath* model.

Stationary Energy (Residential, Commercial, and Industrial (RCI))

RCI sectors' energy use includes fossil fuel combustion and grid-supplied electricity. The residential sector's GHG emissions are based on household energy used for heating, cooling and lighting, etc. The commercial sector encompasses electricity and natural gas used in non-residential buildings (e.g., schools, hospitals, retail, institutional and government-owned facilities). The industrial sector includes electricity and natural gas. SWG supplies natural gas and Tucson Electric Power (TEP) and Trico Electric Cooperative supply electricity within the Tucson MSA.

SWG staff provided RCI natural gas use for 2021. Emissions from fossil fuel combustion are calculated using fuel volumes and *ClearPath* emission factors for natural gas.

TEP natural gas use was removed from the industrial natural gas volumes to avoid double counting since the GHG emissions released in the generation of electricity were incorporated into the electricity use totals and in the calculations of 2021 TEP emission factors.

Electricity use data for 2021 by sector and jurisdiction were provided by TEP staff. TEP electricity use data were aggregated into customer classes based on average annual energy use, not necessarily by customer operations. Consequently, the industrial sector may include some large commercial operations, and the commercial sector may include some small industrial operations.

Trico staff provided electricity use data by sector and by jurisdiction. Trico staff indicated that the TEP emission factors were applicable to the electricity delivered by Trico. The Pascua Yaqui Tribe's electricity use was included in the Trico totals.

The Tohono O'odham Utility Authority (TOUA) staff provided electricity use data by sector for the Tohono O'odham Nation. TOUA purchases electricity from TEP, so the TEP emission factors were used to estimate these GHG emissions.

Annual electricity generation emission factors for TEP and Trico were calculated by PAG staff using data supplied by their staff. Composite emission factors for each inventory year were developed by first determining the fraction of electricity produced at each plant type and fuel type combination as compared to the total annual generation. Each plant/fuel type combination has a unique emission factor (pounds GHG/MWh); see formulas below. The composite annual emission factor was determined by calculating the weighted average of the individual plant/fuel emission factors.

Fraction = Annual MWh (by Plant/Fuel type)/Total Annual Electricity Generation (MWh)
Annual Electricity Generation Emission Factor = sum (Fractions x Unique Generation Factor)

Stationary energy emissions from RCI natural gas and electricity use were based on end-use energy consumption data; emissions from the local generation of electricity are not included in the Pima County totals to avoid double counting. These emissions were included in the emission factor determination and the RCI sectors' electricity use emissions.

Solid Waste

Pima County waste totals and emissions include those from the Los Reales, Sahuarita, Marana Regional and Speedway landfills. Solid waste disposal totals and emissions for Los Reales and Marana Regional landfills were obtained from the EPA's Greenhouse Gas Reporting Program. Emission totals were obtained from EPA's Greenhouse Gas Reporting Program for the Tangerine Landfill, which opened in 1983 and closed in 2013 but continues to generate methane emissions. The Speedway Recycling & Landfill facility disposal totals were provided by Arizona Department of Environmental Quality (ADEQ) and landfill staff. Sahuarita landfill waste totals were supplied by Tucson Waste and Recycling staff. Sahuarita landfill stopped accepting waste in 2016. Speedway landfill debris was characterized using data from a Cascadia construction and demolition waste study. Waste emission factors embedded in *ClearPath* were used to estimate the Speedway landfill GHG emissions.

Water and Wastewater

Wastewater Reclamation

Pima County Regional Wastewater Reclamation Department (RWRD) staff provided data for all regional facilities for 2021, and *ClearPath* model emission factors were used to calculate GHG emissions from the nitrification/denitrification process, lagoon treatment, digester gas flaring and digester gas combustion for onsite energy production, as well as septic fugitive. Staff at the Towns of Marana and Sahuarita provided wastewater processing emissions data for their facilities for 2021.

Central Arizona Project

Emissions from the electricity used to deliver CAP water to Tucson Water and various other customers within Pima County were listed as the "Water" in "Water & Wastewater" in the base year GHG inventory. CAP delivery volume data for 2021 was provided by Tucson Water and CAP staff. Electricity generation emission factors for the CAP were provided by CAP staff.

The calculation for CAP electricity use was previously made by Tucson Water staff by determining the kWh needed to pump water to individual pumping stations to deliver one acre-foot (AF) of water to each location used by Tucson Water. A composite pumping electricity factor was developed for each year as the weighted average of the kWh/AF calculated for each facility. This emission factor was applied to the total annual acre-feet delivered to Tucson Water facilities and other CAP customers.

Industrial Processes

Cement Production

Pima County emissions from the CalPortland Company Rillito Cement Plant for 2021 were obtained from the EPA GHG Reporting Program.

Energy Industries

The Kinder Morgan Inc. SGC Sierrita Compressor Station energy industry transport emissions resulting from natural gas combustion in 2021 were obtained from the EPA's Greenhouse Gas Reporting Program.

3.2 GHG Reduction Targets

In July 2017, the County adopted Climate Resolution 2017-51, which resulted in the current 2018-2025 Sustainable Action Plan for County Operations that addresses Carbon, Water, Landscapes, Materials, and Workforce, and aligned County carbon emissions targets to the United States target of reducing carbon emissions by 26 to 28 percent by 2025. To address the recent findings of the IPCC AR6, the National Climate Advisor and the White House Office of Domestic Climate Policy adjusted the United States Nationally Determined Contribution (NDC) by setting a new economy-wide target of reducing its greenhouse gas emissions by 50 to 52 percent below 2005 levels by 2030. Most recently, the Pima County Board of Supervisors passed Climate Resolution 2022-25 which responded to the urgent global call to reduce climate risks and increase climate resiliency. Importantly, this resolution adopted the IPCC AR6 goal. Pima County has been a leader in sustainability for over 15 years and continues to work to identify and implement strategies that significantly reduce emissions and increase climate resilience. The County's existing sustainable action plan, which will be ultimately replaced by a climate action plan, sets aspirational targets in key areas to improve the County's emissions and build resilience. The County's transition includes a focused group of

executive leaders working on building a path forward to develop strategies, inform decision making, and assist in project development that will enable the region to meet and exceed its aspirations.

3.3 GHG Reduction Measures

The "priority measures" identified in this section were aligned with the EPA CPRG Planning Grant guidance. Per the EPA CPRG Planning Grant guidance, PCAP priority measures are focused on implementation ready measures that provide near term GHG emissions reductions. For the competitive CPRG implementation grant, the performance period for awards is up to five years (2025-2030). The priority measures in this section do not represent all available GHG emission reduction and carbon sink enhancement measures. A complete set of implementation measures will be incorporated into the Pima County (CCAP), aligned with the CCAP requirements. The selection of the priority measures for the Pima County region PCAP was developed through:

1. Analysis of the 2021 PAG GHG emissions inventory
2. Feedback received from an online CPRG survey
3. Feedback received through CBOs outreach events in LIDAC areas
4. Projects provided by Pima County Departments
5. Projects provided by coalition partners (City of Tucson, City of South Tucson, Town of Oro Valley)

Priority measures cover the residential energy, solid waste, wastewater, transportation and commercial energy (buildings) sectors which accounts for 86% of the 2021 Pima County region GHG emissions. Priority measures are organized by sector[1] with additional details on the following information:

- Description of each measure;
- Estimate of near-term (2025-2030) and long-term (2030-2050) GHG emissions reductions;
- Implementing City, County or Town;
- Review of Authority to Implement;
- Implementation schedule and milestones;
- Geographic location;
- Metrics for tracking progress;
- LIDAC benefits.

Transportation

Measure 1. Los Reales gas capture – Use for Government Fleet, Waste Haulers and Transit Buses

The City of Tucson, through its Environmental & General Services Department (EGSD), is dedicated to addressing the impact of landfill gas (LFG) generated at the Los Reales Sustainability Campus (LRSC). Situated at 5300 E. Los Reales Rd, Tucson, AZ, this project aims to clean the LFG, mitigating fugitive emissions and minimizing air pollution. Concurrently, the endeavor seeks economically, and socially beneficial end uses for the generated LFG. The project encompasses the expansion of the Gas Collection and Control System (GCCS) to capture up to 3,600 standard cubic feet per minute (scfm), with the potential for future expansions. Additionally, it proposes the construction of a LFG to Renewable Natural Gas (RNG) Processing Facility, accompanied by a transfer pipeline and injection station for RNG to be

[1] The corresponding sectors are the "major sectors responsible for GHG emissions" as described in EPA's CPRG implementation Grants General Competition Notice of Funding Opportunity.

injected into local natural gas lines. This necessitates the City of Tucson to enter into contractual offtake agreements, facilitated by the local utility, to credit RNG produced at the facility for fueling its CNG fleet. Any excess RNG could potentially be sold to other transportation users connected to the existing gas networks. 66% of the LFG will be subjected to cleaning processes. Subsequently, a filling site for CNG buses and waste fleet will be established at Los Reales Sustainability Campus. The remaining 34% of the LFG will be flared.

Table 2. Estimate of cumulative Near-term and Long-term Transportation GHG emissions reductions – Los Reales gas capture

	CO2e Emission Reductions (Metric Tons)
2025-2030	1,153,071
2030-2050	14,387,585

Implementing Jurisdiction

1. City of Tucson

Review of Authority to Implement

The City of Tucson owns and operates the landfill and has the jurisdictional authority to implement this project. The project necessitates the City of Tucson to enter into contractual offtake agreements, facilitated by the local utility, to credit RNG produced at the facility for fueling its CNG fleet. Any excess RNG could potentially be sold to other transportation users connected to the existing gas networks.

Implementation Schedule and Milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Day 1- Contract with selected vendor (180 days to complete) Day 181: Gas Collection System upgrades (160 days) Day 181: Engineering & Design: development of design (246 days to complete) Day 181: File with ACC regarding gas clean-up and distribution from the Arizona Corporation Commission (90 days)	Day 366: Permitting: Get regulatory permitting initiated including but not limited to: Solid waste permit modification, air permits, NOI for Arizona Pollutant Discharge Elimination System, Land disturbance permit, etc. (365 days to complete) Day 410: Solicit Bids from contractors to build the system: (120 days) Day 427: Following Engineering & Design phase: Order/Manufacture Equipment (390 days)	Day 750: Begin Construction (365 Days) Day 1050: Begin Commissioning (180 days)	Day 1,230: Begin operating RNG Plant. 100% implementation	N/A

Metrics for Tracking Progress

Tracking metric is annual Vehicle Miles Traveled (VMT) from vehicles using Los Reales LFG

LIDAC Benefits

- Improved air quality and associated public health due to reduced air pollution.
    - Justice40 Climate Change: Reductions of local air pollutants (I.e. PM2.5, ozone)
- Decreased vehicle tailpipe emissions
    - Justice40 Clean Transportation: Reduction of exposure to harmful transportation-related emissions.
- Access to clean, reliable bus transportation
    - Justice40 Clean Transportation: Access to clean, high-frequency transportation
- Reduced noise pollution

    - CPRG LIDAC Technical Guidance – Reduced noise pollution
- Creation of high-quality jobs and workforce development opportunities
    - Justice40 Training and Workforce Development

Measure 2. Fleet Electrification and Infrastructure

The projects within Measure 2, include electrification of the City of Tucson, Pima County, and the Town of Oro Valley's fleet internal combustion engines, which includes light duty and passenger vehicles. The scope includes transitioning municipal vehicle fleets to electric vehicles (EVs), encompassing various departments and services. This fleet electrification will reduce greenhouse gas emissions and improve air quality across Pima County. The project includes the acquisition of a diverse range of electric vehicles, installation of EV charging infrastructure, and phasing out older, fossil fuel-dependent vehicles. The plan consists of 50 sedan fleet vehicles being replaced every year for the next 5 years (2025-2030).

Pima County Facilities Management will install an additional 100 Level 2 charging stations for County fleet support, six fast charging stations for the Pima County Sheriff's Department (to electrify rural services), and six fast chargers at a valued library, refugee center, and food bank.

In addition, Pima County, City of Tucson, Trico Electric Cooperative, Inc., and Tucson Electric Power Company propose the Pima Regional Electric Vehicle Charging Access Partnership (REVCAP) to expand utilization of electric vehicles (EV) in rural and urban communities of Pima County.

Measure Description

This measure incentivizes the installation of EV charging infrastructure for publicly available charging and funds the transition of public fleets from fossil fuel-powered vehicles to EVs. Projects include the procurement of sedans and light-duty service municipal and other public entity vehicles. Workforce development will be included in this measure with the development of programs to address EV maintenance and charging station installation, beginning with current employees. For 2021, the mobile combustion source category generated 5,487,360 MTCO2e or 48% of total regional GHG emissions.

Table 3. Estimate of cumulative Near-term and Long-term Transportation GHG emissions reductions – Fleet electrification and Infrastructure

	CO2e Emission Reductions (Metric Tons)
2025-2030	1,279
2030-2050	18,205

Implementing Jurisdictions

1. City of Tucson
2. Pima County
3. Town of Oro Valley

Review of Authority to Implement

No additional authority required by implementing jurisdiction.

Implementation Schedule and Milestones for Electric Vehicles

Year 1	Year 2	Year 3	Year 4	Year 5
Research Manufacturers electric vehicle specifications, cost, availability, performance, efficiency, and safety ratings. Identify County, City and Town of Oro Valley ICE vehicles to be replaced with EV. Engage with Facilities Management to determine if additional EV chargers are needed based on EV deployment locations. Procure electric vehicles with associated charging infrastructure, training for maintenance of vehicles and implement telematics (Town of Oro Valley Only) on all fleet vehicles to determine future replacements.	Acquisition of 50 electric vehicles Electric vehicle preparation for assignment to respective department and jurisdictions.	Acquisition of 50 electric vehicles Electric vehicle preparation for assignment to respective department and jurisdictions.	Acquisition of 50 electric vehicles Electric vehicle preparation for assignment to respective department and jurisdictions.	Continued electric vehicle preparation as vehicles received. Project closed.

Implementation Schedule and Milestones for EV Charging Stations

Year 1	Year 2	Year 3	Year 4	Year 5
Coordinate Revised Fleet Electrification Rollout Plan. Identify present EV Charging Infrastructure Needs. Procure & Deploy Electric Power Tools.	Implement EV Charging Infrastructure across County Operations, including pilots at emergency services Continue Upgrades to support infrastructure.	Continue Integrating Electric Vehicles & Charging Infrastructure	Continue Integrating Electric Vehicles & Charging Infrastructure	Complete Charging Infrastructure for Entire Light Duty non-emergency Fleet

Implementing Jurisdictions

1. City of Tucson
2. Pima County
3. Town of Oro Valley

Metrics for Tracking Progress

1. Electricity used for charging stations (kWh);
2. Number of vehicles that are transitions to electric vehicles;
3. Vehicle miles traveled by electric vehicles;
4. Number of charging stations installed;
5. Number of employees trained

LIDAC Benefits

- Improved air quality and public health due to reduced air pollution
  - Justice40 Climate Change: Reductions of local air pollutants
- Decreased vehicle tailpipe emissions
  - Justice40 Clean Transportation: Reduction of exposure to harmful transportation-related emissions
- Increased public access to electric vehicle chargers
  - Justice40 Clean Transportation: Access to affordable charging stations
- Reduced noise pollution
  - CPRG LIDAC Technical Guidance – Reduced noise pollution
- Creation of high-quality jobs and workforce development opportunities
  - Justice40 Training and Workforce Development

Commercial Energy

Measure 1. Energy Efficiency Upgrades for Municipal Operations

Measure Description

This measure supports the deployment of energy efficiency upgrades for municipal operations. Projects include LED lighting upgrades, replacement of commercial appliances, facility retrofit programs,

emergency generator replacement, and energy management control systems upgrades. For 2021, the commercial energy sector generated 1,382,875 MTCO2e (12%) of total regional GHG emissions.

The projects to be implemented reflected in Table 4 include the following (with annual energy reductions in kWh):

- City of Tucson Building Energy Efficiency Program – 7,951,420 kWh reduction
- Tucson Water's Pump & Booster System Efficiency Program - 15,794,000 kWh reduction
- City of South Tucson Solar Energy System (SES) - 178.5 Kw Solar PV – 258,477 kWh reduction
- Town of Oro Valley EV Adoption Plan – 33 kw Solar PV – 59,410 kWh reduction
- Pima County Facilities Management Building Automation & Control Systems upgrades – 424,047 kWh reduction
- Pima County Facilities Management Building Asset Electrification – 1,029,070 kWh reduction
- Pima County Facilities Management onsite energy production (solar) – 1,674,492 kWh reduction
- Pima County Facilities Management building energy efficiencies – 1,614,225 kWh reduction
- Pima County Facilities Management building envelope analysis – 2,386,812 kWh reduction

The City of Tucson plans to implement a comprehensive weatherization and retro-commissioning initiative for extensive building tune-ups across multiple city-owned facilities. The primary focus is optimizing the efficiency of city facilities, replacing aging equipment, and addressing high GWP R22 units. The initiative involves a robust retro-commissioning and efficiency program, estimated at $1.50 per square foot, covering all occupied City-owned buildings over 2,500 square feet, including smaller buildings within larger "campuses" meeting the criteria. The City manages 254 qualifying buildings, totaling 4,652,847 square feet.

Tucson Water’s energy intensity is larger than water utilities with local surface water sources due to our unique recharge and recover approach and the number of booster sites and wells used throughout the distribution system. The Colorado River is Tucson’s primary source of drinking water. Tucson Water’s allocation of Colorado River water is delivered by the Central Arizona Project and recharged into the aquifer. The amount of water needed to meet demand is recovered through booster sites and wells and distributed throughout the region. An expanded program would increase booster site and well pump energy efficiency by an average of 14% across the entire portfolio. Larger pumps have greater efficiency potential (as much as 60%) while smaller pumps have less.

The City of South Tucson plans to install 525 Q.PEAK DUO BLK-G6+/AC 340 340 Watt Panels (Q CELLS with associated equipment and materials. The photovoltaic solar (PV) system would be installed on the Administration, Police and Fire Department, and City Courts buildings, and on existing carports located in the City of South Tucson municipal complex.

To offset fossil fuel utility power, the Town of Oro Valley, will design for construction of renewable energy power sources. The Town intends to design solar parking shades to offset the electrical utility’s usage of fossil fuel to generate the electricity used to charge EVs. These structures will have the added benefit of protecting wheeled assets from sun and rain. Given an estimate of 0.35 kWh per mile, the Towns fleet’s average mileage, and TEPs renewable energy generation of 40%, an estimated 33kW of solar will be needed.

To electrify Pima County, tracking progress both in transportation and across other assets. For transportation, EV charging stations will be installed at key locations and monitor their usage, while increasing the electric vehicle fleet. For assets, we'll track and boost the percentage of electric-powered power tools, generators, heaters, and more. Regular data analysis will guide adjustments and measure impact, with the understanding that external factors and evolving data needs may require adaptation.

Pima County aims to install 350kW of additional solar capacity. This will help achieve net zero energy, off-grid, and net-metered consumption at key facilities like the Amado Food Bank, outlying Sheriff Substations, and Facilities Management (FM) shop using solar power. Both off-grid and grid-connected solutions will be used depending on the site. The project will involve designing, permitting, installing, and monitoring customized solar systems tailored to each location's unique requirements.

Pima County plans to augment the current heating operation at the community-oriented Kino Veteran's Memorial Pool with a solar thermal heating system. This will directly offset emissions of natural gas and utilize existing pumps and installed infrastructure to provide a direct application of renewable energy compatible with existing systems.

Peak load occurs when maximum incidental demand is achieved. The maximum demand timing coincides with the highest facility demand for power. This could also apply to the grid as a whole. This project aims to develop grid-responsiveness at Pima County's central plant facilities, to reduce demand across our facilities by actively managing power factor and stored electric reserves. It includes battery storage devices, monitored power factor remediation, and Heating, ventilation, and air conditioning (HVAC) load controls.

Integrating existing infrastructure with cutting-edge systems. Pima County is focusing on boosting efficiency, fortifying security, and ensuring real-time responsiveness. Key components include smart plugs, CO2 monitors, and lighting controls. Systems will be integrated with central HVAC controls, and the central controls will be upgraded to accommodate and perform optimization operations, including machine learning.

This project provides basic funding to procure the tool for a complete buildings' systems inventory analysis and best-practice EnergySTAR integration. It also provides for basic training, and limited staff time to begin onboarding buildings. Using these tools, best practices, and training we will be able to directly address weatherization and future order of priorities.

Table 4. Estimate of cumulative Near-term and Long-term GHG emissions reductions – Energy Efficiency Upgrades for Municipal Operations

	CO2e Emission Reductions (Metric Tons)
2025-2030	380,777
2030-2050	3,038,084

Implementing Jurisdictions

1. City of Tucson
2. Pima County
3. City of South Tucson
4. Town of Oro Valley

Review of Authority to Implement

The City of Tucson, Pima County, the City of South Tucson, and the Town of Oro Valley all have the authority to implement these projects as they are the property owners of the facilities.

Implementation Schedule and Milestones – City of Tucson Building Energy Efficiency Program

Year 1	Year 2	Year 3	Year 4	Year 5
Planning phase: complete facility selection, identify and contract with vendors to complete retro-commissioning and identify additional efficiency opportunities. (90 days). Complete 20% of building space in yr. 1. (900k sq ft)	Complete 40% (1.8M sq ft of building inventory)	Complete 60% (2.7M sq ft of building inventory)	Complete 80% (3.6M sq ft of building inventory)	Complete 100% (4.6M sq ft of building inventory)

Implementation Schedule and Milestones – Tucson Water's Pump & Booster System Efficiency Program

Year 1	Year 2	Year 3	Year 4	Year 5
Planning phase: Develop an inventory of booster site and well pumps. Gather data and develop pump curves. Identify high priority pumps for reconditioning or replacement.	Continue to recondition and replace pumps as the prioritized list of sites with the highest return on investment is developed. A platform for real time monitoring of pump efficiency will also be developed.	Monitor pump efficiency and continue to recondition or replace pumps with the highest return on investment.	Monitor pump efficiency and continue to recondition or replace pumps with the highest return on investment.	All of the highest priority pumps will be reconditioned or replaced by the end of this year but Tucson Water will continue to monitor pump efficiency.

Implementation Schedule and Milestones – Town of Oro Valley EV Adoption Plan – 33 kw Solar PV

Year 1	Year 2	Year 3	Year 4	Year 5
Onboarding and analysis phase – Procure three electric vehicles with associated charging infrastructure, training for maintenance of vehicles and implement telematics on all fleet vehicles to determine future replacements.	Preliminary study and design for solar panels and other renewable sources to offset fossil fuel generated electricity usage at charging stations.	Install alternative energy sources per study conducted in Year 2.	100% implementation	

Implementation Schedule and Milestones – City of South Tucson Solar Energy System (SES) – 178.5 Kw Solar PV

Year 1	Year 2	Year 3	Year 4	Year 5
Planning phase: Identify and create site plans to include ideal roofing and carport locations for PV System installation. Develop Scope of Work and procure solar contractors via RFP meeting local, state, and federal procurement requirements. Select lowest bidding contractor meeting RFP requirements and enter into contract. Issue Notice to Proceed and contractor to begin construction of PV system.	Construction upgrades: Continue with PV System installation, tie in new System into existing building connections and finalize construction. Complete final inspection with local building department and in communication with Tucson Electric Power. Issue Completion Certificate.	PV System complete and in operation/100% implementation.	PV System complete and in operation/100% implementation.	PV System complete and in operation/100% implementation.

Implementation Schedule and Milestones – Pima County Facilities Management Building Automation & Control Systems upgrades

Year 1	Year 2	Year 3	Year 4	Year 5
Implement Building Automation Software for Demand Response Scheduling including batteries at primary Central Plant.	Implement Building Automation with fully integrated Building Automation Controls for Energy Storage Devices and Demand response network.	Monitor & Optimize System Performance Assess System Integration & Performance Develop & Implement AI-driven Technologies	Monitor & Optimize System Performance Assess System Integration & Performance Develop & Implement AI-driven Technologies	Monitor & Optimize System Performance Assess System Integration & Performance Develop & Implement AI-driven Technologies

Implementation Schedule and Milestones – Pima County Facilities Management Building Asset Electrification

Year 1	Year 2	Year 3	Year 4	Year 5
Access grid responsiveness and assets to be replaced and upgraded.	Continue to access grid responsiveness and assets to be replaced and upgraded. Upgrade and install battery storage devices, power factor remediation, and HVAC load controls.	Continue to access grid responsiveness and assets to be replaced and upgraded. Upgrade and install battery storage devices, power factor remediation, and HVAC load controls.	Continue to access grid responsiveness and assets to be replaced and upgraded. Upgrade and install battery storage devices, power factor remediation, and HVAC load controls.	Continue to access grid responsiveness and assets to be replaced and upgraded. Upgrade and install battery storage devices, power factor remediation, and HVAC load controls.

Implementation Schedule and Milestones – Pima County Facilities Management onsite energy production (solar)

Year 1	Year 2	Year 3	Year 4	Year 5
Design & Install Solar Water Heater at Kino Pool Implement Solar Preheated Water Systems	Off-grid PV 50kW + Storage ($100k worth) + Lighting 50kW+DC Fastx1 + Level2 x8 (PW expansion)	Off-grid PV 50kW + Storage ($100k worth) + Lighting (Abrams)	Off-Grid Small loads/monitoring replacements (Tech packages applied to remote monitoring sites - data loggers)	Post commissioning and regular data monitoring to the sites, continue routine O&M in-house.
Grid-Connected PV Net Zero Outlying FM Shop Mission Rd	Procure, Grid-Connected PV System for Net Zero at Food Bank	Procure, Grid-Connected PV System for Net Zero at Sheriff Substations	Grid-Connected PV group Purchase 2x50kW systems	

Implementation Schedule and Milestones – Pima County Facilities Management building energy efficiencies

Year 1	Year 2	Year 3	Year 4	Year 5
Access grid responsiveness and assets to be replaced and upgraded. Procure equipment.	Upgrade central HVAC controls, smart plugs, CO2 monitors, and lighting controls. Perform optimization operations, including machine learning.	Upgrade central HVAC controls, smart plugs, CO2 monitors, and lighting controls. Perform optimization operations, including machine learning.	Upgrade central HVAC controls, smart plugs, CO2 monitors, and lighting controls. Perform optimization operations, including machine learning.	Upgrade central HVAC controls, smart plugs, CO2 monitors, and lighting controls. Perform optimization operations, including machine learning.

Implementation Schedule and Milestones – Pima County Facilities Management building envelope analysis

Year 1	Year 2	Year 3	Year 4	Year 5
Procure tools, train and launch Building inventory EnergyStar onboarding	Power Factor Correction/Controls Devices	Infiltration reduction kickoff (including duct seal testing) based on analysis with EnergyStar	Continue using tools to perform analysis and look for best practice priorities in energy efficiency	Continue using tools to perform analysis and look for best practice priorities in energy efficiency

Implementing Jurisdictions

1. City of Tucson
2. Pima County
3. City of South Tucson
4. Town of Oro Valley

Metrics for Tracking Progress

- Electricity use reductions (kWh);
- Natural gas use reductions (therms)

LIDAC Benefits

- Improved air quality and improved public health due to reduced air pollution
    - Justice40 Climate Change: Reductions of local air pollutants
- Deployment of clean energy
    - Justice40 Clean Energy and Energy Efficiency: Deployment of clean energy
- Increased regional resiliency to extreme weather events and reduced municipal energy costs
    - Justice40 Affordable and Sustainable Housing: Reduced housing cost burden
- Creation of high-quality jobs and workforce development opportunities
    - Justice40 Training and Workforce Development

Water & Wastewater

Measure 1 – Municipal Upgrades, O&M Artificial Intelligence improvements, N2O Mitigation Pilot Demonstration, Class A Biosolids Solar Dryer

Measure Description

Pima County RWRD will implement data science to wastewater treatment through of intelligent operations and maintenance (O&M) solutions utilizing machine learning as a powerful and predictive tool for optimizing energy and chemical usage at our Tres Rios Wastewater Reclamation Facility (WRF), southern Arizona's largest wastewater treatment facility. This groundbreaking project will utilize AI-artificial intelligence powered decisions for optimizing electrical usage, energy demand management, RNG production, and chemical usage. Together, these AI driven actions and machine learning will improve operational efficiency, energy savings and GHG emission mitigations.

Pima County RWRD has acquired two package plants for evaluating a novel, low energy technology in conjunction with The Water Research Foundation and the University of Arizona with the goal of deploying the first greenhouse gas optimized treatment system for efficient nutrient removal and reducing both energy consumption and GHG emissions.

Pima County RWRD plans to utilize the excess heat from the aeration blowers as well as photovoltaic and battery storage to utilize solar drying of biosolids that are generated at Tres Rios WRF. RWRD completed two comprehensive master planning efforts identifying opportunities for energy performance improvements utilizing waste heat recovery (WHR), PV, and battery energy storage systems (BESS) for the production of Class A biosolids solar dryer at the Tres Rios WRF.

For 2021, the water & wastewater sector generated 295,837 MTCO2e (3%) of total regional GHG emissions.

The projects to be implemented reflected in Table 5 include the following (with annual energy reductions in kWh):

- City of Tucson building energy efficiency program (water savings)
- Pima County Wastewater – Machine Learning Artificial Intelligence (O & M Improvement) - 6,000,000 kWh reduction
- Pima County Wastewater – N2O Mitigation Pilot Demonstration – 9,763,750 kWh reduction
- Pima County Wastewater – Class A Biosolids Solar Dryer – 7 MW Solar PV – 12,599,748 kWh reductions

Table 5. Estimate of cumulative Near-term and Long-term GHG emissions reductions – Municipal Operations upgrades, including artificial intelligence, mitigation pilot project, etc.

	CO2e Emission Reductions (Metric Tons)
2025-2030	138,357
2030-2050	495,412

Implementing Jurisdictions

1. City of Tucson
2. Pima County

Review of Authority to Implement

The City of Tucson's EGSD is responsible for managing City buildings and has the authority to implement projects within City of Tucson buildings.

Pima County RWRD is the regional wastewater entity within Pima County and owner of the Tres Rios WRF, RWRD has the statutory authority to implement projects and has authorization for use of the adjacent landfill for the installation of PV solar panels and battery storage.

Implementation Schedule and Milestones – City of Tucson building energy efficiency program (water savings)

Year 1	Year 2	Year 3	Year 4	Year 5
Planning phase: complete facility selection, identify and contract with vendors to complete retro-commissioning and identify additional efficiency opportunities. (90 days). Complete 20% of building space in yr. 1. (900k sq ft)	Complete 40% (1.8M sq ft of building inventory)	Complete 60% (2.7M sq ft of building inventory)	Complete 80% (3.6M sq ft of building inventory)	Complete 100% (4.6M sq ft of building inventory)

Implementation Schedule and Milestones – Machine Learning AI – Intelligent O&M

Year 1	Year 2	Year 3
Planning Phase: Identify energy and chemical reduction process opportunities and establish baseline parameter performance.	Monitoring and Evaluation: Continue to monitor key performance metrics and adjustments for continuous improvement.	100% implementation Identify additional opportunities for machine learning applications and further reductions
Milestone #1 Initiate implementation of AI-machine learning for targeted process improvements.	Milestone #2 Documentation of performance goals for achieving initial target reductions for the following: 10% reduction in energy usage 10% chemical usage reduction 15% reduction in CO2 emissions	Milestone #3 Achieve full target reductions of: 15% reduction in energy usage 20% chemical usage reduction 35% reduction in CO2 emissions

Implementation Schedule and Milestones – N2O (Nitrogen Oxide) Mitigation Pilot Demonstration

Year 1	Year 2	Year 3
Planning Phase: Configure and installation of control and test skid package plants.	Monitoring and Evaluation: Continue to monitor key performance metrics for seasonal performance variations.	100% implementation Identify additional opportunities for machine learning applications and further reductions
Milestone #1 Completion of package plant installation. Initiate treatment flow of 100,000 gallons per day. Gather baseline emissions data for CO2, CH4 and N2O emissions.	Milestone #2 Achieving 50% of initial treatment performance goals during the first year. 25% reduction in energy usage 20% reduction in CO2 emissions 40% reduction in N_2O emissions	Milestone #3 Achieve 100% of target reductions for the following: 50% reduction in energy usage 35% reduction in CO2 emissions 80% reduction in N_2O emissions

Implementation Schedule and Milestones – Class A Biosolids Solar Dryer

Year 1	Year 2	Year 3	Year 4
Planning Phase: System design and logistics	Construction: Initiate construction of the solar dryer and tie-in with existing infrastructure at the Tres Rios WRF	Construction: Complete construction and commissioning of solar dryer	100% Implementation: Documentation of emission reductions
Milestone #1 Completion of energy balance calculations and evaluation for supplemental heat and ventilation. Establish guaranteed maximum price for implementation.	Milestone #2 Installation of waste heat recovery system and aeration header. Begin installation of PV solar on adjacent closed landfill.	Milestone #3 Initiate processing of biosolids Verify achievement of Class A biosolids production.	Milestone #4 Validate biosolids volume reduction of 75%. Quantify excess energy production to power grid. Quantification of GHG emission reductions after seasonal temperature variations.

Implementing Jurisdictions

1. City of Tucson
2. Pima County

Metrics for Tracking Progress

- Water usage (gallons)
- Electricity use reductions (kWh).
- Natural gas use reductions (therms)

LIDAC Benefits

- Improved air quality and improved public health due to reduced air pollution
    - Justice40 Climate Change: Reductions of local air pollutants
- Deployment of clean energy
    - Justice40 Clean Energy and Energy Efficiency: Deployment of clean energy

Solid Waste

Measure 1 – Los Reales gas capture, City of Tucson Organic Waste & Recycling Program upgrades

Measure Description

For 2021, the solid waste sector generated 88,434 MTCO2e (1%) of total regional GHG emissions.

The projects to be implemented reflected in Table 6 include the following (with annual energy reductions in kWh):

The City of Tucson's Organic Waste and Recycling Drop-off Program plans to establish seven collection sites strategically located in each of the six City Wards and at the LRSC. These sites will cater to food and yard waste, single-stream recycling, and non-recyclable plastics, aligning with Tucson's goal of achieving zero waste by 2050.

Currently, the City of Tucson diverts only four percent (4%) of organics and recyclables. This Project aims to increase waste diversion from 33,000 to 54,600 tons annually, representing a 65% increase. Over the five-year grant period, this project anticipates diverting a total of 108,000 tons.

The City of Tucson, through its EGSD, is dedicated to addressing the impact of LFG generated at the LRSC. Situated at 5300 E. Los Reales Rd, Tucson, AZ, this project aims to clean the LFG, mitigating fugitive emissions and minimizing air pollution. Concurrently, the endeavor seeks economically, and socially beneficial end uses for the generated LFG. The project encompasses the expansion of the GCCS to capture up to 3,600 standard cubic feet per minute (scfm), with the potential for future expansions. Additionally, it proposes the construction of a LFG to RNG Processing Facility, accompanied by a transfer pipeline and injection station for RNG to be injected into local natural gas lines. This necessitates the City of Tucson to enter into contractual offtake agreements, facilitated by the local utility, to credit RNG produced at the facility for fueling its CNG fleet. Any excess RNG could potentially be sold to other transportation users connected to the existing gas networks. 66% of the LFG will be subjected to cleaning processes. Subsequently, a filling site for CNG buses and waste fleet will be established at Los Reales Sustainability Campus. The remaining 34% of the LFG will be flared. Additional implementation and authority to implement information is located under the Transportation Sector Measure 1.

Table 6. Estimate of cumulative Near-term and Long-term GHG emissions reductions – Los Reales gas capture, City of Tucson Organic Waste & Recycling Program upgrades.

	CO2e Emission Reductions (Metric Tons)
2025-2030	37,496
2030-2050	662,880

Implementing Jurisdiction

1. City of Tucson

Review of Authority to Implement

City of Tucson's Environmental and General Service Department is responsible for managing the Los Reales Sustainability Campus. The City of Tucson owns and operates the LRSC and has the authority to implement projects at this facility.

Implementation Schedule and Milestones – City of Tucson Organic Waste & Recycling Program Upgrades

Year 1	Year 2	Year 3	Year 4	Year 5
Planning phase: Issue RFP and contracts for work to be completed. Order equipment, identify drop-off sites, begin compost facility upgrades (including engineering and permitting)	Continue upgrades to food, yard waste, and recycling drop-off sites. Finalize upgrades to compost facility. Day 550: Launch program.	Assessment, evaluation and refinement of processes.	Assessment, evaluation and refinement of processes.	100% implementation

Implementing Jurisdiction

1. City of Tucson

Metrics for Tracking Progress

- LFG collected annually (scfm)
- Compostable materials collected annually (tons)

LIDAC Benefits

- Improved air quality and Improved public health due reduced air pollution
    - Justice40 Climate Change: Reductions of local air pollutants
- Deployment of clean energy
    - Justice40 Clean Energy and Energy Efficiency: Deployment of clean energy
- Reduced food waste sent to landfills
    - Justice40 Climate Change: Reductions of greenhouse gas emissions

GHG Emissions Sinks

Measure 1. Pima County Flood Control - Avra Valley rural floodplain and riparian restoration, and Urban Stormwater Parks.

Measure Description

The Pima County Regional Flood Control (RFCD) uses the Floodplain Management Plan as a guide to protect the public from flood risk, restore riparian areas along watercourses, and restore natural floodplain function, as resources allow. RFCD identified two projects: 1) Avra Valley rural floodplain and riparian restoration, and 2) Urban Stormwater Parks.

In the Avra Valley (which includes Altar Valley and Brawley Wash Watersheds), the management approach has been limited to non-structural practices, due to the predominately rural nature of the watersheds. Preservation of natural floodplain function is important in these watersheds to reduce channelization, which in the past, has led to extensive maintenance requirements due to sedimentation. There are many opportunities for restoration and land stewardship projects throughout the watersheds, which include biologic carbon sequestration from revegetation efforts.

Projects that include the conservation of stormwater sheet flow and floodplain enhancements create soil-water-carbon sinks and reduce potential flood and erosion damages to public and private infrastructure, and agricultural lands. Several project sites have been identified of varying size and complexity. Projects also include a re-vegetation plan to increase vegetation cover with native grass seeding and shrub/tree plantings. Increasing the presence and availability of surface water can increase plant communities' ability to adapt in the face of climate change and reduce long-term maintenance.

The proposed projects identified in the Tucson Urban Stormwater Park program are located on RFCD or City of Tucson properties. Stormwater Parks increase tree canopy cover, reduce urban heat, and support flood mitigation. There is evidence that neighborhood-scale basins are the most important scale to implement stormwater harvesting. Stormwater flowing in roadways is diverted into shallow basins where it is infiltrated into the soil and supports a vegetation pallet of trees and shrubs. The City of Tucson's Storm to Shade program accepts responsibility for maintenance of each completed stormwater park that is designed and constructed by RFCD. The proposal will build upon successful projects that have already been established. Data for carbon reduction was determined using an average of four recent Pima County Stormwater Park development Plan Sets as designed by RFCD Landscape Architect.

Table 7: Avra Valley Rural PCAP Projects

Avra Valley Rural PCAP Projects							
			Existing Conditions		Proposed Conditions		Results
Project Name	**Total Area (A)**	**Total Area (km2)**	**% Area Vegetation**	**% Area bare ground**	**% Area Restored (total cover)**	**% Area Tree/Shrub Cover**	**Carbon Sequestered CO2e (T)[2]**
Altar Wash Floodplain Restoration	168.05	0.68007	50	50	90	55	836.7
Altar Wash Channel Meander Mitigation	2.17	0.00876	56	44	92	68	35.67
Duval Channel Meander Erosion Mitigation	0.066	0.000268	20	80	70	50	0.8707
Buckelew West	646.09	2.61462	68	32	100	48	1521.4
Tortuga Ranch	508.23	2.0567	50	50	95	70	1780.62
CAVSARP	1169.52	4.7328	40	56	52	44	2575.57
Cactus Avra	4755.2	19.2436	70	26.67	96.67	76.67	18260
Tucker Road	483.16	1.9553	66.67	33.33	93.33	80	1934.63
W. Prickle Desert Dr	477.99	1.9344	18.75	31.25	50	43.75	1046.67
TOTAL	**8,210.48**	**33.2265**	**439.42**	**403.25**	**739.00**	**535.42**	**27,992.13**
AVERAGE	912.28	3.6918	48.82	44.81	82.11	59.49	3,110.24

[2] Carbon Sequestered CO2e calculated using i-Tree.eco, developed by USDA Forest Service (source: https://www.itreetools.org

Implementing Jurisdiction

1. Pima County

Review of Authority to Implement

The proposed projects identified in the Avra Valley are located on Pima County, RFCD, or City of Tucson properties. A 25-year Inter-Governmental Agreement (IGA) between RFCD and City of Tucson authorizes cooperative land management project implementation on the properties. The IGA establishes conditions, responsibilities, and expectations regarding the design, construction, and maintenance of land management improvements on RFCD, Pima County, and City of Tucson lands.

An IGA between the RFCD and City of Tucson authorizes cooperative collaboration in the urban area.

Implementation Schedule and Milestones -Tucson Urban Stormwater Park

Year 1	Year 2	Year 3	Year 4	Year 5
Planning phase: site location selection, rainfall-runoff, data collection and analysis, project planning and design.	Construction of Urban Stormwater Park (100% complete) and Planning phase for next project.	Construction of Urban Stormwater Park (100% complete) and Planning phase for next project.	Construction of Urban Stormwater Park (100% complete) and Planning phase for next project.	Construction of Urban Stormwater Park (100% complete) and Final Reporting.

Implementation Schedule and Milestones - Avra Valley rural floodplain and riparian restoration

Year 1	Year 2	Year 3	Year 4	Year 5
Planning phase: Contract watershed restoration contractor to finalize existing 15% project plans and obtain permits	Start Project Installation with Phased Construction	Project Installation 100% complete	Performance Monitoring of treatment site and vegetation	Performance Monitoring and Final Reporting

Implementing Jurisdictions

1. Pima County
2. City of Tucson

Metrics for Tracking Progress

Percent tree canopy

LIDAC Benefits

- Flood attenuation
    - Justice40 Climate Change: Increased Resilience to climate change, uptake of GHG emissions in atmosphere, groundwater recharge, and increased habitat for wildlife

Other

Measure 1. Pima County Natural Resources, Parks and Recreation - Lawn & Garden Equipment Electrification Pilot Project

Measure Description

Pima County Natural Resources, Parks, & Recreation (NRPR) department plans to remove and replace gas powered handheld lawn and garden equipment with battery powered units at six (6) project sites. The sites identified have adequate electrical capacity to recharge batteries and are located in fortified, secured compounds.

For 2021, the commercial energy sector generated 1,382,875 MTCO2e (12%) of total regional GHG emissions.

Table 8. Estimate of cumulative Near-term and Long-term GHG emissions reductions – NRPR Lawn & Garden Equipment Electrification Pilot Project

	CO2e Emission Reductions (Metric Tons)*
2025-2030	0
2030-2050	0

* The small scale of the NRPR electrification pilot project resulted in negligible GHG emissions reductions when compared to the baseline GHG inventory for the commercial energy sector where this project is located. However, there will be immediate criteria air pollutants reductions associated with the pilot project.

Implementing Jurisdiction

1. Pima County

Review of Authority to Implement

No additional authority required by implementing jurisdiction.

Implementation Schedule and Milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Planning phase: Procure complete line of battery-operated commercial landscape equipment for six job sites. 100% Implementation	Replacement parts (batteries and chargers) as required.	Replacement parts (batteries and chargers) as required.	Replacement parts (batteries and chargers) as required.	Replacement parts (batteries and chargers) as required.

Measure 2: Replace Gas Powered Handheld Lawn and Garden Equipment with Battery Powered Units

Implementing Jurisdiction

Pima County

Metrics for Tracking Progress

- Number of pieces of equipment transitioned to electric

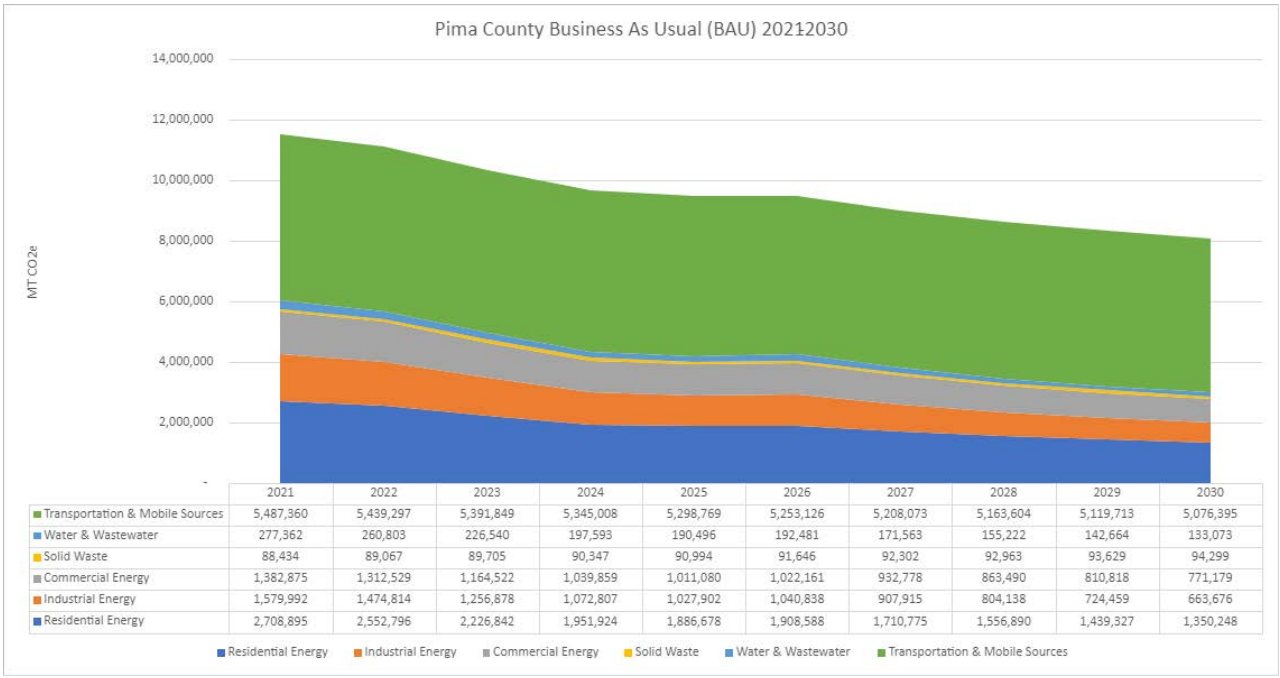
LIDAC Benefits

- Improved air quality and Improved public health due reduced air pollution
    - Justice40 Climate Change: Reductions of local air pollutants
- Deployment of clean energy
    - Justice40 Clean Energy and Energy Efficiency: Deployment of clean energy
- Reduced noise pollution
    - CPRG LIDAC Technical Guidance – Reduced noise pollution

3.4 GHG Emissions Projections

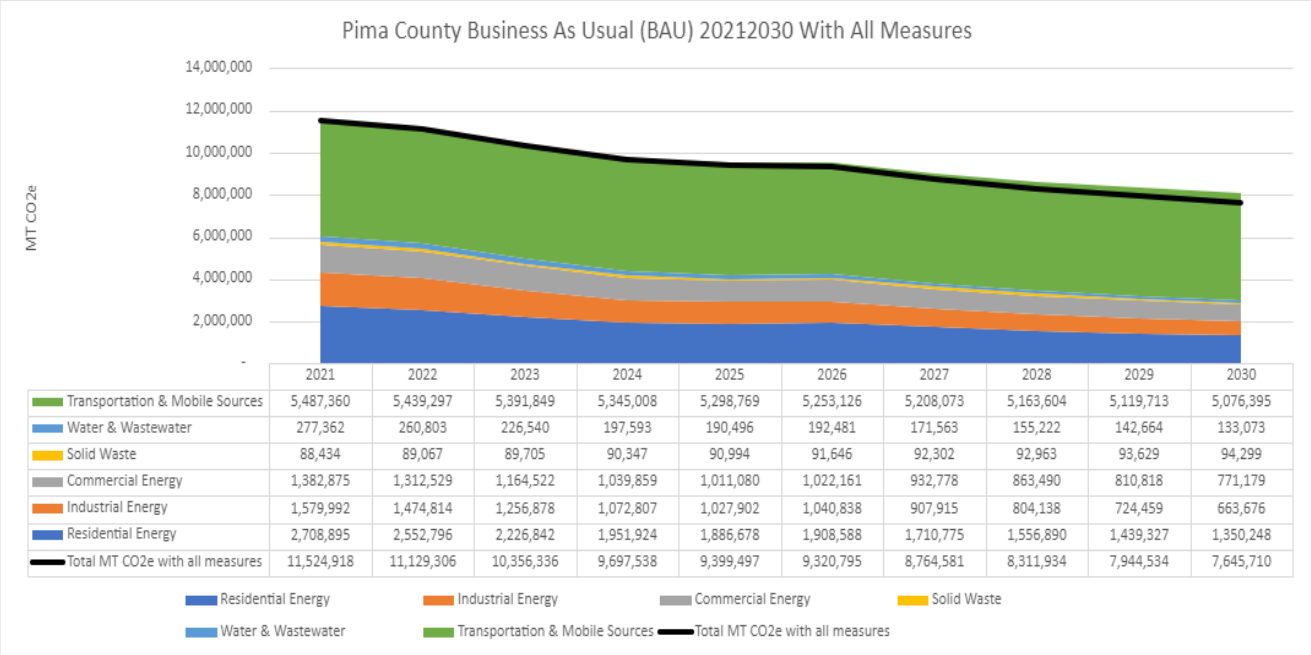
Below are the Business-as-Usual (BAU) projections (without and with the measures) from the ICLEI Clearpath model. The BAU was developed using the 2021 baseline GHG inventory and applying modeling factors such as population growth projections, carbon intensity growth (decrease) rates, etc. to project the GHG emissions by sector out to the two time periods in the PCAP (2025-2030, 2030-2050). Figures 6 and 8 below show the default BAU's for 2025-2030 and 2030-2050 respectively. Figures 7 and 9 below show BAU with all of the PCAP measures (denoted with the black line) implemented.

Figure 6. Pima County Business as Usual GHG Emissions (2021-2030)



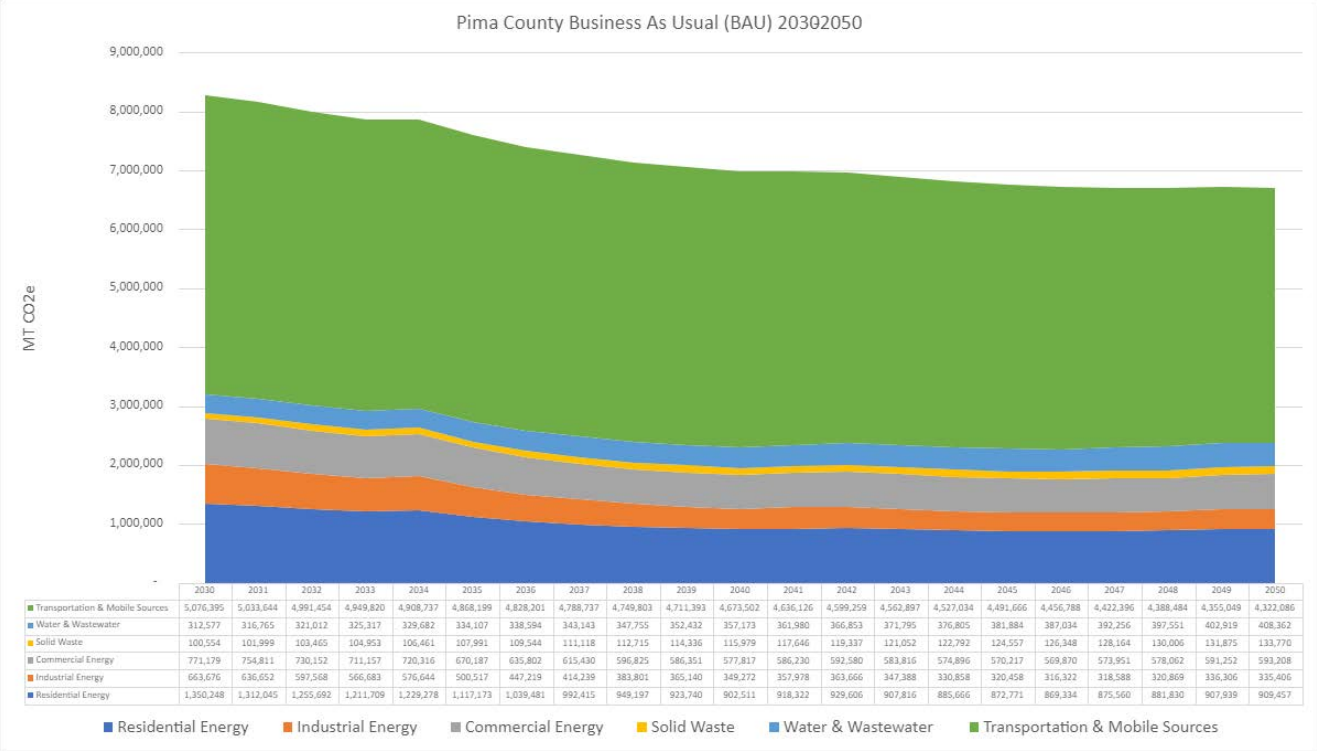
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Transportation & Mobile Sources	5,487,360	5,439,297	5,391,849	5,345,008	5,298,769	5,253,126	5,208,073	5,163,604	5,119,713	5,076,395
Water & Wastewater	277,362	260,803	226,540	197,593	190,496	192,481	171,563	155,222	142,664	133,073
Solid Waste	88,434	89,067	89,705	90,347	90,994	91,646	92,302	92,963	93,629	94,299
Commercial Energy	1,382,875	1,312,529	1,164,522	1,039,859	1,011,080	1,022,161	932,778	863,490	810,818	771,179
Industrial Energy	1,579,992	1,474,814	1,256,878	1,072,807	1,027,902	1,040,838	907,915	804,138	724,459	663,676
Residential Energy	2,708,895	2,552,796	2,226,842	1,951,924	1,886,678	1,908,588	1,710,775	1,556,890	1,439,327	1,350,248

Figure 7. Business as Usual (BAU) GHG emissions with all Measures* (2025-2030)



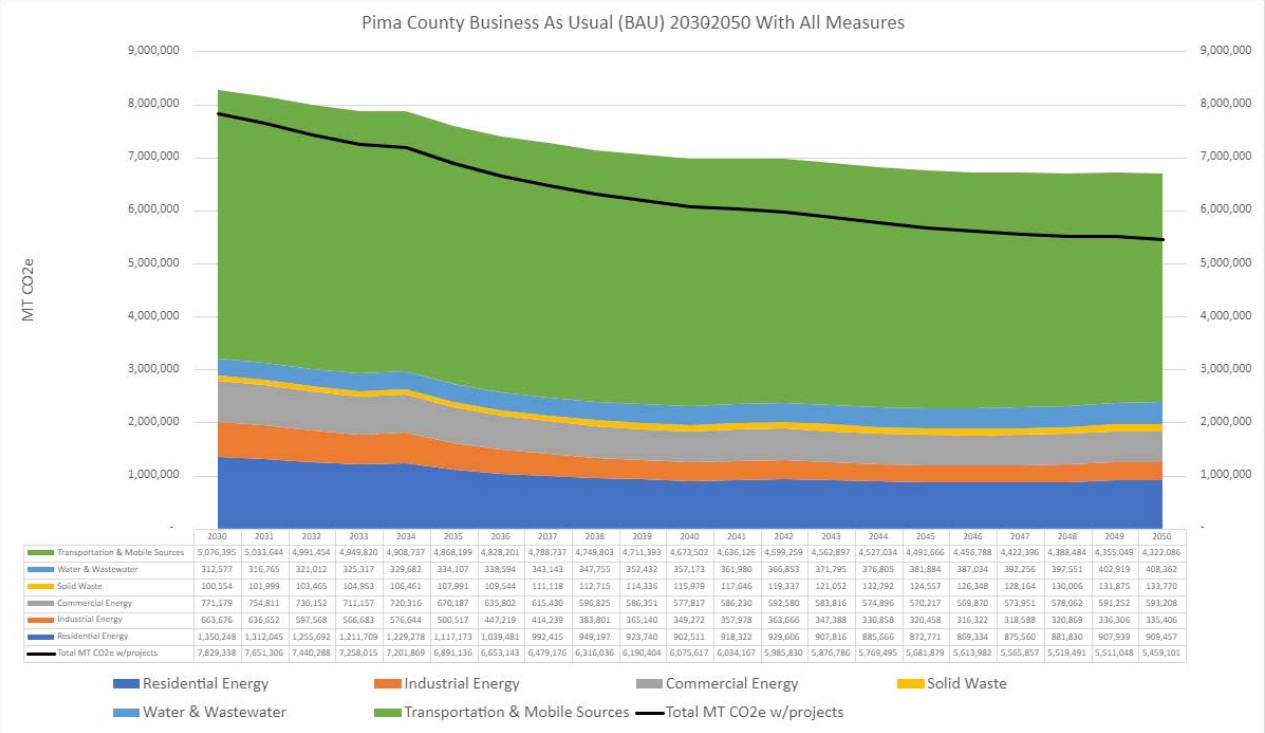
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Transportation & Mobile Sources	5,487,360	5,439,297	5,391,849	5,345,008	5,298,769	5,253,126	5,208,073	5,163,604	5,119,713	5,076,395
Water & Wastewater	277,362	260,803	226,540	197,593	190,496	192,481	171,563	155,222	142,664	133,073
Solid Waste	88,434	89,067	89,705	90,347	90,994	91,646	92,302	92,963	93,629	94,299
Commercial Energy	1,382,875	1,312,529	1,164,522	1,039,859	1,011,080	1,022,161	932,778	863,490	810,818	771,179
Industrial Energy	1,579,992	1,474,814	1,256,878	1,072,807	1,027,902	1,040,838	907,915	804,138	724,459	663,676
Residential Energy	2,708,895	2,552,796	2,226,842	1,951,924	1,886,678	1,908,588	1,710,775	1,556,890	1,439,327	1,350,248
Total MT CO2e with all measures	11,524,918	11,129,306	10,356,336	9,697,538	9,399,497	9,320,795	8,764,581	8,311,934	7,944,534	7,645,710

Figure 8. Pima County BAU GHG Emissions (2030-2050)



	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Transportation & Mobile Sources	5,076,395	5,033,644	4,991,454	4,949,820	4,908,737	4,868,199	4,828,201	4,788,737	4,749,803	4,711,393	4,673,502	4,636,126	4,599,259	4,562,897	4,527,034	4,491,666	4,456,788	4,422,396	4,388,484	4,355,049	4,322,086
Water & Wastewater	312,577	316,765	321,012	325,317	329,682	334,107	338,594	343,143	347,755	352,432	357,173	361,980	366,853	371,795	376,805	381,884	387,034	392,256	397,551	402,919	408,362
Solid Waste	100,554	101,999	103,465	104,953	106,461	107,991	109,544	111,118	112,715	114,336	115,979	117,646	119,337	121,052	122,792	124,557	126,348	128,164	130,006	131,875	133,770
Commercial Energy	771,179	754,811	730,152	711,157	720,316	670,187	635,802	615,430	596,825	586,351	577,817	586,230	592,580	583,816	574,896	570,217	569,870	573,951	578,062	591,252	593,208
Industrial Energy	663,676	636,652	597,568	566,683	576,644	500,517	447,219	414,239	383,801	365,140	349,272	357,978	363,666	347,388	330,858	320,458	316,322	318,588	320,869	336,306	335,406
Residential Energy	1,350,248	1,312,045	1,255,692	1,211,709	1,229,278	1,117,173	1,039,481	992,415	949,197	923,740	902,511	918,322	929,606	907,816	885,666	872,771	869,334	875,560	881,830	907,939	909,457

Figure 9. Pima County BAU With All Measures (2030-2050)



	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Transportation & Mobile Sources	5,076,395	5,033,644	4,991,454	4,949,820	4,908,737	4,868,199	4,828,201	4,788,737	4,749,803	4,711,393	4,673,502	4,636,126	4,599,259	4,562,897	4,527,034	4,491,666	4,456,788	4,422,396	4,388,484	4,355,049	4,322,086
Water & Wastewater	312,577	316,765	321,012	325,317	329,682	334,107	338,594	343,143	347,755	352,432	357,173	361,980	366,853	371,795	376,805	381,884	387,034	392,256	397,551	402,919	408,362
Solid Waste	100,554	101,999	103,465	104,953	106,461	107,991	109,544	111,118	112,715	114,336	115,979	117,646	119,337	121,052	122,792	124,557	126,348	128,164	130,006	131,875	133,770
Commercial Energy	771,179	754,811	730,152	711,157	720,316	670,187	635,802	615,430	596,825	586,351	577,817	586,230	592,580	583,816	574,896	570,217	569,870	573,951	578,062	591,252	593,208
Industrial Energy	663,676	636,652	597,568	566,683	576,644	500,517	447,219	414,239	383,801	365,140	349,272	357,978	363,666	347,388	330,858	320,458	316,322	318,588	320,869	336,306	335,406
Residential Energy	1,350,248	1,312,045	1,255,692	1,211,709	1,229,278	1,117,173	1,039,481	992,415	949,197	923,740	902,511	918,322	929,606	907,816	885,666	872,771	869,334	875,560	881,830	907,939	909,457
Total MT CO2e w/projects	7,829,338	7,651,306	7,440,288	7,258,015	7,201,869	6,891,136	6,653,143	6,479,176	6,316,036	6,190,404	6,075,617	6,034,167	5,985,830	5,876,786	5,709,495	5,681,879	5,613,982	5,565,857	5,519,491	5,511,048	5,459,101

* Excluding RFCD "Sinks" Projects

Table 9. Comparison 2021-2030 BAU vs All Measures Implemented

Year	BAU (MT CO2e)	MT CO2e – All Measures Implemented
2021	11,524,918	11,524,918
2022	11,129,306	11,129,306
2023	10,356,336	10,356,336
2024	9,697,538	9,697,538
2025	9,505,919	9,399,497
2026	9,508,840	9,320,795
2027	9,023,406	8,764,581
2028	8,636,307	8,311,934
2029	8,330,610	7,944,534
2030	8,088,870	7,645,710

Table 10. Annual MT CO2e Reductions by Sector for all Measures Implemented

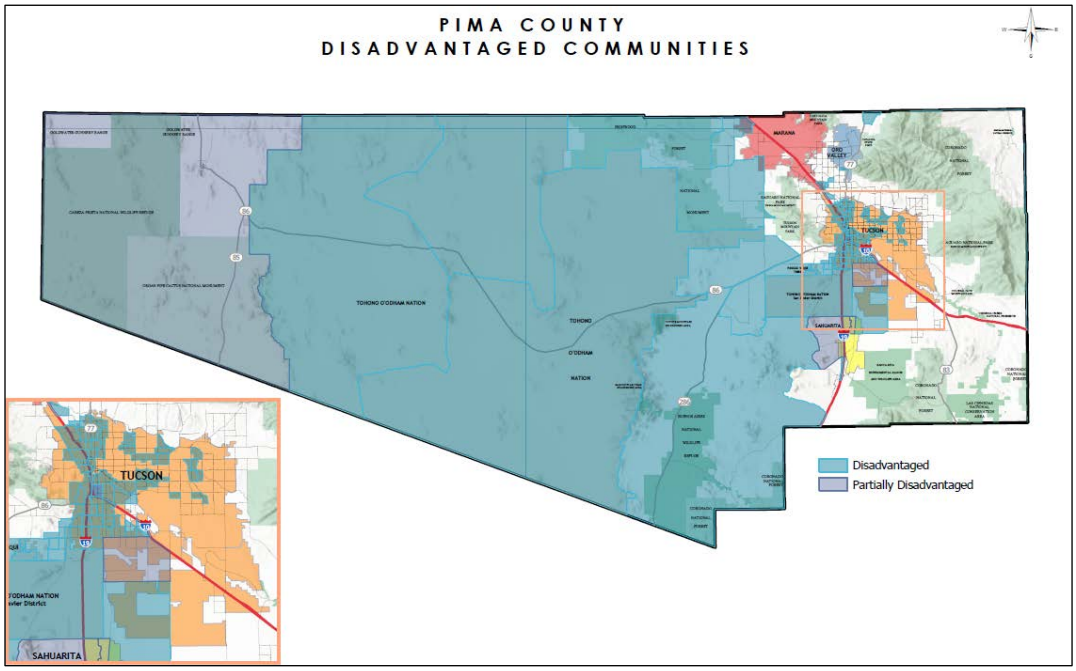
	Total MT CO2e Reductions			
Year	Transportation	Commercial Energy	Solid Waste	Water & Wastewater
2025	58,397	23,401	1,763	22,965
2026	114,690	47,032	3,510	23,001
2027	168,940	61,868	5,303	23,039
2028	221,198	73,463	7,121	23,078
2029	271,520	83,149	8,964	23,116
2030	319,960	91,793	10,835	23,156

4. Low Income Disadvantaged Communities Benefits Analysis

The EPA recommends utilizing the Climate and Economic Justice Screening Tool (CEJST) to identify LIDAC communities. CEJST was developed under Executive Order 14008 to help Federal agencies better identify communities that can benefit from the Justice40 Initiative. This tool identifies census tracts that meet thresholds for at least one of the categories of burden related to climate change and the environment or if they land within the boundaries of Federally Recognized Tribes. The burdens are based on eight different categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.

The Pima County dataset located with the CEJST tool identified 91 disadvantaged census tracts out of 241 total tracts (38%) within the Tucson MSA (see Figure X and Appendix X for full list).

Figure 10. CEJST Identified Disadvantaged Communities in the Tucson MSA (I.e. Pima County)



The total number of people who live in Tucson MSA LIDAC communities is 392,683. Tribal communities include the Tohono O'odham Nation, Pascua Yaqui Tribe, and San Xavier District.

Within these 91 LIDAC census tracts, several risk factors predominate the cumulative environmental and social conditions that negatively impact quality of life, life expectancy, and disproportionately burden certain communities to environmental exposures. The disadvantaged communities are located in the City of Tucson, especially on the south, southwest, and west sides, the City of South Tucson, the Tohono O'odham, San Xavier, and Pascua Yaqui tribal lands, and large swaths of unincorporated Pima County. A small number of LIDAC census tracts are also located in the Towns of Oro Valley, Marana, and Sahuarita.

Factors that impact LIDAC Communities in the Tucson MSA (average percentiles)

- Low-life expectancy: 68%
- Unemployment: 78%,
- Percent of individuals living 200% below the poverty line: 84%
- Percent of people experiencing Housing Burden: 73%
- Linguistic Isolation: 72% (defined as all adults speak a language other than English in the home and none speaks English "very well")
- Adult asthma rate: 76%
- Adult coronary heart disease: 56%
- Adult diagnosed diabetes: 60%
- Energy Burden: 68% (defined as the percentage of gross household income spent on energy costs)

Environmental exposures (average percentiles)

- Traffic Proximity and Volume: 58%
- Diesel Particulate Matter exposure: 60%
- Located near Wastewater Discharge: 67%
- Located near Leaky Underground Storage Tanks: 50%
- Located near a Superfund Site: 55%

LIDAC Demographic Data in Tucson MSA LIDAC Communities (average percent)

- Hispanic/Latino: 52%
- White: 33%
- American Indian/Alaska Native: 9%
- Black/African American: 3%
- Asian: 2%
- Native Hawaiian or Pacific: 0%
- Two or more races: 5%
- Other: 13%
- Under age 10: 52%
- Over age 64: 13%

These data demonstrate that over half of LIDAC communities within the Tucson MSA are Hispanic, followed by White and American Indian population, with over half of the population under the age of 10.

Environmental Justice is of considerable importance to the residents of Pima County, particularly on the South Side of Tucson, with previous Trichloroethylene (TCE) and 1-4 dioxane contamination in local groundwater wells and a disproportionately high number of air pollution sources co-located in areas with the highest minority and lowest income populations. A Superfund site has existed near the Tucson International Airport for three decades, as well as Davis-Monthan Air Force Base, Interstate 10 and 19, the Tucson Electric Power generating station, the Los Reales landfill, petroleum tank farms, a wide variety of industrial sources of air pollution, and a nearby PFAS water plume. This is contributing to considerable environmental justice concerns.

Table 11: CEJST results by burden indicator and burden category for Pima County and 25 miles outside of Pima County.

Burden Category	Burden Indicator	Census Tract Count	Population Amount	Additional Tracts in 25-mile proximity	Additional Population in 25-mile proximity
Climate Change	Greater than 90th percentile for expected agricultural loss	18	94,652	13	118,062
Climate Change	Greater than 90th percentile for building loss	11	47,562	4	15,177
Climate Change	Greater than 90th percentile for population loss	0	0	2	4,549
Climate Change	Greater than 90th percentile for flood risk	1	1,165	4	11,024
Climate Change	Greater than 90th percentile for fire risk	125	546,748	34	159,280
Energy	Greater than the 90th percentile for energy burden	6	24,196	1	3,850
Energy	Greater than the 90th percentile for PM-2.5 exposure	0	0	0	0
Transportation	Greater than the 90th percentile for Diesel particulate exposure	4	17,357	0	0
Transportation	Greater than the 90th percentile for DOT transit barriers	12	53,169	10	43,073
Transportation	Greater than the 90th percentile for Traffic Proximity	7	22,747	0	0
Housing	Greater than the 90th percentile for housing burden	18	86,607	0	0

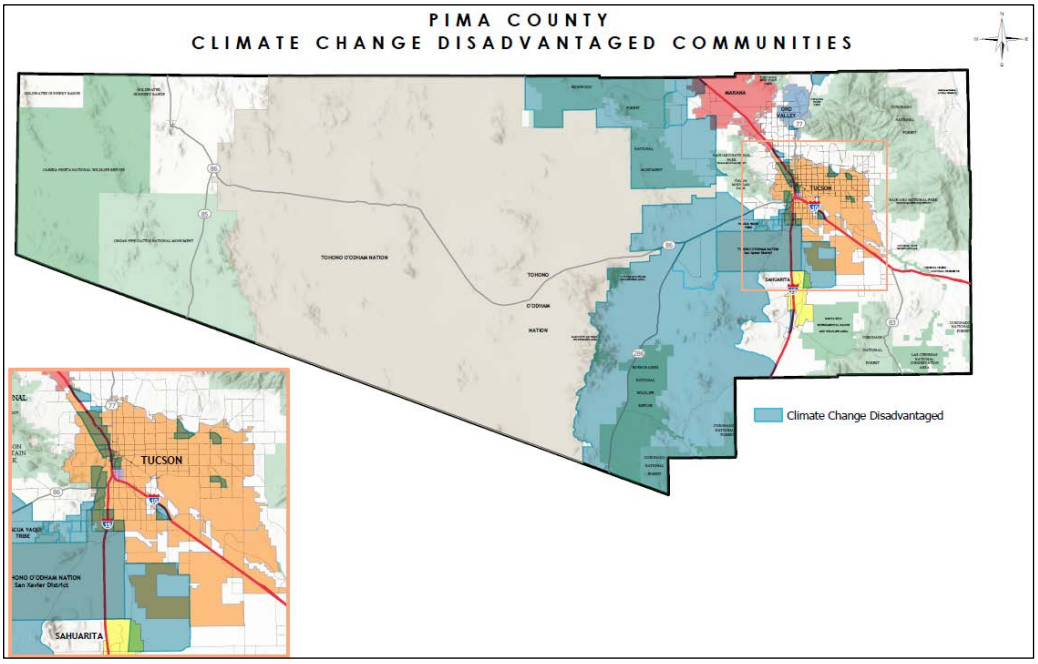
Housing	Greater than or equal to the 90th percentile for share of the tract's land area that is covered by impervious surface or cropland as a percent	1	896	0	0
Housing	Greater than or equal to the 90th percentile for homes with no kitchen or indoor plumbing	26	88,647	6	23,583
Housing	Greater than or equal to the 90th percentile for lead paint, the median house value is less than the 90th percentile.	1	6,055	0	0
Legacy Pollution	There is at least one abandoned mine in this census tract	0	0	0	0
Legacy Pollution	There is at least one Formerly Used Defense Site (FUDS) within the tract	13	43,819	9	54,895
Legacy Pollution	Greater than or equal to the 90th percentile for proximity to hazardous waste facilities	0	0	0	0
Legacy Pollution	Greater than or equal to the 90th percentile for proximity to superfund sites	0	0	0	0
Legacy Pollution	Greater than or equal to the 90th percentile for proximity to RMP sites	2	12,439	0	0
Water and Wastewater	Greater than or equal to the 90th percentile for leaky underground storage tanks	3	6,937	0	0
Water and Wastewater	Greater than or equal to the 90th percentile for wastewater discharge	71	296,550	4	24,203
Health	Greater than the 90th percentile for asthma and is low income	9	24,639	3	11,540
Health	Greater than the 90th percentile for diabetes and is low income	5	18,679	13	40,242
Health	Greater than the 90th percentile for heart disease	20	59,781	10	31,396

Health	Greater than the 90th percentile for low life expectancy	15	61,984	1	3,173
Workforce Development	Greater than or equal to the 90th percentile for low median household income as a percent of area median income and has low high school attainment.	18	75,771	8	26,636
Workforce Development	Greater than or equal to the 90th percentile for households in linguistic isolation and has a low high school attainment	18	80,124	8	27,655
Workforce Development	Greater than or equal to the 90the percentile for households at or below 100% federal poverty level and has low high school attainment	32	141,229	8	34,756

The results from Table 11 demonstrate multiple disadvantaged communities throughout Pima County in addition to a 25-mile buffer surrounding all of Pima County. The disadvantaged communities are not isolated to the county boundary, they extend outside of the county.

4.1 Climate Change Burden: at or above the 90th percentile for expected agriculture loss rate, or expected building loss rate, or expected population loss rate, or projected flood risk, or projected wildfire risk AND are at or above the 65th percentile for low income.

Figure 11. Climate Change LIDAC community census tracts within the Tucson MSA



Wildfire

In 2020, the Santa Catalina Mountains in Pima County experienced the largest forest fire in recorded history, totaling approximately 80,000 acres. The forest fires frequency and intensity are anticipated to increase due to climate change.

Future Climate Induced Rainfall

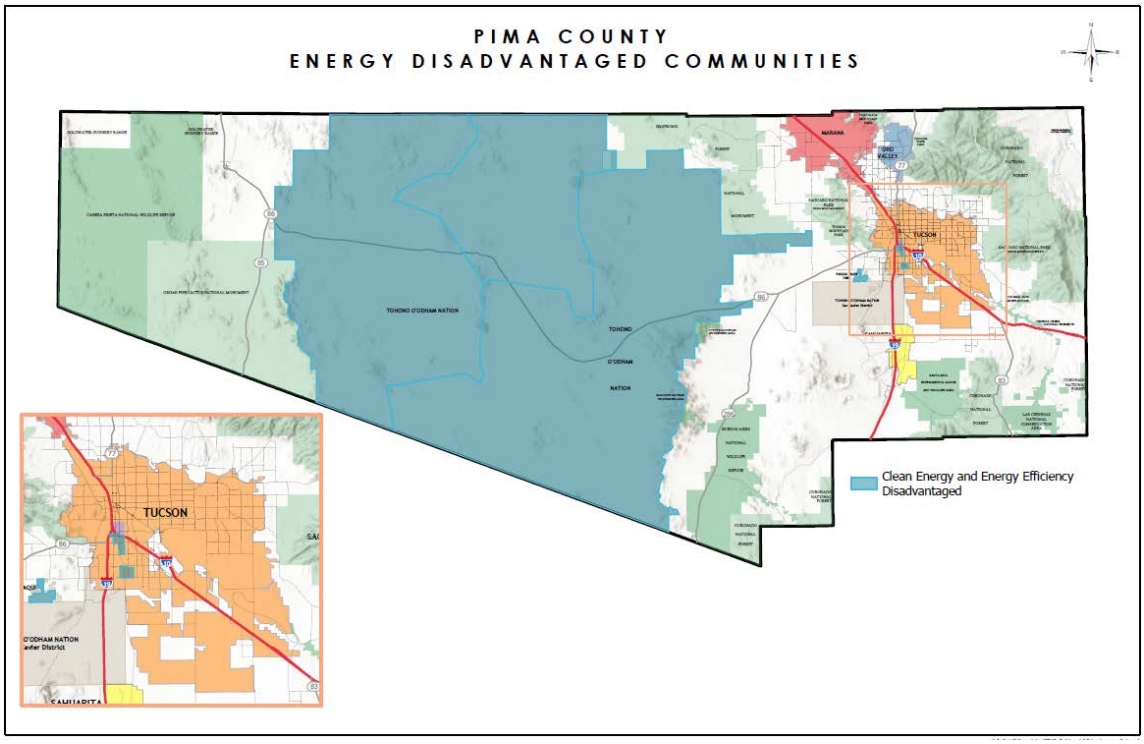
Pima County RFCD recently completed a study evaluating the impact of climate change on future rainfall scenarios and associated flood risk, concluding that future rainfall depths will increase by over 20% for 100-year storm. Further, the current 100-year storm is anticipated to be equivalent to the 25-year storm over the next 50 years. Pima County is evaluating the modified watersheds due to these fires and their effect on flooding. The measures proposed by the Pima County RFCD will assist with improving flooding risk in LIDAC communities.

Invasive Plant Species

The widespread presence of invasive plant species, particularly buffelgrass, exacerbates the typical fire risk in the Sonoran Desert by providing connectivity between biomes. Buffelgrass exists from the mountains to the urban interface, increasing likelihood of loss of both residential and commercial structures due to fire.

4.2 Energy Burden: at or above the 90th percentile for energy cost or PM2.5 in the air AND are at or above the 65th percentile for low income.

Figure 12. Energy burdened LIDAC community census tracts within the Tucson MSA:

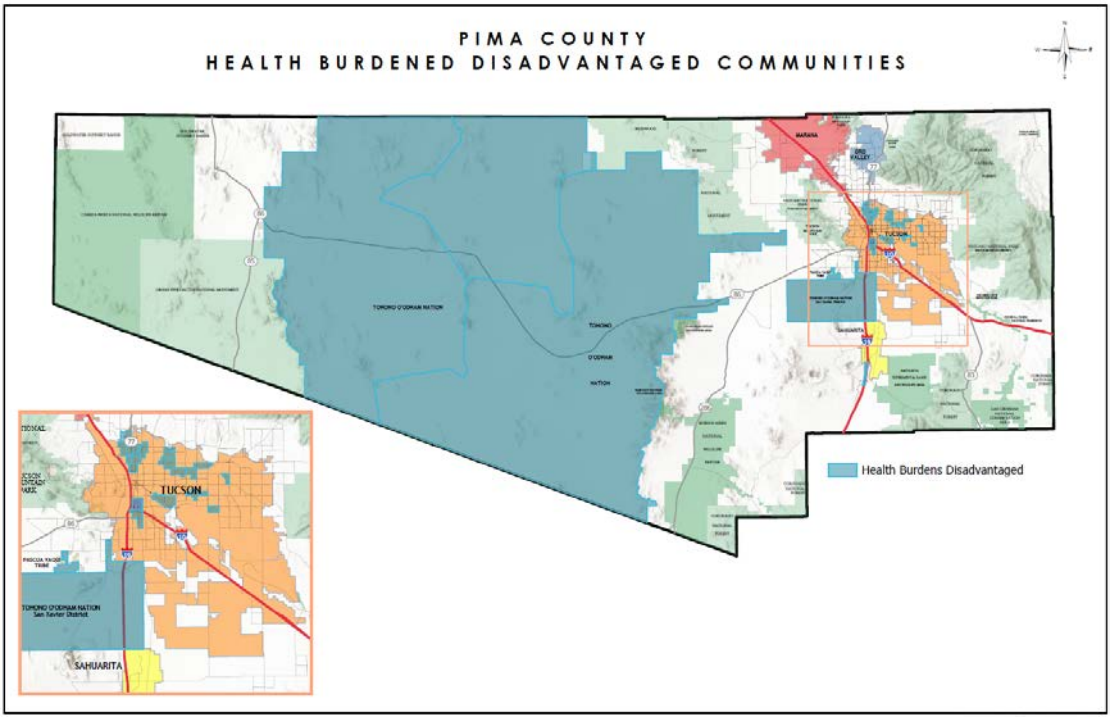


Energy Efficiency Upgrades for Local Governments

Measures that have been included for Pima County, the City of Tucson, and City of South Tucson will save on the amount of electricity that is generated in the region. Electricity provided by Tucson Electric Power and its subsidiary, Trico Electric Cooperative, is generated through a variety of renewable (solar and wind) and non-renewable sources (natural gas and coal). Energy that is conserved through these projects will not only reduce GHG emissions in the Tucson MSA, but will also reduce criteria air pollutants, such as NO2, that are considered criteria air pollutants and regulated by PDEQ for stationary point sources. NOx sources of air pollution also contribute to ozone formation. Pima County is currently on the cusp of becoming nonattainment for ozone ('21-'23 Design Value 70 ppb) and will become a nonattainment area if the standard is lowered, as is currently proposed. In addition, these projects will create job opportunities, especially in electrical and construction trades and help save money on the high cost of electricity that is ultimately borne out by local taxpayers.

4.3 Health Burden: at or above the 90th percentile for asthma or diabetes or heart disease or low life expectancy AND are at or above the 65th percentile for low income.

Figure 13. Health burdened LIDAC community census tracts within the Tucson MSA:



Many LIDAC communities in Pima County suffer from significant health disparities, including disproportionate rates of diabetes, heart disease, and low life expectancy.

Heat

One climate related health risk, that is not accounted for in the CEJST tool, is heat risk. The public outreach activities conducted with LIDAC communities overwhelmingly listed *excessive heat* as a primary climate change-related event that is of most concern. This is likely due to the fact that the summer of 2023 experienced the highest average temperatures in recorded history. LIDAC communities

are experiencing more frequent, hotter days and nights and longer durations of high temperatures. They are feeling the pain both physically and financially as energy costs go up. LIDAC communities are more often renters and do not have the ability to make energy-efficiency modifications to their properties. LIDAC communities experience greater heat-related stresses through their work activities, often conducted outdoors. Indoor deaths are indicative of a population who either chooses not to properly cool their homes due to high energy costs or experiences a lack of cooling access in their homes or trailers. Swamp coolers no longer work well enough to adequately cool homes.

In order to address excessive heat and prepare for the summer, the City of Tucson, in collaboration with the Pima County Health Department and the University of Arizona, hosted an Excessive Heat Planning Summit on February 3, 2024. Community members and local experts provided input on a wide variety of topics and the results of planning meeting will be consolidated and utilized for future excessive heat planning efforts in the Tucson MSA.

High homeless rates, as well as undocumented migrants coming from the southern border, are all included among the heat-related deaths. The Pima County Office of the Medical Examiner has created a heat-related deaths data dashboard that documents undocumented migrant border crosser (UBC) deaths, non-UBC deaths, and deaths in persons experiencing homelessness. In 2023, there were 176 heat-related deaths. Below are the data dashboard summaries:

Figure 14. 2023 Undocumented Border Crosser Heat-Related Deaths

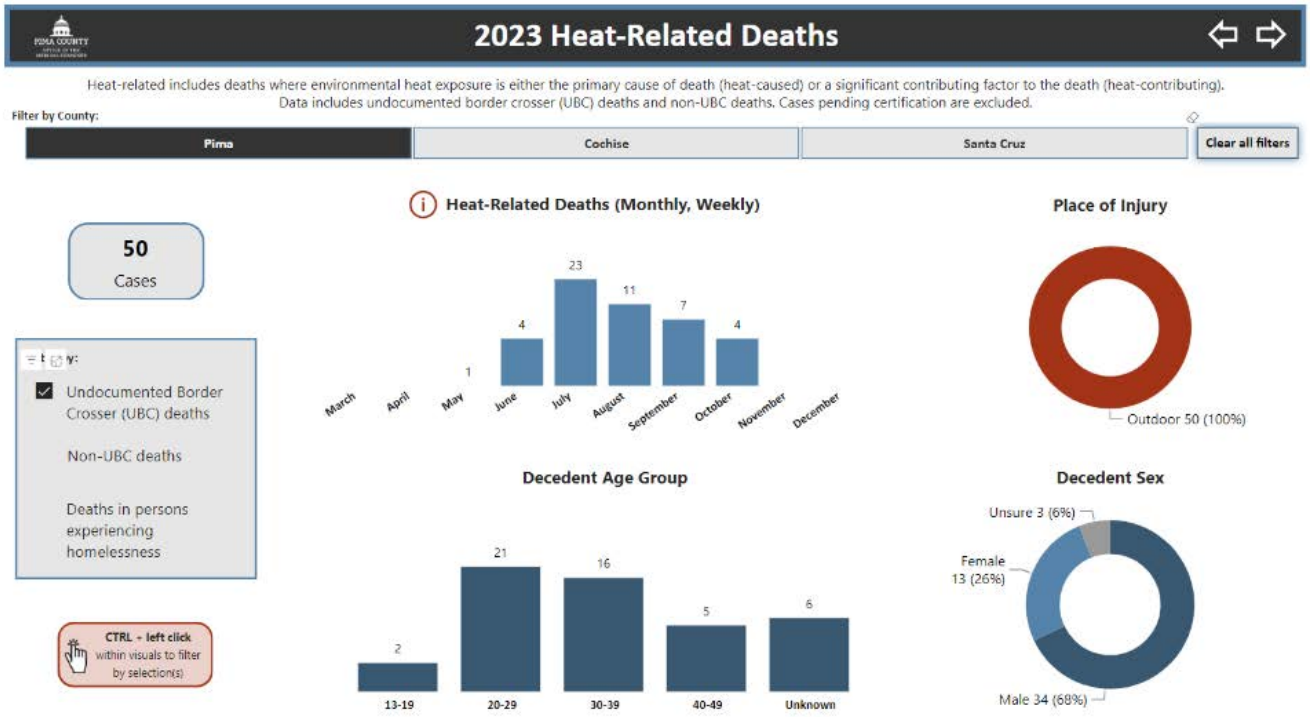
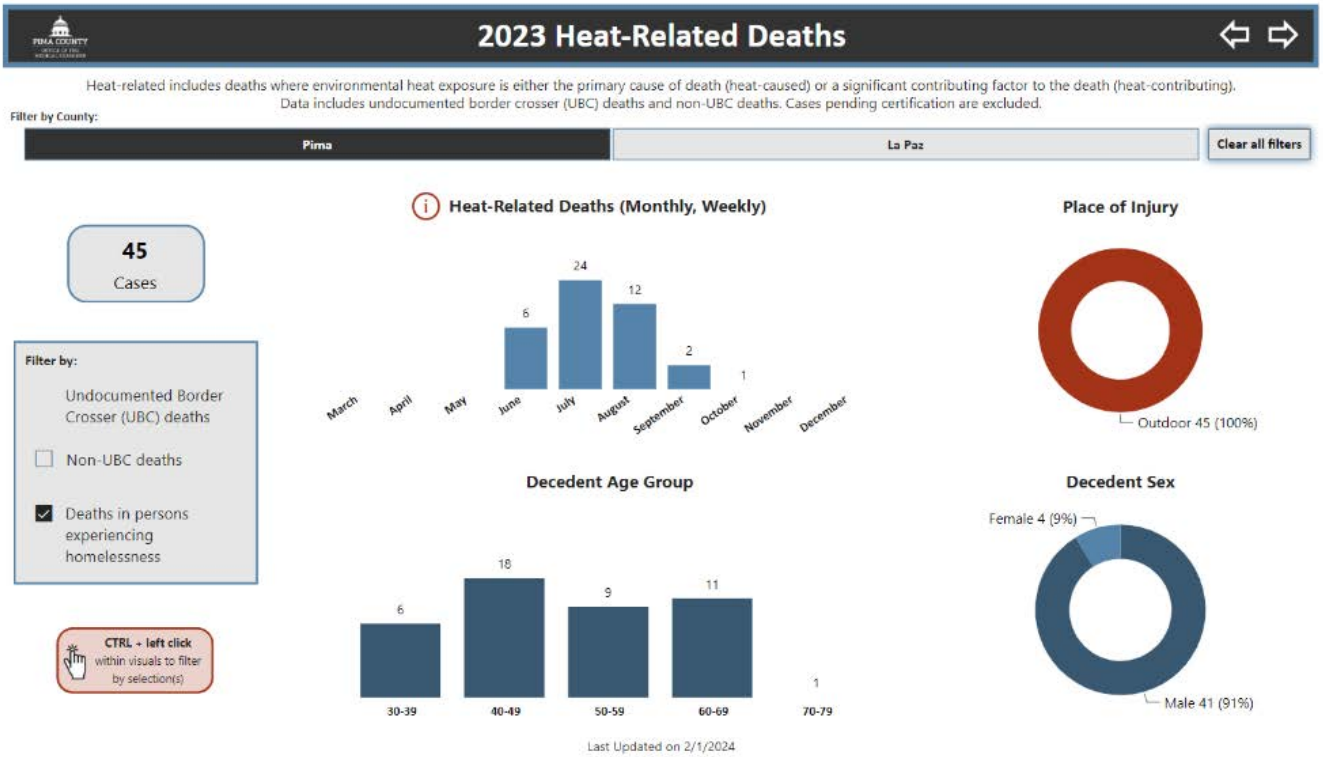


Figure 15. 2023 Non-Undocumented Border Crosser Heat-Related Deaths

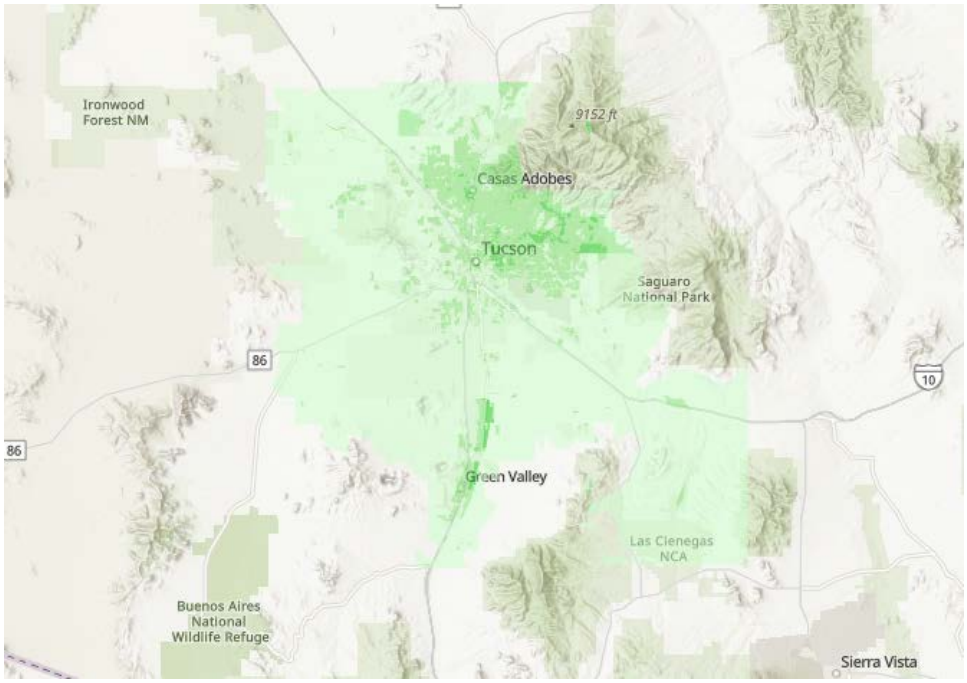
Figure 16. 2023 Heat-Related Deaths in Persons Experiencing Homelessness



Shade Inequities

Pima Association of Governments hosts resiliency planning tools to assess differences in factors such as shade equity. Figure 17 below is a map of Percent Tree Canopy Cover for the Tucson Metro Area. It is apparent that areas lacking shade are the same areas that are identified as disadvantaged in CEJST.

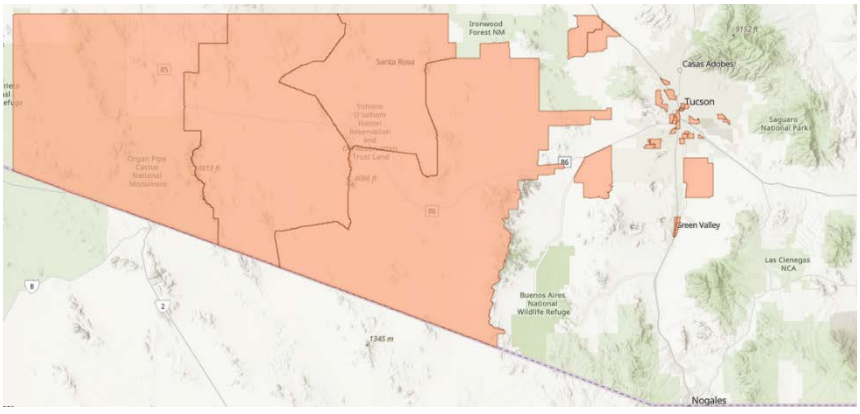
Figure 17. Percent of Tree Canopy Cover for Tucson Metro Area



Food Deserts

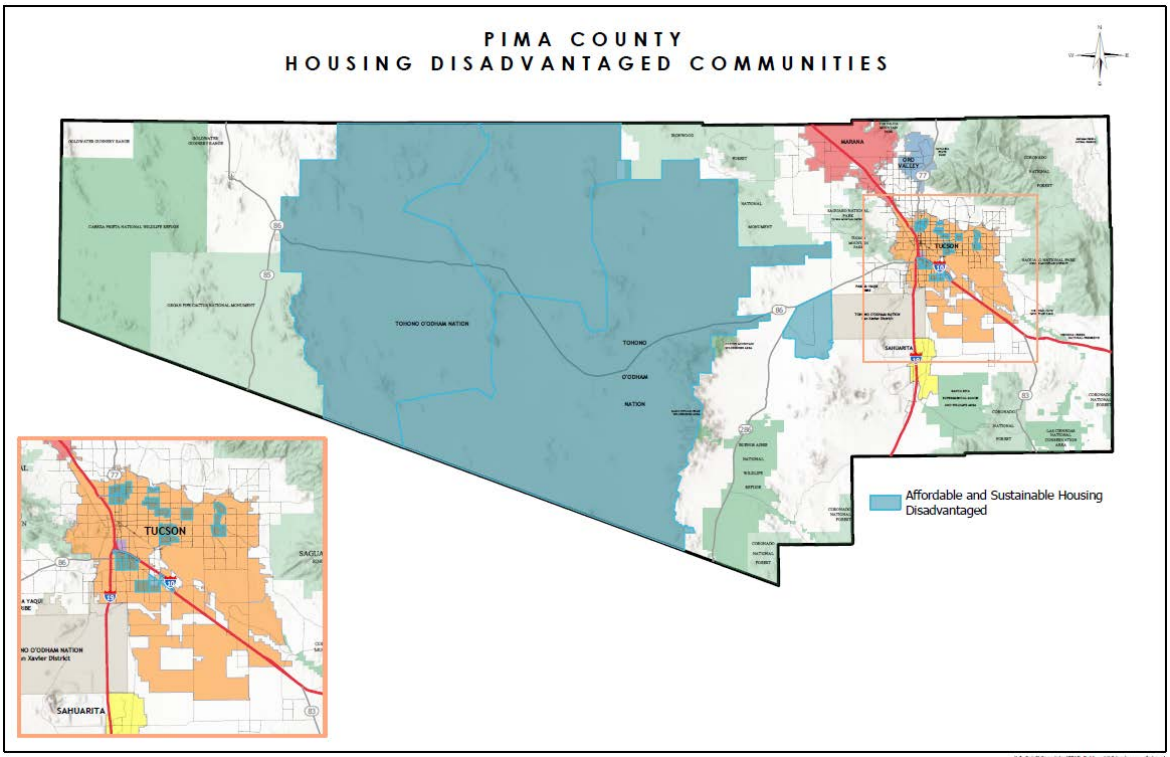
Pima County also includes a large number of Food Deserts, especially on tribal lands, areas south of Tucson, and unincorporated Pima County. Local food production efforts were mentioned through the LIDAC outreach as a way to encourage food resiliency in rural and urban communities. Local food production also creates green community spaces, often experiencing cooler temperatures. Stormwater harvesting can conserve water and help to control flooding and erosion. The City of Tucson's composting project would help facilitate these efforts in LIDAC communities. The Community Gardens of Tucson, could also build upon their existing networks of existing gardens in eastern Pima County.

Figure 18. Pima County Food Deserts



4.4 Housing Burden: experienced historic underinvestment OR are at or above the 90th percentile for housing cost OR lack green space OR lack indoor plumbing OR lead paint AND are at or above the 65th percentile for low income.

Figure 19. Housing Burdened LIDAC Communities

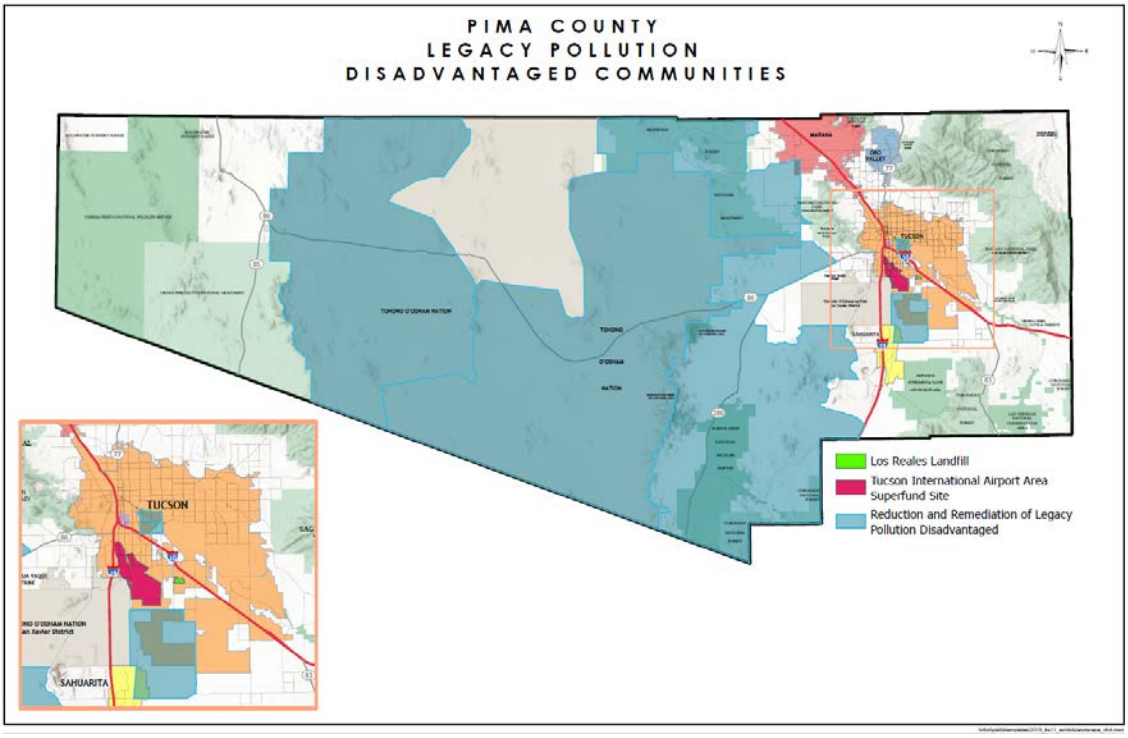


An inadequate number of housing units greatly contributes to housing insecurity in the Tucson MSA. The City of Tucson and Pima County are working collaboratively to address this issue on many fronts.

Climate change is a significant issue as it relates to housing issues, such as heating and cooling needs, renter's rights, landlord incentives, and utility assistance programs for renters. Based on the LIDAC community outreach, it is clear that addressing the needs of renters will be essential to providing benefits to LIDAC communities.

4.5 Legacy Pollution Burden: have at least one abandoned mine OR formerly used defense sites OR are at or above the 90th percentile for proximity to hazardous waste facilities OR proximity to Superfund sites OR proximity to Risk Management facilities AND are at or above the 65th percentile for low income.

Figure 20. Legacy Pollution burdened LIDAC communities



A Superfund site (related to former military activities) is located in the LIDAC communities near the Tucson International Airport and is another potential source of a harmful environmental exposure. The contamination was found in the early 1950s, but improper waste disposal practices continued for 20 years and the groundwater treatment and clean up started in 1994. After that additional contaminants including PFAS were found in the water that required additional treatments, and Tucson Water stopped serving the water as drinking water in 2021. The residential population around the airport is predominantly Latino and Native American. The census tract where the Los Reales land is located is 04019410502 and is identified as partially disadvantaged but does not contain specific data in CEJST.

City of Tucson Los Reales Sustainability Campus Methane Capture Project

The Los Reales landfill is a Municipal Solid Waste (MSW) Landfill owned and operated by the City of Tucson Environmental Services Department (COTES). The site began operation in 1967 and covers 1,087 acres, of which 428 acres include the existing waste disposal footprint and areas declared for expansion of that footprint.

The decomposition of solid waste generates LFG containing CH4, and CO2 and non-methane organic compounds (NMOC). The facility extracts LFG from wells across the site. These wells form part of a comprehensive extraction wellfield including compressor station and a blower/flare station. COTES has

contracted with a third party to operate both a well-collection system and the industrial flare to burn the collected LFG.

Regulated pollutants emitted from the flare burning of the LFG include nitrogen oxides (NOX), carbon monoxide (CO), sulfur dioxide (SO2), particulate matter (PM), volatile organic compounds (VOC), and hazardous air pollutants (HAP). While the landfill, including its associated facilities, is a True Minor source of all criteria and hazardous air pollutants, it is a Class I stationary source pursuant to Pima County Code (PCC) 17.11.090.B.1.d and Code of Federal Regulations (CFR) 40 CFR 70.3(a)(5). Though an "existing" source subject to 40 CFR 60, Subpart Cc, Pima County regulations PCC 17.16.390.A.1 and PCC 17.16.390.C amend that applicability to include 40 CFR 60, Subpart WWW. Pursuant to that subpart (40 CFR 60.752(b)), any MSW landfill with a design capacity "greater than, or equal to 2.5 million megagrams" is subject to Part 70 permitting requirements. This landfill has declared a total design capacity of 50 million (short) tons (45.4 million megagrams).

The methane capture project at the LRSC involves capturing and processing the methane so it can be utilized in City of Tucson buses and garbage trucks. This measure will also dramatically help support efforts to reduce air pollution near these communities by eliminating the need to flare the methane being generated at the landfill, potentially reducing NOX, CO, SO2, PM, and VOCs, and HAPs.

City of Tucson Organic Waste and Recycling Drop-off Program

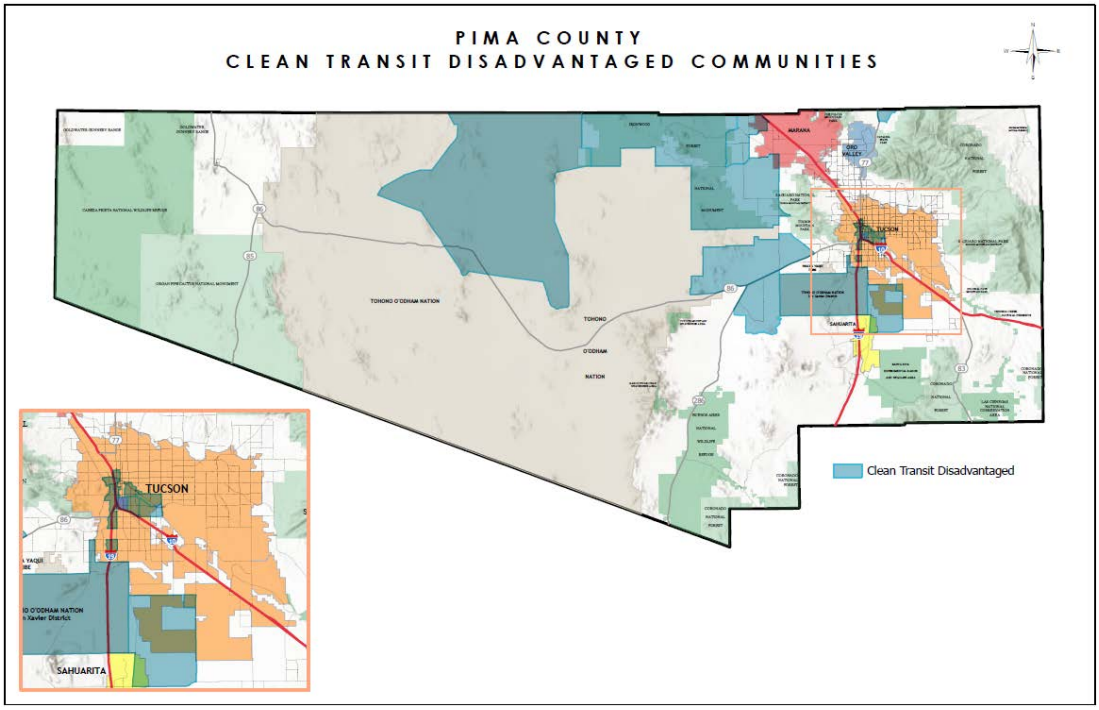
The expected outcome of these City of Tucson's projects is the creation of a permanent program for City of Tucson residents to effectively reduce the amount of organic waste they generate and that is landfilled at LRSC. The organic waste that will be collected at the new drop off centers will provide the improved compost facility at LRSC with the feedstock necessary to produce high quality compost. This compost will then be distributed to several locations such as city ward offices and Community Gardens of Tucson partnered sites, where residents can obtain compost for their personal use.

The City of Tucson is currently piloting a Food Cycle at Home program, in partnership with the Community Gardens of Tucson, where Tucson residents are voluntarily dropping off food scraps at designated times at gardens located within each City Ward.

In addition, compost will also be donated to other local community gardens, school gardens, City of Tucson parks and recreation centers, Department of Transportation maintained natural areas, The University of Arizona grounds as well as several local Tucson and Pima County farms, this way compost is made available to the general population in a more convenient location. Incorporating the high-quality product that will be created at the new compost facility will help grow more food that will go back into the community.

4.6 Transportation Burden: are at or above the 90th percentile for diesel particulate matter exposure OR transportation barriers OR traffic proximity and volume.

Figure 21. Transportation burdened LIDAC Communities



LIDAC communities are more frequently located in high traffic proximity areas, leading to increased fine particulate and noise exposure. LIDAC communities also disproportionately face challenges related to excessive heat and transportation. Often walking, transit, or biking are the only options which makes travel difficult in frequent triple digit heat. Lack of shade also adds more challenges that contribute to heat-related health risks.

Public Electric Vehicle Charging Infrastructure

Nine of the proposed locations will fill existing gaps in electric charging infrastructure in Pima's rural communities. On average, rural residents drive more than urban counterparts, spend more on vehicle fuel and maintenance, and often have fewer alternatives to driving to meet their transportation needs. One source of concern for these residents is where to access electric vehicle charging infrastructure. Investment in this infrastructure will help reduce the vehicle miles travelled by our rural residents searching for a charge. In turn, having more publicly accessible infrastructure available may help stimulate or incentivize other rural residents to invest in EVs. Having more accessible EV charging will also allow urban residents to reduce their vehicle miles travelled on congested roads in search of their next charge. Getting drivers off the road will help reduce the numbers of crashes that are occurring on our streets.

This measure also provides a second important safety improvement relating to pedestrians, cyclists, and transit users. Three of the proposed charging sites will support new shared-vehicle fleets available for low-cost rent at transit centers in the City of Tucson. Transit users often need to transfer between bus lines to get to where they're going. However, many bus routes still leave the traveler short of their

ultimate destination, requiring them to either walk or bike the last mile, sometimes while carrying heavy loads. These roadway users are particularly vulnerable to safety hazards, especially on some of the more notoriously unsafe roadways in Pima County. Many transit users in Pima County are also economically vulnerable, a majority live in historically disadvantaged communities and census tracts. Thus, these users may be disproportionally bearing the impact of environmental and traffic inequity. Electrifying the transit centers is the first step in creating a shared fleet of EVs that would be made available on a preferential basis for our low-income transit users. A last-mile shared-use vehicle service will get pedestrians and cyclists off the streets into safer transportation modalities, particularly for errands involving bulky loads and disabled passengers.

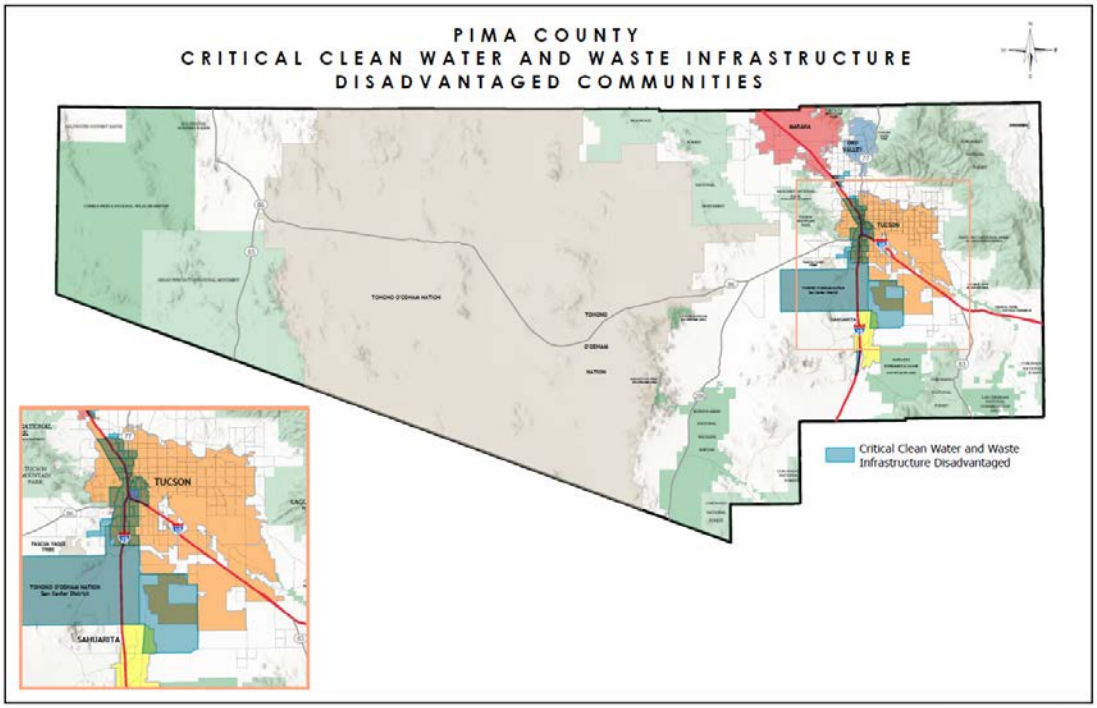
The City of Tucson and Tucson Electric Power will also launch an equity-focused community car sharing program, using a portion of requested funding to acquire and install EV chargers and construct solar shade structures. The goal of this proposed community car-sharing program is focused on providing “end of the trip” mobility opportunities for transit riders, particularly low-income individuals. The program will utilize EVs to reduce carbon emissions and improve air quality while addressing the transportation challenges of underserved communities. This component will allow drivers to access a car when they need one without having to pay the high costs of purchase, maintenance, repairs, and insurance. Using an online reservation system, residents and community members will be able to rent vehicles for trips at an hourly or daily rate. The program will employ an app-based reservation and payment system, making the process seamless and easy to use. The program will operate 24/7, ensuring access to transportation at any time of the day.

The program will work by placing EVs at strategic locations near or at the City’s three transit centers, allowing individuals to easily rent and return vehicles for "end of the trip” needs or short-term rental. Two of the three transit centers are located in historically disadvantaged neighborhoods; the third is located in proximity to multiple apartment complexes. All three of the transit centers are located near to commercial centers and two of them are located in close proximity to government service centers where consumers can access multiple public benefits and programs. One of the transit centers is located near to City, County, State and Federal courthouses and the County’s main voter registration office.

To ensure that the vehicle rentals are accessible to low-income individuals, reduced rental rates for individuals who meet certain income criteria will be offered. The program will also provide educational resources on the benefits of EVs, including how to charge and maintain the EVs. This information will be available in English and Spanish.

4.7 Water and Wastewater Burden: are at or above the 90th percentile for underground storage tanks and releases OR wastewater discharge AND are at or above the 65th percentile for low income.

Figure 22. Water and Wastewater Burdened LIDAC Communities



Pima County Flood Control District Stormwater Measures

The stormwater measures will restore floodplain and stormwater function in degraded Justice40 Disadvantaged tracts and Climate Change Disadvantaged tracts as identified by the Justice40 Initiative. Installation of projects in these historically underserved or economically disadvantaged communities would ensure we are delivering equitable resources to all Pima County communities. Arid land restoration techniques, like water harvesting basins, create soil-water-carbon sinks in degraded areas and have benefits that include climate resilience, flood detention, erosion control, and groundwater recharge. Landscape-scale implementation can help to mitigate climate change through sequestration of carbon and make dryland ecosystems more resilient to climate-related disturbances.

Regional Wastewater and Reclamation Measures

The treatment of wastewater is an energy intensive process requiring substantial amounts of electricity and chemical usage. This can often result in significant operational costs for the communities being served while releasing global warming potential gases such as CO2, CH4 and N2O into the atmosphere.

N2O is a potent GHG, which accounted for 7.9% of the global anthropogenic GHGs in 2004.[1] It is also predicted to be the most dominant ozone-depleting substance in the 21st century.[2] Since the first published data by Czepiel et al. reported N2O emissions from a WRRF, awareness and concern of N2O emissions during wastewater treatment have grown significantly among urban water authorities.[3] The EPA reports that N2O from the wastewater sector accounts for about 3% of N2O emissions from all sources and ranks as the sixth largest contributor.[4] The relative contribution of direct N2O emissions to

the overall GHG emissions of a water resource recovery facilities (WWRF) is expected to increase as the nation's energy supply shifts to renewable sources and the resulting indirect GHG emissions are reduced.

[1] IPCC 2007. Climate change 2007: synthesis report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (eds Team C. W., Pachauri R. K., Reisinger A.). Geneva, Switzerland: IPCC
[2] Ravishankara A. R., Daniel J. S., Portmann R. W. 2009. Nitrous oxide (N2O): the dominant ozone-depleting substance emitted in the 21st century. Science 326, 123–125 10.1126/science.1176985 (doi:10.1126/science.1176985)
[3] Czepiel P., Crill P., Harriss R. 1995. Nitrous oxide emissions from municipal wastewater treatment. Environ. Sci. Technol. 29, 2352–2356 10.1021/es00009a030 (doi:10.1021/es00009a030)
[4] United States Environmental Protection Agency 2006. Global anthropogenic non-CO2 greenhouse gas emissions: 1990 to 2020. Washington, DC: US-EPA

Throughout the United States, over 16,000 WRRFs play vital roles within communities, treating tens of millions of gallons of sewage each day. Over the last 20 years, many WRRFs have incorporated advanced biological nutrient removal (BNR) processes to comply with increasingly stringent discharge limits. While effluent water quality has improved with tighter nutrient limits, it comes at the high price of increased energy consumption and greenhouse gas (GHG) emissions. This is due to the use of inherently energy-intensive secondary treatment processes accounting for as much as 80% of the total electrical demand at WRRFs[1],[2],[3] and releasing N2O during the process. While process intensification technologies enhance receiving water quality, the currently available technologies are not optimized for energy efficiency or carbon reduction, and result in increased energy use and carbon emissions. Conversely, attempts to provide nitrogen removal using less energy often use control measures to operate aerobic processes at low dissolved oxygen (DO) concentrations; however, this increases N2O emissions by an order of magnitude.

[1] Contreras, J.A., E.I. Valenzuela, and G. Quijano. "Nitrate/Nitrite-Dependent Anaerobic Oxidation of Methane (NAOM) as a Technology Platform for Greenhouse Gas Abatement in Wastewater Treatment Plants: State-of-the-Art and Challenges." *Journal of Environmental Management,* 2022. 319.

[2] Bao, Z.Y., S.C. Sun, and D.Z. Sun. "Assessment of Greenhouse Gas Emission from A/O and SBR Wastewater Treatment Plants in Beijing, China." *International Biodeterioration & Biodegradation*, 2016. 108: 108-114.

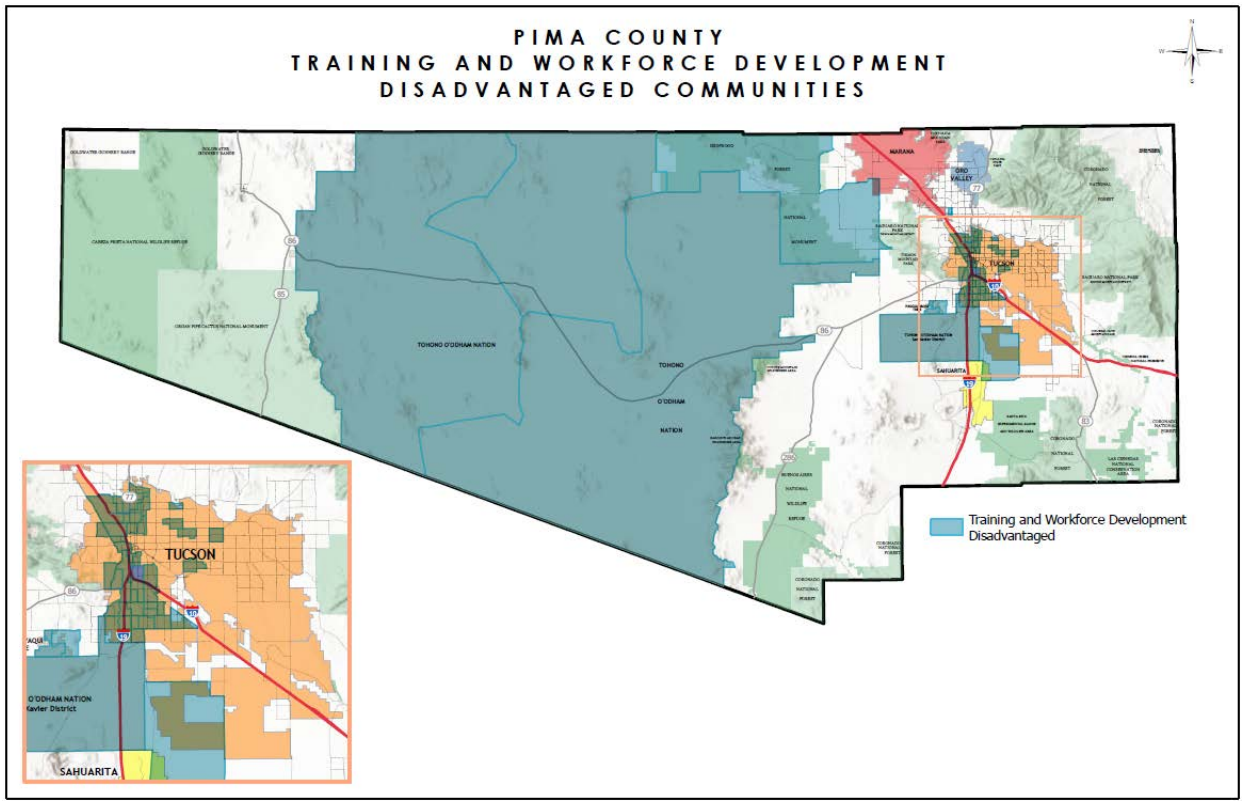
[3] Tomczak, W. and M. Gryta. "Energy-Efficient AnMBRs Technology for Treatment of Wastewaters: A Review." *Energies*, 2022. 15(14).

Many decarbonization efforts fall short of performance goals and predominantly target only indirect CO2 emission sources (e.g., from use of purchased electricity) via overall energy reductions. While initially effective, reductions from indirect emissions will subside with time due to continued greening of the energy grid. Impactful decarbonization requires curtailing not only indirect emission sources, but also addressing N2O emissions, which have a global warming potential 298 times higher than CO2.

The wastewater measures will help support efforts to reduce air pollution within and near the disadvantaged communities by reducing NOX, CO2, and CH4.

4.8 Workforce Development Burden: Are at or above the 90th percentile for linguistic isolation OR low median income OR poverty OR unemployment AND more than 10% of people ages 25 years or older whose high school education is less than a high school diploma.

Figure 23. Workforce Development burdened LIDAC communities



5. Workforce Planning Analysis

Pima County's ambitious planned investments in GHG reduction will generate significant growth in several high-quality career fields. Facility retrofits, solar microgrids and new EV charging infrastructure all rely on skilled technicians and construction tradespeople. Pima County's EV chargers require repair and maintenance by skilled electricians regularly. The growing market for electric vehicles and hybrid cars has already spurred the revamping and expansion of Pima Community College's Automotive Technology and Advanced Manufacturing programs at a new Center of Excellence at its downtown campus. Simultaneously, companies like American Battery Factory, Sion Power and Lucid Motors have opened large new operations in the region.

Pima County's Economic Development mission is to create a vibrant, diverse, and resilient economy that allows for upward economic mobility for all community members. As part of this vision, the Pima County Community and Workforce Development (CWD) department connects local individuals, families, neighborhoods and nonprofits to a network of services essential for learning, working, living and thriving in Pima County. Education and training resources are just one component of the services CWD provides. CWD programs support the whole human, ranging from homeless services, rental assistance, and

eviction prevention, to capital public facility projects in low-income rural communities and sectoral workforce initiatives in advanced manufacturing and cyber security. This breadth ensures that CWD is reaching most vulnerable, disadvantaged, underserved communities with critically needed support and programmatic on-ramps.

As the administrative entity and fiscal agent for the local workforce board serving the Tucson-Pima County region dating back to the mid-1980s, CWD is the regional authority on job quality and workforce development for out-of-school youth and unemployed and under-employed adults. CWD has honed its Workforce Innovation and Opportunities Act (WIOA) resources and policies to optimize pathways for these populations to good jobs in technical fields that command family-sustaining wages. As such, CWD has a strategic focus on the building trades, which comprises multiple career fields related to our PCAP strategies. CWD partners with union Joint Apprenticeship and Training Committees (JATC), Pima Community College, Pima County Joint Technological (K12) Education District, and hundreds of local employers to develop a skilled workforce to support our regional economy, including the proposed GHG reduction measures.

For workers, CWD offers different tiers of services. Its employment resources include labor-market information, job banks, on-line matching, job leads, workshops, resumes and career counseling. Intensive career counseling includes vocational assessments, individualized career planning, pre-vocational adult education, job search and placement. These services are provided based on eligibility for a variety of grants targeting out-of-school youth, low-income adults, laid-off workers, veterans, and homeless job seekers. CWD also offers an array of training programs offered by more than 300 qualified occupational training providers and through on-the-job training contracts (including apprenticeships). These trainers include both traditional public and private college partners plus grassroots non-profits. Assessments and career exploration are used to determine appropriate training, and assistance is provided in developing training plans to reach industry-recognized credentials.

CWD has long utilized the WIOA program's financial support for job seekers and training participants to lower barriers to quality careers for historically marginalized groups, such as long-term unemployed and citizens returning from prison or jail. By co-funding a Workforce Development Specialist with the County Behavioral Health Department embedded in the Inmate Navigation, Support and Treatment program, CWD is able to assist former detainees from the County Jail as they are completing treatment for substance use disorders. Over the past four years CWD has added new tools for assisting job seekers with young children with the County Board of Supervisor's historic $30 million investment in high-quality early childhood care and education. Pima Early Education Program Scholarships is now an ongoing program at multiple high quality childcare centers and K12 public schools, allowing thousands of prime-age adults to enter, or re-enter the labor force and engage in career training.

Pima County CWD partners with employers and industry groups, such as the Southern Arizona Manufacturing Partners and the Transportation Builders' Alliance, to understand skills requirements and to create aligned workforce development opportunities. The insights from these partnerships ensure that training investments are tied directly to high-skilled jobs in the evolving workplace. Pima County's H-1B One Workforce program funds training for occupations in aerospace, advanced manufacturing, and information technology fields, many of which overlap with the emerging needs in electric vehicle and battery manufacturing in the region. Outreach for H-1B is made through traditional partners and

community-based resources to ensure that all communities, including populations historically unrepresented in these fields, learn about this career training opportunity.

CWD's long-standing partnership with the International Brotherhood of Electrical Workers (IBEW) is the foundation for a new apprenticeship initiative currently being launched with a special WIOA allocation this year. Traditionally IBEW has recruited new apprentices through CWD's One-Stop job centers, where career development specialists make job seekers aware of the benefits of union jobs, the prerequisites for the electrical apprenticeship and the importance of completing the full pathway. WIOA pays for the testing, tools and supportive services low-income students need to enter the apprenticeship program. When IBEW launched its photovoltaic installer program in 2010, Pima County provided grant funding for the training of its instructors. Last year CWD and IBEW collaborated with the other JATCs to launch a Multi-Craft Core Curriculum (MC3) program to prepare out-of-school youth for apprenticeship — and ultimately a career — with a local union trade hall. The six-week program provides students with hands-on experience, teaches them about all 14 union trades and enables them to get numerous certifications, including CPR, first aid and Occupational Safety and Health Administration OSHA10 job-site safety fundamentals. CWD runs the program at its Las Artes Arts and Education Center in the heart of South Tucson, where dozens of high-school dropouts achieve a high school equivalency diploma each year. The IBEW and the Plumbers and Pipefitters Joint Apprenticeship Training Committees are working with CWD to launch apprenticeship hiring and training activities at a nearby County facility in South Tucson this summer.

Community-based partnerships are key to Pima County's ability to assist job seekers from all corners of Pima County and from diverse economic and socio-economic backgrounds. These collaborations include partnerships with faith-based groups, literacy tutors and culturally specific agencies, allowing Pima County to reach under-resourced and marginalized populations with its career workforce development opportunities. CWD contracts with six CBOs (e.g. Catholic Community Services, Goodwill, and Tucson Youth Development) to provide staffing at the CWD American Job Centers. Additionally, CWD has resource navigators out stationed at Interfaith Community Services, Pima Council on Aging, Sahuarita Food Bank, Youth on Their Own, International Sonoran Desert Alliance in Ajo and Tucson House public housing. Workforce development programming leverages other grant funded partnerships that CWD administers, including Community Development Block Grant, Continuum of Care and Low-Income Home Energy Assistance Program – overall CWD subawards to 67 CBO.

Increasingly, grassroots groups are tapping into concerns about climate change as a vehicle for youth development, career exposure and skill training. PDEQ has partnered with Ironwood Tree Experience since 2021 to offer Youth for Blue Skies environmental internship program for high school youth, ages 14-20. Additionally, ITE offers urban and rural stewardship programs, such as Youth Action Corps leadership projects, Wilderness Warriors and Youth Ambassadors for Southwest Cultures internships. Pima County Parks and Recreation Environmental Education program partners with K12 school districts to offer field study trips and classroom programs, and the Living River of Words: Youth Poetry and Art Contest. Many more youth are gaining exposure to climate-related policy, planning and conservation work through volunteer-driven activist groups like Arizona Youth Climate Coalition, Tucson Clean and Beautiful, Sonoran Institute, Sky Island Alliance, and Tucson Audubon Society.

The planned expansion of Pima County RWRD gas capture and bio-solid drying technologies will draw upon RWRD's partnership with the University of Arizona's Water & Energy Sustainable Technology

(WEST) Center, co-located at the Agua Nueva water campus of Pima County, where microbiologists and engineers are developing new technologies that deal with water scarcity and reuse. For decades RWRD has funded a paid summer internship program in partnership with CWD to introduce high-school students – including those enrolled in career technical education in bioscience - to wastewater treatment operations. Using a home-grown apprenticeship-like model, RWRD has established compensated trainee positions for operators and conveyance technicians in conjunction with in-house classroom-based training.

6. Intersection with Other Funding Availability

American Rescue Plan Environmental Justice Monitoring Grant

In 2022, the Pima County Department of Environmental Quality, in collaboration with the University of Arizona College of Public Health, received a grant from the EPA to collect data that is needed to adequately address potential environmental injustices within these communities. Twenty air quality sensors will be located at schools throughout Pima County, with particular emphasis in the communities with multiple air pollution sources, to better understand the potential variability at the neighborhood level. The data will be made publicly available and students at the high schools will work to analyze the data to determine how the concentrations in different regions vary.

Electrification of Fleet Vehicles

Several of the government entities involved in the Pima County Regional Climate Pollution Reduction Grant propose retiring government fleet vehicles with zero or low-emission vehicles, principally electric vehicles. Several of the Pima partners began acquiring efficient fleet vehicles before passage of the Inflation Reduction Act (IRA); others are now exploring the possibility. Generally, partners are considering upgrading sedan vehicles and light duty trucks, which comprise the vast majority of fleet vehicles. Before the historic grant opportunity presented by the IRA, these purchases would be budgeted conservatively as part of the annual capital improvement budgets and approved by governing officials after a critical financial and budgetary review. Rebates have been provided by several utility providers to help underwrite the costs of the charging infrastructure that is needed to support the new fleet.

The IRA made a number of incentives and programs available to help expedite the conversion to low and no-emission fleets. Through the Clean Bus program, for example, IRA has made funds available for school districts to purchase clean-running school buses. Several school districts within Pima County have applied to and received support from this program. Pima County schools are organized by school district and are separate legal entities from the County's administrative and organizational structure. Local transit buses, the most prevalent type of heavy-duty vehicle in the region, have already been converted to Compressed Natural Gas, hybrid, or biodiesel fuels and the City of Tucson has already has ten electric buses from previously acquired grant funds.

Finally, the IRA made the benefits of several tax credits available to governmental entities through the use of direct pay and transferability options. Most relevant, the Commercial Clean Vehicle Credit might be useful to help offset some of the costs of purchasing clean vehicles. Regional partners are exploring how best to use these new tax incentives. However, more substantial and useable funding mechanisms are necessary to meet the ambitious fleet modernization targets set by the Pima PCAP.

Charging Fuel Infrastructure

The National Electric Vehicle Infrastructure (NEVI) program will help expand publicly accessible charging infrastructure throughout the nation and the State of Arizona. NEVI provided formula funds to the State of Arizona to expand fueling corridors, which currently are along major interstate routes. The Pima regional partnership is collaborating with the State to ensure that NEVI funds are deployed effectively and efficiently and meets the stated purpose. Even with NEVI funds in the state, there are significant gaps in charging infrastructure, particularly in low income, disadvantaged and rural communities in the southern region. Projects proposed in the PCAP are intended to help fill these gaps. Pima County, on behalf of a regional collaboration, applied for funding from the competitive Fiscal Year 2023 Charging Fuel Infrastructure Grant Program—Communities. The County sought approximately $11 million to expand alternative charging to 40 new, publicly accessible locations throughout the region, and the creation of small electric vehicle ride sharing programs at four transit centers to better serve and incentivize low income and disadvantaged communities. The locations were chosen based on their access to underserved and rural communities, utilizing facilities owned by Pima County or partners to facilitate faster implementation of these grants. This grant was not selected for funding in Fiscal year 2023. The regional partners are also aware that the NEVI program set aside funds to help repair existing public charging infrastructure. However, these funds were not available to construct new facilities. As such, it was not considered a viable funding mechanism to achieve the partners' charging and electrification goals.

The regional area is supported by two primary utilities: Tucson Electric Power and TRICO Electric Cooperative. Both utilities offer capital rebates on the charging equipment. The partners have utilized these rebates to support expanding fueling needs for internal fleet requirements. The regional partners will continue to work with these utilities to seek rebates and other incentives to support building out the charging infrastructure to support the broader communities.

Energy Efficiency Upgrades for Government Facilities

Federal funding for energy efficiency upgrades of any kind by local governmental entities is limited. Pima County was eligible to receive, and successfully applied for formula funding from the Department of Energy's Energy Efficiency and Conservation Block Grant program in FY 2024. The County was eligible to receive approximately $368,820 to fund energy efficiency activities in the County. It has chosen to fund upgrades to cooling units at its Kino Service Center. This center houses the Pima County One-Stop – part of the ARIZONA@Work American Job Center network and is a multi-service center providing direct access to employment and training programs, emergency assistance with rent and utilities for low-income households, and home repair programs for low-income homeowners including DOE funded weatherization programs. The center is also a hub for non-profit resources, including the Housing and Urban Development (HUD) Community Development Block Grant program and the County's Outside Agency program. Because the County received formula funds, it was not eligible to apply for funding under the Energy Efficiency and Community Block Grant competitive program.

Regional partners are not aware of other grant funds that would support facilities' conversion in water, HVAC, or other equipment to more energy efficient versions or facility weatherization. The partners are aware of several programs that would support residential improvements, but these are not applicable to governmental entities. Pima partners have also explored the availability of state funds to install water efficient fixtures and improve water conservation and storage through the state's new Water

Conservation Grant Fund. Some of these grants have been approved but primarily addressed at improving energy efficient fixtures involving multifamily facilities serving low-income families or where the facility clearly served a public function and had cost effective, demonstrable water savings in acre feet. This fund specifically *declined* to support transition to more water efficient fixtures in government facilities. There may also be rebate programs available to help defray certain equipment costs, generally provided by vendors and manufacturers. The partners do incorporate these rebate programs into their facility planning and procurement processes. However, the facility improvements envisioned by the partners are a critical and impactful piece in helping the regional partners meet ambitious climate change goals. Each of the partners have small capital improvement budgets but these limit the amount, type and scope of project that can be undertaken in any single year. As such, these budgets would be utilized to support the projects and goals of the partners' CPRG plans but are insufficient, without more, to be successful.

Stormwater Improvements

Pima County has explored a variety of watershed grants to improve habitat and quality of these important riparian areas. Funds have been obtained from the Natural Resources Conservation Service to conduct planning studies in part of the area that would be the subject of the Avra Valley carbon sink project (Brawley Wash Watershed grant in the amount of $744,500). Funding has also been obtained by the regional partners for both planning and limited conservation activities in the area from the Bureau of Reclamation. Pima County has also pursued stormwater conservation funding via other Bureau of Reclamation grant programs included within its WaterSMART programs with qualified success. The County has also explored obtaining funding for critical stormwater conservation and mitigation programs through Congressionally Directed Spending opportunities (EPA State and Local Assistance Grants), with modest success. The funds that have been obtained cover most of the planning required to implement soil-water-carbon sinks in the rural location of Avra Valley. Implementation funding that was received (which was actually awarded to a non-profit conservation organization) would cover only 5% of the estimated carbon improvement costs. Climate Pollution Reduction Grant funding is necessary to scale this project to achieve the impacts anticipated from this project.

No funding to date has been secured to create the stormwater capture basins needed to create the urban-facing stormwater parks. Pima County has not been successful in securing other potential sources of funding for similar types of stormwater capture and conservation programs (notably Bureau of Reclamation WaterSMART grant programs). However, funds have been secured by the City of Tucson for urban tree planting and workforce development. Urban forestry grants provide support for a critical component of the envisioned stormwater parks and the partners will continue to pursue such opportunities as they become available. Additional, available funding such as that available through the CPRG would allow the partners to fully achieve the outputs and outcomes of the urban stormwater parks in the near term.

Wastewater Improvements

The Pima regional partnership is proposing to utilize artificial intelligence to optimize energy and chemical usage at Tres Rios WRF, the largest wastewater treatment facility in southern Arizona. The DOE, notably through its Energy Efficiency and Renewable Energy (EERE) Office, sponsors numerous competitions, prize and research efforts to improve the energy efficiency and usage of treatment facilities and others. The County has pursued several of these research opportunities but has not

historically been successful receiving DOE funding or sponsorship. The County has been successful in teaming up with private entities to pursue cutting edge research opportunities, notably with the Water Research Foundation. However, funding available from these resources covers only a small fraction of identified research projects and would not cover the operations/maintenance costs of implementing artificial intelligence analytics.

Technology innovations in aeration techniques to conserve energy while demonstrably reducing nitrous oxide is a second wastewater proposal. Pima County has partnered with the Water Research Foundation and the University of Arizona to explore new technologies to optimize treatment systems for efficient nutrient removal to both reduce energy consumption and greenhouse gas emissions—specifically nitrous oxide (which has a global warming potential 298 times higher than carbon dioxide.) Pima County submitted this project to the Department of Energy in 2023, and it was selected as one of eight finalists but ultimately was not selected for funding. Other sources of research funding are insufficient to support the costs of this pilot project.

Capital improvements for renewable energy usage and storage to produce the first Class A biosolids solar dryer in the region. Pima County has been a leader in distributing the biosolids its produces during its wastewater treatment, distributing it for fertilizer use throughout the region. The production of biosolids now involves constant aeration, which is a significant energy user and contributor to greenhouse gas emissions given traditional energy sources. The County is planning capital improvements at Tres Rios WRF that will utilize 100% renewable resources (thermal and solar technologies) that will help maximize heat recovery and reduce fossil fuel consumption in the production and transportation of biosolids. These changes will help the County reduce its energy usage, reduce the amount of biosolids produced while increasing the quality of those biosolids, and reduce the number of truck hauling trips given the reduction in biosolid volume. Currently, the project is in the design phase and is included within the County's Capital Improvement Plan. Design will set the construction parameters and will be based on the existing footprint at the facility, the types of equipment available and appropriate for the project, and the extent of renovation and retrofitting that will be necessary. Funding for the construction phase is speculative at this point. While Regional Wastewater Special Obligation funds are the likely source of capital improvements, these funds are limited and must support other operational and maintenance needs of the County's wastewater treatment operations. The County cannot easily increase sewer usage and facility fees. Proposing new bond issuances is not feasible given the income demographics of the region and its historical lack of enthusiasm to support infrastructure bonds. The County has not been able to identify other external sources that would provide capital support at any level.

City of Tucson Climate Action Funding

The City of Tucson departments and programs actively seek funding opportunities to support climate action items. Since April 2023, the City of Tucson has been able to secure close to $40 million dollars in federal and state funding.

FY23 – First Quarterly TRT Implementation Update (April-June 2023)

- $21.5M Low or No Emissions Grant from the Federal Transportation Administration (FTA) to purchase 39 Compressed Natural Gas (CNG) buses to replace all remaining high emissions producing diesel-fuel buses in Sun Tran's fleet.

- $3M Arizona Water Infrastructure Finance Authority (WIFA) Water Conservation Grant (Round 1) to begin Tucson Water's transition to Advanced Metering Infrastructure (AMI), beginning with the largest customer meters, to improve customer water usage tracking, information access, and accountability.

FY23 – Second Quarterly TRT Implementation Update (July-September 2023)

- A $5M grant for the City's Urban Forestry Program from the U.S. Department of Agriculture (USDA). This funding will support the creation of more green spaces, invest in workforce development, and promote community engagement to ensure the benefits of trees are equitably distributed across Tucson.
- A $3.5M Resilient and Efficient Codes (RECI) Grant. The **New Buildings Institute** will leverage the Resilient Southwest Building Code Collaborative – a collective effort that includes local jurisdictions (including the City of Tucson), state agencies, researchers, educational and training organizations, industry and technical partners, and community-based organizations – to advance highly efficient and resilient construction practices that address affordability and regional characteristics.

FY24 – Third Quarterly TRT Implementation Update (October-December 2023)

- A $829,696 grant for resilience hub planning from FEMA Regional Catastrophic Preparedness programs.
- A $1.5M WIFA Water Conservation Grant (Round 2) to implement a Turf Removal Program by removing grass from city parks and replace it with landscaping that uses less water.
- A $3M WIFA Water Conservation Grant (Round 4) to upgrade water fixtures and appliances in City-owned public housing stock.
- A $1M Reconnecting Communities and Neighborhoods Grant from the Department of Transportation for the Nebraska bridge.

Grant applications under review include:

- A $1.2M Strengthening Mobility and Revolutionizing Transportation (SMART) Grant for Traffic Signal Pre-emption for Public Safety Program.
- A $3M WIFA Water Conservation Grant (Round 4) to upgrade water fixtures and appliances in City-owned public housing stock.
- A $1.2M WIFA Water Conservation Grant (Round 5) to expand the SHARP facility.
- A $1.3M WIFA Water Conservation Grant (Round 5) for a Multifamily Retrofits program.
- A $720,000 WIFA Water Conservation Grant (Round 5) for a GIS project at El Pueblo Center.

Grant applications that were not selected include:

- $3.6M Solid Waste Infrastructure for Recycling (SWIFR) Grant for organics recycling programming in Tucson.

Other grant applications are under development include EPA's Community Change Grant, RAISE's Drexel Bridge project, and EPA's WIIN Grant for Randolph Park PFAS Project.

7. Next Steps

The completion of this PCAP, marks the first step toward most effectively determining priority measures that will reduce GHG emissions in the Tucson MSA over the next five years. PDEQ will work with coalition partners to develop the CPRG Implementation Grant application that, if awarded, will help fund the ability for the region to achieve the goals as outlined in the PCAP.

PDEQ will continue to work with coalition partners to develop the CCAP, due to EPA in July 2025. Elements included in this effort will be the development of an updated 2023 GHG emissions inventory, clearing defining goals and targets, identifying program actions, selecting additional measures for GHG reductions, conducting the LIDAC benefits analysis, and reviewing the authority to implement the measures. Pima County intends to continue efforts with the Climate Action Executive Team and Advisory Committee, and build upon the comprehensive approach to climate activities, planning and tying initiatives to regional priorities. The Climate Action teams seek to incorporate the PCAP, and CCAP, efforts into the County's comprehensive climate strategies. This will be demonstrated through the development of the next iteration of the County's Climate Action Plan for County Operations (CAPCO), and alignment of these planning efforts with the Priority and Comprehensive Climate Action Plan. The Climate Action efforts will also build upon data, reporting and integration of community-based feedback. The continued integration of community priorities to assure the actions, strategies and direction of these efforts will assure the County maintains regional alignment with its Coalition partners, jurisdictions, LIDAC partners – all of which seek to promote, and importantly, demonstrate measurable impacts for the region. PDEQ intends to hire two additional Environmental Specialists to help with these efforts.

PDEQ also intends to seek additional funding to build upon efforts to create opportunities to empower youth to become an integral part of these efforts, building upon the existing Youth for Blue Skies Apprenticeship Program and to build upon their Clean Air and Cut Down Pollution programing to incorporate education focused on GHG emissions reductions and Inflation Reduction Act (IRA) incentive programs. Additional public outreach events will be planned with coalition partners focused on both GHG mitigation and climate change resiliency. To support these efforts, the County will explore funding opportunities, such as the IRA Community Change grants, supporting place-based investment to build community capacity, and specialized air monitoring funding made available under the IRA to expand network monitoring with new multipollutant monitoring stations. These programs will help educate the County and its stakeholders with better environmental information and engagement, which will help the County tailor responses and programs to more fully and equitably address environmental justice concerns.