



Board of Supervisors Memorandum

May 3, 2022

Sustainability Action Plan for County Operations (SAPCO) Update

In support of the May 3, 2022 Board Agenda Item 12 placed by Supervisor Grijalva, that requests information and a presentation on the Sustainability Action Plan for County Operations (SAPCO), attached is PowerPoint presentation titled "Sustainable Action Plan for County Operations Update: FY21 Implementation Audit Results & Recommendations for Next Steps" (Attachment 1).

As requested, the presentation details highlights of the SAPCO report, progress on goals, plans for addressing Wastewater treatment emissions and investigation into solid waste disposal patterns.

Preliminary Information on Wastewater Related SAPCO Topics

Regarding Wastewater energy usage, preliminary details to report focus on the Regional Wastewater Reclamation Department (RWRD) initiated energy reduction program in cooperation with the Department of Energy (DOE) through their Better Plants program. The Better Plants agreement with the DOE is to obtain a 25 percent reduction in energy intensity over ten years. The agreement was signed on December 23, 2014, making 2025 the ten year target.

As of a 2019 RWRD audit, a total energy reduction of 13 percent has been achieved placing us half way towards reaching the goal. The RWRD 2021 Energy Master Plan identified that the highest energy consuming processes are:

- Aeration - 55 percent
- Dewatering bio-solids – 13 percent
- Treatment plant headworks operations – 8 percent

Therefore, these are the areas chosen to direct the greatest attention for further RWRD energy reductions.

Of RWRD's total 2021 emissions of 38,488 MTCO₂e, approximately 95 percent, or 36,717, are directly attributed to electrical energy usage. RWRD also incurs natural gas emissions of 1,771 MTCO₂e representing 28 percent of overall County natural gas emissions of 6,187 MTCO₂e annually which could be offset through thermal energy storage. RWRD recently completed a pilot study in conjunction with the City of Surprise with a novel bio-solids dryer that incorporates concentrated solar and thermal energy storage for dewatering of bio-solids.

The RWRD 2021 Energy Master Plan identified a waste heat capturing opportunity that could potentially eliminate natural gas emissions at the Tres Rios Wastewater Reclamation Facility. Additionally, there are several projects currently being evaluated for implementation

The Honorable Chair and Members, Pima County Board of Supervisors
Re: **Sustainability Action Plan for County Operations (SAPCO) Update**
May 3, 2022
Page 2

into RWRD's energy efficiency effort. SAPCO measurement methods related to these efforts are being evaluated to ensure the most accurate picture of RWRD's energy use and carbon footprint. For example, the methodology for representing the benefit the RWRD recently constructed biogas cleaning system is being analyzed since the current report only showed a minimal potential benefit.

Action Plan Resolution

As communicated in my [April 18, 2022](#) memorandum transmitting the SAPCO update and audit report, a Resolution is provided to the Board of Supervisors as additional information for the Board to consider as part of the presentation. The purpose of the Resolution is to establish a framework going forward for furthering Pima County's commitments to address the risks of climate change by establishing a climate action plan that aligns with current national and international efforts, and results in achieving the SAPCO goals (Attachment 2).

Recommendation

I recommend that the Board of Supervisors provide input and direction to staff on the SAPCO audit report and Resolution.

Sincerely,



Jan Leshner
County Administrator

JKL/anc – April 29, 2022

Attachment

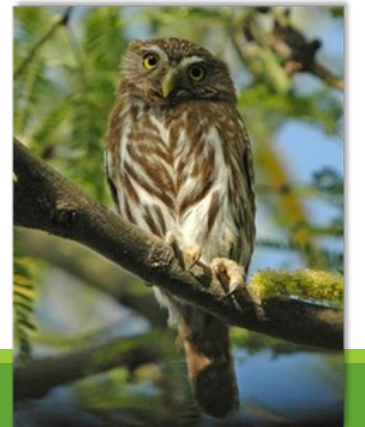
- c: Carmine DeBonis, Jr., Deputy County Administrator for Public Works
- Francisco García, MD, MPH, Deputy County Administrator & Chief Medical Officer, Health and Community Services
- Yves Khawam, PhD, Assistant County Administrator for Public Works
- Jackson Jenkins, Director, Regional Wastewater Reclamation Department
- Linda Mayro, Director, Office of Sustainability and Conservation
- Sandra Maina, Sustainability Program Manager

ATTACHMENT 1

Sustainable Action Plan for Pima County Operations Update

Office of Sustainability & Conservation
May 3, 2022

FY21 IMPLEMENTATION AUDIT RESULTS &
RECOMMENDATIONS FOR NEXT STEPS



IN THIS PRESENTATION

1. **SAPCO & the 2022 IPCC Assessment Report**
2. **Current Progress: Carbon, Water, Landscapes, Materials, Workforce**
3. **Results of the recently conducted Implementation Audit**
4. **Summary of implementation challenges/obstacles**
5. **Big Fixes & Funding opportunities**
6. **Comparative review of sustainability programs in other jurisdictions**
7. **Recommendations for a Pima County Climate Action Plan**

SAPCO & the 2022 IPCC Assessment Report 6

- The Intergovernmental Panel on Climate Change (IPCC) issues periodic Assessment Reports to inform policy-makers about risks and costs.
- Since 2007, the Board of Supervisors has acknowledged these findings.
- The IPCC AR6 concludes that *“accelerated action is required to adapt and to make rapid, deep cuts in greenhouse gas emissions.”*
- The United States has updated its carbon reduction goals to 50 to 52 percent below 2005 levels.



2018-2025 SAPCO Current Progress

- ✓ Carbon Target 1 – Buildings + WWTF - Reduction from Baseline ca. 7%.
- ✓ Carbon Target 2 – Non-electric Vehicles - Reduction Exceeds Goal of 10%
- ✓ Carbon Target 3 – Replace 120 ICE with Electric - Achieved 81% of Goal
- Water Target 5 - Reduce Water Use 15% - Increase from baseline of 145%
- ✓ Landscapes 11 - Plant 10,000 Trees – Achieved 44% of Goal
- ✓ Landscapes 12 - 40 Acres of Green Infrastructure – Achieved 67% of Goal
- Materials 22 - Reduce landfill waste 20% - Increase from baseline of 85%
- Materials 24 – Increase use of preferred products – Decreased use of 39%

To Meet U.S. Carbon Reduction Goal by 2030 Pima County Reduction Targets

Emissions Reduction of 50% - Annual average reduction of 5%
(4,704 MT CO₂e/yr)

Emissions Reduction of 100% - Annual average reduction of 11%
(10,530 MT CO₂e/yr)



Results of the SAPCO Implementation Audit

- **34 Departments responded**
- **26 Targets: 11 Hard Targets + 90 Strategies to Reach Targets**
- **The most accessible strategies for departments to implement:**
 - **Increase recycling of office and industrial materials 29**
 - **Improve waste reduction education 26**
 - **Improve employee energy conservation practices 24**
 - **Buy reusable/refillable items 18**
 - **Implement safety trainings and educational campaigns 17**

Observations & Challenges to Implementation

➤ **CURRENT EFFORTS FAVOR THE ‘LOW HANGING FRUIT’**

- Recycling, waste reduction, education, etc.

➤ **NO PRIORITIZATION OF STRATEGIES**

- 90 strategies are too many. Need “Big Fix” high-return strategies

➤ **LACK OF FUNDING, PERSONNEL, ASSIGNED RESPONSIBILITY**

- Cost, staff, not a directed program, not my responsibility



Review of Sustainability Programs in 20 Other Western Jurisdictions

- Most have *Climate Action Plans* that mitigate climate change and reduce greenhouse gas emissions.
- Some have broad *Sustainability Plans* that include the community.
- City/County leadership adopt Plan and assign implementation.
- Diversity of organizational structures work to implement
- Big Fixes implemented over time to reduce carbon emissions.
- Innovative financing: taxation, GO bonds, carbon tax, general fund, etc.

County “Big Fixes” Recommended in 2017

- **Solar Installations:** Add 40-42 MW of solar PV, combined with battery storage where feasible.
- **Energy & Water Efficiency:** Increase energy and water efficiency in buildings
- **Fleet Vehicles:** Replace gasoline sedans with EV's and improve employee driver behavior (reduction in idling, efficient routing, etc.).
- **Green Infrastructure & Low Impact Development with Trees (GI-LID+Trees):** for carbon sequestration, reduction in urban heat island effects, stormwater management, and flooding abatement.



Wastewater Treatment Energy Use as a Utility

- RWRD is a utility that will be reported separately going forward.
- 95% of RWRD 2021 GHG emissions derive from electricity use.
- 2021 Energy Master Plan identified the highest energy using processes:
1.Aeration at 55% 2.Dewatering biosolids at 13% 3.Headworks at 8%
- These highest use processes are the focus of greatest energy reductions.
- RWRD is engaged in a focused energy reduction program with the Department of Energy through their Better Plants program. Our Better Plants agreement with the DOE is to obtain a 25% reduction in energy intensity over ten years.

Wastewater Biosolids & Biogas

- RWRD screening processes now remove more unwanted materials such as inorganic materials that are sent to the landfill.
- RWRD is delivering clean renewable natural gas made from biogas to homes and businesses in partnership with SW Gas.
- RWRD's facility is the first of its kind in Arizona to connect into a gas delivery grid, generating revenue for the County and bringing major benefits to our environment



Some Wastewater Treatment “Big Fixes”

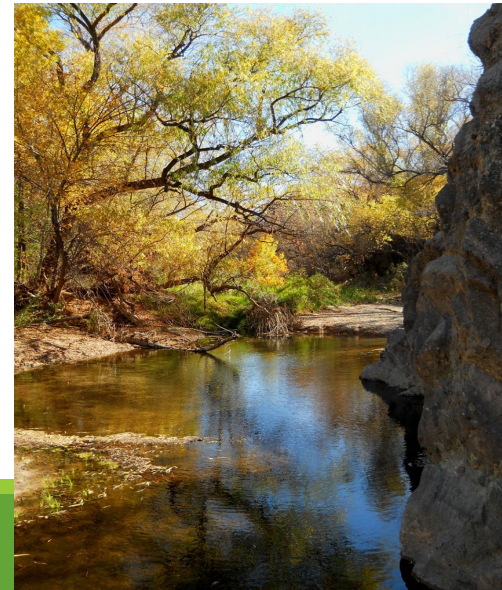
| Opportunity | Description | Benefits | Implementation Cost |
|------------------------|-----------------------------------|---|--|
| | | | |
| Anammox | Side-stream ammonia reduction | <ul style="list-style-type: none"> • 17% reduction in aeration energy at Tres Rios • Improved water quality • Increased treatment capacity | \$8,200,000 (2020) |
| Aeration Header | Common Header at Tres Rios | <ul style="list-style-type: none"> • Provides much needed redundancy • Reduces peak energy demand • Reduces overall energy usage | \$1,500,000 (2020) |
| ABAC | Ammonia Based Aeration Control | <ul style="list-style-type: none"> • 5% reduction in aeration energy | \$1,200,000 (2020) |
| NIMLR | Nitrate Based Mixed Liquor Return | <ul style="list-style-type: none"> • 3% aeration energy reduction • Increased treatment capacity • Improved water quality | \$750,000 (currently piloting one train at Tres Rios and soon at Agua Nueva via a WRF sponsored research project) |
| Thermal Energy Storage | Waste Heat Recovery | <ul style="list-style-type: none"> • Reduces MTCO₂e by 1,771 • All hot water needs and digester heating with renewable energy • dewatering of biosolids with renewable energy | \$3,500,000 |

Funding Opportunities - Grants

- **Environmental Protection Agency (EPA)**
- **Department of Transportations (DOT)**
- **USDA - Forest Service**
- **FEMA**
- **Department of Energy: Office of Clean Energy Demonstration**
- **Department of Interior: Bureau of Reclamation**
- **Army Corps of Engineers**

Recommendations for a Pima County Climate Action Plan for County Operations

1. Extend the plan to 2030
2. Increase carbon reduction target to 50% below 2005 levels
3. Restructure annual reports, redefine targets, RWRD report
4. Align the County Climate Action Plan to ICLEI LGOP methodology
5. Identify best big fixes and conduct cost-benefit analyses
6. Launch Pima County's employee–Green Stewards
7. Publish THRIVE, self-paced climate 101 training
8. Create a Sustainability Dashboard



ATTACHMENT 2

RESOLUTION 2022 - __

RESOLUTION OF THE PIMA COUNTY BOARD OF SUPERVISORS TO FURTHER PIMA COUNTY'S COMMITMENTS TO ADDRESS THE RISKS OF CLIMATE CHANGE BY ADOPTING A CLIMATE ACTION PLAN THAT ALIGNS WITH CURRENT NATIONAL AND INTERNATIONAL EFFORTS IN SUPPORT OF THE PARIS CLIMATE AGREEMENT

The Board of Supervisors of Pima County, Arizona finds:

1. Consensus exists among the world's leading climate scientists, and the recently released United Nations International Panel on Climate Change (IPCC) Assessment Report No.6 (AR6) agrees that we face a major global climate crisis caused by greenhouse gas emissions, and calls on governing bodies to prepare for, reduce the risk of, and increase resilience to climate impacts; and
2. Documented impacts of global warming include but are not limited to rising sea levels, melting ice sheets, and increased occurrences of extreme weather events, resulting in the destruction of ecosystems and infrastructure, increased costs, and reduced economic productivity, as well as unpredictable and unhealthy living environment that will have significant impacts to human health and safety; and
3. Pima County's geographic location makes it particularly vulnerable to the devastating impacts of climate change including extreme drought, fires, flooding, and the concomitant adverse impacts on human health and the environment; and
4. In 2007, the Pima County Board of Supervisors adopted Resolution 2007-84, which was the basis for the 2008 and 2014 *Sustainable Action Plan for County Operations* (SAPCO), setting targets for reduced greenhouse gas emissions; and
5. In 2015, nearly 200 nations adopted the voluntary United Nations Paris Climate Agreement (Paris Agreement) aimed at reducing carbon emissions, slowing rising global temperatures, and helping countries deal with the effects of climate change; and
6. The United States ratified the Paris Agreement on September 3, 2016, and committed to its own Nationally Determined Contribution (NDC) or United States target of reducing carbon emissions by 26 to 28 percent by 2025; and
7. On June 6, 2017, the Pima County Board of Supervisors passed Resolution 2017-39 affirming its commitment to the Paris Agreement; and
8. 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; and
9. 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 NDC by setting a new economy-wide target of reducing its greenhouse gas emissions by 50 to 52 percent below 2005 levels by 2030; and

10. Approximately 80 percent of the County's current total carbon emissions is derived from electricity generated from fossil fuels, and
11. Pima County continues to make progress in combating climate change by installing 13MW of solar energy infrastructure at county facilities, constructing a biogas facility to make beneficial use of methane from wastewater treatment, transitioning its fleet to electric and energy saving vehicles, installing green infrastructure, and maintaining natural carbon sequestration in riparian areas and other natural areas, but greater efforts are needed.

NOW, THEREFORE, BE IT RESOLVED that the Pima County Board of Supervisors:

1. Authorizes and directs the County Administrator and staff to prioritize and align efforts with the United States new NDC to the Paris Agreement, and to identify, implement, and advocate for those climate actions that are determined to be the highest operational priorities to reduce carbon emissions to 50 to 52 percent below 2005 levels by 2030 through:
 - a. Revising the current SAPCO into a multi-year *Climate Action Plan for County Operations* (CAPCO) that extends the plan to 2030, and increases carbon reduction targets to 50 percent below 2005 levels to conform with United States NDC to achieve its commitment to the Paris Agreement.
 - b. Identifying high priority strategies for Carbon, Water, Landscapes, Materials, and Workforce to reduce risk from climate change and promote resilience.
 - c. Conducting cost-benefit analyses for implementation of high priority strategies and identify available funding.
 - d. Adopting annual targets and assigning strategies to be included in annual departmental work plans to reach stated targets.
 - e. Aligning the County Climate Action Plan to the International Council for Local Environmental Initiatives - Local Government Operations Protocol (ICLEI LGOP), which provides a consistent set of methodologies for accounting for carbon emissions associated with local government operated buildings, vehicles, and other operations in the United States.
 - f. Working with County contracted utilities to maximize the benefit that the County receives from utilities' conversion to renewable energy resources.
 - g. Initiating Pima County's employee Green Team – "Green Stewards."
 - h. Publishing "THRIVE," a self-paced climate 101 training for the benefit of the County workforce.

SIGNATURES ON FOLLOWING PAGE

Passed, adopted and approved, this ____ day of _____, 2022.

Sharon Bronson, Chair
Pima County Board of Supervisors

ATTEST:

Melissa Manriquez, Clerk of the Board

APPROVED AS TO FORM:

 April 28, 2022

County Attorney