# CENTRAL ARIZONA COLLEGE SUSTAINABILITY PLAN, 2022-2025

## SUSTAINABILITY PLAN

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**Appendix 1:** Existing and Currently Planned Sustainability Approaches at CAC - Facilities, Resource Usage, and Grounds (As of December 2021) ..... 27
1. EXECUTIVE SUMMARY

Founded in 1969, Central Arizona College (CAC) is a multi-campus community college serving the 5,374 square miles of Pinal County. CAC is strongly committed to providing students with a low-cost, quality education and to contributing to the quality of life in Pinal County.

During the past 20 years, CAC has developed a growing commitment to sustainability (see Appendix 1). Most of the CAC campus grounds have Xeriscape – featuring plants suited to Pinal County’s desert conditions – and computerized drip irrigation. The three new campuses that opened in the 2010s have a wide array of sustainability features, such as LED lighting, window canopies, reflective window glazing, energy-efficient technology and appliances, and natural light options. In the late 2010s, the chiller at Signal Peak Campus received a major upgrade to make it more energy-efficient. Several older buildings have been retrofitted with various energy-saving features.

This Sustainability Plan is a “living” document that will be revised to allow for new sustainability initiatives, share lessons learned, and address emerging trends in sustainability. It is designed to promote sustainability across the institution and ensure that students learn and practice sustainability. Several of the approaches would enable CAC to be more cost-effective in its operations.

Some approaches incorporated in the plan will require executive council and/or governing board approval. Others will be able to be initiated by faculty through the curriculum development process or individual division initiatives and by employees through the departmental approval process.

This Sustainability Plan recognizes that various climate studies consider Pinal County to be “ground zero” for climate change in the American Southwest. A combination of dwindling water supplies, heatwaves, rising temperatures, and economic damage (particularly to agriculture) make Pinal County the second most at-risk county in the United States of being uninhabitable within 20 to 40 years, depending on the rapidity of climate change, a 2020 study by ProPublica and Rhodium Group found. The study holds that Pinal County is at risk of having temperatures so high that the human body will not be able to self-cool, resulting in heatstroke and death. While the study’s critics are not convinced that Pinal County will experience such extreme temperatures and the economic impact might not be that dire because agriculture in the region is likely to be less dominant than it is today, they do agree that Pinal County’s future is at significant risk due to climate change and dwindling water supplies.

As an institution dedicated to helping students build their futures, CAC has a responsibility to confront the threats of climate change and water scarcity to our region and to teach and model preserving and nurturing animal and plant life. The College is called to work to support the interdependent web of our existence. This

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1 As reported in: “6 Arizona counties may be uninhabitable in next 30 years due to climate change, study shows.” Arizona 12 News, December 23, 2020

2 Ibid.
effort will help CAC be competitive in the 21st-century workplace and attract students to our institution. Such an effort supports CAC’s vision of being “Central Arizona’s premier choice in education and career excellence.”

2. SUMMARY OF RECOMMENDATIONS

In terms of resource consumption at CAC, the Sustainability Team gives the highest priority to approaches that would provide the largest reductions in CO2 emissions and water usage while having the largest impact on CAC’s utility bills or various other costs, such as travel. Sustainability in many areas, when approached intelligently, can reduce costs. Thus, sustainability can support a major principle of Lean management – creating more value for stakeholders and customers by reducing waste through the more efficient use of resources.

Table Key:
- Shorter Term Priority
- Medium Term Priority
- Longer Term Priority

<table>
<thead>
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<th>Table 1: Recommended Initiatives</th>
<th>Page</th>
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<tbody>
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<td><strong>Energy Efficiency</strong></td>
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<td>New or renovated buildings meet LEED Silver level</td>
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<td>Research ice storage for chillers</td>
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<td><strong>On-site electricity Generation and Storage</strong></td>
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<td>Hire an energy consultant to price and spec solar and on-site storage, ROI, payback, savings</td>
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<td>Install solar at campuses, if feasible, based on the energy consultant’s recommendations</td>
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<tr>
<td>Install on-site electricity storage if feasible, based on the energy consultant’s recommendations</td>
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<td><strong>Water and Wastewater</strong></td>
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<tr>
<td>Remove turf/lawn that is ornamental only and replace with Xeriscape or repurpose for community gardens</td>
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<td>Continue to install drip irrigation</td>
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<tr>
<td>Remove any plants unsuitable for desert/arid conditions</td>
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<tr>
<td>Continue to install low-flow toilets and faucets</td>
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<tr>
<td>Educate staff, students, and faculty about Arizona’s water shortage and aridity.</td>
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<td>Ensure that new machinery and equipment are water-efficient</td>
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<tr>
<td>Involve students in our water conservation efforts, whenever possible</td>
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<td>Have facilities staff attend workshops on water conservation</td>
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<tr>
<td><strong>Sustainable Landscapes</strong></td>
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<td>Plant habitats for endangered birds and insects (e.g., butterflies, pollinators – bees)</td>
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<td>Reduce the use of pesticides and herbicides</td>
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<td><strong>Solid Waste Reduction and Management</strong></td>
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<td><strong>Green Purchasing</strong></td>
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<tr>
<td>Seek out and prioritize “green” vendors and products for all college purchases.</td>
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<tr>
<td>Purchase products made from recycled materials</td>
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<td>Purchase products made with alternative natural materials</td>
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<td></td>
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<tr>
<td>Install energy-efficient materials</td>
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</table>

Install electric vehicle charging stations – SPC, STC, SMC, MC | 13   |      |
Purchase electric vehicles to replace campus vehicles being retired, when feasible | 14   |      |
Promote virtual meetings instead of traveling to meetings | 14   |      |
**3. ACKNOWLEDGMENTS**

A team of CAC faculty and staff developed this sustainability plan. The team members were:

- Karen Hindhede, Faculty
- Paul Petersen, Facilities
- Dr. Elizabeth Baroi, Faculty
- Dr. Crystal McKenna, Faculty
- Julie Tjalas, Marketing
- Hugo Steincamp, Resource Development & Quality Assurance
- Blake Andrews, Police Officer

Various other faculty and staff submitted ideas to the team for consideration. The team researched sustainability practices at other institutions, consulted with energy and sustainability experts, and conducted an environmental scan of CAC’s current and planned sustainability efforts. The team’s administrative sponsor was Chris Wodka, Vice President of Finance/CFO.

**4. PROJECT GOALS**

This plan contains recommendations, that, if enacted, would enable the institution to achieve the following goals.

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**Use Green Seal Certified cleaning and paint products**

18

**Avoid purchasing products with toxic chemicals**

18

**Purchase green pesticides and herbicides**

18

**Purchase remanufactured toner cartridges**

18

**Outside printing uses a minimum of 30% recycled paper product**

19

**Student and Community Learning**

Integrate sustainability objectives into course objectives

19

Offer courses that highlight sustainability practices and principles

19

Offer Sustainability endorsement for certificates and degrees

20

New district-wide club for any Vaquero (student, staff, faculty) interested in advancing sustainability at CAC

20

Investigate possibilities for creating a sustainability pathway or related certificate/degree

20

Interweave sustainable goals into the CAC mission and vision

20

Pre-Earth Day guest-lecture and independent lecture series in the week leading up to the Earth Day Celebration

21

Vaquero community building and awareness: In-service sessions regarding sustainability issues and Vaquero initiatives held at All-College Day, Adjunct Faculty In-service Day, and/or Faculty Development Day

21

District-wide Earth Day Celebration

21

Provide opportunities for students to engage in sustainability issues in class through co-curricular options

21

Intra- and extra-curricular community awareness campaigns co-created by students, faculty, and staff (PSAs, website, etc.)

21

Join ASSHE (Association for the Advancement of Sustainability in Higher Education) to empower CAC employees and students to be catalysts in sustainability innovation

21

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1) Reduce resource consumption (electricity, fuel, paper, water)
2) Reduce air, water, and soil pollution
3) Reduce the institution’s CO2 emissions/carbon footprint
4) Protect and promote environmental health for CAC employees and students
5) Promote environmental awareness and education among faculty, staff, and students
6) Recommend improvements in organizational and physical infrastructure to support sustainability
7) Connect with the community to promote an exchange of sustainability efforts.
8) Support the efforts of the Equity Council and others to promote campus-wide practices that encourage diversity, equity, and justice (an important part of sustainability principles and practice)

5. BACKGROUND

5a. Sustainability – What is it?

There are many definitions of sustainability, but they all share the idea of preserving resources and the planet for the future. The 1987 United Nations Brundtland Report defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

The efficacy of this definition has been subject to scholarly debate. For example, two senior economists at the World Bank, Herman E. Daly and Dr. Kenneth N. Townsend, have explained that “sustainable economic growth is impossible since the economy is an open subsystem of the Earth’s ecosystem, which is finite, non-growing, and materially closed.” Nevertheless, “this Brundtland definition has become the default standard definition of sustainable development today, focusing on the theme of intergenerational equity.”

Since the Brundtland Report was written in 1987, sustainability has evolved to tackle the twin threats of climate change and resource depletion. Contemporary sustainability addresses issues such as changing consumer behavior, de-investing in fossil fuels, and social justice (since poorer communities and countries are dumping grounds for wealthier communities and countries and are disproportionately affected by climate change and other environmental disasters). Contemporary sustainability incorporates three Es: ecology, economy, and equity. Edwards emphasizes that education is being added to the 3 Es. These 4 Es are our “outer” landscape, depicting our relationship to the environment and sustainable development.

He explains that to find solutions to our incredibly pressing challenges, we also need to recognize and embrace the research and practices emphasizing the three Cs: consciousness, creativity, and compassion. These equal "connection," and all 4 Cs are

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3 Freyman, M., An Exploration of Sustainability and its Application to Corporate Reporting, The Hauser Center for Nonprofit Organizations at Harvard University, Cambridge, MA. 2012
the "inner" landscape that helps us find solutions to the problems we face. Ecology, Economy, Equity, Education + Consciousness, Creativity, Compassion, Connection = Sustainability.

Contemporary sustainability is morphing into regenerative sustainability. According to Leah Gibbon, “regenerative sustainability’s aspirational aim is to manifest thriving and flourishing living systems....”5 Daniel Wahl, who writes about regenerative culture, defines sustainability with a regenerative focus as “the underlying pattern of health, resilience, and adaptability that maintain this plant where life as a whole can flourish.”6 Similarly, Suzanne Simard discovered mycorrhizal networks, which demonstrate how essential shared resources are between fungi, trees, and plants.7

The most powerful sustainability efforts, therefore, couple satisfying human needs without compromising future generations (sustainability) with developing restorative systems beneficial to humans and other species (regenerative). For example, at CAC, this dual approach could involve, among other things, shifting to a renewable source of energy (sustainability) through installing solar panels, and planting trees, shrubs, and grasses that provide habitat and food for endangered species (regenerative).

The 20th century model of resource consumption is no longer sustainable or prudent in the face of the crisis of climate change, dwindling resources, and species extinction. CAC must move to a more sustainable way of operating and educating students.

5b. State and County Policy Contexts

Climate Change and Energy
Arizona does not have a climate-specific requirement or regulation for energy, but the Corporation Commission, which regulates utilities, requires 15 percent of the energy from regulated electric utilities to come from renewable sources such as solar and wind by 2025. New regulation new regulations require electric utilities to get half their power from renewable energy like solar and wind in 2035.

As the impacts of climate change increase, Arizona may enact state policies and regulations that require or further encourage individual homeowners and public and private entities to increase their use of renewable energy, to reduce CO2 emissions. Compliance with future state policies and regulations regarding environmental concerns and energy should be an important consideration for CAC.

Travel Reduction Plan
The Pinal County Board of Supervisors approved a Travel Reduction Ordinance for Area A of Pinal County on December 13, 2000. This ordinance requires employers of

8 Lovelock, J. The Vanishing Face of Gaia: A Final Warning; Enjoy It While You Can. Allen Lane. 2009
50 or more employees in Area A to provide information to the Pinal County Travel Reduction Program. CAC’s Superstition Mountain Campus is in Area A.

The Travel Reduction Plan’s main requirements are that each major employer (meaning an employer in Area A having fifty or more employees): (a) provide each regular employee with information on alternate mode options and travel reduction measures, (b) participate in a survey and reporting effort, (c) prepare and submit a travel reduction plan, and (d) notify its employees of their duty to comply with the requirements of section 49-542, namely the requirement that vehicles used to commute to a place of work in Area A comply with relevant vehicle emission testing requirements.

Climate Change and Water Supply Threats
Climate change is resulting in heatwaves and an increase in overall temperatures that are making life in the Southwest more challenging and uncomfortable. Scientists forecast that climate change will test the region’s ability to provide food, water, and cooling. They estimate that by 2050 Phoenix will be like Baghdad is now, where average highs in summer range from 98 to 112 degrees and heatwaves reach 120 degrees. Slowing and ultimately stopping climate change requires a collective effort on the part of individuals and public and private entities.

The Southwest has been in a mega-drought for two decades, creating concern that the region is moving to a permanent arid state.

In 2022, Tier 1 restrictions on water from Lake Mead will go into effect. This means that Pinal County agriculture will lose one-third of its allocation of water from the Central Arizona Project (CAP). Moreover, Pinal County farms that have lost most of their allocation of water from San Carlos irrigation are leaving their fields fallow. The cost of water is predicted to soar as water supplies dwindle and the state undertakes expensive measures to protect and extend the remaining supply.

The upshot of this situation is that farmers are likely to increase groundwater pumping, which could have serious ramifications on the water supply of various CAC campuses. The Department of Water Resources and Arizona State University researchers believe that Pinal County’s groundwater from the aquifer cannot support the current farms or the increased housing. Declining aquifer levels result in higher pumping costs and take a toll on the land causing sinkholes that can damage buildings, roads, and other infrastructure.

In 2021, the State of Arizona announced that it will disallow any future development using groundwater sources within a 4,000-square-mile management area, which includes all of Pinal County. Regulators will no longer issue the permits, known as a Certificate of Assured Water Supply, required for such construction. (However, sufficient permits have been issued to allow residential home construction for another eight to ten years.)

The U.S. Department of Reclamation

9 Landis, B. With cutbacks imminent, Arizona and other states scramble to save Colorado River water, Arizona Republic, November 20, 2021

10 Gardiner, D. A recipe for disaster: Pinal County might not have enough water for 139,000 planned homes. AZCentral. 2019, March 5.
forecasts that by 2023 Lake Mead will have shrunk so much that Tier 2 restrictions will be necessary. Tier 2 is likely to result in restrictions on residential and commercial water usage and further cuts to Pinal County agriculture.

The U.S. Department of Reclamation also estimates that there is a 66 percent probability that Tier 3 restrictions will be necessary by 2025 – a “doomsday” scenario because Tier 3 means that no water will supply CAP. These restrictions are likely to put significant legal, social, financial, and political pressure on water users to adopt water conversation measures and reduce water consumption markedly.

Water restrictions stemming from the declining level of Lake Mead start in 2022.

Additionally, the falling water levels at Lake Powell the second-largest man-made reservoir in the US, make a 34 percent probability that the Glen Canyon Dam will no longer generate electricity, starting in 2023. Hydroelectric production at Lake Mead’s Hoover Dam is also threatened by falling lake levels. While the impact of reduced electricity production from these sources is unknown, CAC could protect itself from soaring electric bills and electricity shortages by having on-site electricity production. In 2021, California shut down hydroelectric production at three dams due to insufficient water.

6. SUSTAINABILITY APPROACHES

6a. Sustainability Management

CAC presently does not have an individual to oversee sustainability projects. The Sustainability Project Team will play a role in tracking progress in implementing and completing sustainability initiatives. As CAC adopts aspects of the Sustainability Plan, they should be integrated into the Facilities Master Plan and Student Services and Academic planning, as appropriate per each respective area.

If the College decides to install photovoltaic solar panels to provide electricity at various locations, it is recommended that the institution procure the services of a qualified energy consultant independent of the solar vendor. This person would review contracts between CAC and a solar company (either to lease solar or purchase it outright), advise on on-site storage, and help determine the needed capacity of systems and Return on Investment (ROI).

There are also companies that specialize in managing energy efficiency and conservation. These companies have energy performance contracts with their clients and guarantee that savings meet or exceed annual payments to cover all project costs. Such companies usually specialize in solar systems and onsite solar systems, smart building management systems, water conservation (such as drip irrigation), and HVAC efficiency.
6b. Sustainable Building Practices

LEED is the world’s most widely used “green” building rating system and is available for virtually all building types. Various studies have shown that LEED buildings have significantly lower carbon emissions, and less waste and water consumption than their conventional counterparts, and therefore are less expensive to operate than traditional structures.

All of CAC’s recently constructed buildings, such as the Science building and the Student Union building at Signal Peak Campus, have LEED sustainability features, such as natural lighting, and all chillers, motors, and air handlers on a VFD system.

The facilities at the Maricopa Campus feature rammed earth walls, which have a very high thermal/R value. The window shades are designed to reduce thermal heat in the building while letting in natural light. Photo courtesy of CAC.

Various community colleges and universities within Arizona have LEED-certified buildings. For example, Chandler-Gilbert has three large facilities (60,000 square feet) that have LEED Gold certification. Gateway Community College’s IE building has the Gold certification. The Maricopa Community Colleges construct all new buildings on their campuses to LEED Silver standards (or equivalent) or higher. Arizona State University has completed 41 LEED projects that comprise 65 buildings. ASU requires its new buildings to meet the requirements for LEED Silver certification.

6c. On-site Electricity Generation and Storage

Electricity is one of CAC’s greatest costs. Consider, for example, CAC’s electricity bill for August 2021, (Table 2) when summer temperatures reach their peak.
Table 2: Electricity Costs, August 2021

<table>
<thead>
<tr>
<th>Site</th>
<th>Provider</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Aravaipa Campus</td>
<td>San Carlos</td>
<td>$4,829</td>
</tr>
<tr>
<td>Casa Grande Center</td>
<td>APS</td>
<td>$4,519</td>
</tr>
<tr>
<td>Florence Center</td>
<td>APS</td>
<td>$4,120</td>
</tr>
<tr>
<td>Maricopa Campus</td>
<td>ED3</td>
<td>$4,120</td>
</tr>
<tr>
<td>San Tan Campus</td>
<td>SRP</td>
<td>$18,225</td>
</tr>
<tr>
<td>Signal Peak Campus</td>
<td>San Carlos</td>
<td>$85,036</td>
</tr>
<tr>
<td>Superstition Mountain Campus</td>
<td>SRP</td>
<td>$33,772</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$151,163</strong></td>
</tr>
</tbody>
</table>

To save electricity, CAC has undertaken several initiatives in recent years. For example, the College has committed to LED comprising 100 percent of its lighting. As of September 2021, 60 percent of the college’s lighting is LED. Other measures taken with existing facilities include, and are not limited to, repairing door sweeps and seals so that they are more airtight, reprogramming light controls, installing double pane windows when buildings are renovated, and several approaches to making existing HVAC systems more efficient.

On-site solar power generation could be a significant contributor to CAC lowering its carbon emissions and reducing its expenditure on electricity. Some examples:

- Arizona Western College reports that its five 1-megawatt saved $149,000 in electricity costs between 2011 and 2018. (This is early adoption of solar. The cost of solar has declined by 89 percent since 2010 and new solar systems are much more efficient than the ones installed ten years ago.)
- Maricopa Community College District has solar arrays at four participating colleges, and their total kilowatt-hour (kWh) output is more than 12.2 million kWh annually; solar power now makes up 40 percent of their total electrical load.
- Central New Mexico Community College has completed a 1.3-megawatt solar farm at its Westside campus. On average, the energy captured will provide 50 percent of the electricity needed to power the Westside Campus buildings, thereby also cutting CO2 emissions.
- Santa Rosa Junior College in Santa Rosa, California recently installed 2.6 MW solar and 1.3 MW storage, which will provide $29 Million in 25-Year Net Savings and offset 39 percent of the Santa Rosa campus’s annual electric load and 94 percent of the Petaluma campus annual electric load.
- Gavilan College in Gilroy, California recently installed 1.4 MW solar and 500kW storage, which will provide an estimated $12.5M projected savings over 25 years and offset 75 percent of the institution’s electricity needs.
- West Valley College, located in Saratoga California has installed 2.2 MW solar, which has $17.5M projected savings over 25 years and offsets 30 percent of the college’s electricity needs.
As noted, the cost of solar modules has dropped by almost 90 percent since 2010. For example, ten years ago a 100 KW commercial system cost approximately $1 million. Today, this system will typically cost between $100,000 and $250,000 before incentives are utilized. A one-megawatt (MW) solar system would cost between $820,000 and $1.4 million.

Three of the four utility companies that provide CAC with electricity have incentives for commercial solar use. APS, which supplies power to the San Tan Campus and the Casa Grande Center (these facilities accounted for 12 percent of the August 2021 electricity costs) has two programs for commercial solar. EPR-6 is a net metering energy rider where excess KWh produced and not used will be netted against KWh supplied by APS during the billing month or banked and netted on subsequent bills if necessary. EPR-2 is a net billing renewable purchase energy rider. It measures the excess power produced/not used and gives a monthly bill credit based on the current EPR-2 purchase rate; the credit applies toward the APS billed amount for that month and any remaining credit will roll over to the next month’s bill. EPR-2 is for systems 100 KW or less.

Electric District #3 supplies electricity to the Maricopa Campus. The utility’s D3 Customer Owned Distributed Generation Program is for customers who purchase power and energy from ED3 to deliver power back to the company. The maximum system allowed is 20 kW DC. The Maricopa Campus accounted for 2.7 percent of August 2021’s electricity costs for CAC.

Salt River Project (SRP), which supplies electricity to CAC’s Superstition Mountain Campus, has incentives for solar, such as the Buyback Service Rider: if the energy produced by the system is greater than the energy used by the customer in each period, the value of the excess energy produced is credited to the customer. Superstition Mountain Campus accounted for 22.3 percent of CAC’s electricity costs for August 2021.

According to Commercial Solar Guide, a whitepaper produced by Sun Power Solar, there are three main ways to pay for commercial solar systems. One way is to simply pay cash. With solar, “cash is king” because it produces the most favorable return. By owning the system, CAC would keep the savings produced through solar generating some of its electricity. For example, if CAC paid cash for a solar system at Signal Peak Campus and generated 40 percent of the electricity used during the summer months, the savings on the August electricity bill for that campus would be approximately $34,000. Moreover, cash simplifies ownership, and the purchaser keeps any local, state, and federal incentives.

A second main way to fund the solar is through low-interest loans or lines of credit. This provides the second-best ROI after cash.

The third main way to finance solar is a Power Purchase Agreement. Many public colleges and universities finance their projects through third-party providers and install, maintain, and operate their solar systems over a defined period, such as 25 years. The PPA stipulates a fixed rate, usually with a negotiated escalation factor. They are predicated on utility rates rising faster than the PPA rate with the escalation
There are some potential problems with this approach, including the price escalator rising faster than the utility rate and the solar system being worn out or obsolete by the time it is paid off.

There are many types of energy storage technologies, most usually batteries, with a range of electrochemical storage solutions, including advanced chemistry batteries, flow batteries, and capacitors. There's also thermal storage, capturing heat and cold to create energy on-demand or offset energy needs. Mechanical storage includes technologies to harness kinetic or gravitational energy to store electricity.

Lithium-Ion batteries are the most common type of on-site energy shortage. The price of lithium-ion batteries has fallen by about 80 percent over the past five years, enabling the integration of storage into solar power systems.

Various institutions of higher education and businesses are now using on-site energy storage to save the electricity produced by on-site storage. For example, Central New Mexico Community College has an energy storage system for its solar system, consisting of consists of five, 100kW lithium-ion battery packs for a total of 500kW of energy storage.

Another form of storage involves producing ice at night in a large chiller and using it for cooling during the day. This approach enables an institution to use nighttime, off-peak electricity rates to cool buildings during the day. For example, the Las Cruces campus of the University of New Mexico is using an ice storage system to take advantage of off-peak electricity rates, which are about 5 cents per kilowatt-hour versus 25 cents for peak use. The ice is stored in large tanks and is melted during the day by a heat exchanger. The University of Arizona is also using a chilled water facility to lower its energy usage.

Solar systems on a commercial scale are complex, as are the contracts. The measurement and verifications of the system add complexity. Therefore, it is recommended that CAC procure the services of an energy planner/consultant to:

- estimate costs, ROI, and the financial benefits of incentives from utilities,
- advise on the size and specifications of solar systems,
- advise on on-site electricity storage,
- and review any contracts between a solar power vendor and the college.

The energy planner could also determine the ROI of operating solar at Signal Peak Campus without any incentives from its electricity provider (San Carlos Electric). Because the cost of solar dropped by almost 90 percent during the last decade (and it is forecast to decline by a further 34 percent between 2020 and 2030), it may become financially beneficial for CAC to install solar
at SPC, despite no incentives from San Carlos Electric. SPC has the highest electricity bill of all of CAC’s campuses, so it may potentially offer the greatest monetary savings.

Solar panel arrays should be placed above the car parks or on open acreage and not on roofs for maintenance purposes. This arrangement also means that the installed systems are not tied to buildings that may be demolished or substantially altered in the future. Solar over parking lots also provides shade for parked vehicles.

It may behoove the college to take a phased approach to purchasing and installing solar systems at the campuses – install solar at one campus one year and then install a system at another campus in the subsequent year and so on. As well as spreading the total purchasing price for all the systems across several years, this approach would enable the college to learn from each installation and its subsequent usage, and apply the lessons learned to subsequent purchases and installations.

6d. Transportation: Campus Fleet and Travel

Commercial/Workplace Electric Car Charging Stations
As the use of electric vehicles increases, CAC should provide electric charging stations for its students, staff, and visitors. Additionally, having electric charging stations on campus would acknowledge that Pinal County is an important hub for electric vehicle manufacturing, with Lucid Motors opening its only production plant in Casa Grande.

A charging infrastructure to support electric cars is critical to support the transition to large-scale electric car use, which would lower carbon emissions and regional air pollution. As the use of electric cars expands, students and other stakeholders will expect that they will be able to charge their cars while they are on campus.

Electric vehicle electric charging stations for commercial use range in cost, distance to the power supply, and charging capacity. They are available from numerous vendors. Level I charging is suitable for home use only. Level II charging is most common for commercial parking spaces. They charge cars four to five times more quickly than Level I chargers, with 12 to 14 miles added each hour. They use 208/240V and 30 amperes electric. Level III chargers are the fastest and charge batteries at the rate of 35 to 100 miles per hour. However, they are expensive and are incompatible with various electric vehicles. The average cost of a Level II charger is $6,000 plus installation (a concrete pad, electrical supply, etc.)
SRP (which serves Superstition Mountain Campus) offers $4,000 rebates per networked Level 2 EV charging station port installed at schools, government sites, and colleges. APS (which provides electricity to the San Tan Campus and Casa Grande Center) periodically offers various kinds of incentives and support for installing charging stations on a limited, time-bound basis.

Campus Fleet
As individual vehicles in the CAC fleet are retired, they should be replaced by electric vehicles whenever feasible and practical to do so. Electric pickup trucks are being introduced to the market and the overall price of electric vehicles is dropping. It is forecast that electric cars and trucks will be cheaper or at least no more expensive than their internal combustion engine (ICE) counterparts by 2025. Additionally, the maintenance costs of electric vehicles are much lower than ICE vehicles. In 2021, the base model Ford F150 electric pickup is $33,000 and the smaller Ford Maverick pickup, which is a hybrid, starts at $20,000.

Travel
CAC should encourage employees to hold virtual meetings between campuses to reduce the CO2 emissions (and associated costs) caused by local automobile travel. Virtual meetings save staff time (no travel) and mileage reimbursement costs. Additionally, CAC should encourage organizations with which it is involved to hold meetings virtually rather than face-to-face to reduce automobile travel and air travel, which has a particularly high carbon footprint.

6e. Water and Wastewater
As noted, there is a 66 percent probability that Arizona will experience Tier 3 water restrictions by 2025, meaning that Central Arizona Project would no longer supply water to Maricopa County and Pinal County. In Pinal County, groundwater supplies are diminishing faster than they are being replaced.11 CAC should commit to reducing water usage and plan for enforced reductions. Early efforts to reduce the College’s water consumption will place the institution in a better position if or when the state introduces and enforces water restrictions.

Pinal County towns and the County government eventually passing legislation regarding ornamental lawns is a distinct possibility – Las Vegas is passing regulations that will require the removal of ornamental grass in selected areas (e.g., the middle of roadways, common areas shared by commercial property owners). California is frequently banning watering lawns in various counties due to its water supply crisis.

Some ways to reduce water consumption are:

11 'Our own survival is at stake': Arizona is using up its groundwater, researchers warn. Arizona Republic. May 13, 2021
- Ensure that new machinery and technology are water efficient.
- Educate staff, students, and faculty about Arizona becoming increasingly arid and its dwindling water supplies.
- Involve students in our water conservation efforts, whenever possible.
- Continuously research water-saving practices and apply what is feasible to CAC.
- **Remove turf and replace it with Xeriscape or repurpose it for community gardens.** Lawn for decorative purposes only and not for sports grounds or the SPC Green where large of people occasionally gather is unnecessary and harmful from an ecological perspective. *Ornamental grass requires four times as much water as drought-tolerant landscaping like cactus and other succulents.* A square foot of lawn requires 55 gallons of water a year to survive. **Removing ornamental lawns may provide CAC with the largest water savings at the least financial cost.**
- Have grounds staff and facilities supervisors attend workshops on Xeriscape, drip-irrigation, and other water-conservation topics. The University of Arizona provides free workshops about these topics.
- **Continue to install drip irrigation for plants.**
- **Remove any non-native plants or plants from desert regions that require a lot of water.** Pine trees, for example, are not appropriate for a desert region.
- **Continue to install low-flow toilets, urinals, and faucets.**

“The lawns should have never come west of the Rocky Mountains,” Diana Balmori, a New York-based landscape architect and author of “Redesigning the American Lawn.”

The Sustainability Project Team researched greywater systems and rain collection systems and has concerns about both approaches. Greywater collection involves collecting water from showers, sinks, and floor drains and reusing it for irrigation or flushing toilets. There are myriad engineering and financial challenges with installing greywater systems on college campuses and maintenance can be expensive and complicated.\(^{12}\) A relatively large-scale system on a college campus costs at least $1 million. A college had to decommission its recently installed multi-million-dollar greywater system because it couldn’t get it to work properly. The payback period is at least 25 years and 50 years can be common, without considering maintenance costs and having to replace equipment as it ages.\(^{13}\)

Rain collection systems are much simpler and less costly than greywater systems. Rainwater can be harvested in rain barrels or cistern systems that funnel runoff to water collection tanks. The water can be used for irrigations plants and turf. All that is needed to capture water is to direct the flow

\(^{12}\) Franklin Alvis and Rodolfo Valdes-Vasquez, Ph.D., *Challenges of Greywater Systems on College Campuses*, Colorado State University Fort Collins, CO, 2019

\(^{13}\) Ibid.
of rainwater from roof gutters to a rainwater storage tank. This way, water can be collected and used for various needs. However, CAC buildings do not have guttering, so they would need to be retrofitted. The angled roofs of the Maricopa Campus buildings and the new facility at SMC might make rainwater capture easier than on other buildings.

There is also the question as to whether CAC receives enough rainfall to make a rainfall collection system worthwhile. Pinal County receives an average of only 9.36 inches of rainfall a year, compared to 38 inches for the United States. However, according to the University of Arizona, 1 inch of rainfall on a 1,000 square foot roof could collect 600 gallons of water. A rainfall collection expert would be able to determine whether such a system would be practical for the institution. Additionally, there is also some concern that removing/redirecting the rainwater from returning to the natural environment could perpetuate the diminishing aquifer situation.

Another approach to water conservation that the College could explore is rain harvesting. This method involves contouring landscapes so that the water from rain flows to plants that require water or to catchment ponds that are used to provide water for irrigation. Water falling off roofs can also be directed to holding areas or plants. A simple rainwater harvesting system usually consists of a catchment, a distribution system, and a landscape holding area, which is a concave or planted area with an earthen berm or other borders to retain water for immediate use by the plants. This approach would involve altering existing landscapes or ensuring that new landscapes are designed to divert water to holding areas.

6f. Sustainable Landscaping

Over the years, CAC has developed a sustainable landscape, featuring Arizona native plants and plant species from other countries that resist heat and droughts.

Going forward, we would encourage the institution to adopt various aspects of regenerative landscaping. These landscapes restore the environment and encourage long-term sustainability, increased biodiversity, and enhanced resilience. They go beyond sustainability by rebuilding natural habitats and ecosystems for birds, animals, and important insect species. Ecologically designed landscapes sequester CO2 and reconnect regional wildlife corridors. For example, planting milkweed would provide a food source for the endangered Monarch butterfly, which migrates between Mexico and the United States. Course-based student projects could implement some of these ideas. Reducing pesticide use would help to protect insects that perform critical functions in the environment, such as pollinating plants and being food for birds, reptiles, and small mammals.

A regenerative landscape expert hired as a consultant would be able to help CAC devise a landscape that saves more water, provides habitat for native birds and animals that are threatened with extinction, and restores soil health.

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Some of the simpler aspects of regenerative landscaping, such as establishing native and other desert-area plants that support animal, bird, and insect species, and composting, could be implemented without guidance from a regenerative landscape expert.

6g. Solid Waste Reduction and Management

CAC employs several strategies to reduce the amount of waste going to landfills. For example, the College recycles its non-operational and/or obsolete computers, flat-screen monitors, and other related items free of charge. The college’s I.T., Facilities, and Warehouse conduct several disposal events throughout the year. Disposal items are collected and prepared for pick up by Westech Recyclers, a State of Arizona certified Electronics recycler located in Phoenix. CAC does not pay a fee to recycle items accepted by Westech Recyclers.

Recycling

CAC presently does not have recycling programs for cans, bottles, and other single-use products, such as bottle tops, newspapers, and used copy/office paper. One reason for this is that the communities in which CAC campuses are located no longer operate recycling programs due to cost and thus do not pick up materials to be recycled. However, several local companies pay for used cans and bottles, as well as other metals and plastics.

The Sustainability Team is in various stages of piloting three recycling programs at Signal Peak Campus. The first recycling pilot involves recycling aluminum cans and plastic sourced from the Signal Peak Campus. This program would be evaluated and, if proven feasible, would be scaled up to involve other campuses. Cans aluminum cans and plastic bottles would involve collecting cans and plastic bottles from the Student Union building and selling them to a company in Casa Grande. The estimated cost to purchase the needed collection materials, annual mileage to and from the Casa Grande company that buys recycled materials, and staff time is approximately $1,700. The estimated return for the recycled materials gathered from the Student Union building is roughly $1,500 to $2,000. Paul Petersen, SPC facilities foreman, would oversee the pilot project.

The second recycling program involves TerraCycle, an international organization that recycles hard-to-recycle items. Individuals or organizations can purchase specific zero waste boxes and ship them back to TerraCycle once they are filled. There are also corporate sponsors for certain recycling programs and once an organization gets "accepted" for one of these corporate recycling programs, a small amount of money ($0.01 per pound) can be earned for charities when the full boxes are returned. CAC can be designated as a “charity” by working with the CAC Foundation. The money can be used to purchase zero waste boxes in the future or other recycling efforts.

As part of the Terracycle initiative, CAC has been “accepted” into some corporate recycling programs, such as writing implements (for pens, markers, and other writing implements sponsored by BIC) and the personal care recycling program sponsored by Toms of Maine where items like toothbrushes, toothpaste tubes, plastic
floss containers, and shampoo bottles are collected. Other boxes currently set up include candy wrappers and bottle caps. The TerraCycle boxes would be placed where most relevant, such as in the Residence Hall and CAC libraries.

The third initiative would consist of an effort to recycle the clothes, food, and other items left by students vacating the residence halls at Signal Peak. Packaged or tinned food could be given to the CAC Food Pantries. Clothes could be donated to local charities such as Goodwill and the Salvation Army.

There is also interest in creating a “swap meet” type of activity where students and employees could donate and then “shop for free” for clothing. Residence hall items could be donated for this type of activity.

Composting
Composting is a way to reduce materials going to landfills, regenerate soil, and naturally feed plants. For example, at Texas State University, compost is made from tree trimmings, raked leaves, and other vegetative material, with no outside inputs. Grounds Operations has a policy that vegetative materials are never put in a dumpster to be transported to a landfill. The compost provides Grounds Operations with a useful product made from the materials picked up on campus. Several crews work on different parts of this process from chipping branches, turning and watering the compost pile, and applying it to the fields.

6h. Green Purchasing

Green purchasing refers to procuring goods and services that have a reduced impact on human health and the environment compared to competing products or services that have the same purpose. Research has found that green purchasing reduces waste and environmental impacts and can even reduce costs. Switching to greener cleaning products can reduce employees’ exposure to toxic chemicals that cause allergies, rashes, and cancer. Buying 100 percent recycled paper can reduce energy usage and greenhouse emissions and protect forests. Purchasing electric vehicles reduces local air pollution and CO2 emissions.

CAC’s Facilities Department already purchases some green products. For example, in 2021 it began to purchase trash bags made of recycled plastic and green cleaning materials. And it buys “green” cleaners.

CAC can make a difference by:

• Purchasing products made from recycled materials (e.g., paper materials, carpets) and the highest possible post-consumer recycled content
• Purchasing products made with alternative natural materials (e.g., paper made from bamboo, which grows quickly, instead of paper made from old-growth trees).
• Installing Energy Star efficient appliances
• Using Green Seal Certified cleaning products
• Using Green Seal Certified paint products
• Not purchasing products with toxic chemicals and prophylactic antibiotics
• Purchasing green pesticides and
herbicides
- Buying remanufactured toner cartridges

Additionally, CAC could contract with outside printing firms to require the use of a minimum of 30 percent recycled content.

Measurement
The College should track progress in the following areas when possible:
- Office supplies with recycled content purchased.
- Recycled/remanufactured toner cartridges purchased (number and percent of all toner cartridges purchased)
- Reams of recycled copy paper purchased
- Paper products (e.g., towels, toilet paper) with recycled content
- Cleaning supplies with Green Seal certification purchased
- Decomposable products (e.g., trash bags) purchased
- Energy Star Compliant computer equipment and applicants purchased

7. STUDENT AND COMMUNITY LEARNING

Student Learning
College administrators across the country are reporting a surging demand for environmental-related degrees as Generation Z (young people under the age of 25) respond to climate change and environmental degradation.\(^\text{15}\)

Central Arizona College should offer programs and courses that meet the growing demand for sustainability-related pathways, certificates, and degrees.

Several CAC faculty members have expressed interest in integrating more ecojustice and sustainability themes into their courses. Multiple faculty members now have coursework and degrees pertaining to Sustainability Education. These faculty members’ experience and expertise should be sought out when designing curriculum as well as capitalizing on and expanding current curriculum and collaboration. For example, the college currently offers ENV 101 (Environmental Science) and LIT 254 (LIT & Film) with an option for Environmental Literature. Before the COVID-19 pandemic, faculty at the Maricopa campus collaborated to offer a themed ENG 102 and ENV 101 course with related research topics. Additionally, for years the English department faculty have offered a themed ENG 101 course for students interested in the Nursing, Health & Emergency Careers pathway.

A similarly themed ENG 101 course focusing on ecology, economics, and equity (the three Es of sustainability principles) and consciousness, creativity, and compassion (the three C’s of sustainability principles) could be designed for students interested in sustainability topics.

Discussion and research should be conducted to determine the best route for curriculum development. It might be feasible to create a sustainability pathway and in time evaluate student needs and enrollment. Similarly, community needs may necessitate the consideration of a

\(^{15}\) “No point in anything else”: Gen Z members flock to climate careers, *The Guardian*, 6 September 2021
specific certificate, e.g., environmental technician, relating to a sustainability topic.

Potential goals may include:
- Provide opportunities for students to engage in sustainability issues within the classroom and through co-curricular options
- Integrate sustainability objectives into course objectives
- Offer courses that highlight sustainability practices and principles
- Investigate possibilities for creating a sustainability pathway

Ultimately, whatever student learning possibilities and curriculum development would occur, the work must be interdisciplinary and grounded in multiple theoretical perspectives such as institutional theory, ecofeminism, terrapsychology, etc., in addition to being inclusive of a broad cross-section of the Sciences and Humanities.

Another idea is to create an “endorsement” for students to add to their existing degree/certificate/pathway. For example, a student seeking an A.S. in Business could also take a specified number of courses in the sustainability realm and therefore attain an A.S. in Business with an endorsement in sustainability. While this endorsement wouldn’t have meaning in transfer to four-year institutions, it would show distinction in students pursuing their degree under the lens of sustainability.

Community Learning
The sustainability project team recognizes that long-term solutions require large-scale support from the CAC community. As such, it is essential that all Vaqueros - faculty, staff, and students - are given the opportunity to learn about and contribute to the sustainability efforts at CAC.

Within the CAC community, there are faculty and staff members with advanced degrees in sustainability and related fields, as well as many employees who are personally extremely passionate about these issues. By leveraging this pool of expertise and passion, sessions for community learning regarding sustainability issues and initiatives can be developed and presented at district-wide events such as All-College Day, Adjunct In-service Day, and Faculty Development Day.

This can be used as a "call to arms" for recruiting a critical mass of faculty and staff who are interested in contributing to larger community awareness at CAC both inside and outside the classroom. Such increased awareness and interest could also lead to the co-creation of a new kind of gathering of the minds within the College community: a "club" that is not just "for students" - a community-wide group of dedicated individuals who are committed to action, where all members are equal in status regardless of title, and all ideas are welcome.
This team will create its own path and choose action items that are brought forth by members, but some preliminary goals might be to create PSAs, website banners, or other community awareness campaigns, as well as host the first-ever Vaquero Earth Day Celebration. This would ideally be a district-wide celebration of what CAC has accomplished with its sustainability initiatives, a holistic celebration of what the earth provides for us all, and a hands-on experience for all students to recognize how they could contribute to a more sustainable community. In the week leading up to the celebration, sustainability experts can host lunchtime sustainability lecture series ("Vaquero Talks") at various campuses and volunteer to give guest lectures in courses that have ties to sustainability concepts.

8. SUSTAINABILITY and CAC’S WIDELY IMPORTANT GOALS (WIGS)

In January 2022, Central Arizona College adopted two Widely Important Goals, “create a world-class learner experience” and “make CAC a great place to work.” These goals align with CAC’s mission to be “Central Arizona’s premier choice in education and career excellence.”

The following outlines why sustainability education is a critical component of a world-class learner experience and how recent research shows that sustainability plans have an important role in increasing employee satisfaction.

Goal 1: create a world-class learner experience
Creating a world-class learner experience entails many things, including meeting students’ requirements for educational content, attracting talented individuals to work at the institution, and finding the funding necessary to pay for improvements to CAC’s facilities, programs, and services. An intelligent approach to sustainability would help CAC meet its goal to create a world-class learner experience, both directly and indirectly.

Sustainability Content in Academic Programs and Classes
Part of providing a world-class learner experience involves developing academic programs and courses that respond to student needs and attract students to the institution. By offering sustainability education, CAC would likely enhance its relevance to many students, especially as the climate crisis deepens and the number of “green” jobs increases as society adapts to address critical environmental issues and resource depletion. Numerous surveys conducted in recent years show that environmental-related employment is the first choice of young people because they fear that they have the most to lose if climate change is allowed to continue unchecked. College administrators nationwide report a surging number of students inquiring about and pursuing environmental-related degrees and careers. Ninety-two percent of the student respondents to a 2020 global survey about sustainability education agreed that this education is something that all universities
and colleges should actively incorporate and promote.\textsuperscript{16}

A world-class education learner experience must involve students attaining the skills and knowledge to understand the world they are inheriting from previous generations and to address its problems. The global population is projected to reach 9.7 billion by 2050.\textsuperscript{17} To support the current levels of resource consumption, energy use, and waste production, around 2.3 planet Earths would be needed.\textsuperscript{18} Thus, reducing the ecological footprint and transforming society is critical to human survival.

A recent United Nations report recommends that higher education faculty incorporate and increase sustainability concepts into their teaching. Colleges and universities are not doing enough in this area and what is done is often siloed and centered in the science and technology disciplines.\textsuperscript{19} Higher education institutions have a particular responsibility to inform and produce future educated citizens who have the skills and knowledge needed to navigate successfully within the changing world. As McFarlane and Ogazon put it, “(w)e must now, more than ever before, become educated and aware of our surroundings and the interrelatedness of our environment and socio-economic activities as they affect our ability to progress and survive as a species – providing for our contemporary needs and wants while not destroying the prospects for future generations.”\textsuperscript{20}

Sustainability education is important for equity and social justice, which should be inherent goals of a world-class learner experience. Students from underrepresented backgrounds have a right to learn about environmental issues and sustainability, for three main reasons. First, Arizona will bear the brunt of climate change in the United States as its water supplies dwindle and temperatures soar. According to a recent study, Pinal County is at risk of being uninhabitable within 20 to 40 years due to climate change. The study ranked six threats from 1 to 10, with 10 being the worst. Pinal County scored a 10 for heat, 8 for farm crop yields, 7 for economic damages, and 6 for very large fires and “wet bulb” (heat plus excessive humidity).\textsuperscript{21}

Second, polluting industries usually choose to locate in poor, rural communities due to, among other things, residents not having the resources – e.g., education, access to affordable legal representation – to fight companies trying to locate industries in their area. Various communities in Pinal County (e.g., Coolidge, Eloy, and Randolph) have experienced the location of polluting industries in recent decades.

\begin{footnotesize}
\begin{itemize}
\item[\textsuperscript{16}] 2020 Survey, “Students, sustainability, and education.” SOS Students Organizing for Sustainability International
\item[\textsuperscript{17}] Zaleniene, I., Pereria, P. Higher Education for Sustainability: A Global Perspective. Geography and Sustainability, Volume 2, Issue 3, June 2021
\item[\textsuperscript{18}] Ibid.
\item[\textsuperscript{21}] Study: Pinal is 2nd most at-risk U.S. county for being uninhabitable, as reported in InMaricopa.com, 12/20/20
\end{itemize}
\end{footnotesize}
Third, sustainability education should not be limited to colleges and universities that serve more affluent students. By teaching sustainability, CAC would give its students the skills and knowledge needed to advocate for their communities and to secure work in “green” or environmental fields, the fastest-growing job sectors in the country. In other words, by including sustainability education in its academic programming, CAC will provide its students with the knowledge required to be informed citizens of a country and planet being transformed by climate change and related developments. This aligns with CAC’s Common Student Learning Outcome (CSLO) of students “participating in diverse environments while demonstrating global citizenship and social consciousness.” Conversely, as American communities and the economy transform to more sustainable models, individuals from underprivileged backgrounds without knowledge about sustainability issues will be likely left further behind, politically and financially.

Funding
Creating and maintaining a world-class learner experience will likely require allocating more money to direct services for students. A lean approach to management will be key to finding and allocating the financial resources necessary to fund efforts to create a world-class learner experience. According to the Lean Management philosophy, waste is any activity that consumes resources but brings no value to the end customer. In 2021, CAC spent $730,000 on electricity. Although electricity is necessary for the institution, it creates no direct value for our students. If CAC reduced its electricity bill by, say, 40 percent (approximately $300,000 annually) by installing solar arrays, it would, after the solar panels are paid for (which could take zero to ten or more years, depending on whether the institution pays cash for the panels or leases them to purchase) have more funding available for improving the learner experience. According to some recent news articles, many colleges community colleges are now realizing 75 percent savings on their electricity bills by installing solar fields at their campuses. And some universities now have 100 percent of their electricity coming from renewable sources (principally solar).

Attracting Talented Employees
Creating a world-class experience for students will also require attracting top talent to work at the college. If CAC wants to attract top talent, especially from the Millennial generation and Generation Z (people currently in their teens to mid-20s), the college should step up on sustainability. For example, 26 percent of the business school respondents to a recent study conducted by Yale University said they would not accept a job with a company that has weak environmental practices, a seven-point increase from 2015. Fifty-one percent of the students surveyed said they would accept a lower salary to work for an environmentally responsible company, up from 44 percent in Yale’s inaugural 2015 survey. Ultimately, the report concluded that business schools should emphasize opportunities to integrate sustainability topics and that corporations need to improve their sustainability practices – if
they want to attract top talent.\textsuperscript{22}

**Goal 2: Make CAC a great place to work**

The global workplace is being transformed as Baby Boomers retire, Millennials start filling senior administrative positions, and Generation Z (born between 1997 and 2012) enters the workforce. Generation Z forms the largest portion of the U.S. population, closely followed by Generation Y/millennials (born between 1981 and 1996). This transformation is evident at CAC, where:

- Most of the senior administration is Generation X (born between 1965 and 1979/80) and only three senior administrators are Baby Boomers. Seven years ago, nearly all of CAC’s senior administrators were Baby Boomers.
- The number of Generation X employees now exceeds the number of Baby Boomers working at CAC.
- Generation Y/Millennials now comprise 25 percent of CAC’s full-time workforce.

Within five to seven years, Baby Boomers will likely form a small minority of CAC employees and Generation Y/Millennials will probably form the largest group as the older members of Generation X employees start retiring.

What can we conclude from the generational shift occurring among CAC employees? Research shows that Millennials are going to be the largest workforce in the United States within six years and they have their expectations about job satisfaction. As an increasing number of Millennials and Generation Z work at the institution, more employees are going to consider the institution’s sustainability efforts, or the lack of them, when they are thinking about what makes CAC a great place to work. Millennials and Generation Z are particularly eco-conscious. They spend more on environmentally friendly products per person than Baby Boomers and Generation X consumers do.

Surveys of Millennials and Generation Z workers clearly show a strong relationship between their job satisfaction and whether their employer practices sustainability. For example:

- In 2019, 70 percent of Millennials responding to a Fast Company survey prefer to work in a company with a strong sustainability agenda.\textsuperscript{23}
- About three-quarters of these respondents are even willing to take a smaller salary to work for

\begin{table}[h]
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Generation & Birth Years & Number & \% of Fulltime Staff \\
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Baby Boomers & 1946-1964 & 109 & 29\% \\
Generation X & 1965-1980 & 175 & 45\% \\
Generation Z & 1996-2012 & 1 & <1\% \\
\hline
Totals & & 383 & 100\% \\
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\end{tabular}
\caption{The Generations of CAC’s Full-time Employees}
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Note: CAC has 23 Generation Z workers in part-time and work-study positions.

\textsuperscript{22} Yale Center for Business and the Environment, Rising Leaders on Social and Environmental Sustainability Survey, 2022

\textsuperscript{23} As reported in *How Gen Z and Millennials are putting sustainability on corporate agendas*, JLL, March 6, 2020
an environmentally responsible firm
- Seventy percent of the respondents stated that they are much more likely to stay with their employer long-term if they have a strong sustainability plan.
- Nearly 40 percent said that had chosen a job because their employer performed better on sustainability.
- Thirty percent said that they had left an employer due to a lack of action on sustainability.
- Thirty percent said that put in more hours and work harder because their employer actively practices sustainability.

Many other recent surveys of Millennials and Generation Z, including surveys conducted by Deloitte, Cone, and Sustainable Brands, among other organizations, find that these workers’ satisfaction and longevity with their employer are enhanced by sustainability programs. Millennials and Generation Z want to work for organizations that share their values, and the issue of climate change is particularly important to them.24

The Deloitte Report concludes, “To win the hearts of Generation Z, companies and employers will need to highlight their efforts to be good global citizens. And actions speak louder than words: Companies must demonstrate their commitment to a broader set of societal challenges such as sustainability, climate change, and hunger.”

All of this does not preclude our current Baby Boomer and Generation X employees who also care deeply about sustainability topics. They believe that environmental and ecological projects are connected to social justice and fiscal responsibility - and contribute to making CAC a place where people enjoy working and want to work.

CAC employees with such expectations will be happier when they know that the institution is tackling issues that they care about, is socially responsible, and evolving its practices to meet the threats of climate change and water depletion, which threaten human existence in the American Southwest. Issues such as solar power at campuses, electric car charging stations, and recycling are often raised by staff in various meetings. By implementing sustainability approaches, CAC will reinforce its message to employees that it is responsive to evolving societal needs, wants the best possible education for its students, and is innovative.

9. MONITORING AND REPORTING PERFORMANCE

To ensure progress in and desirable outcomes for the sustainability initiatives selected by Executive Council, the Sustainability Team will track and document progress and outcomes. This undertaking will often require working with Facilities, consultants, Purchasing, Academics, Student Services, and other personnel and CAC departments involved in sustainability efforts.

24 The Deloitte Millennial Survey 2018
The Sustainability Team will establish baseline data (which may involve collecting data from various CAC departments or consultants hired by the college) for each selected sustainability initiative. Depending on the type of initiative, this may involve calculating return on investment, payback times (actual rather than originally estimated), cost, energy saved, water saved, or CO2 reductions.

CAC should become a member of the Association for the Advancement of Sustainability in High Education (AASHE). This organization has a software application for monitoring and reporting on sustainability initiatives. Additionally, it shares best practices with its membership.

The Director of Resource Development and Quality Assurance, with support from the Sustainability Team, will create an annual report that provides information on progress and outcomes.

10. COMMUNICATING THE PLAN, PROGRESS, AND RESULTS

The Sustainability Team will communicate information about the sustainability plan, seek suggestions about current and potential sustainability activities and educational programs, and share information about the plan’s progress and results. To achieve these ends, the team will employ several strategies:

- Create a sustainability webpage (linked to the “About CAC” page on the CAC website) that provides a copy of the sustainability plan, news about sustainability initiatives, and information about what CAC has achieved in the sustainability area to date.
- Provide information on CAC’s sustainability program via the One College One Team site on Teams
- Create an annual report that provides information on the status of sustainability initiatives and outcomes
- Have Marketing and Public Relations send press releases on various CAC sustainability projects to local media.
- Attend departmental, constituency, or student group meetings as needed or hold a Lunch & Learn or other workshops as needed to garner feedback, solicit ideas, and create a collective effort to implement ideas and projects. Invite speakers to address/discuss environmental and sustainability topics where our community is invited
- Support student-created projects (PTK/Honors, course-based, club-based, community service, etc.) that encourage student awareness of the issues at hand and what CAC is doing about them.
- Invite a student to be a member of the sustainability team.
APPENDIX ONE: Existing and Currently Planned Sustainability Approaches at CAC - Facilities, Resource Usage, and Grounds
(As of December 2021)

Key:
X – Installed or in progress
P – Currently Planned
N.A. – Not applicable or appropriate for CAC given current infrastructure/systems
Blank – Not present at CAC

<table>
<thead>
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<th>Item</th>
<th>SPC</th>
<th>Maricopa Campus</th>
<th>San Tan Campus</th>
<th>SMC</th>
<th>AVC</th>
<th>CGC</th>
<th>Florence Center</th>
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<td>Replaced lawn with Xeriscape or artificial grass where appropriate</td>
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<td>Plant drought-resistant trees and shrubs that can stand excessive heat</td>
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<td>Carpet purchased made with less energy</td>
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<td>Recycle organic matter - compost</td>
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<td>Purchase of green power through APS</td>
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<td>Recycling program (e.g., paper, plastic, cans, cardboard, metals)</td>
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<td>Repurpose clothes and various other items left in Residential Halls end of year</td>
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<td>Encourage café to reduce or end use of single-use plastics</td>
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## CENTRAL ARIZONA COLLEGE SUSTAINABILITY PLAN, 2022-2025

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<th>San Tan Campus</th>
<th>SMC</th>
<th>AVC</th>
<th>CGC</th>
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<tbody>
<tr>
<td>Replace fleet with electric cars and trucks when replacement is due</td>
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<td>Electric car Charging Station</td>
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<td>Encourage virtual meetings instead of face-to-face (locally, regionally, and nationally)</td>
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<td>Promote Travel Reduction Program</td>
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<td>Incentivize carpooling</td>
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<td>Smart valve installation- slowed down chilled water flow</td>
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<td>Plate and frame heat exchanger- allows to cool the chilled water</td>
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CAC (SMC Campus only) participates in the Pinal County Travel Reduction program by mandate.
during the cooler months instead of running the chillers

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<tbody>
<tr>
<td>Computer server room AC change - more efficient unit</td>
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<td>Turn it off campaign – turn off devices and lights when not in use</td>
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