CALIFORNIA STATE UNIVERSITY, CHICO

CLIMATE ACTION AND RESILIENCE PLAN 2.0

Updated 2020

California State University, Chico is committed to achieving carbon neutrality by the year 2030.

STATEMENT FROM PRESIDENT HUTCHINSON

Chico State has a long-standing commitment to addressing climate change and it is my honor to continue the tradition. Upon assuming the role of President at Chico State, I immediately reaffirmed our campus pledge to the President's Carbon Commitment to achieve carbon neutrality by 2030 and observed that our climate work, although notable, had fallen short of our collective expectations. We all feel the direct impacts of climate change and ensuring that we have the ability to recover and thrive after a disaster is of utmost importance, which is why I added "resilience" to our Climate Commitment.

In 2018, while in the process of developing the University strategic plan, we were hit with the devastating reality of a changing climate when the Camp Fire destroyed the town of Paradise and several more neighboring ridge communities. The ripple effects of the disaster reached far and wide making it abundantly clear that we, Chico State, needed to do more to address climate change. A renewed sense of urgency facilitated the endorsement of Sustainable and Resilient Systems as the third key priority in our strategic plan. Moving forward, we will devote resources and support to realize progress in developing sustainable and resilient systems, not only on our campus but throughout the communities we serve.

Under the leadership of Cheri Chastain, sustainability programs manager, and Michael Guzzi, associate vice president for Facilities and Management Services, and with the help of the Campus Sustainability Committee comprised of an interdisciplinary team of faculty, staff and students, the following action plan was developed. It outlines beautifully a path to achieving carbon neutrality, establishes goals that will make our campus more resilient to the effects of climate change, and creates opportunities for Chico State to serve as a leader and partner to our service region. The plan is ambitious. The goals will challenge us in ways we may not have realized, and we will have to make difficult decisions along the way. However, I am confident that together we will achieve carbon neutrality, demonstrating innovation and resilience through academic excellence.

Ten years from now, I imagine that we will look back on our journey to achieve carbon neutrality with awe. We will celebrate our students, who graduate with a deep commitment to battle the effects of climate change, as critical thinkers and solution builders. And, we will congratulate our regional partners, knowing that together we helped communities improve their health and economic vitality and emerge more resilient and sustainable.

Together, we will.

~ Dr. Gayle E. Hutchinson, President

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Endorsements

This plan was endorsed by the CSU, Chico Academic Senate, Associated Students Board of Directors, and the Campus Sustainability Committee.

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EXECUTIVE SUMMARY

Chico State is committed to achieving carbon neutrality by 2030 for scopes 1, 2, and 3 emissions and has made campus-community resilience a university-wide strategic priority. Scope 1 emissions are direct emissions from processes and equipment under the ownership and control of the campus: mobile combustion in vehicles and yard equipment, stationary combustion in boilers and backup generators, release of refrigerants, and agricultural emissions. Scope 2 emissions are indirect emissions associated with the generation, transmission, and delivery of purchased electricity. Scope 3 emissions are indirect emissions that contribute to campus operations, but not directly owned or operated by the campus: student, faculty, and staff commuting to/from campus; university sponsored travel; wastewater treatment; and solid waste to landfill.

Chico State first made a commitment to carbon neutrality in 2006 with the signing of the Presidents' Climate Commitment. President Hutchinson reaffirmed this commitment in 2016 and added climate resilience to our carbon commitment. In fall 2019, the University Strategic Plan, 2019-2024, was released. In the plan, Resilient and Sustainable Systems is elevated as a key strategic priority of focus for Chico State. This University Strategic Plan will guide much of the work on the Chico State campus over the next five years.

Chico State publicly reports biannual greenhouse gas (GHG) emissions to Second Nature[1] and is committed to providing progress reports. The campus' first Climate Action Plan was adopted in 2011 and outlined 10 key steps to begin to reduce emissions. Five of these actions were completed including using a more climate-friendly power supply, retrofitting campus lighting systems, retrofitting the domestic water booster in housing, and virtualizing our servers. Four actions were partially completed and one action, reducing single-occupancy vehicle traffic to campus, saw little action.

Chico State uses a 1990 GHG baseline of 32,224 metric tons of carbon dioxide equivalents (MTCO2e). In fiscal year 2017/18, the most recent for which we have complete data, Chico State reports 21,017 MTCO2e GHG emissions, a 34.8% decrease from the 1990 baseline. While this is a significant reduction, there have been minimal operational actions taken on our campus to get to this level. Scope 1 emissions have remained relatively flat since the 1990 baseline inventory with limited investments in energy efficiency improvements. Scope 2 emissions saw the most substantial reduction in emissions due to a switch in how campus energy was procured. Chico State switched in 2009 from buying direct access coal-generated power to purchasing power from the local utility Pacific Gas & Electric (PG&E). In 2018, PG&E sourced 39%[2] of their power from renewable sources. Chico State was an early mover in shifting from the historically cheaper coal driven power generation but this shift must happen at a global scale, and quickly, if the most destructive impacts of climate change are to be avoided.

There is a lot of work to be done to achieve carbon neutrality by 2030 and build a campus that is resilient to the impacts of climate change that we are already experiencing. The following plan outlines a path to achieve these ambitious goals and calls on all campus members – students, faculty, staff, and partners – to act. Further, it is not enough for us to reduce our impact. We must remain committed to our academic mission of educating and empowering the next generation of sustainability leaders; we must build robust relationships within our community and support one another through the challenges

[1] https://secondnature.org/

[2] https://www.pge.com/en_US/about-pge/environment/what-we-are-doing/clean-energy-solutions/clean-energy-solutions.page?WT.mc_id=Vanity_cleanenergy

ahead; and we must acknowledge that social justice is inextricably linked to climate justice and actively take steps to ensure a just transition to a sustainable future.

This plan calls for reevaluation in how emissions are quantified for Chico State and consideration for how additional sources can be measured and included in our inventory. This plan calls on our campus to not only invest in drawing down emissions, but to ensure that we are preparing for the impacts of climate change we cannot avoid, ensuring our campus can be resilient to the climatic changes we will face. This plan identifies several pathways and ideas to draw down emissions including energy efficiency measures, electrification of university utilities, electric vehicle and equipment adoption, renewable energy additions, alternative transportation improvements, and policies and procedures that should be adopted or explored. Also identified in this plan are campus generated sources of carbon sequestration that must be supported and researched if we are to meet our goals. One of the difficult challenges we will face is funding the work that must be done so this plan also outlines a few ideas to secure the financial resources necessary.

This document is intended to be a living document and should be updated at least every five years.

Definitions and Abbreviations

ABBREVIATIONS	
AS	Associated Students
BCCER	Big Chico Creek Ecological Reserves
CAP	Climate Action Plan
CPUC	California Public Utilities Commission
CSC	Campus Sustainability Committee
CSU	California State University
CRARS	Center for Regenerative Agriculture and Resilient Systems
CVAC	Campus Vegetation and Arboretum Committee
EV	Electric vehicle
GHG	Greenhouse gas
FMS	Facilities Management and Services
IPCC	Intergovernmental Panel on Climate Change
kW	Kilowatt = 1,000 watts
kWh	Kilowatt-hour
LED	Light emitting diode
MTCO2e	Metric tons of carbon dioxide equivalents
MMTCO2e	Million metric tons of carbon dioxide equivalents
PPA	Power purchase agreement
SEMP	Strategic Energy Master Plan

DEFINITIONS	
Carbon neutral	Achieving net zero carbon emissions by balancing carbon emissions with carbon removal, through sequestration or offsets, or elimination at the source. Chico State's carbon neutral goal applies to operational carbon as documented by source in the chapter on GHG data and includes measured emissions from scopes 1, 2, and 3.
Chico State	All state-supported activities as well as the auxiliary functions of Associated Students, University Housing, and Chico State Enterprises.
CO2e	Carbon dioxide equivalents. CO2e is calculated from global warming potential (GWP) and provides a common unit of measurement for measuring the climate effects of different gases.
Resilience	Ability to survive disruption and anticipate, adapt, and flourish in the face of change. This report was written specifically with climate change as the driver of change.
Scope 1 GHG emissions	Direct emissions from processes and equipment under the ownership and control of the campus: mobile combustion in vehicles and yard equipment, stationary combustion in boilers and backup generators, release of refrigerants, and agricultural emissions.
Scope 2 GHG emissions	Indirect emissions associated with the generation, transmission, and delivery of purchased electricity.
Scope 3 GHG emissions	Indirect emissions that contribute to campus operations, but not directly owned or operated by the campus: student, faculty, and staff commuting to/from campus; university sponsored travel; wastewater treatment; and solid waste to landfill

INTRODUCTION

About Chico State

Founded in 1887, California State University, Chico (Chico State) is the second oldest campus in the California State University (CSU) system. Chico State is home to more than 17,000 students, employs 2,000+ faculty and staff, and offers more than 100 undergraduate major degree options. Chico State is located in the heart of downtown Chico, California, at the north end of the Sacramento Valley, and shares a deep connection with the land and community.

We acknowledge and are mindful that Chico State stands on lands that were originally occupied by the native people of this area. We recognize the Mechoopda and their distinctive spiritual relationship with this land and the waters that run through campus. We are humbled that our campus resides upon sacred lands that sustained the Mechoopda people for centuries. The Chico State Office of Tribal Relations facilitates a sense of belonging in higher education and continued distinctive spiritual relationship with place.

Chico State is composed of three distinct land use types:

- 132-acre main campus with Big Chico Creek flowing through the center of campus, an extensive arboretum, several historic buildings, and on-campus residents
- An 800-acre teaching and research University Farm that houses aquaponics, greenhouses, an organic dairy, the Organic Vegetable Project, orchards, row crops, the RAD Soils Lab, and sheep, swine, and beef units
- Ecological reserves encompassing 4,043 acres along both Big Chico Creek and Butte Creek just minutes from the Chico State campus

Chico State's service area includes 12 Northern California counties: Butte, Colusa, Glenn, Lassen, Modoc, Plumas, Shasta, Siskiyou, Sutter, Tehama, Trinity, and Yuba. At 33,310 square miles, these counties are collectively larger than the entire state of South Carolina. An overwhelming number of Chico State students, 97.5%, come from California: 27.8% from within the service area; 10.7% from the Sacramento Area; 20.5% from the San Francisco Bay Area; 22.1% from the Los Angeles Area; and 16.4% from the rest of California. Chico State is a recognized Hispanic Serving Institution.

There are also auxiliary and self-support units contributing to the Chico State campus: Associated Students (AS), Chico State Enterprises (CSE), the University Farm, and University Housing. The AS enriches the quality of campus life through programs and services created for students by students. CSE serves the University's mission by promoting, supporting, and managing funded research, partnerships, and innovative opportunities. Located five miles south of the Chico State campus, the University Farm supports classes in agriculture by providing students the opportunity to get their hands dirty and put lectures into action, supports local farmers and ranchers with research, and provides local food to our community and Wildcat Food Pantry. University Housing provides 2,260 living spaces in six on-campus residence halls and one off-campus apartment complex.

Climate Change Impacts in Chico State Service Area

The scientific community widely accepts that human induced GHG emissions are driving the climate to change in ways that it would not without anthropogenic influence. The current rapid change in climate is resulting in extreme weather events around the globe including droughts, floods, fires, extreme heat, changes in seasons, ecosystem disruptions, more intense hurricanes, melting ice sheets, and sea level rise[3]. Global average surface temperatures measure the temperature on land and water and average across the planet[4]. If we are to avoid the most devastating impacts of climate change, we must limit the rate at which the planet is warming to no more than 1.5°C above pre-industrial (1880-1900) global temperatures.

Over the last five years, we have intimately experienced the direct impacts of a rapidly changing climate in Northern California. From 2013-2017, California experienced exceptional drought conditions in most of the state, impacting the agriculturally-based economy of northern California and jeopardizing sensitive ecosystems while creating abnormally dry and combustible landscapes.

In February 2017, following intense precipitation events, the Oroville Dam Spillway, located about 30 miles from campus, collapsed. This collapse lead to the immediate evacuation of the City of Oroville and all areas south to Sutter County, and threatened to undermine the integrity of the dam itself.

In July 2018, the Carr Fire ignited in Redding, California, about 74 miles from campus. The fire destroyed 229,651 acres, 1,604 structures, and claimed 8 lives. This fire burned so intensely that it caused a "Firenado," with winds in excess of 143 mph – equivalent to an EF3 tornado – causing tornado-like damage while rapidly spreading the fire. Chico was blanketed with smoke and unhealthy air quality for several days.

On November 8, 2018, the devastating Camp Fire ignited in Pulga, California, about 20 miles from campus as the crow flies. The Camp Fire scorched 153,336 acres, destroyed 18,804 structures in less than 6 hours, and claimed at least 85 lives. The Camp Fire almost completely destroyed the towns of Paradise, Concow, and Magalia, displacing roughly 50,000 people from their homes, with approximately 20,000 of them relocating to Chico. While the fire did not quite reach Chico, the city and campus were again blanketed in smoke and very unhealthy air quality for days, and courses were cancelled for two weeks.

[3] https://library.wmo.int/doc_num.php?explnum_id=10211

[4] https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature#:~:text=According%20to%20the%20NOAA%202019,more%20than%20twice%20as%20great.

In April 2019, a supercell of moisture parked over the City of Chico overwhelming storm drain capacity, causing localized flooding and millions of dollars of damage to the Chico State campus alone. With the high risk of fire following into the summer of 2019, the Investor Owned Utilities in the State of California implemented Public Safety Power Shutoffs to mitigate future utility-sparked wildfires. As this plan is being written in fall 2020, some of the largest wildfires in California history are raging not only in our state but in several western states including Oregon, Washington, and Idaho.

In addition to these (un)natural climate disasters, we are in the midst of a global pandemic that is shining a spotlight on disproportionate impacts within our communities and highlighting the need for environmental and social justice. Marginalized communities (e.g. people of color and economically disadvantaged people) which are the most impacted by climate change and rampant pollution have also been hardest hit by this pandemic. We are not only feeling the physical impacts of a changing climate, but the societal impacts of the increase in GHG emissions.

In order to limit warming to 1.5°C increase over pre-industrial temperatures and the steady acceleration of GHG emissions, the Intergovernmental Panel on Climate Change (IPCC)[5], the United Nations body for assessing the science related to climate change, is calling for "rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems." This unprecedented action needs to happen in the next ten years and Chico State is committed to doing our part.

Presidents Climate Commitment

In 2007, Chico State was a founding signatory of the American College and University Presidents' Climate Commitment (ACUPCC), also known as the Presidents' Climate Commitment, committing our campus to carbon neutrality. In 2015, President Hutchinson added resilience to the Climate Commitment, making campus and community resilience a top priority. Progress reports and accountability on meeting our commitments is managed through the organization Second Nature[6]. We have adopted Second Nature's definition of resilience in which our campus increases the ability to survive disruption and to anticipate, adapt, and flourish in the face of change. This report was written specifically with climate change as the driver of change.

The Climate Commitment is an outward expression of our campus leadership in charting a path toward a more sustainable campus community. We are committed to addressing climate change by reducing and ultimately neutralizing GHG emissions. Additionally, we will accelerate research and educational efforts to equip our students to be actively engaged in working toward a more sustainable future. We are proud that our student body exhibits extraordinary sustainability leadership in and around our campus. Our incredible faculty and staff are just as committed to building a sustainable future grounded in science and practicality.

[5] https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Headline-statements.pdf
[6] https://secondnature.org/

2019-2024 University Strategic Plan

Mission and Vision

Chico State is the comprehensive university of the North State with a global reach. Through excellence of inquiry, innovation, and experiential learning, we develop students who are critical thinkers, responsible citizens, diverse leaders, and inspired stewards of environmental, social, and economic resources. Chico State will be known as a preeminent university solving the unprecedented challenges of the 21st century.

Strategic Priorities and Enduring Commitments

The strategic priorities will provide Chico State with focus as we aspire to achieve our vision and will direct us going forward:

- **Equity, Diversity, and Inclusion:** Cultivate and nurture a welcoming and inclusive campus where students, faculty, and staff have an equitable opportunity to thrive.
- **Civic and Global Engagement:** Build stronger and more vibrant communities by connecting the University and community in mutually beneficial ways to effect meaningful change in the world around us.
- **Resilient and Sustainable Systems:** Advance environmental, social, and economic sustainability, while striving toward a just and resilient future.

All of Chico State's priorities are predicated on the primacy of student success enabled by excellence of faculty and staff as well as communication, technology, and philanthropy.

The strategic priorities are grounded in our four enduring commitments, powering the mission of the University and fueling our students' drive for success. Enduring commitments are time-honored promises we make to students and each other. They are the building blocks for a high-quality education and essential ingredients to student success:

- Academic Distinction
- Transformative Student Experiences
- Prominent Scholarship and Innovation
- Culture of Excellence and Accountability

Resilient and Sustainable Systems Strategic Priority Goals

The resilient and sustainable systems team was tasked with developing university-wide goals. To achieve carbon neutrality, a three-pronged approach was developed to include operational and tactical measures, looking beyond neutrality and focusing on mitigation and sequestration, and acknowledging our mission as an institution of higher education. Resilience goals are focused on forging resiliency in the communities we serve.

Adopted university-wide goals:

1. Write and adopt an updated Climate Action Plan (CAP) to outline a roadmap for achieving 2030 carbon neutrality including strategies for building a climate resilient campus by December 2020.
2. Quantify the amount of carbon sequestered at the University Farm, main campus, and Big Chico Creek Ecological Reserves (BCCER) by July 2021.
3. Restructure the current Green Leaf curriculum designation to focus on climate change and climate resilience by December 2021.
4. Create a Resiliency Collaborative to focus on resiliency in the natural environment and working lands through scholarship, teaching, and service by December 2021.
5. Develop a plan to optimize the amount of sequestered carbon as measured by total soil carbon by January 2022.
6. Increase the integration of resiliency into research and academic practice through faculty workshops and infrastructure to share best practices by May 2022.
7. Improve coordination with local municipalities on emergency planning and resource sharing to include an Updated Integrated Emergency Management Plan by July 2022.
8. Increase our ability to respond to future disasters on and off campus by ensuring that a minimum of 10% of Chico State students have CPR and First Aid, Healing Center Engagement, or Trauma Informed Care Training by December 2022.
9. Develop a strategy for student educational continuity after a disaster through transfer agreements with other CSU's and/or a transition to online learning by December 2022.
10. Require that every student who graduates from Chico State has taken at least one Green Leaf course as part of their education by May 2028.

CLIMATE ACTION BACKGROUND

State and California State University Climate Policies and Goals

The State of California has set aggressive climate action goals dating back to 2006 with the signing of the Global Warming Solutions Act (AB 32), giving authority to the California Air Resources Board to develop regulations and market mechanisms to reduce California's GHG emissions to 1990 levels by 2020, an approximate 30% reduction in statewide emissions. According to the 2019 Edition of the California Greenhouse Gas Emissions Inventory: 2000-2017[7], 2017 emissions are 7 MMTCO2e below the 1990 baseline, meeting and exceeding the stated goal.

KEY CALIFORNIA STATE CLIMATE POLICIES	
Executive Order B-18-12	Calls for significant reductions in state agencies' energy purchases and GHG emissions. The Executive Order included a Green Building Action Plan[8]. The plan requires all state-owned buildings and major renovations beginning design after 2025 will be net zero energy with an interim target of 50% for all new facilities to be net zero by 2020.
Executive Order B-30-15	Sets an interim GHG emissions target of 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050.
AB 3232	Requires a reduction in residential and commercial building emissions to at least 40% below 1990 levels by 2030.
SB 100	Requires the California Public Utilities Commission (CPUC) to establish renewable energy portfolio standards of 50% by the end of 2026, 60% by close of 2030, and 100% by 2045.
Executive Order B-55-18	Sets a statewide carbon neutrality goal of 2045 or sooner, and to achieve and maintain net negative emissions thereafter.

In May 2014, the California State University (CSU) Board of Trustees adopted the first systemwide Sustainability Policy, applying sustainable principles across all areas of university operations. The sustainability policy includes several Climate Action Plan goals:

- The CSU will strive to reduce systemwide facility greenhouse gas (GHG) emissions to 1990 levels, or below, by 2020 consistent with AB 32.
- Emissions will include both state and auxiliary organization purchases of electricity and natural gas; fleet and marine vessel usage; and other emissions the university or self-support entities have direct control over.

[7] https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2017/ghg_inventory_trends_00-17.pdf
[8] https://www.ca.gov/archive/gov39/wp-content/uploads/2017/09/Green_Building_Action_Plan_B.18.12.pdf

- The CSU will strive to reduce facility GHG emissions to 80% below 1990 levels by 2040. Campus tracking and reporting of their GHG inventory will be grounded in the American College and University Presidents Climate Commitment guidelines or equivalent, with consideration to campus-requested improvements.
- The CSU will encourage and promote the use of alternative transportation and/or alternative fuels to reduce GHG emissions related to university associated transportation, including commuter and business travel.

Climate Action and Resilience Plan 2.0 (CAP 2.0) Relationship to Other Plans

The development of this document has paralleled efforts of the President's University Strategic Plan as well as an updated Campus Master Plan, each supporting and building from one another.

The CAP 2.0 is also being done in tandem with a Strategic Energy Master Plan (SEMP) which will create a deeper dive into natural gas and scope 2 emissions reduction tactics. The creation of these plans collaboratively has provided a unique opportunity to ensure the campus has the resources needed to move toward common goals.

This plan is also being updated at the same time the City of Chico is updating its Climate Action Plan[9]. Chico State representatives have been active in the development of the City's plan to ensure that priorities are aligned and each entity will be able to work collectively to achieve our goals.

Previous Climate Action Plan Recommendations and Implementation Updates

Chico State first adopted a CAP in 2011[10]. The initial Climate Action Plan (CAP) set forth the interim goal of achieving 1990 GHG emissions (32,224 MTCO2e) by 2020 and outlined key strategies for achieving carbon neutrality by 2030. As of fiscal year 2017/2018, Chico State GHG emissions inventory resulted in 21,017 MTCO2e – a 34.8% decrease from 1990 levels, meeting and exceeding the original CAP recommendations.

[9] http://chicosustainability.org/climate-action/climate-action-plan/
[10] https://www.csuchico.edu/sustainability/_assets/documents/chico-state-climate-action-plan-2011.pdf

TABLE 1: 2011 CAP GHG REDUCTION STRATEGIES AND PROGRESS UPDATE					
	Complete		Mostly Complete		Not Started
	2011 Tactic			**2019 Status**	
Energy sector Reduction Strategies					
	Select an electrical services provider that provides a more climate-friendly grid mix.			Chico State switched in 2009 from buying direct access coal-generated power to purchasing from PG&E with a minimum of 33% renewable mix and 0% coal power.
	Retrofit lighting systems in 15 campus buildings based on Investment Grade Audit already complete.			Complete. See the Strategic Energy Master Plan (SEMP) – a separate document – for details. Total savings were 2,777,880 kWh and $244,450 annually.
	Chiller replacements at Main Plant and PAC along with HVAC and VAV upgrades to MLIB and Holt.			A new chiller was installed at the central plant in 2016. There hasn't been any HVAC or VAV work completed in MLIB. Holt has had small-scale efficiency upgrades in various spots in the building.
	Retrofit domestic H2O booster pump in housing.			Pump was upgraded Jan 2014.
	Install PowerSave power management software.			PowerSave was installed on campus in 2010 but was later removed due to budget restrictions. Current operating software (SCCM for PCs and Jamf for Macs) performs the same power operations that PowerSave was providing. It was calculated to save 120,000 kWh and $14,880 annually.
	Convert 170 physical servers to virtual by 2015.			In 2019, there were 332 virtual servers (54 physical servers). In 2013, two server virtualization projects were executed totaling a reduction of 160,000 kWh and roughly $20,000 annually. The virtual servers we are transitioning to are actually carbon neutral – more information in the recommendations chapter.
	Implement recommendations made in the investment grade energy audit.			Several updates were made to campus energy systems per the audit, but more remains to be done. See the SEMP for further information and recommendations
	Building restriction or closure on evenings and weekends and restricting evening classes to 3 buildings.			This recommendation has evolved to make sure we still have a vibrant and accessible campus in evenings and weekends, but ensuring that we are using our spaces as efficiently as possible both for energy efficiency and campus safety. This recommendation is expanded upon in the recommendations chapter.
Transportation Sector Reduction Strategies					
	Reduce single-occupancy vehicle traffic to campus.			While there have been sporadic efforts to address single-occupancy vehicle travel, there has not been a significant reduction. A Transportation Demand Management (TDM) Plan was adopted in 2009 that provides many recommendations that should be implemented.
	Promote virtual meetings and conferences.			The CSU system has invested in Zoom meetings in order to help facilitate virtual meetings. COVID-19 forced all campus activities to go virtual and we have moved out of our comfort zone by hosting all meetings and conferences in a virtual space.

CHICO CLIMATE CHANGE VULNERABILITIES & RESILIENCE PLANNING

While we work to become a carbon neutral campus, we must also work to be resilient to the effects of climate change. In August 2018, the City of Chico published a Climate Vulnerability Assessment[11] which used Cal-Adapt[12] to assess the vulnerabilities Chico is already experiencing as a result of climate change.

The assessment identifies increased average temperatures and changes in annual precipitation – fluctuating between extended periods of drought and periods of higher than average moisture – as major direct impacts of climate change. According to the assessment, these direct impacts will result in four key indirect ramifications:

- Increased frequency, intensity, and duration of extreme heat days and waves
- Increased flooding
- Decreased snowpack and water supplies
- Increased wildfire

These impacts of climate change have had and will continue to have ripple effects throughout our campus and community, and will impact vulnerable populations the most – people of color, elderly, children, people experiencing homelessness, and low-income families. Making sure we have utilities that can survive disruption, affordable housing, a secure and robust local food system, protections for vulnerable populations, mental health services, economic stability, development and safety nets, access to transportation within and around our region, emergency response and preparedness, and many more facets of a resilient community must be considered.

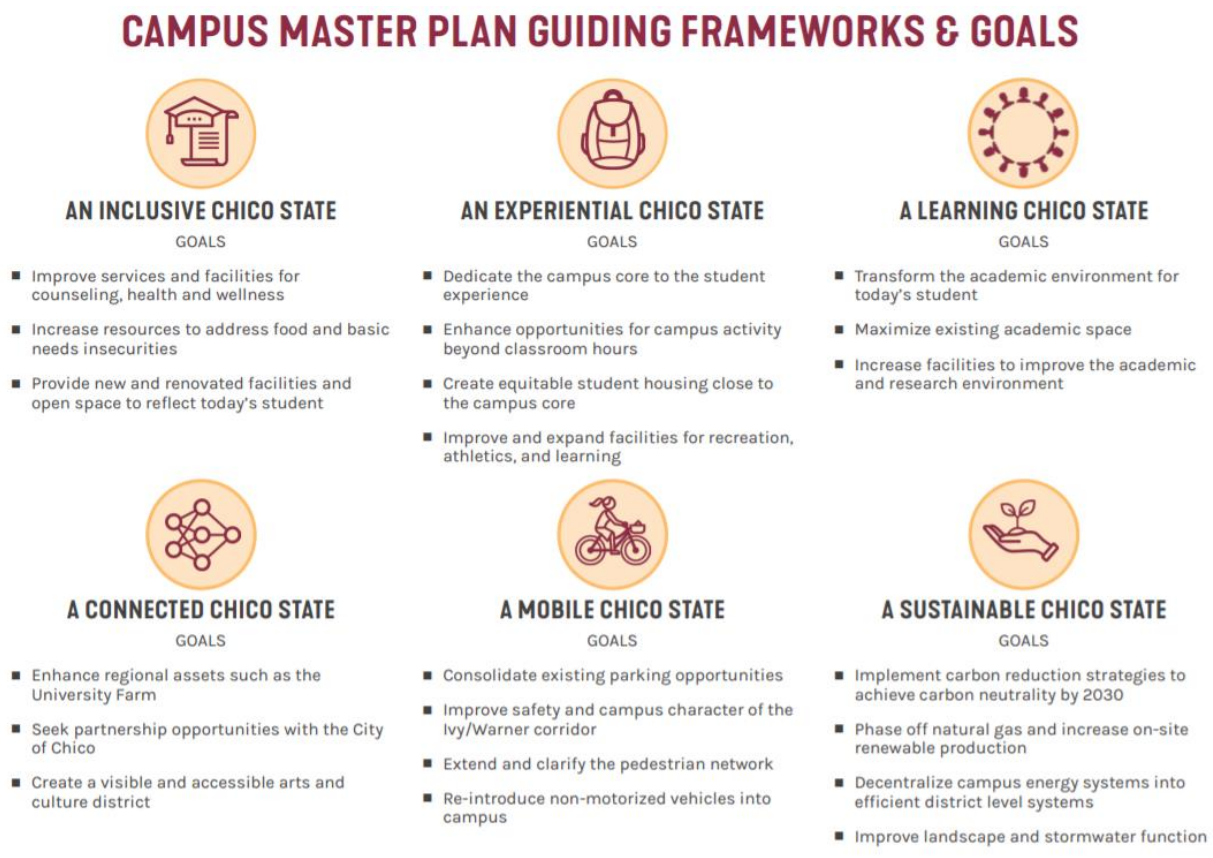
Many of our students come from outside of the Chico area and may not be used to the extreme heat we experience. These students also tend to live in older housing stock that lacks insulation or air conditioning, posing a health risk as we experience more extreme heat waves. We must partner with the City to promote with the resources available to assist local landlords with improvements to these properties.

[11] http://chicosustainability.org/documents/ChicoClimateChangeVulnerability.pdf
[12] https://cal-adapt.org/

Resilience in the Campus Master Plan

As the climate changes and Chico State's campus grows, the University is acting to adapt to and mitigate regional impacts. Master Planning resilience efforts strive to ensure growth coincides with the campus commitment for carbon neutrality and programmatic undertakings to better serve campus constituents and the broader Chico community. The Campus Master Plan identifies strategies to amplify the University's role in mitigating the effects of climate change:

- Capitalize on building location and directional placement to enhance shading for cooling needs
- Utilize native landscaping to reduce irrigation demand
- Create redundancy in electrical systems and decentralizing from the central plant to create resilience through district systems
- Utilize renewable energy production and battery storage onsite to allow temporary and selective campus operations during utility power disruptions
- Utilize low-impact development techniques to manage and capture stormwater, using the aquifer for water storage
- Preserve existing trees for campus shading and plant new trees in coordination with development plans
- Support riparian habitat along Big Chico Creek by preventing erosion from high storm flow events
- Minimize surface parking areas and utilize permeable paving



Second Nature Resilience Commitment Strategies

Drawing from Second Nature's recommended strategies and the Climate Vulnerabilities Assessment, the following goals have been identified as priorities for our campus. Each strategy includes at least one short, mid, and long-term goal. These goals are not intended to be the extent of our resilience commitments, but are the initial step in measurable goals. There are many other activities and programs happening on and around Chico State that continue to build resilience on our campus and in our communities.

TABLE 2: CLIMATE RESILIENCE GOALS			
	Responsible Lead	Target completion	Estimated Cost
Improve Stormwater Management			
Engage campus experts to model heavy precipitation events for campus – both short- and long-duration events – to expose flood-prone areas in need of mitigation efforts.	FMS-Sustainability	Dec 2021	$5,000
To better manage stormwater and improve retention within the aquifer, add at least four more bioswale locations on campus in strategic areas per the modeling.	FMS-Grounds + CVAC	Dec 2024	$150,000
Increase the percent of permeable surfaces on campus from 41% to 60% with the addition of permeable pavers, permeable asphalt, and landscaped areas.	FMS-Grounds + Design & Construction	2027	TBD with surface type
Improve Ecosystem Management			
Improve pollinator habitat on campus by achieving Wildlife Sanctuary, Bee Campus USA, or other comparable certification(s).	FMS-Grounds + CVAC	Dec 2021	$10,000
Increase the percent of acreage devoted to native and drought-tolerant plants or edible landscaping from 15% to 35%.	FMS-Grounds + CVAC	May 2023	$40,000
Increase the acreage utilizing subsurface irrigation and add smart meter controls to the remaining 55 stations.	FMS-Grounds	Jan 2025	$400,000-$500,000
Increase Food Security & Resilient Food Distribution and Storage Systems			
Increase CSA from 20 to 50 members; explore how to accept EBT for CSA membership; and expand use of OVP farm stand at the University Farm.	OVP + CRARS + CHC	May 2022	$10,000
To improve student access to fresh produce, establish a farm stand on campus with OVP produce available; allow students to use Wildcat dollars or EBT for produce purchases and CSA membership.	OVP + CRARS	May 2023	$20,000
Increase the volume of University Farm produced food going to campus AS Dining Services to $500/week sales.	OVP + AS Dining Services	May 2024	$40,000
Install at least 0.5 acres of edible landscaping and on-campus gardening and develop education and outreach materials for campus community.	FMS-Grounds + OVP + CVAC	May 2025	$75,000

Building Water Resilience

As included in the City of Chico's Climate Vulnerability Assessment, it is predicted that Chico will continue to experience decreased snowpack and water supplies (drought) as well as periods of exceptionally high precipitation. While not included in the formal goals reported to Second Nature as part of the Resilience Commitment, it is essential that Chico State **give attention and investment to water conservation projects and practices** while doing as much as possible to ensure a sustainable supply of water for our campus and community.

The stormwater goals included above will go a long way in responsibly managing the heavy precipitation it is expected we will experience. These goals will also aid in recharging the aquifer from which Chico draws its drinking water. Chico State should also mandate **all new construction and major renovations adhere to low impact development (LID) principles**. LID principles emphasize conservation and use of natural features in land planning and engineering design.

Recharging water supplies and sustainably managing water resources is critical, however we must also reduce the amount of water we are drawing to being with. Given the low price paid for water, it is often difficult to financially justify water conservation practices. There are several building code regulations to require low water use appliances and fixtures in new construction, but Chico State is an old campus with many fixtures, like toilets and sinks, being many decades old. Utility budget savings should be earmarked to reinvest in replacing these aging fixtures to reduce the water demand for Chico State. For example, Whitney Hall was built in 1967 and still has many original toilets. There are 87 toilets in the building using 4.5 gallons/flush while current standards are 1.6 gallon/flush. It is estimated that if we replace the toilets in this one building, we could save 6,682 gallons of water **daily**. Scaled up to the rest of campus, there are huge water saving potentials to be had.

Chico State should take every effort to use each gallon of water as many times as possible before losing it to sewer or storm drains. This includes looking for projects that recover water from one process and recycle it into another. One example is to recovery greywater from sinks, filter it, and reuse it as irrigation water. Another example is to recovery condensate water from cooling systems and use it for irrigation needs. This type of project was pitched in fall 2020 to the Sustainability Fund Allocation Committee. The project will include condensate recovery from the cooling system at the Gateway Science Museum and reuse it in native landscaped areas outside the museum. The project was awarded funding and should serve as a proof of concept project for Chico State.

There are many more ideas for water conservation on and round campus that must be embraced if we are to prepare for a sustainable water future.

CHICO STATE GREENHOUSE GAS DATA

Sources of Greenhouse Gas Emissions

Scope 1

Scope 1 emissions include stationary combustion, mobile combustion, agriculture emissions, and refrigerants. Stationary combustion primarily includes natural gas consumption in boilers and natural gas appliances but also includes diesel consumption in backup generators. Natural gas use is quantified from utility bills while diesel use is calculated from purchase records.

Mobile combustion occurs in anything that moves which includes vehicles and lawn and yard equipment such as leaf blowers, lawn mowers, chainsaws, and trimmers. These quantities are also measured from purchase records. Agriculture emissions occur from livestock at the University Farm as well as from nitrogen fertilizer applications. Livestock emissions are quantified based on the number of animals while fertilizer applications are measured from purchase records. While refrigeration systems are typically closed-loop systems, there are occasional losses in the system. Emissions from refrigeration are measured by the amount of additional refrigerant added to the system.

Scope 2

Chico State's Scope 2 emissions are those associated with the generation, transmission, and delivery of purchased electricity. Some customers are able to purchase electricity directly from a supplier and utilize the local infrastructure to deliver that energy referred to as Direct Access (DA). Chico State was a DA customer until 2007 when we switched to purchasing electricity from the utility provider, PG&E. As a DA customer, the primary source of power being purchased was generated by coal power which is among the most polluting methods of generating electricity. There are many DA options with a higher renewable makeup and this is explored more in the recommendations section of the document.

PG&E measures and reports the emissions associated with the generation, transmission, and delivery of the power moving through their infrastructure. PG&E publishes the amount of CO2e produced per unit of power delivered which is what is used to determine our GHG emissions from purchased electricity.

As stated previously, California has passed legislation mandating additional renewable energy targets for all utilities including PG&E. As PG&E continues to green their grid-mix, our emissions will continue to go down. There are also options from PG&E to procure renewable energy at a premium price.

Scope 3

Scope 3 emissions are the most challenging to quantify and are difficult to delineate boundaries. Within scope 3, Chico State measures emissions from students, faculty, and staff commuting to/from campus, campus sponsored travel, material sent to landfill, and wastewater treatment.

Commuting emissions are calculated using an administered transportation survey in which respondents are asked how far they travel to get to campus, how many trips they regularly make, and what mode of transit they use to get there. This information is then used to estimate the total commuting impact. This data is only as good as the survey responses received and in spring 2019, there were only 1,487 responses out of a total of 17,819 campus users. In the recommendations chapter is a solution to continue to refine this data in order to have a more accurate reflection of commuting related emissions by understanding better exactly how far students, faculty, and staff are traveling to get to campus.

Measurement of campus sponsored travel has become more sophisticated in recent years with the implementation of the travel management system, Concur, which tracks modes of transit and distances traveled. There are still less sophisticated measurements of campus sponsored travel which are measured through mileage reimbursements. Campus sponsored travel includes not only state supported travel but Associated Students and Chico State Enterprises travel.

Material that is sent to landfill is quantified through waste disposal utility invoices and standard EPA landfill emissions factors.

Waste water is not specifically metered however, incoming water deliveries are measured by the utility. Based on this incoming water, we can estimate the amount of water used in various applications including the amount that leaves through wastewater plumbing.

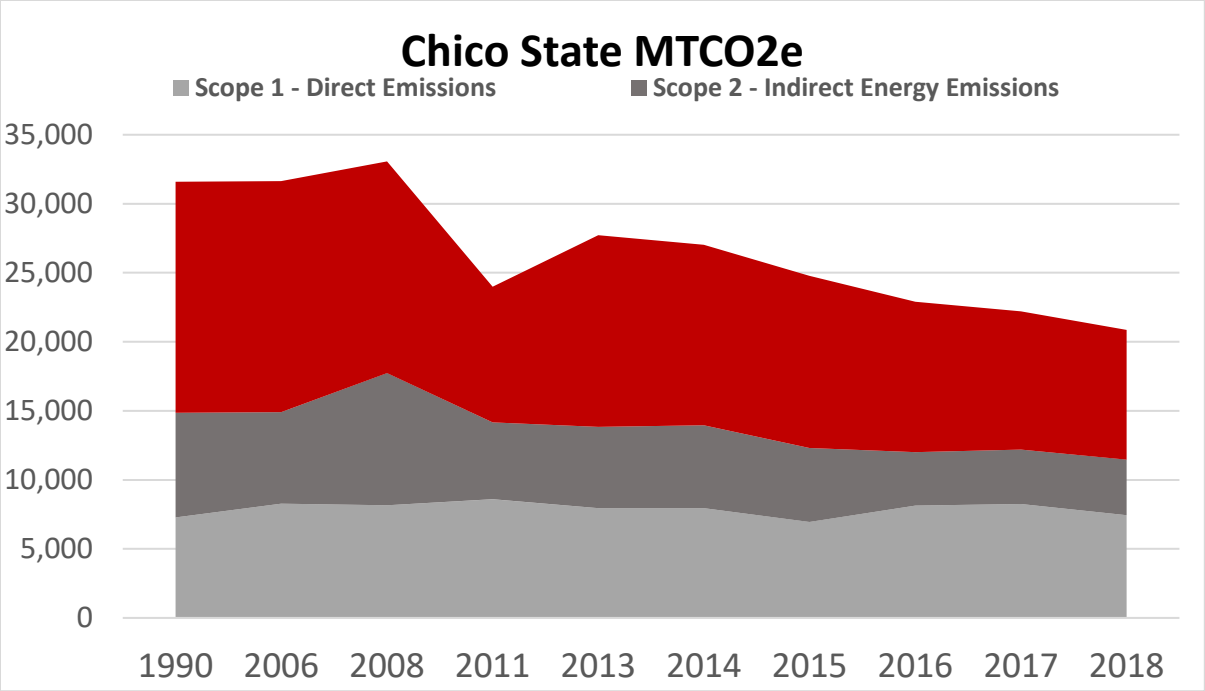
Changes in Greenhouse Gas Emissions

Chico State has been measuring greenhouse gas (GHG) emissions since 2006 and has a measured baseline of 1990. Since changing the source of campus electricity purchases from primarily coal generated power to the PG&E utility grid mix in 2007, campus has seen a sustained reduction from 1990 levels with FY 2017/18 being 34.8% lower than 1990. Full details of the GHG inventories for Chico State are publicly available online via the Second Nature reporting platform.

While there are some fluctuations in emissions from year to year, scope 1 and 2 emissions have remained relatively flat for the last several years. Switching electricity providers had a substantial impact on our campus GHG inventory, but we have done little within our own walls to reduce the amount of emissions associated with our operations.

While we have high levels of confidence in our scope 1 and 2 emissions, scope 3 is likely underreported due to the lack of precision in the measurements. Even still, scope 3 emissions remain the largest source of GHG emissions for our campus. Within scope 3, students, faculty, and staff commuting to and from campus comprise the largest category of emissions and should be made a priority for reduction investment.

There is an evident drop in scope 3 emissions between 2008 and 2011. This is largely attributable to the recession experienced in those years. During that time, there were state imposed furloughs which reduced the amount of travel to and from campus. Gas prices were also quite high which drove people to use other, less carbon intense modes of transportation. It is expected we will see similar drops in GHG emissions as a result of the pandemic occurring as this plan is being written.



Fiscal Year 2017-18 Emissions Data

There are three sources of emissions that make up 85.6% of the total campus inventory: commuting (39.2%), natural gas combustion (27.3%), and purchased electricity (19.1%). These sources of emissions should be the primary focus for reductions but are also the most expensive and difficult to address as discussed in the chapter for reduction recommendations.

The below inventory is self-reported with the assistance of a third party to identify proper emissions factors.

TABLE 4: CHICO STATE FISCAL YEAR 2017-18 GHG INVENTORY					
	Quantity	Units	kg CO2e / Unit	MTCO2e	% Total Emission
Scope 1 - Direct Emissions				**7,440**	**35.4%**
Stationary Combustion				**5,733**	**27.3%**
Natural Gas	107,751	MMBtu	53.11	5,723	27.2%
Diesel for Backup Generators	1,000	Gallons	10.2130	10	0.0%
Mobile Combustion				**502**	**2.4%**
Gasoline Fleet	31,278	Gallons	8.811	276	1.3%
Diesel Fleet	22,197	Gallons	10.21	227	1.1%
Agricultural Emissions				**1,189**	**5.7%**
Fertilizer, Synthetic, 20% N	289,815	lbs	7.93	460	2.2%
Fertilizer, Organic, 2% N	309,000	lbs	3.85	238	1.1%
Cows - Dairy	149	head	1,679.16	250	1.2%
Cows - Beef	169	head	1,238.44	209	1.0%
Swine	123	head	42.00	5	0.0%
Goats	67	head	148.91	10	0.0%
Sheep	67	head	253.64	17	0.1%
Refrigerants				**16**	**0.1%**
Scope 2 - Indirect Energy Emissions				**4,025**	**19.1%**
Purchased Electricity	**30,506**	**MWh**	**131.934**	**4,025**	**19.1%**
Scope 3 - Other Indirect Emissions				**9,552**	**45.4%**
Commuting				**8,239**	39.2%
Faculty / Staff Commuting - Auto	2,943,973	Miles	0.3464	1,020	4.9%
Faculty / Staff Commuting - Bus	55,153	Miles	0.0563	3	0.0%
Student Commuting - Auto	20,652,374	Miles	0.3464	7,155	34.0%
Student Commuting - Bus	1,089,622	Miles	0.0563	61	0.3%
Other Financed Travel				**679**	3.2%
Air Travel	2,245,740	Miles	0.1372	308	1.5%
Train	1,038	Miles	0.1124	0.12	0.0%
Bus	12,040	Miles	0.0563	0.68	0.0%
Auto	1,068,722	Miles	0.3464	370	1.8%
Waste Generated in Operations				**634**	3.0%
Solid Waste	1,499	Short Tons	310	465	2.2
Waste Water	42,321,242	Gallons	0.0004	169	0.8%
Gross Emissions				**21,017**	**100.0%**

Additional GHG Measurement Considerations

Historically, Chico State has not measured carbon sinks such as soil organic carbon and vegetation as part of the campus GHG inventory. Roughly 50 of the 132 acres of campus hold carbon storage potential. This combined with the 1,048 acres of farm and rangeland and the 4,043 acres of reserves hold a potentially large carbon storage bank we must continue to invest in. Current estimates show that the 50 acres of dairy pasture alone are sequestering 62 tons of carbon/year. Measurements for these various land use types are underway as this plan is being written with a Carbon Farm Plan nearing completion for the University Farm. Once measurements are made, plans will be developed and implemented to continue to improve our carbon storage abilities. **Chico State must continue to invest in regenerative farming and landscape management practices as well as protecting vegetation and trees as a critical path to carbon neutrality. Moving forward, we must also develop a methodology for including these important carbon sinks as part of the campus GHG inventory**.

There are several sources of scope 3 emissions that are not included in these inventories and consideration should be given to how they can or should be measured moving forward. Historically, purchased materials like food, paper, and other goods, vendor and contractor trips to campus, as well as guests attending events such as sports and concerts have not been quantified in the campus GHG inventory. There are also energy emissions associated with activities such as virtual server use that may be reducing energy consumption on our campus, but are being transferred to a third party.

Energy associated with drawing water from the campus well for irrigation is accounted for in the campus scope 2 emissions. However, the energy used by our water utility to pump, treat, and deliver water to campus is another source of scope 3 emissions that is currently not accounted for in the campus GHG inventory. According to the California Public Utilities Commission[13] (CPUC), almost 19% of the total energy used in California is used to treat, heat, and convey water across the state. The CPUC recently authorized a series of pilot programs[14] exploring whether energy savings may be realized through water conservation measures – exploring the water/energy nexus. This should also be a discussion on our campus and in our community.

Due to the fact that these emissions have not been accounted for historically, they are not accounted for in the carbon neutrality goals for campus. However, they do come with GHG impacts and consideration should be given to whether and how these emissions are accounted for moving forward, recognizing that they do come with climate change impacts – some positive, some negative.

The Chico State Master Plan calls for the inclusion of a few Public Private Partnership (P3) projects as part of the future campus build out. The GHG impacts of these projects will be excluded from the campus carbon neutrality commitment because they will not be owned by the campus. Nonetheless, these should come with contract stipulations that the developers will build at minimum net zero energy buildings and ideally carbon neutral buildings. Emissions associated with these P3 projects should be included in the campus conversation about how additional sources of emissions should be accounted for moving forward.

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13 https://www.cpuc.ca.gov/General.aspx?id=6048#:~:text=Upwards%20to%2019%20percent%20of,delivery%20and%20treatment%20of%20water.

14 https://www.cpuc.ca.gov/nexus_calculator/

Operational vs. Embodied Carbon

The emissions currently measured for Chico State include operational-based carbon emissions. However, there is a great deal of embodied carbon within our built environment that has not been accounted for, and building decarbonization is a growing area of interest, research, and policy development. While embodied carbon, calculated through a life cycle assessment (LCA), is not included in the carbon neutrality goals for Chico State, they should be a guiding design element moving forward.

The State of California has passed legislation with initial requirements on quantifying the global warming potential (GWP) of certain building material types. The Buy Clean California Act[15] (Public Contract Code § 3500-3505), states the Department of General Services (DGS) is required to establish and publish the maximum acceptable Global Warming Potential (GWP). The Act targets embedded carbon emissions of structural steel (hot-rolled sections, hollow structural sections, and plate), concrete reinforcing steel, flat glass, and mineral wool board insulation. These materials must have a GWP that does not exceed the limit set by DGS.

The Embodied Carbon in Construction Calculator[16] (EC3) tool allows benchmarking, assessment and reductions in embodied carbon by material type, focusing on the upfront supply chain emissions of construction materials. Material types currenlty available in the tool include concrete, steel, aluminum, wood, thermal and moisture protection, openings, and finishes. The tool utilizes building material quantities from construction estimates and/or building information models and a database of third-party verified Environmental Product Declarations (EPDs). Utilization of the EC3 tool can enable the specification and procurement of low carbon building material options.

[15] https://www.dgs.ca.gov/PD/Resources/Page-Content/Procurement-Division-Resources-List-Folder/Buy-Clean-California-Act

[16] https://www.buildingtransparency.org/en/

CARBON NEUTRALITY RECOMMENDATIONS

Chico State's carbon neutrality should be achieved, to the maximum extent possible, via equipment investments, advanced technology deployment, and behavior changes as outlined below. The following is not an exhaustive list as there are new processes and technologies continually being developed. This CAP should be updated every five years to reflect these advances. Should these actions and investments not get campus to neutral targets, the "purchase" of campus owned sequestration offsets should be considered. Visit the offsets chapter for more information on offset thresholds and allowances.

Carbon Neutrality Milestones

In order to ensure Chico State is on the right path to achieving carbon neutrality, the below milestones should be met and sustained:

- 15% reduction in stationary emissions by 2025 relative to baseline FY 2018/19
- 15% reduction in purchased electricity emissions by 2025 relative to baseline FY 2017/18

These milestones should be me through targeted investments focusing on deferred maintenance as an additional measure for project prioritization.

Carbon Neutrality Recommendations

Building on the work of the initial CAP, the strategies below aim to reduce overall GHG emissions. Several faculty members have challenged their students to investigate solutions to reduce our GHG emissions and many of the below recommendations came directly from those students. A deeper explanation of each item follows this table.

It should be noted that preliminary cost estimates for basic energy efficiency measures are more than $24million, requiring substantial investment.

TABLE 5: CHICO STATE CARBON NEUTRALITY RECOMMENDATIONS

		GHG Impact	Estimated Cost
#	**SCOPE 1**		
1	Reduce the dependence on natural gas boilers to generate steam for heating - "Wean-the-Steam"	High	See SEMP
2	Adhere to a zero scope 1 procurement policy and expand to auxiliary units	High	See SEMP
3	Install building level steam and natural gas metering	Medium	See SEMP
4	Invest in battery backup storage to replace diesel generators	Low	See SEMP
5	Migrate to 100% fully electric vehicle fleet	Medium	$200k/yr until complete
6	Utilization of electric grounds equipment	Low	TBD
7	Encourage staff use of non-motorized travel through campus when possible	Low	Potential Savings
8	Reduce the amount of nitrogen fertilizer use	Low	Potential Savings

#	SCOPE 2		
9	Invest in energy conservation measures (ECMs) recommended in the SEMP	High	See SEMP
10	Continue to invest in onsite renewable energy and storage per SEMP recommendations	High	See SEMP
11	Invest in better building level energy use metering	Medium	See SEMP
12	Continue to urge the Chancellors Office to evaluate and pursue Community Choice Aggregation (CCA) and/or Direct Access (DA)	Medium	Potential Savings
13	Continue to pursue net zero energy buildings in major renovations and new construction	High	Potential long-term savings
14	Improve space utilization to consolidate activities in off-peak times of use	Medium	Cost Savings
15	Server virtualization	Medium	Potential Savings
16	Education campaign for behavior-based energy savings and actions among students, faculty, and staff	Medium	$1,500/yr
#	**SCOPE 3**		
17	Continue to refine data collection for commuting emissions estimates	Undetermined	$1,000
18	Adopt a telecommuting and/or flexible schedule policy for employees	High	$0
19	Incentivize reduced carbon-intense commuting for staff and faculty	Medium	TBD
20	Add infrastructure to support access to non-motorized travel on and around campus	Medium	TBD
21	Add electric vehicle charging capacity	Medium	TBD
22	Facilitate a bike lending library	Undetermined	TBD
23	Achieve Bicycle Friendly University status and continue to improve score every three years	Medium	$1,000/yr
24	Install secure bike parking facility(s)	High	$175k
25	Upgrade the bike path through campus	High	$300k
26	Study the feasibility of prohibiting or limiting on-campus residents from bringing cars to campus	Medium	$0
27	Continue to promote Zipcars on campus and/or develop additional car sharing options	Low	$0
28	Assist the City in implementing recommendations made in the South Campus Neighborhood Project	Medium	$0
29	Require virtual meetings when travel can be avoided	Medium	Cost Savings
30	Evaluate geographic parking permit restrictions	TBD	$0
31	Increase B-Line ridership through targeted education and outreach campaign	Medium	$1,500/yr
32	Implement a full-scale composting operation at the University Farm	High	$150k + 1 FTE Staff
33	Implement a comprehensive zero waste program	Low	$500k

Details for GHG Reduction Recommendations

Scope 1

1. **"Wean-the-Steam"**
   Responsible Party: FMS-Boiler Chiller Plant

Use of natural gas in the central plant boilers is the second largest source of GHG emissions for Chico State. In order to reduce this impact, we must reduce our reliance on natural gas as an energy source to generate steam for heating. While it is unlikely that all natural gas consumption will cease on campus in the next 10 years, the SEMP outlines a path to substantially reduce natural gas consumption on campus through electrification efforts and distributed systems.

2. **Zero scope 1 procurement policy**
   Responsible Party: FMS

Natural gas and fossil fuel combustion account for 83% of scope 1 emissions, making it a primary focus for neutrality investments. To begin addressing these, FMS has introduced a Zero Scope 1 Emissions Procurement Policy. The policy states:

> *"No new building, renovation, or equipment replacement approved after June 30, 2019 shall use onsite fossil fuel combustion (e.g. natural gas) for space and water heating with the exception of those projects connected to an existing central campus thermal infrastructure. All vehicles and equipment that utilize internal combustion engines shall be replaced with zero onsite emission alternatives when available and appropriate. Any exceptions must provide justification and be approved by AVP Facilities and Capital Projects."*

It is recommended here that auxiliary units including Housing, the Associated Students, University Farm, and Chico State Enterprises adopt a similar policy for equipment upgrades within their units.

3. **Install building level steam and natural gas metering**
   Responsible Party: FMS-Boiler Chiller Plant

There is currently little visibility into individual building natural gas use and virtually no visibility in the amount of steam being consumed by each building which prohibits efficiency identification and action. Installation of metering will allow operators visibility into building level use, identify outliers that could be leaks, and make adjustments to reduce natural gas use. The SEMP provides further detail on building metering needs.

4. **Invest in battery backup storage to replace diesel generators**
   Responsible Party: FMS

There are currently more than 20 diesel powered backup generators on the Chico State campus. These should be phased out for electric replacement options and possibly battery storage systems. The battery storage systems could also be combined with additional onsite power generation and make the campus further resilient to power disruptions. The CSU Chancellors Office is currently developing a battery Master Enabling Agreement (MEA) that should make the process of adding additional battery backup storage more streamlined for our campus. This MEA was still being developed as of the writing of the SEMP so cost calculations were not included.

5. **Migrate to a 100% fully electric vehicle fleet**
   Responsible Party: FMS-Logistics & Transportation

The State University Administrative Manual (SUAM) policy 9171[17] provides guidance to campuses on fleet vehicles. The policy state universities are to have 10% of their fleet include zero emissions vehicles by FY 2017/18 and increase 5% annually until reaching 50% by FY2025/26. As of May 2020, 35% of campus vehicles (UPD, Housing, and FMS) are electric – this includes any vehicle that is self-propelled that someone sits in/on and steers as opposed to something that is pushed. Estimating the cost to increase the number of electric vehicles in the fleet is tricky as there is still a high level of uncertainty around technology, regulatory requirements, and incentives.

In September 2020, Governor Newsome issued an executive order requiring sales of all new passenger vehicles to be zero-emission by 2035 along with additional measures to eliminate harmful emissions from the transportation sector. This executive order will most likely spur additional incentives and speed the adoption of electric vehicle advancements, hopefully reducing purchase prices. Prices for an electric cart are approximately $25k/cart and an electric truck to fit campus needs is currently estimated at $70k.

6. **Utilization of electric grounds equipment including but not limited to mowers, blowers, and trimmers**
   Responsible Party: FMS-Grounds

Electric grounds equipment is currently a small proportion of the fossil-fuel consumed and combusted on campus. However, every transition to electric equipment reduces emissions and localized air pollution. The California Air Resources Board[18] provides information on incentives and resources available to help make this transition.

7. **Encourage staff use of non-motorized travel through campus when possible**
   Responsible Party: All campus vehicle users

There are many instances where a vehicle is not needed to travel to a campus destination. Staff should be encouraged to utilize non-motorized travel (e.g. walking) when and where appropriate. Walking instead of driving will decrease gasoline and/or electricity use as well as improve individual health and wellbeing with the addition of movement throughout the day.

8. **Reduce the amount of nitrogen fertilizer use**
   Responsible Party: FMS-Grounds and University Farm

Nitrogen-rich fertilizer applications currently make up about 3% of the campus GHG emissions inventory. Transitioning to regenerative practices under the guidance of the Center for Regenerative Agriculture and Resilient Systems (CRARS) will reduce both the emissions associated with these applications, and also reduce campus operating expenses. Compost generation and applications could be a sustainable path to reducing nitrogen-based fertilizer applications in certain areas.

[17] https://calstate.policystat.com/policy/6637418/latest/
[18] https://ww2.arb.ca.gov/our-work/programs/zero-emission-landscaping-equipment

Scope 2

9. **Invest in energy conservation measures (ECMs) recommendations in the SEMP**
   Responsible Party: FMS and Auxiliaries

There have been several audits conducted on campus in the last fifteen years highlighting ECMs campus could implement to reduce energy consumption. Very few of these recommendations have been put into practice – most lack funding. Per SEMP recommendations, concerted effort and funding should be placed on these ECMs to reduce total campus energy use.

10. **Continue to invest in onsite renewable energy and storage per SEMP recommendations**
    Responsible Party: FMS

As this CAP is being updated, additional solar is scheduled to be installed as a power purchase agreement (PPA) on the WREC, BMU, new Science building, and parking structure 2. Learning from the experiences of the most recent PPA solicitation, Chico State should refine the RFP process to add solar to additional locations on campus including the University Farm and large buildings on campus such as the Meriam Library, Holt Hall, Langdon Hall, O'Connell Hall, and Performing Arts Center. It is understood that many of these buildings require new roofs prior to solar additions which further increases the cost of the project. However, these roofs will need to be replaced eventually and should be prioritized for solar production capacity.

As solar capacity is added to campus, it should be coupled with battery storage systems to further capitalize on system savings and build energy resilience for campus infrastructure. See the SEMP for further details on solar recommendations.

11. **Invest in better building level energy use metering**
    Responsible Party: FMS-Boiler Chiller Plant and Auxiliaries

As with natural gas, there is room to improve knowledge of individual building level electricity use. Having a more quantitative understanding of each building's consumption will help identify buildings for ECMs and also help to identify more quickly when there is a problem in need of addressing. Building-level metering should be accessible and transparent to all campus users, further building a more committed campus community. See the SEMP for further details on how to prioritize and implement this recommendation.

12. **Continue to urge the Chancellors Office to evaluate and pursue Community Choice Aggregation (CCA) and/or Direct Access (DA)**
    Responsible Party: FMS-Energy Manager

A CCA is an agency in which energy contract procurement is removed from an Investor Owned Utility (IOU) and placed with a local joint power authority. The IOU infrastructure is still used to transmit and deliver power to the end customer so a complete decoupling from the IOU is not an option with a CCA. Having more local control over energy contracts allows for sourcing of more renewable energy that may not be available through the IOU. CCAs also have more control over where and how the revenue from energy sales are used, with revenue frequently reinvested in the local community.

DA allows a customer to procure electricity directly from a supplier and not from an IOU. As with a CCA, the IOU infrastructure is still used to transmit and deliver the electricity to the end customer. As stated

previously, the original DA Chico State used to procure power resulted in primarily coal generated power. Current DAs allow for a heavier renewable electricity mix and potentially better price negotiation. The CPUC currently limits the amount of DA allowable within the IOU service territory and purchases are awarded on a lottery system.

Butte Choice Energy has recently been established in Butte County as a CCA. Chico State will not initially join the regional CCA as energy procurement is managed by the Chancellors Office. We are urging the CSU to continue to explore both the CCA and DA options not just for Chico State, but all campuses in the CSU system.

13. **Continue to pursue net zero energy buildings in major renovations and new construction**
    Responsible Party: FMS-Design & Construction

As per the Master Plan, all new construction and major renovations on campus should be built to net zero energy standards. This includes designing with optimal energy efficiency from the start of the project as well as installing renewable energy and/or battery capacity. When there is not enough space within the building to support the renewable energy needed to supply the load, space should be identified elsewhere on campus to produce the amount of renewable energy needed for that building. For example, a tall building like Butte Hall with a relatively small roof footprint does not allow for the amount of solar panels needed to power the building. Should Butte Hall be renovated, solar totaling the amount needed to run Butte Hall should be installed on other buildings and/or adjacent parking areas. We will eventually run out of space using an approach like this so every attempt should be made to make the most of energy efficiency investments and utilization of existing heating and cooling systems.

14. **Improve space utilization to consolidate activities in off-peak times of use**
    Responsible Party: Campus Facilities Use Committee

The Policy for University Long and Short-Term Facilities Allocation and Utilization, EM-20-18[19], informs administrators, faculty, staff, students, and University auxiliary representatives and is guided by the Physical Master Plan and the University Strategic Plan. The policy states that among other responsibilities, it is the responsibility of the Campus Facilities Use Committee to promote sustainable use of space across campus; receive, review, and advance suggestions about efficient and sustainable use of space; review reports on space utilization and energy use annually or as needed (i.e. utility use, facility and space use, etc.); and make recommendations to Cabinet. The Campus Sustainability Committee, Energy and/or Built Environment subcommittees should provide GHG emissions associated with building energy use to the CFU Committee in order to promote sustainable use of space on the Chico State campus. Consideration should be made to time of day usage to limit energy expenses and attention should be paid to more evenly distributing days of heavy usage on campus (e.g. moving away from heavy Tues/Thurs use and encouraging more Mon/Wed/Fri usage. This will also have a substantial impact on parking availability and could help reduce our scope 3 commuting emissions.

[19] https://www.csuchico.edu/pres/em/2020/20-018.shtml

15. **Server Virtualization**
    Responsible Party: Information Technology Support Services

As of the writing of this plan, Chico State operates only 54 physical servers in the campus data center and 332 virtual servers. Servers are no longer allowed to be run outside the data center with one or two exceptions. In addition, roughly 20 servers are running in Microsoft Azure data centers. These are mostly basic infrastructure and some proof-of-concept servers currently, but the goal is to move 80% of current on-campus servers into Azure over the next few years. Azure, overall, is carbon neutral in their power usage and the specific data centers that our servers are hosted in are actually carbon negative. Microsoft has committed to making their entire cloud infrastructure carbon negative by 2030[20].

16. **Education campaign for behavior-based energy savings and actions among students, faculty, and staff**
    Responsible Party: FMS-Sustainability and AS Sustainability

The FMS Green Campus team will partner with Associated Students Sustainability and any other relevant organizations on campus to encourage behavior-based energy savings and actions among students, faculty, and staff by hosting at least one awareness campaign or challenge per semester and conducting at least two office audits using the SCOOP process every semester.

Scope 3

17. **Continue to refine commuting data collection for commuting emissions estimates**
    Responsible party: FMS-Sustainability

Building on work already begun with the Geographic Information Center (GIC) and the Geography Department's GeoPlace, continue to update maps of how far students, faculty, and staff live from campus. These maps can be combined with data gathered in the annual transportation survey to better estimate distance traveled to campus and further obtain a more accurate estimation of emissions associated with commuting.

18. **Adopt a telecommuting and/or flexible schedule policy for employees**
    Responsible Party: Campus Vice Presidents

The global COVID-19 pandemic forced many faculty and staff to adopt telecommuting options as a way to manage business and educational continuity. A more formal telecommuting policy should be adopted allowing those faculty and staff who can work from home to continue to do so, thus eliminating unnecessary travel to and from campus.

Adopting telecommuting options will also have a positive benefit on the existing space constraints campus currently experiences. If faculty or staff are only having to come to campus one or two days per week, offices could transition to shared spaces thus reducing demand for individual office spaces. As the pandemic has showed us, there are also energy savings that can be realized as more people work offsite. The first 9 months of 2020 included 6 months of telecommuting as a response to the pandemic. In that

[20] https://www.microsoft.com/en-us/corporate-responsibility/sustainability/operations

time, campus was able to reduce energy expenses by more than $750,000 compared to the previous year. Telecommuting as a response to COVID-19 has also had the added benefit of quickly transitioning our campus to largely paper-free work, reducing operating expenses, waste, and natural resources. These co-benefits should be included as part of an adopted policy.

A frequent barrier to alternative transportation adoption, as stated in transportation surveys, is personal obligations such as taking kids to school or doctor/dentist appointments. Having a flexible work schedule for those staff and/or faculty who need it could increase the adoption of alternative modes of transit.

19. **Incentivize reduced carbon intensity commuting for faculty and staff**
    Responsible Party: FMS-Sustainability

Responses in the 2019 Transportation Survey indicated that an incentive or rewards-based program for faculty and staff to use a reduced carbon intensity form of commuting was desired. These lower intensity modes of transportation include but are not limited to carpooling, ridesharing, biking, skateboarding, walking, and public transportation. An inventory should be made of various incentive programs offered at other higher education campuses to get an industry snapshot of what other campuses are providing and what might be feasible for Chico.

20. **Add infrastructure to support access to non-motorized travel on and around campus**
    Responsible Party: FMS-Sustainability

Per the Campus Master Plan, we should add infrastructure on and around campus, in partnership with the City of Chico and Butte County Association of Governments (BCAG), to support non-motorized travel. Infrastructure can include, but is not limited to, docking and charging for electric scooters, well-marked and maintained bike paths, safely lit streets and major corridors, B-Line routes conducive to campus schedules, etc. See the Master Plan for further details and recommendations.

21. **Add electric vehicle charging capacity**
    Responsible Party: FMS

While there is a need to focus on electrification of the campus utilities, there is also a need to electrify our campus fleet as well as provide for electric vehicle charging to people coming to campus whether they be students, faculty, staff, or guests. There are currently 10 electric vehicle charging stations located on the top level of parking structure 2. These chargers are available to reserved electric permits only until 5:00 p.m., Mon-Fri. After 5:00 p.m., and on the weekends, the chargers are available for free to anyone in the community.

It is recommended here that campus double the electric vehicle charging capacity by 2025. It is further recommended that students have first access to at least five reserved electric permits per semester.

22. **Facilitate a bike lending library**
    Responsible Party: Associated Students

There are many students who cannot afford to purchase their own bike. A bike lending library could provide short term loans of bikes and bike equipment to students without their own equipment. Bikes could be checked out for a few hours or full days to run errands or get exercise. If the library was large enough, the bikes could also be checked out for class field trips around the community. A library like

this will also help our international students who did not arrive with a bike or who are uncomfortable driving. A bike lending library could also provide semester loans for equipment such as sturdy bike locks, bells, or helmets. Other CSU campuses have had great success with these programs and a Chico State program could be modeled on these other successful programs.

Associated Student's Adventure Outings hosts a bike auction every year in which they auction off recovered bikes that were not reunited with their owners. These bikes could be used as the foundation for the library and auction proceeds from future auctions could help support the maintenance required for the library bikes.

23. **Achieve Bicycle Friendly University status and continue to improve score every three years**
    Responsible Party: FMS-Sustainability

The League of American Bicyclists offers a Bicycle Friendly University certification that Chico State should use as a roadmap to continue to improve bike infrastructure on and around campus. Areas where Chico State scores poorly should form a roadmap for future projects to further improve facilities and facilitate alternative transportation use. Chico State will be submitting their first application for certification in October 2020. The certification is good for four years and we should strive to improve our score with each application.

24. **Install secure bike parking facility**
    Responsible Party: FMS-Sustainability

In the 2019 Transportation Survey, fear of bike theft and vandalism were sited consistently by survey respondents as a barrier to riding a bike to campus. Additionally, there were more than 100 faculty or staff who responded that they are parking their bikes in their offices because they have experienced or are afraid of them being stolen or vandalized if parked in a rack on campus. In order to begin to alleviate these concerns, a secure bike parking facility should be installed. The facility should be easily accessible from main bike routes, well-lit, and accessible only to a specific group of people (i.e. those with an active Wildcat ID card).

25. **Upgrade the bike path through campus**
    Responsible Party: FMS-Sustainability

In August 2019, FMS worked with appropriate campus partners to open a pilot bike path running east-west through campus along the north side of Big Chico Creek. The path was installed as a pilot so the location could be tested prior to expensive facilities upgrades. In the Fall 2019 semester, the Geography 436 – Transportation Planning class studied the bike path and made recommendations for improvements[21] to the path. A project was opened to make needed upgrades. However, with financial uncertainty following COVID-19, this project was put on hold. As soon as funds are available, this project should be made a priority. Improvements include better signage, more clear markings, pavement upgrades, and moving the path to the north side of the travel-way instead of hugging the creek.

[21] https://www.csuchico.edu/sustainability/_assets/documents/bike-survey-report-presentation-f2019-geog436.pdf

26. **Study the feasibility of prohibiting or limiting on-campus residents from bringing cars to campus**
    Responsible Party: FMS-Sustainability

There are many campuses throughout California and the country who limit first-year, and on-campus residents from bringing vehicles to campus. Chico State should look to these campuses and explore how a similar system could work in Chico. Encouraging students' acceptance of alternative modes of transportation early in their academic career will influence their adoption of alternative transportation for years to come. In this exploration, if preventing first-year, on-campus students from bringing a vehicle to Chico should not be feasible, we should consider a remote parking area elsewhere in Chico with a shuttle service should students need to access their vehicle.

27. **Continue to promote Zipcars on campus and/or develop additional car sharing options**
    Responsible Party: FMS-Sustainability

Zipcars are available via subscription that allows users to borrow a car for a limited amount of time to run errands, go to an appointment, go grocery shopping, visit a friend who lives far way, etc. Zipcars make it easy for the campus community to commute using an alternative mode of transit and use a car only when needed. Zipcar is also a great option for our on-campus students to not have to bring a car to Chico as multiple users share the vehicle, easing parking limitations, and reducing GHG emissions.

28. **Assist the City in implementing recommendations made in the South Campus Neighborhood Project**
    Responsible Party: FMS-Sustainability

The South Campus Neighborhood (SCN)[22] Project took place Spring 2016 – Fall 2018 and was a partnership between Chico State and the Public Works-Engineering Division at the City of Chico, CA. The project is focused on Chico's South Campus Neighborhood, immediately adjacent to both downtown Chico and the University. Laid out in the 1860's, it is Chico's oldest residential neighborhood and is now densely populated with Chico State students.

The three-year SCN project included four university colleges, eight academic departments, sixteen courses, and 750 Chico State Students. The SCN project assessed existing conditions and developed improvement concepts to address a range of identified issues. The neighborhood improvement concepts presented to the City of Chico include: complete streets[23], right-of-way improvements, street lighting and accessibility, bike infrastructure, signage and wayfinding, among other recommendations.

Chico State should continue to partner with the City to bring these recommendations to life; providing a safe neighborhood for our students, easily accessible by alternative modes of transportation.

29. **Require virtual meetings when travel can be avoided**
    Responsible Party: Financial Accounting and Reporting

The global pandemic happening during the drafting of this plan has demonstrated that we can manage to conduct business remotely. This should be considered and embraced moving forward and remote,

[22] https://scnpchico.com/
[23] https://www.transportation.gov/mission/health/complete-streets

virtual meetings should be required of faculty and staff in place of traveling for in-person meetings when and where the technology exists. There should be a formal approval process for travel, possibly in Concur, that requires travelers to confirm whether a virtual option is available.

30. **Evaluate geographic parking permit restrictions to discourage driving to/from campus**
    Responsible Party: FMS-Sustainability

As most are aware, parking is very limited on and around the Chico State campus – especially for student or general use permit holders. According to the 2019 Transportation Survey, many students commented that they will drive to campus, circle for a while looking for a parking spot, then leave and miss their classes altogether. At the same time, there are many students, faculty, and staff driving to campus that live within a reasonable distance to walk or use another mode of transit. In order to open parking spaces for those traveling longer distances, Chico State should evaluate a geographic parking permit restriction with parking rates tiered according to distance traveled. For example, we could prevent the sale of parking permits to those living within 1 mile of campus and permits may be more expensive the closer one lives to campus. There are a lot of logistics to implementing a program like this, but it should be explored in its entirety to determine practicality.

This evaluation should be done in tandem with recommendation 15. With more courses being offered on Tues/Thurs than on Mon/Wed/Fri, there is an even greater parking impact on those days. There is also time considerations to be made here as the bulk of courses are taking place in the middle of the day.

31. **Increase ridership on the B-Line through targeted education and outreach campaign**
    Responsible Party: FMS-Sustainability

For more than 20 years, Chico State has been subsidizing all students, faculty, and staff to ride the B-Line bus for free with a valid Wildcat ID. According to the spring 2019 Transportation Survey, 27% of respondents were unaware that their Wildcat ID is a free bus pass. Through an awareness and education campaign, we will work to reduce this number to as close to 0% as possible. The campus sustainability alternative transportation subcommittee will work on a targeted awareness and education campaign to introduce people to riding the bus and the ins and outs of riding the B-Line. Many people do not know how to ride a bus – how to swipe their ID cards, how to signal a requested stop, how to operate the bike racks, etc. – which prevents them from being comfortable in embracing the bus as a mode of transportation. We should remove some of these barriers and introduce riders to the bus in non-threatening situations. For example opening the bus for people to explore while it is parked without the pressure of having to go anywhere. In the transportation survey, many people cited safety as a barrier to riding the bus. However, there are many safety features on each of the B-Line buses such as multiple security cameras that should be included in an educational campaign for students, faculty, and staff.

32. **Implement a composting operation at the University Farm to manage all organic discards from campus**
    Responsible Party: FMS-Sustainability and the Center for Regenerative Agriculture and Resilient Systems

Investing in a full-scale composting operation at the University Farm has multiple benefits for our GHG reduction efforts. The organic components of waste are what leads to significant GHG emissions when

buried in a landfill. Organics generate methane during anaerobic decomposition in a landfill which is estimated at 28[24] times more potent than carbon dioxide as a greenhouse gas. Chico State's solid waste generation only accounts for 2% of our overall emissions which means there are other more impactful investments that can reduce the release of GHG emissions.

However, composting organics plays a very important role in achieving our carbon neutrality goals. The increase in carbon sequestration in soils is an emerging area of study and composting could serve to sequester a great deal of carbon in our soils – improving soil health, improving water retention, reducing the need for chemical applications, and benefiting the surrounding ecosystem.

As stated above, it is a university-wide goal to measure the amount of carbon sequestered in our soils and work to increase the capacity of soil to store more carbon. Work has already begun on this goal with soil measurements being taken on campus proper, at the University Farm, and eventually at the Big Chico Creek Ecological Reserve (BCCER). Chico State is already composting the leaf debris from the vast campus tree canopy with stable product being added back into landscaped areas and already showing plant health improvement in several areas on the main campus.

Composting efforts should be expanded to include all green waste generated on campus as well as all food scraps from dining operations and all farm debris such as bedding and manure.

33. Implement a comprehensive zero waste program
Responsible Party: FMS-Sustainability and Auxiliaries

Zero waste practices mimic natural cycles where materials are not simply discarded but recovered for beneficial use. The goal is to send no material to landfill, incinerator, or the environment. The internationally accepted definition of zero waste states that at least 90% of total solid waste generated is diverted from landfill through reduction, redesign, reuse, recycling, and composting. This is measured by weight with emphasis placed on eliminating waste before it occurs rather than relying on recycling and composting as a long-term solution.

As stated in recommendation 34, solid waste to landfill only constitutes 2% of Chico State's GHG emissions. However, there are other motivations for investing in zero waste. The CSU system, in alignment with California State mandates, has set a goal that all campuses divert at least 80% of total solid waste from landfill by 2020. Our best estimates have Chico State diverting approximately 30% of solid waste from landfill leaving us far from achieving our targets. Chico State's program should include, at the minimum: a campus culture embracing zero waste; regular waste characterization audits; a robust tracking and reporting system; strong education and awareness campaigns; and effective collections including signage and labeling. As most of the waste generated on campus actually originates from downtown restaurants as food service packaging, we will also need to foster relationships with downtown businesses to move our city toward zero waste.

[24] https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf

Tracking & Reporting Recommendation Progress

The Campus Sustainability Committee (CSC) should be the conduit for not only driving many of these projects but also for sharing progress, providing full transparency into our work, and fostering participation from a diverse group of campus stakeholders. The CSC is committed to reporting to Academic Senate all progress made by CSC subcommittees. As subcommittees are developing their annual workplans and goals, they are asked to consider projects and goals that will continue to drive progress toward our climate and resilience goals. This plan will serve as a resources they can refer back to as they are developing those plans.

As previously stated, Chico State reports a biannual GHG inventory to Second Nature as part of our Climate Commitment. This inventory will show any realized reductions in GHG emissions and will be the measurement for whether we are moving toward meeting our carbon neutrality goals.

It will be important to track progress on these specific recommendations and any other efforts on campus to reduce our GHG emissions and build a climate resilient campus. As part of our Climate Commitment, we have access to the Green Revolving Investment Tracking System (GRITS)[25]. GRITS is an online platform that allows users to track energy, financial, and carbon savings data. We should begin to use this platform to track progress on these recommendations

[25] https://www.gogrits.org/

EXPANDING CLIMATE COMMITMENTS

Campus Sustainability Committee

The role of the Campus Sustainability Committee (CSC) is to facilitate the achievement of Chico State's sustainability goals. The membership of the CSC reflects the ability of the committee to facilitate accountability for attaining these goals and includes representation from all divisions on campus. The CSC provides leadership in identifying mechanisms, resources and structure to integrate sustainability concepts into all core functions of the university.

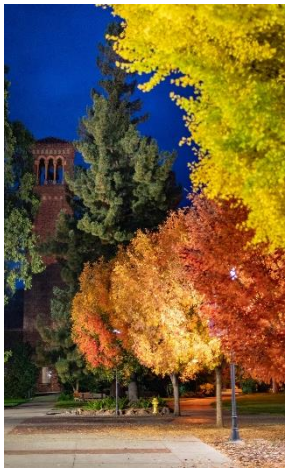
Through subcommittees, the CSC provides support and leadership for addressing specific focus areas of campus sustainability goals. Each subcommittee is led by a member of the CSC and includes additional members from the CSC, faculty, staff, students, and community members as appropriate.

There are currently ten subcommittees within the CSC that will evolve as the needs of campus continue to evolve. These subcommittees are the pathway for students, faculty, staff, and community members to come together to solve the challenges we are facing. Current subcommittees include: Curriculum, Research, Student Engagement, Alternative Transportation, Zero Waste, Procurement, Water, Natural Environment, Agriculture, and Energy and Built Environment.

Campus Vegetation and Arboretum Committee

The primary mission of the Campus Vegetation and Arboretum Committee (CVAC) is to help create and review policies that seek to maintain and enhance the educational and aesthetic value of the Chico State Arboretum and associated vegetation. The committee is dedicated to the preservation of historic trees and planning for future plantings; enhancement of the natural beauty and character of the campus; enhancement of vegetative structure to maximize ecosystem services and functions such as air quality, soil stabilization, carbon sequestration, microhabitat modifications, wildlife habitat, and campus biodiversity; and providing an extended classroom and living laboratory that serves the educational mission of the University.

The CVAC is actively participating in and guiding the work on campus to measure and improve carbon sequestration potential not just in the trees and vegetation, but in campus soils. The campus vegetation and arboretum will play in important role in ensuring a climate resilient campus.



Specific CVAC objectives that bolster climate resilience include:

- Optimize the benefits of carbon sequestration, water use efficiency, energy conservation, and air pollutant removal provided by campus trees.
- Augment the use of the campus arboretum and vegetation as an educational and outreach tool for the campus and surrounding community.
- Restore native vegetation along Big Chico Creek riparian corridor, including replanting when large trees need to be removed, and the regular removal of non-native vegetation.
- Reduce the extent of lawns on campus for water-use efficiency, educational gardens, and native plant species, where appropriate, and as aligned with Physical Master Plan.

Carbon Neutrality and Resilience as Part of the Curriculum and Education for All Students

As an institution of higher education, it is our responsibility to ensure that climate change education is integrated into the curriculum of all colleges on campus. It is our duty to ensure that every student who graduates from Chico State has a fundamental understanding of climate change and how their career path – no matter what it is – can play a role in ensuring a sustainable future.

In the Chico State course catalog, there is a green leaf designation to identify courses that address sustainability. Following the release of the University 2019-2024 Strategic Plan, a goal has been set to restructure the green leaf designation to focus on climate change. Courses earning a green leaf designation will explore the science of climate change, how climate change impacts various facets of life on earth, and how we can remain resilient as the climate continues to change.

The Campus Sustainability curriculum subcommittee has been tasked with this initiative and will be working over the next few years to develop the student learning outcome criteria required for a course to earn a green leaf. This subcommittee will also create a system to ensure that courses with green leaf designations are evaluated periodically and content continues to remain in alignment with intended student learning outcomes. Additionally, the curriculum subcommittee will develop a path so every student who graduates from Chico State by May 2028 will have taken at least one green leaf designated course during their time on our campus.

Expanding Carbon Neutrality and Resilience Research

In addition to expanding curricula and educational experiences, Chico State must also conduct research to better understand climate change and expand solutions for neutralizing our impact. The CSC research subcommittee has embarked on the important first step of creating an inventory of Chico State's sustainability-related research. The inventory will be an online repository cataloging faculty research with links to grant funding reports and open access publications. There is also work underway within the research subcommittee to work with the CSC curriculum subcommittee to provide a green leaf designation for sustainability-based research courses within the Chico State course catalog.

There are several organizations on campus leading sustainability-related research described below. This includes research that contributes critical data to inform decision-making as the campus and the larger community work together toward carbon neutrality and climate impact mitigation.

Center for Regenerative Agriculture and Resilient Systems

The Center for Regenerative Agriculture and Resilient Systems (CRARS) was created as a global research center demonstration site and policy think tank to promote regenerative farming practices in order to reduce greenhouse gases, restore soil resiliency, increase the sustainability of farms and ranches, and address food and water insecurity. Through interdisciplinary teams, CRARS researches innovative methods and strategies resulting in practical, transferable, and transformative solutions to regenerate soils and ecosystems, drawing down atmospheric carbon and sequestering it in soils in the process.

The Center for
REGENERATIVE AGRICULTURE
AND RESILIENT SYSTEMS
CALIFORNIA STATE UNIVERSITY, CHICO

Compost is known to benefit soil health and biodiversity, water retention, and plant health. The ability of compost applications to sequester carbon in soils is emerging. CRARS is already researching compost methods and how compost can impact our path to neutrality.

Big Chico Creek Ecological Reserves

Another important and unique research opportunity at Chico State is the Big Chico Creek Ecological Reserves (BCCER). Under the direction of Chico State Enterprises, the mission of BCCER is to preserve critical habitat and provide a natural area for environmental research and education. BCCER contains 3,950 acres of diverse canyon and ridge habitats, including 4.5 miles of Big Chico Creek, and is home to diverse species of plants and animals. BCCER is also representative of much of Northern California topography and has afforded researchers, policy makers, and practitioners the opportunity to understand the important role these habitats serve in carbon sequestration.

BIG CHICO CREEK ECOLOGICAL RESERVE
CALIFORNIA STATE UNIVERSITY, CHICO
Twenty Years
1999-2019

Northern California has continued to experience some of the worst wildfires in state history, driven largely by the impacts of climate change and modern methods of forest and wildland management. During the year 2020 in California, more carbon was released in the atmosphere from wildfires than emitted from all of the registered cars in the state[26]. BCCER provides an outdoor laboratory which supports student success and community engagement through experiential learning, scholarship, research and innovative land management consistent with

[26] https://news.mongabay.com/2020/09/off-the-chart-co2-from-california-fires-dwarf-states-fossil-fuel-emissions/

conservation goals guided by Indigenous and traditional knowledge. The research products from BCCER efforts could inform more intelligent land management decisions and reduce the incredible release of GHG emissions as forests continue to burn more intensely.

Center for Water and the Environment

The Center for Water and the Environment (CWE) is the Chico State center for research and education of water, energy, and the environment. CWE is a community of faculty, staff, and student researchers collaborating for an integrative, multidisciplinary perspective on complex environmental and societal issues. CWE supports research with on and off-campus connections, funding assistance, outreach, laboratories, and shared resources. CWE offers students faculty mentors, research opportunities, funding for research, high-quality learning environments in the lab and the field, and an annual research showcase. The CWE hub connects regional partners with faculty expertise, student interns, and campus resources.

Some examples of CWE research that contributes to carbon neutrality and resilience to the impacts of climate change include:

- *Solar Energy Research and Education Group* (SEREG) will engage faculty and students in competitive research and product development and prepare students for careers in the solar energy field. The research component of SEREG includes research and development of new technologies in solar cell materials and electronics, high-efficiency manufacturing, and integrated technologies for optimizing grid security.
- *Biofuels Research Group* leads biofuels and biogas projects with input from local industry, to explore real world problems facing industry and impeding their competitiveness in the market.
- *Sierra Fund Sierra Headwaters Resiliency Project* focuses on the long-term ecological monitoring of the headwaters in the Sierra Nevada mountains that provide a significant portion of water to California water supply. Research includes the impacts of climate change on the sensitive mountain meadows, and developing strategies for climate resiliency.
- *Fire Research Group* is a multidisciplinary group of researchers exploring the causes and effects of wildfire, strategies for living on the urban-wildland interface, and how to prevent enormous wildfires in the region.
- *Big Chico Creek Watershed* Tour is a 1-unit class that explores Big Chico Creek from its headwaters, through the center of campus, to the confluence with the Sacramento River. Faculty and staff scientists lead students in studying different parts of the creek, including managed forests, aquatic invertebrates, and riparian restoration at the confluence. Studies research current conditions of the watershed, and contribute annual data used for evaluating practices to mitigate for climate change and develop resiliency.

Chico State must continue investing in the research efforts of CRARS, BCCER, and CWE in order to achieve the carbon neutrality and resilience goals for campus and the surrounding community; each provides important benefits to our students' education and contributes to the health of our region.

Expanding Carbon Neutrality and Resilience Community Outreach

Connecting with our local community to address climate change and resilience is a key pillar of the Presidents Climate Commitment. To that end, Chico State must continue to build relationships with our diverse and geographically large service territory. There are several programs already in place to meet this goal and others that should be built and bolstered.

As discussed above, CRARS, BCCER, and CWE serve as important research outlets for our campus community. These organizations also represent the vast majority of the landscape in the 33,310 square miles that is the Chico State service territory. Agriculture, forestry, and nature tourism (e.g. Lassen National Park, Plumas National Forest, Shasta-Trinity National Forest, Ishi Wilderness, etc.) make up most of the region's economy. These industries are hard hit by the rapidly changing climate as discussed in the local impacts chapter. The partnerships that these centers forge with our community and the support they provide is building a more climate resilient North State and beyond.

Chico State's service territory represents enormous potential for carbon sequestration, climate mitigation, and community resilience. CRARS programs are designed to support the farming and ranching communities with applied research, educational programs, and economically viable production systems that build soil carbon. CRARS fosters mentor farmers and serves as a peer-to-peer information exchange hub for regenerative agriculture practices.

BCCER affords an opportunity to research adaptive land management strategies, real world wildfire mitigation, and carbon sequestration opportunities. BCCER staff have built relationships with landowners in the Big Chico Creek watershed and provide regular outreach and education on practices to improve the health and resiliency of the region. BCCER also partners with several state agencies, including CalFire, to provide training opportunities for first responders.

Developing adaptive land management plans for diverse land use types, based on research conducted within both CRARS and BCCER, will benefit the entire Chico State service territory by mitigating climate change and creating a more climate resilient regional community.

Office of Civic Engagement

The Office of Civic Engagement is a natural path to connect the expertise of our faculty, enthusiasm of our students, and talents of our staff with our service territory. The Office of Civic Engagement's mission is to promote, strengthen, sustain, and recognize civic engagement initiatives that are consistent with the strategic priorities of Chico State based on respectful partnerships with the broader community, and aimed at developing socially and environmentally responsible students, faculty, and staff. An important new initiative within the Office of Civic Engagement is North State Roots.

North State Roots serves to leverage Chico State students, staff, and faculty in reciprocal and interdisciplinary partnerships around the self-defined issues of the North State communities. Goals of the initiative include engaging North State students in their home or regional communities; educating the campus community about the assets and capacities of the North State; and providing increased experiential, community-based learning opportunities for students.

It is recommended that North State Roots continue to explore and engage with the Educational Partnerships for Innovation in Communities Network (EPIC-N) model to foster these relationships and achieve these goals, and that Chico State continue to financially support that work.

Center for Healthy Communities

The Center for Healthy Communities (CHC) is a leader in research-based nutrition, physical activity, and policy changes to support community health and address food insecurity. The Center is the umbrella organization for over 30 programs that support communities across the state. A few of the programs include the CSU Basic Needs Training and Resource Center, CalFresh Healthy Living, North State Benefits Enrollment Center, and NorCal Alliance for Health Equity just to name a few. The Center's faculty and staff represent agriculture, business, child development, education, food safety, graphic design, health and community services, journalism, kinesiology, management information systems, nutrition, public administration, public relations and media, social work, and sociology.

New research shows that 50% of college students struggle with Food Security[27]. In addition, a 2016 study[28] conducted by the CHC found that while 46% of Chico State student respondents suffered from low to very low food security, only 20% of CalFresh Food eligible respondents were enrolled in the CalFresh Food nutrition assistance program.

The CHC is the lead organization for a $14million grant to provide CalFresh outreach to over 100,000 students across the CSU, UC, and Community Colleges, bringing awareness and solutions to the food insecurity students are experiencing. The CHC current provides a great deal of resources and support for communities and higher education institutions working to address food insecurity. The CHC will play a critical role in ensuring food security for the many students and low-income families across the entire state of California. The CHC will be essential in Chico State achieving the resilience goals for our campus and community.

[27] https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools/
[28] https://www.csuchico.edu/chc/_assets/documents/chico-food-insecurity-report-2016.pdf

City of Chico Climate Action Commission

With Chico State's central and impactful location in the heart of the City of Chico, it is critical that the campus work with the City as each entity builds its own path toward carbon reduction commitments. The City of Chico Climate Action Commission (CAC) is an evolution of the City Sustainability Task Force and was officially formed in December 2019. The CAC was appointed by City Council with the mission of updating the City's CAP and then working to implement that plan. As Chico State's CAP is being written, the CAC is also updating to the City of Chico's CAP. Chico State must continue our interaction with and/or service on the CAC so we can achieve our shared climate action goals.

Additional Chico State Sustainability Related Centers, Offices and Programs

Associated Students Sustainability

The Associated Students (AS) Sustainability Center exists to ignite a passion in the campus community to be active in protecting and restoring the earth. The program offers internships, paid student staff positions, and volunteer opportunities. Students promote eco-awareness on campus through education and outreach, implement sustainable practices within AS departments, and provide funding opportunities for student-driven sustainability projects through the Sustainability Fund Allocation Committee. Resources available that empower action include a 'Free Store', DIY/Fix-it supplies, a compost garden drop, creek clean-ups, and the Function Junction for zero waste events.

California Pavement Preservation Center

The State of California, Department of Transportation (Caltrans) established the California Pavement Preservation Center (CP2C) at Chico State in July 2006, and fully funded the Center in January 2007. The mission of the CP2C is to serve as a leader in a partnered effort between government, industry and academia to advance and improve pavement preservation practices through education, innovation, applied and practical research, technology transfer, and implementation.

This includes developing and advancing innovative approaches to pavement preservation and pavement materials. Specific objectives of the Center include serving as a technical resource for pavement preservation activities within the State of California; educating others about the benefits of pavement preservation in partnership with public agencies and industry; enhancing pavement preservation knowledge through research and training; and providing advice and assistance to others in establishing a pavement preservation program.

General Education Sustainability Studies Pathway

General Education (GE) pathways connect courses from across the University's academic disciplines in an intellectually cohesive course of study that explores an issue or area from a multidisciplinary perspective. Students take their three upper-division courses in one of 10 Pathways, and have the

opportunity to earn an interdisciplinary minor with the optional completion of three additional lower-division courses in the same Pathway.

The GE Sustainability Studies Pathway is an examination of how social, economic and environmental problems interact to result in the global conditions seen today and the challenges that will confront us in the future. The Sustainability Pathway introduces students to the multiple perspectives surrounding environmental issues and prepares them to enter the workforce and public life as a socially responsible and environmentally-minded citizens. Students become knowledgeable citizens with an intra-generational awareness of the connections and interdependencies among equitable societies, vital economies, human innovation and goods and services provided by healthy global ecosystems.

Green Campus

Chico State's Green Campus works under the advisement of the Campus Sustainability Manager and in collaboration with all campus partners to further the campus's sustainability goals and commitment of carbon neutrality by 2030. Green Campus student leaders and interns are catalysts in building a community and culture of sustainability through peer education and awareness building, program and project development and implementation, and research. Green Campus students gain real world experience as sustainability change agents and are given the opportunity to put creative solutions to work. Programs within Green Campus include Green Machine, focused on alternative transportation, and Sustainable Consultations of Office Practices (SCOOP) which provide free office audits and recommendations to improve office sustainability practices.

Organic Vegetable Project

The Organic Vegetable Project (OVP) includes three acres of organic production, growing over 50 varieties of vegetables to supply the Community Supported Agriculture (CSA) membership and the Wildcat Food Pantry. The collaboration brings together students, faculty, local farmers, and community members to cultivate small scale organic vegetable production, support the local food movement, and promote the wise use of resources.

This Way To Sustainability Conference

The This Way To Sustainability (TWTS) Conference is a nationally recognized, student-led conference focusing on challenges, ideas, solutions, and resiliency in planning our sustainable future. The conference hosts a variety of respected professionals speaking on the many aspects of sustainability. The goals of the conference are to educate students, staff, faculty, and community members; and provide attendees an opportunity to network, discuss, and become more aware of pertinent environmental and social issues we all face.

CARBON OFFSETS AND RENEWABLE ENERGY CREDITS

Every effort should be made to achieve carbon neutrality through equipment upgrades, technology investments, policy, and behavior changes before considering offsets. Should we not be able to fully achieve neutrality with these actions, offsets will need to be procured. Offsets are reductions or removals of GHG emissions elsewhere made to compensate for emissions from other activities. Offsets financially support a reduction activity that is equivalent to our own emissions levels. Once offsets are purchased, Chico State will commit to purchasing them in perpetuity as long as there are operational emissions to be accounted for.

As an institution of higher education, we are a center of innovation, research, and dissemination of knowledge, therefore play a unique role in addressing climate change. The Presidents Climate Commitment calls for us to engage with our communities to improve emissions-reduction mechanisms and to create innovative new approaches to GHG reductions, advancing the science and practice of addressing climate change. Offset projects represent a unique opportunity for us to demonstrate leadership in developing new and innovative carbon sequestration protocols and projects within our community.

In that spirit, Chico State will seek to develop projects to measure and improve carbon sequestration on campus lands including but not limited to the main campus, University Farm and rangelands, and ecological reserves. Projects should be registered with the Offset Network[29] or other equivalent program that allows for peer review of sequestration and offsets. Projects to sequester carbon on university lands should be given priority over any purchased offsets not directly affiliated with the campus.

In accordance with the Presidents Climate Commitment, up to 30% of scope 3 emissions, and not more than 10% of total campus emissions, shall be offset by these “peer-reviewed” or “innovative” offset projects.

As a potential funding mechanism, consideration should be given to attaching a carbon price to campus projects registered as peer reviewed projects in which the campus would “pay” the campus entity providing the sequestration activity. Potential projects include but are not limited to carbon sequestration on campus, at the University Farm, or at BCCER. The price of carbon offsets varies widely from <$1 per ton sequestered to >$50 per ton dependent upon: the type of project, the standard under which it was developed, the location of the offset, the co-benefits associated with the project, and the vintage year. Average offset prices are currently $3-$6 per ton, but are predicted to continue to increase as demand for offsets continues to rise.

Any offsets procured by Chico State should result in real GHG reductions; add value to our education, research, and service missions; and help create a healthy, just, and sustainable society. Using Second Nature’s guidance, Chico State will require:

- Offsets will be additional, not having otherwise occurred under a reasonable and realistic business-as-usual scenario (with the exception of carbon that is sequestered in campus-managed lands);

[29] https://offsetnetwork.secondnature.org/

- Offset projects are transparent and communicated to campus and community annually to ensure validity;
- Projects result in permanent, measurable reductions of GHG emissions;
- Projects result in reductions of GHG emissions that take place during a distinct period of time reasonably close to the period of time during which the GHG emissions that are being offset took place;
- Projects consider any increase in direct or indirect GHG emissions that result from the project activity;
- Offset projects include, whenever possible, co-benefits that consider educational, social, economic development, and resiliency benefits;
- Offsets produced from project activities are not double counted or counted and claimed by any other party;
- Credits are retired.

For further direction on offsets, Chico State will refer to Second Nature's Carbon Markets & Offsets Guidance document[30].

[30] https://secondnature.org/wp-content/uploads/Carbon-Markets-and-Offsets-Guidance-1.pdf.

FUNDING AND FINANCES

The most commonly cited barrier to achieving carbon neutrality is funding the projects, programs, and work required. There are, however, avenues that can be pursued that will provide sustainable sources of funding. As funding measures are implemented, we must be careful not to rely on negative feedback loops. For example, a vehicle-based source of revenue will diminish as less people are driving vehicles.

Another commonly cited barrier to completing projects on campus is staff time and availability. It is important that Chico State **maintain at a minimum existing staffing to execute climate change and resilience goals**. This includes a full-time energy manager and full-time sustainability manager.

University Strategic Plan Funding

Given that Sustainable and Resilient Systems is a pillar of the University Strategic Plan, any funding made available to support the implementation of the strategic plan should be utilized to contribute to campus carbon and resilience goals. It is unclear what the financial future of Chico State will look like as we recover from a global pandemic, but investing in a sustainable and resilient future will ensure that we have the ability to survive disruption, and to anticipate, adapt, and flourish in the face of change. Continuing to invest in a carbon neutral future and ensuring that our campus and communities are resilient to the changing climate will position Chico State for success for generations to come.

Energy Budget, Incentives, and Rebates

Campus should continue to **maintain the existing energy and utility budget**. However, as savings are realized as a result of energy efficiency improvements, **savings should be specifically earmarked for reinvestment in future projects that reduce energy and natural gas consumption, and lower GHG emissions**. While it may currently be practice, this should be formalized so savings cannot be pulled for other uses.

There are many standard and custom rebates available from the utility (PG&E) for electricity or natural gas saving projects that should be capitalized on. Standard rebates are simple to apply for and can be done after a purchase or installation. **Applying for these rebates should be a required function of the campus Energy Manager and/or Building Maintenance Manager's role**.

Customized rebates require more attention in that they need to be submitted to and approved by PG&E prior to the purchase of any equipment. **Chico State will develop a process where any energy saving projects that do not qualify for standard rebates are routed to the PG&E account representative to determine rebate eligibility prior to any purchase being made**. This should be a checklist item in all design and construction projects and be a collaborative effort between departments within Facilities Management and Services.

PG&E also offers **On Bill Financing (OBF)** as a method of financing energy efficiency projects. OBF would allow Chico State to obtain loans, up to $250,000 with payback periods of up to 120 months, for a wide variety of energy efficient projects. With OBF, the loan is paid back based on projected energy savings, via installments on the customer's monthly PG&E bill. After the loan is repaid, any energy savings that result from the new, energy efficiency equipment will translate into lower utility costs – savings the customer can keep.

Transportation Fund

The campus transportation fund is funded with revenue from parking citations and fines. This fund is currently used to cover a portion of the needed subsidy to afford all Chico State students, faculty, and staff with free rides on the regional transit, B-Line. The fund is also used to pay for other alternative transportation related projects on campus. There is potential for funds to be used for other purposes, like parking enforcement, that do not support alternative transportation adoption. **Campus will formalize that this fund is to be used exclusively for alternative transportation projects that reduce single-occupancy vehicle trips to/from campus**. Examples of potential projects include bike path upgrades, secure bike parking, and bike rack repairs.

An additional source of revenue into the fund could be a carbon fee placed on all parking permit sales. Because those purchasing parking permits are directly responsible for the bulk of scope 3 emissions, there should be a financial contribution to offsetting the emissions associated with the trips made. Again, these funds should be earmarked specifically for projects resulting in scope 3 GHG emissions reductions. The CSC Alternative Transportation Subcommittee should lead this effort as a campus goal.

Travel Mitigation Fund

Sponsored travel makes up approximately 3% of Chico State's GHG inventory and is needed to support university operations. Sponsored travel includes trips made on behalf of the university such as conferences, research trips, presentations, advancement, and meetings. **A travel mitigation fund would create a financial adder to each trip depending on the impact of the booked travel** – the more carbon intense the travel, the larger the contribution.

The travel mitigation fund would be used to invest in projects and programs that mitigate the emissions associated with travel, fund projects that would directly impact the community, and further our commitment to sustainable development as a university. Examples include regenerative agriculture and sustainable land management practices that support carbon sequestration, alternative transportation improvements, and energy and natural gas efficiency projects.

There are a number of universities that have implemented similar pilot funds, such as CSU East Bay, and have demonstrated success. The development of a Chico State travel mitigation fund would create a culture of accountability and grant Chico State academic distinction. Again, the CSC Alternative Transportation Subcommittee should lead this effort as a campus goal.

Sustainability Fund Allocation Committee (SFAC)

In 2006, students voted to increase their fees by $5/semester to support the creation of the AS Sustainability Program and Fund. This pool of money is available to fund projects students wish to deploy on campus that have tangible benefits for the campus community. Students submit an application for their project, fellow student leaders deliberate on project applications, and awards are given to agreed-upon projects. **Any student wishing to implement a climate solution driven project on campus should make sure to apply to the fund**!

Divestment and Investment

Sustainability, including ESG (environmental, social and governance) factors are integral to the investment management for the endowment pool. Beginning with the divestment of direct investments in 2015, the endowment pool undergoes an annual review of carbon exposure to ensure that the University Foundation's policy of carbon divestment continues to be managed in accordance with stated policies and guidelines. The University Foundation is committed to meeting these goals.

Going beyond divestment, the endowment portfolio is also routinely monitored against specific ESG criteria; as strong ESG rankings are closely tied to strong company performance, and thus, investment success. To fulfill these responsibilities, the University Foundation's advisor, Arnerich Massena, employs ESG evaluation criteria in their portfolio management and due diligence efforts to arrive at investment opportunities that score high on sustainability and performance. Above and beyond their portfolio management responsibilities, Arnerich Massena is also a registered B Corporation, a signatory to the United Nations Principles for Responsible Investing (UN PRI) and a member of the Intentional Endowments Network (IEN)[1].

The commitment of Chico State to sustainability will require that capital and investment be shepherded to those areas and opportunities that best align with a future focused on carbon neutrality, equity, justice, resilience, and sustainability**. As an active participant in building a better future, it is imperative that investments within the endowment pool maintain a balance between achieving an appropriate return on investment, in addition to meeting long-term sustainability goals**. Intuitively, neither should be considered an "all or nothing" proposition, and as such we will continue to employ an integrated approach that utilizes best practices and delivers adequate transparency and accountability for the ultimate benefit of all Chico State stakeholders.

CONCLUSION

Addressing climate change is one of the greatest challenges of our time and can often feel impossible to manage. How can individual action amount to the global change we need to address this growing crisis? Do Chico State's actions meaningfully contribute to the shift we need to make? Through the multitude of climate driven weather events we have experienced in our region and the spread of this global pandemic, we have proven that we can adapt and completely alter the way we go about our daily lives. Much like a flock of starlings or a school of fish turning, twisting in synchrony together, we can, and must, change course as a collective.

Chico State is committed to changing course, achieving carbon neutrality by 2030, and building resilience in the face of a changing climate. As an institution of higher education, we are committed to educating our students on the science and solutions to climate change, fostering the next generation of climate leaders.

While this plan lays out an initial path forward, it is not intended to be restrictive. We should continue to think critically and creatively about solutions to climate change and resilience. We must continue to innovate and more importantly, act. As technologies, incentives, and mandates continue to evolve, we must remain nimble but must not lose sight of our goals.

The actions we take today will decide what kind of future we have tomorrow. With the actions laid out in this plan, we will move our university, our students, our communities toward a more sustainable tomorrow.