DECISIONS FOR A SUSTAINABLE TOMORROW

SUSTAINABILITY ASSESSMENT OF CALIFORNIA STATE UNIVERSITY, CHICO

APRIL 2005

Dear Campus Community:

This document was made possible through a partnership between the University's vice presidents for Academic Affairs and Business and Finance. Together we have completed CSU, Chico's first campus sustainability assessment.

This is a major step in addressing the challenge of sustainability. Progress toward a sustainable world will require leading institutions of higher education to teach new ways of thinking and taking responsible actions in the management of our buildings, landscapes, and resources.

This project is an important step in assessing where we are in our ongoing effort to teach and implement practices to create a sustainable campus. Although this report does not summarize every action we are taking toward the goal of sustainability, it brings together in one place a broad view of our campus facilities, academics, and administration. We expect it will provide a foundation for future sustainability assessments.

The report also overlaps with related efforts in both of our divisions:

- The Book in Common for the 2004-2005 academic year has been *Plan B: Rescuing a Planet Under Stress and a Civilization in Trouble*, by Lester Brown, who visited the campus in November as the assessment was getting underway.
- In parallel with these academic endeavors, the campus is in the process of completing a revised master plan which includes the goal of a "sustainable campus" as one of its five overarching strategic objectives. The campus is also developing an impressive record in the areas of recycling and energy conservation.

We ask you as members of the campus community to engage the content and spirit of this report as we move forward as an institution. Our progress toward a more sustainable CSU, Chico will rely on insights and efforts from everyone. Together, we can provide a model for institutions around the state and nation. Our motto – *Today Decides Tomorrow* – embodies this leadership. Together, we can make decisions and take actions toward a sustainable tomorrow.

Scott G. McNall
Provost and Vice President for Academic Affairs

Dennis C. Graham
Vice President for Business and Finance

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PREFACE AND ACKNOWLEDGEMENTS

This report is the culmination of a year-long course (Environmental Issues (GEOG 104) and a Graduate Seminar in Applied Geography (GEOG 305)) where graduate and undergraduate students participated in the information gathering, data collection and writing of this report. Future classes (and the Chico community as a whole) will be able to use this document and some of the research methodologies as a starting point for further study into CSU, Chico's sustainability efforts and progress.

This is not the first time the campus has examined its impacts in this way: there was a 1999 "environmental audit" conducted by students and faculty. But in the intervening half-decade, the state of campus sustainability – and of sustainability assessment – has evolved considerably. This document attempts to bring CSU, Chico's self-knowledge close to the state of the art.

This document is intended to serve as a foundation for planning future progress toward sustainability. As such, it should serve as a bridge between academics and facilities. Both areas have already made progress in bringing sustainability into the fold. Academics has created bachelor's and master's degrees in environmental science and a minor in environmental studies, hired environmental scientists and educators, and established the Rawlins Endowed Professorship in Environmental Literacy. Facilities Management & Services has made considerable efforts to make energy usage more efficient on campus and reduce the use of toxic chemicals on campus. This document is simply another step in those efforts, and an attempt to secure future collaboration.

This report has many contributors but final responsibility rests with a few main authors. Geography professor Mark Stemen, coordinator of Environmental Studies and instructor for the participating courses, provided overall course design as well as impetus for the project from the earliest stages. Joshua Skov of Good Company provided the main project design, as well as the writing and editing of the final document, with assistance from staff at Good Company. Jillian Buckholz, graduate student in the Department of Geography, served as the teaching assistant to both the fall and spring courses. Greg Francis, Executive Dean and Director of Planning, was a pivotal contributor to and steward of the project.

The students enrolled in the classes made significant contributions, both as gatherers of campus data and with insights on the institution's performance. We proudly and gratefully acknowledge them here: Tatiana Ahlstrand, Zachary Alexander, Jennifer Arbuckle, Jake Arellano, Hailie Barnes, Amber Bruggeman, Calli-Jane Burch, Ashley Call-Becker, Carolyn Capriato, Christian Chandler, Cheri Chastain, Jonathan Clark, Toni Cole, Jamie Coughlin, John Davis, Marissa Fierro, Bryan Gabbard, Elizabeth Gaines, Luisa Garza, Melody Henderson, Tara Henshaw, Jennifer Johnson, Dana Kauffman, Heather Kellogg, Morgan Keven, Irene Korber, Solange Ledwith, Donald Lima, Chelsea Manassero, Paul Martens, Jennifer Mays, Blake McClendon, John McGrath, Kristina Miller, Trevor Monroe, Elizabeth Munday, Nicholas Nestal, Matthew Page, Celina Paul, Joshua Pasos, Jason Pirone, Benjamin Pizer-Jacobs, Katie Price, Natalie Robertson, Jessica Runyon, Rebecca Schwalm, Anne Sherman, Tyler Schohr, Anthony Sudderth, Tara Sweigart, Mark Taylor, Kale Thompson, Mandy Trilck, Sara Wiele, Erin Wielenga, Justin Wigham, Paul Wilson, Stephanie Wood, and Carolyn Yoder.

The information was provided by a wide variety of staff whose patience, knowledge and commitment made the report possible: Mike Bates, Cindy Daly, Leslie Deniz, Yvonne Diehm, Ryan Esposto, Greg Francis, Karen Gilmet, Pattie Hannemann Barbara Kopicki, Deborah Kuechel, Bryan Mickelson, Glennda Morse, Warren Moser, Bill Peterson, Ken Sator, Robert Thacker, Gilbert Tyrrell, and Gary Vercruse.

How to Read This Document

The assessment results that follow are divided into six main indicators:

- Energy
- Water
- Transportation and Planning
- Materials, Waste
- Purchasing
- Learning and Governance for Sustainability

Each indicator follows a format with the following sections:

Indicator section	Description of purpose for the section
Why does this indicator matter?	Sustainability is a broad and deep topic, so each indicator section begins with a description of the indicator's importance in the broadest possible sense. The goal of these opening segments is simple: connect the impacts of on-going, day-to-day campus activities and the bigger picture of our social, economic and environmental well being.
What did we measure? How is Chico doing?	For each indicator area, we have a combination of quantitative information and narrative to describe the state of the campus. This is intended primarily as description and context, not as a "grade" or judgment.
What can we learn from others?	Throughout this document we refer to other campuses as inspiration and examples. However, we do not intend to imply that every example is necessarily relevant in every detail, as we refer to many institutions, large and small, public and private.
Opportunities and Ideas	We attempt to offer a few potential opportunities for consideration by the campus community and by relevant campus decision makers. It is beyond the purview of this document to provide specific technical recommendations, but these opportunities can provide fodder for discussion and goal setting.
Pie in the Sky	For each indicator, the students in the class brainstormed specific visualizations of a significantly more sustainable future. These "pie in the sky" ideas are *not* recommendations! However, we believe they supply important points of reference as we consider the changes necessary in our society.

A note on depth: We make no apologies about not measuring everything – no assessment can look at every possible issue of importance. The goal throughout has been to choose a few key topics that, taken as a whole, could provide us with a snapshot of how the institution is doing.

A note on scope and boundaries: Part of this balancing act between breadth and depth has been a matter of limiting the report's scope. There are several key areas that we could not examine due to constraints of time and resources:

- The Chico Farm: Part of CSU, Chico's mission and activities involve research and teaching through the College of Agriculture. Given the important role of food and agriculture in our society and economy, as well as the many activities of the College related to sustainable agriculture, this omission is unfortunate.
- University housing: We were not able to fully represent the management, performance and impacts of campus residences in the assessment. Fortunately, on-campus and campus-owned housing is relatively small (about 1,700 students, or 12% of the student body) compared to many residential campuses. Nonetheless, it sets an important tone for student life and campus culture.
- Environmental Health and Safety (EH&S): The assessment does not look closely at many areas that fall under the purview of Environmental Health and Safety. This is a regrettable omission: serious thinking about sustainability involves consideration of health. However, it is also understandable, since traditional EH&S operations are driven by compliance (i.e., existing law), while sustainability requires us to think far beyond what the law requires.
- Food: The campus provides many food options to campus users through a variety of vendors and units. Unfortunately, the complex nature of food procurement, the diversity of entities (on and off campus) involved in food procurement, and scope limitations prevented study of our campus food systems.

It is our expectation and hope that, as future classes revisit and update this assessment, all of these omitted topics will be included in on-going study of the sustainability performance of the institution.

In search of sustainability – and the sustainable campus

There are many ways to define sustainability. But how can we make our definition resonate with the context of a college or university? The following definitions provide a starting point:

The ability of natural resources to provide ecological, economic, and social benefits for present and future generations.	A concept and strategy by which communities seek economic development approaches that benefit the local environment and quality of life.

The key ideas here are central to a successful public university: an obligation to the future, strength through continuity, a concern for society as a whole, and an understanding of economic realities. Emerging thinking also includes an acknowledgement of ecological constraints and of the interdependence among economic prosperity, the environment and our social systems.

For a physical campus, this complex interdependence poses challenging questions. Where do we get our energy and how can we use it most efficiently? What do our waste streams look like and how are we managing them? How can our transportation system be more sustainable?

Fortunately, there is an emerging campus sustainability movement that recognizes these difficult questions. Modern campuses are microcosms of society as a whole, so the solutions we can generate on campus inform society by example and through better informed graduates who carry the solutions into the rest of the world.

Control of our own destiny?

In addition to providing a snapshot of CSU, Chico's progress toward sustainability as a campus and as an institution, this reports sends a clear message: we can do a lot to improve our performance. This is true for every institution of higher education, so it is no surprise that we have a long way to go.

On the one hand, this is encouraging. The tremendous amount of action and progress across many campus departments and units shows that people at Chico understand the challenges and are willing to take action.

On the other hand, the problems are daunting. Our water use is important, but the campus is but one user among many in our watershed. Our recycling matters, but our solid waste generation and recycling are only small pieces of the region's garbage puzzle. And at the most extreme, our mitigation of our contribution to climate change is admirable, but our actions will be meaningless if others do not act as well.

Some may take this to mean that our actions are without meaning and significance. We disagree. Our actions provide the strongest lever imaginable: through them, *we lead by example*. This assessment is about charting a path of leadership, a path that we hope other campuses – and society as a whole – will follow.

A snapshot of findings: effort and success, but challenges remain

In order to strike out on a path of leadership, we must first document where we stand; this document therefore describes where the path begins. The twenty-three pages that follow together comprise a review of a lengthy endeavor of data collection, so they are already a summary. Yet we can further extract three main trends from the indicators and the process of gathering information, with a few key points as examples.

❖ Recent years have brought major progress and major improvements	✦ CSU, Chico has made significant increases in resource efficiency, stretching from energy and water use to recycling and reuse ✦ Successful management of aging campus buildings and infrastructure have addressed financial and cyclical budget and state realities ✦ The institution has shaped a physical campus setting that models integrated land use planning and transportation
❖ Chico State's biggest sustainability challenges mirror society's major challenges	✦ Significant change in long-lived infrastructure is by definition a gradual process ✦ Individual habits and lifestyles can adapt, but often slowly and painfully ✦ Resource use patterns, supply chains and purchasing methods are more complex than our current governance and information systems for them ✦ To be leaders in addressing major challenges (such as those emerging around water and climate change), we will likely have to duplicate our initial successes in resource efficiency several times over
❖ Campus culture is open to new and more demanding ideas of sustainability, and eager and ready to take on the challenges	✦ The university administration has already demonstrated clear signs of openness and commitment to different models of behavior, thinking and learning ✦ There already exist dialogue and activity in the campus community around many specific on-going and vibrant change-related efforts ✦ As an institution, CSU, Chico has an opportunity and the assets to teach the world about sustainability through its graduates

Why does this indicator matter?

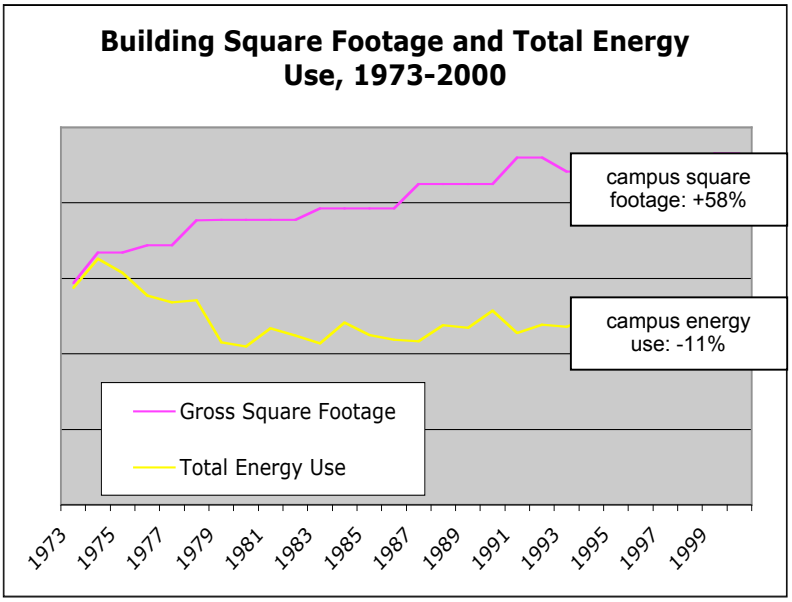
Energy use is integral to the ways humans meet their need for transportation, food and shelter. However, the use of fossil fuels, such as coal, gas and oil, has serious environmental and health impacts. Air pollution and global climate change are both linked to the amount of fossil fuels used across the world. Everything that burns fossil fuels contributes to air pollution.

Campuses need to understand and track their energy use practices in order to make informed decisions. Increased knowledge of energy use will facilitate informed investment in efficiency measures in renovation and new construction, as well as targeting high-use campus units.

What did we measure? How is Chico doing?

Total Energy Use

During the most recent fiscal year, CSU, Chico used 214 billion BTUs (British Thermal Units) of energy in the form of electricity and natural gas. This is roughly equivalent to the energy use of 9,000 average California households. The main campus used about 68% of that energy, housing 20%, the Associated Students 8.5% and the Farm 3.4%.



Two key historical trends (shown in the graph) must inform our understanding of energy use at CSU, Chico in the past generation. Since 1973, the campus has grown by 60%, increasing total square feet by nearly 900,000 square feet. Over the same period, energy use has fallen by more than 10%. In short, campus buildings are managed in a more energy efficient manner than at any time in the past.

However, most of the *absolute* decrease in total energy use came in the 1980s – indeed, total energy use has remained roughly stable over the past twenty years. This is an impressive feat, as the campus has added more square footage and many more energy-using devices, especially computers, printers and other Information Technology (IT) equipment. The campus may be using more energy than in 1980, but it is certainly squeezing more function and usefulness from that energy than ever.

Tracking and Reporting of Energy Use Information

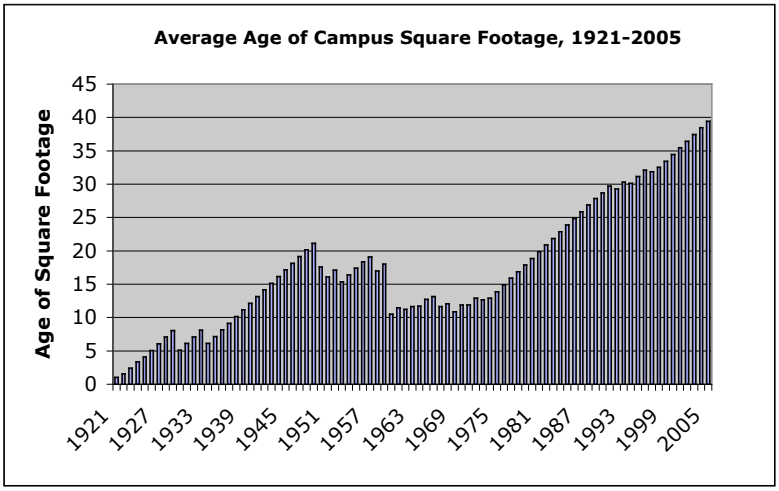
At Chico, all energy use data is recorded monthly and stored on specialized software. A monthly energy report is sent to the Chancellor's office, which is compiled into a system-wide energy report.

All new buildings at Chico State (including the new student services building that is currently under construction) will also have separate meters to measure each building's heating, cooling, and electricity use. This will allow Facilities Management & Services to monitor and better manage the energy consumption for these buildings.

Measuring total energy use is possible, but it is difficult or impossible to know exactly what an individual building uses due to the complex nature of the energy system. Each building uses three different power sources: a central steam plant provides heating; a central chiller plant provides cooling; and electricity comes to each building through a central meter. Each energy source is metered and billed separately. This complexity poses challenges for efforts to communicate energy use to campus users.

Age of Campus Buildings, New Construction and Energy Efficiency

Most campus energy use happens in buildings, so it is important to see the major trends in the development of campus buildings. CSU, Chico is one of the oldest campuses in the CSU system, but like many campuses in the United States, CSU, Chico experienced a building spree in the 1960s that created a majority of its building space. On the other hand, fluctuations in higher education funding and in the college age population have meant that the campus has added few new buildings the past twenty years. Thus, as the accompanying graph demonstrates, the age of campus space has risen to an all-time high: the average age of square footage has risen from just under 12 years in 1970 to over 40 years today. Since older buildings (especially those from before the mid-1970s) are generally less energy efficient, this means that retrofits and new construction are necessary in order to improve campus energy efficiency.



Several important initiatives are taking on this challenge. Led by Executive Order 917, CSU as a whole has begun a five-year plan to reduce energy use by 15%. In addition, the University administration has pledged that all new campus buildings, including the new student services building, will incorporate sustainable practices (including energy efficiency) by following the LEED framework of the US Green Building Council.

Some efforts simply involve additional infrastructure. For example, since 1995, a thermal storage tank has allowed peak energy consumption to remain relatively constant. This tank allows the chillers to run during off-peak hours, thus reducing demand for peak energy (which is more costly). Although peak usage remains relatively stable, off peak energy usage continues to rise.

Building Retrofits Save Energy

When the square footage of the student health center was expanded in the late 1990's by 50%, a new air ventilation system was installed at the same time. The amount of energy required to cool the building actually decreased.

Sources of Energy

Chico, like most large energy users, buys electricity that is generated off campus and natural gas for on-campus use (for water and space heating). Most of the campus' total energy use is in the form of electricity.

Chico receives its energy under a contract from Arizona Power Supply (APS). PG&E, as the owner of the transmission infrastructure, brings this power to CSU, Chico. APS generates power from a variety of sources: coal (43%), natural gas (29%), and nuclear (28%). This mix roughly parallels the mix of our national electrical grid. APS, like many large utilities, is conducting research on and developing renewable energy sources (such as biomass, solar and wind). However, these sources do not generate a significant amount of energy for the company. APS owns and operates a total of roughly five megawatts of photovoltaic solar energy in the state of Arizona. (To put this in perspective, the CSU, Chico campus alone uses roughly four megawatts during peak hours.)

What can we learn from others?

Tracking: California State University Long Beach, for example, has a comprehensive energy management program incorporating real-time metering and energy-saving technologies such as the EnergySaver, which provides a more sophisticated alternative to turning off the lights by automatically varying the voltage to the ballasted fixtures and reducing the power consumed, while maintaining appropriate lighting levels.

Feedback to campus users: Many campuses are providing information to campus users in order to build awareness of the importance of individual behavior in energy efficiency and conservation efforts. University of North Carolina at Chapel Hill's "Green Games" inform dorm residents of energy use with a competition among dorms. The University of Oregon now has a web site providing a real-time readout of campus energy use.

Sources: UC Santa Barbara's Donald Bren Hall incorporates solar photovoltaic panels that provide for almost 10% of the building's electricity needs. Other institutions have also taken bold steps toward switching to renewable power sources, such as the University of Pennsylvania (UPenn) and Pennsylvania State University (PSU), both members of EPA's Green Power Partnership. Of UPenn's total electricity use, 10% is supplied by wind power, and PSU's is 4%. The College of the Atlantic has become the first and only school in the nation to commit to purchasing 100% of its electricity through wind power for the next 20 years, eliminating its production of CO2 and other pollutants.

Opportunities and Ideas

In the near future

- Provide energy usage feedback and education to campus users – Assemble a more organized effort to publicize University energy sources, consumption data and tips to promote energy conservation to faculty, staff, and students. Provide this information via the web to spread energy awareness. For example, a Chico energy web page could inform campus users of the amount of energy being consumed by the University (provided by real-time metering systems), resulting emissions, and tips on how to conserve energy. Also, an

electronic kiosk in the new student services building could showcase the building's green features, as well as raising awareness of other on-line information.

- Regular public reporting – Facilities Management & Services should have a framework for annual reporting on total energy use to the campus community. This open act of transparency and public education would raise awareness, alert campus users to the shared challenge, and annually refocus the discussion based on changes in circumstances from year to year.

- Incorporate a more comprehensive energy management system – Integrate better energy management control system, energy information system, and demand response system into overall management of campus energy. Install real-time energy meters, which can provide a significant amount of information for monitoring by Facilities Management & Services personnel and to educate campus users. Combine installation of better metering and more efficient HVAC systems with improved building control systems.

Long term

- Funding for current proposals – Provide adequate funding to implement the energy efficiency retrofit projects that Facilities Management & Services has already proposed. (These projects would upgrade heating, ventilation and air conditioning (HVAC) systems and lighting systems.)

- Develop a strategic implementation plan for clean and renewable energy – Increase procurement and production of clean energy to meet campus energy demand.

- Harness environmental studies projects to improve campus practices – Provide a structure for students to devise energy efficiency solutions and to boost energy conservation on campus through comprehensive group projects and public information campaigns.

Pie in the Sky
Energy

All energy used on campus – electricity or direct fuel use – comes from renewable sources, such as wind, solar and ecosystem-friendly hydropower.

Why does this indicator matter?

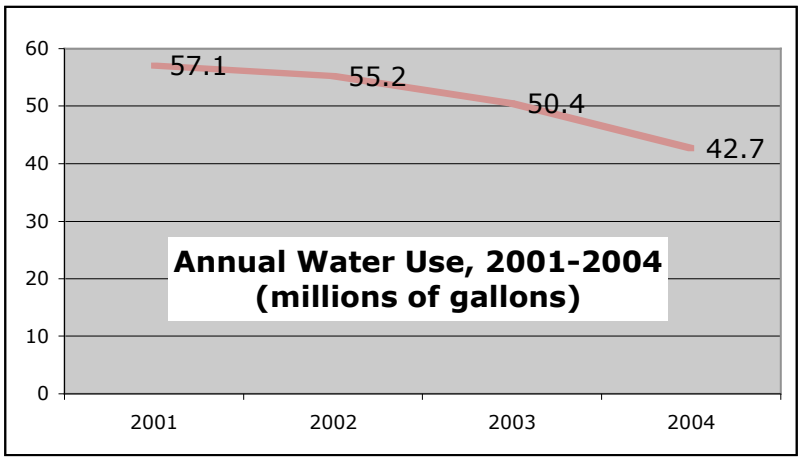
Water is a necessary part of our daily lifestyles, a regular input of our industrial production, and an essential part of the agriculture systems that sustain us at the most basic level. California, like the Western US generally, is increasingly facing water shortages as population growth, various economic sectors and increasingly embattled ecosystems compete for fixed or dwindling water supplies.

Water is currently an inexpensive resource, in large part because prices rarely reflect the full costs of water use. Foresight and responsible stewardship mandate water efficiency to ensure the health of the environment for future generations. This efficiency also results in cost savings, even when water is under-priced.

This indicator tracks how much water the University consumes, how water use is monitored, and how the University uses this information to educate the campus community in order to encourage more efficient habits. The University community – including both the decision makers for campus facilities, as well as individual campus users – must be cognizant of water consumption and its impacts, and translate this awareness into appropriate action at all scales.

What did we measure? How is Chico doing?

On average, CSU, Chico currently uses over 115,000 gallons of water daily (approximately 3.4 million gallons of water per month). This total covers only water purchased from off campus, but there is also a well located next to Butte Hall which supplies an important quantity of water for irrigation. The well is not metered, but Facilities Management & Services plans to install a meter in 2005.



Total campus water use has declined by almost 25% since 2001 (see graph). This remarkable reduction represents the implementation of a range of efficiency measures in campus buildings and landscape maintenance.

Facilities Management & Services is currently testing waterless urinals in its buildings. A cost benefit analysis will help determine whether they will be installed campus wide.

In addition, Facilities Management & Services aims to purchase and install a Maxicom Central Control System for irrigation. Typically, such systems significantly reduce the amount of water needed to maintain the campus landscapes by measuring daily irrigation needs, then automatically programming the system accordingly.

The campus plant list includes drought-tolerant plant material in campus landscaping to conserve water. In addition to lowering irrigation needs, the gradual removal of exotic plants will lessen the use of herbicides and protect native plants. We use approximately 72 cubic yards of landscape mulch a year to build healthy soils, use less water and provide control of invasive and exotic plants.

As part of satisfying LEED green building criteria, the new Student Service Center will include low-flow plumbing fixtures and landscape vegetation with low water needs (or minimal irrigation requirements).

What can we learn from others?

The University of Florida uses reclaimed water for 97% of its irrigation needs. The University of California, Santa Barbara (UCSB) also employs a reclaimed water system that provides for roughly 25% of UCSB's total water use.

In 2000, Oberlin College built a Living Machine®, one of the first water treatment bio-facilities in the United States; it treats 2,000 gallons of gray- and blackwater (i.e., both water from sinks and showers, as well as sewage) per day via various biological filters and distributes that water for use in toilets and irrigation.

In its 2003 Sustainability Report, the University of North Carolina at Chapel Hill highlights a 25% decrease in water usage resulting from an information campaign "Every Drop Counts." Incentives for decreased water usage were also offered in residence halls.

Opportunities and Ideas

In the near future

- Add water meters to buildings and landscape watering systems (and eventually link with Maxicom system) so that Facilities Management & Services personnel can identify leaks more easily.

- Provide water usage feedback and education to campus users – With awareness, people can make better decisions about their water use. Since most campus users do not connect their actions with the environmental and health impacts of energy and water use, there is an opportunity to leverage decentralized individual action for cost savings and the greater good. Most easily, Chico can educate itself about the importance of water usage simply with the distribution of information.
    - Advertise water usage data and tips to promote conservation among various campus audiences.
    - Post information in bathrooms that note the large water usage in showers, sinks, and toilets.
    - A small budget for incentives at the Chico residence halls could be quite effective as well.

- Water-efficient plumbing fixtures – Install efficient sink spouts and faucet aerators throughout campus. Replace all old toilets with low-flow toilets, toilets with half-flush capabilities and waterless urinals.

- Increasingly water-efficient landscaping – Continue to plan and plant landscaping so that water for irrigation may be acquired from stormwater basins, ponds or even graywater systems.

Long term

- Biological water treatment site – Create an on-site wastewater treatment with a constructed wetland similar to Oberlin's. The wetland's biofiltration system could provide the campus with recycled water appropriate for certain uses. The site will also serve as a research site and a means to educate the surrounding community.

- Gradually phase out all unnecessary hardscapes and replace them with pervious surfaces (such as green space and pervious pavers) to reduce the concentration of runoff, increase infiltration to recharge groundwater, and lower the burden on stormwater infrastructure.

Pie in the Sky
Water

Use no more water than falls on campus grounds and other University lands.

Why does this indicator matter?

We rely on our transportation systems to meet our basic needs for mobility of people and materials. The way in which the university plans for and meets these needs has multiple effects in the short and long term.

Our conventional transportation systems are among the largest contributors to both global climate change and local air pollution. Car exhaust is one of the main contributors of increasing greenhouse gases in the atmosphere. In particular, Chico's location in the North Sacramento valley, surrounded by three mountain ranges, makes it vulnerable to smog and inversion layers that create unhealthy air conditions and reduce visibility.

In response to these unintended consequences, there are many strategies for creating a healthier and more efficient transportation system. These strategies include improved public transportation, incentive programs that boost the use of alternative transportation and decrease the need for parking, and land use planning and management that decrease our reliance on the automobile.

What did we measure? How is Chico doing?

Chico's campus has grown steadily over time to its current level of enrollment of 13,883 Full Time Equivalent (FTE) students with a cap set at 14,000 FTEs. Additional students create the need for more space for buildings and parking, but that must be countered with the desire to maintain open spaces and the campus quality of life. The campus Master Plan calls for facilitating pedestrian circulation, and an emphasis on growth through increasing density in the campus core. The plan also calls for constructing additional parking structures.

Modal Split: how people get to campus

More than 80% of Chico students live within a mile of campus, creating opportunities in transportation infrastructure and planning. In general, the campus collects very little information on its transportation habits and therefore can say little about its impacts. However, a recent transportation survey shows that, while a significant number of students (34%) and faculty (18%) use alternative, non-car modes to come to campus, there is significant room for improvement – especially given the proximity of the student population (see table).

Mode	Students	Faculty	Staff
Drive Alone	50%	82%	84%
Carpool	12%	0%	7%
Vanpool	4%	0%	0%
Walk/Bike/Public Transit/Motorcycle	34%	18%	9%

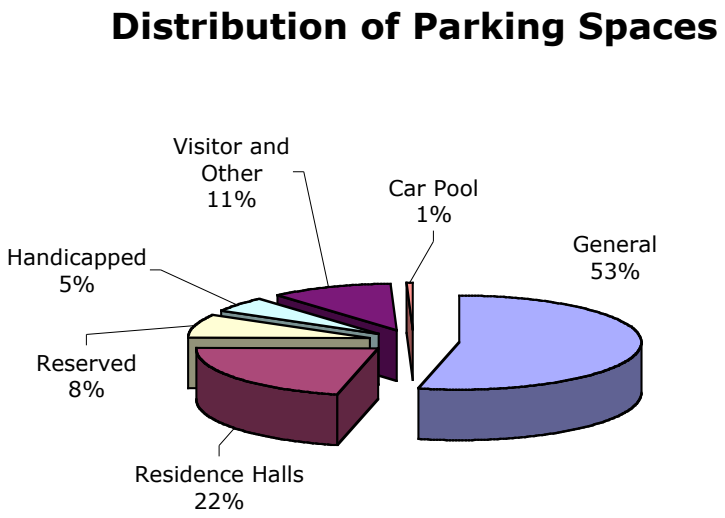
Modal split for commute transportation, by campus user group

Parking

Part of the infrastructure, parking, has been designed to encourage alternative transportation to campus. Chico State has 3,152 bike parking spaces on campus compared to 2,211 car parking spaces (see chart on the next page). This is the lowest ratio of car parking spaces per student of all CSU campuses, with a ratio of 0.149 parking spaces per FTE.

This is a financially prudent path, as there are high costs associated with parking. The estimated cost of each parking space in the four new parking structures scheduled to be built over the next

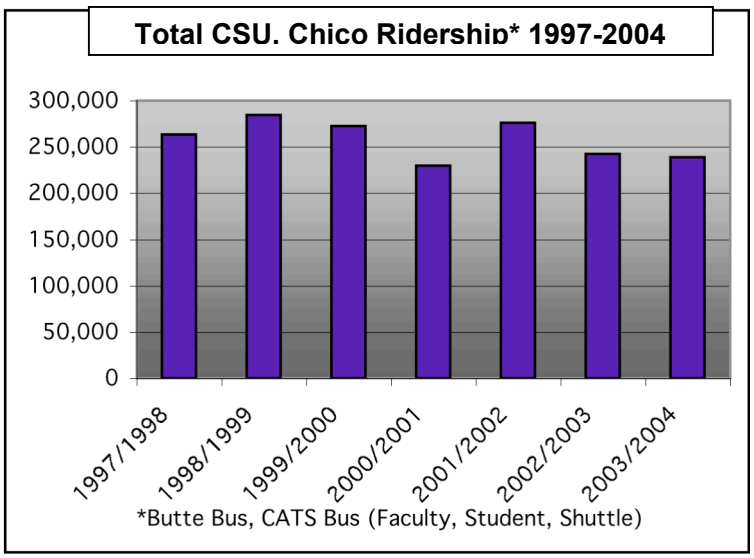
20 years is $12,000. In comparison, the cost of each bicycle parking space on campus is about $100, less than one percent of what it costs to accommodate a car.



However, a transportation system that relies on many modes is not problem-free. There has been some discussion of further modest restrictions in the use of bicycles on campus due to safety concerns and some complaints from pedestrians (for safety reasons, bicycle riding is already prohibited in the core of the campus from 7 AM to 10 PM). Like any transportation policy, bike riding raises new challenges and trade-offs. In fact, the emergence of any tension at all between bicycles and pedestrians may simply signal the campus' success in encouraging the use of alternative transportation measures.

Public Transit Use

Chico State has been collecting data on transit use since 1989 and although students have the ability to ride the transit system for free, in the past few years there has actually been an overall decline in use. Since 1997, total Chico State ridership has declined by 10.4% (see graph), while student ridership has declined by 9.7%, and faculty ridership on CATS has decreased by 53.5%.



Given the opportunities posed by the residential proximity of campus users – as well as the health, environmental and financial costs of cars – this decline seems like a surprising and disappointing step in the wrong direction.

Campus Fleet

When Chico looks to purchase a new vehicle, alternative fuel vehicles are the first choice. Executive Memorandum EM-9933, issued on September 20, 1999, ensures that all vehicle purchases are looked at closely and alternative fuel vehicles are purchased when possible. Since this policy was instated, 39% of the 64 (non-farm) vehicles that have been purchased are electric or alternative fuel vehicles. Still, electric or alternative fuel vehicles account for only 21% of the total campus fleet. If alternative fuel vehicles are not available, then ultra low emission vehicles are sought instead. (Funds for these purchases come mainly from departmental funds, with a small portion from parking fees.)

What can we learn from others?

As measured by the relatively low land use for parking places, CSU, Chico appears to be taking advantage of its central location in the town of Chico. This is certainly a success, both environmentally for the community and financially for campus users and the institution.

University	Parking spaces per daytime campus user
CSU, Chico	0.15
UC Davis	0.39
Colorado State University	0.46
UMass Amherst	0.36

Similarly, the campus provides a high number of bicycle parking spaces relative to car parking spaces, as noted below in a comparison with the University of Oregon (a widely recognized leader in multimodal campus transportation infrastructure).

Category of parking spaces	University of Oregon	CSU, Chico
Car parking spaces	**3,328**	**2,211**
Bike parking spaces	**4,701**	**3,152**
Number of car spaces per bicycle space	**0.7**	**0.7**

At Michigan State, fleet fuel usage was estimated to have increased by roughly 23% between 1989 and 1998, and was projected to increase further as their motor pool increased. However, Michigan State has over 400 vehicles operating on alternative fuels, and a reuse system for various fluids and components.

University of Vermont (UVM) is currently collecting data on the number of trip miles made on alternative fuels. They have developed a long-term goal of a fleet of low- to zero-emission vehicles. UVM also implemented a one-year experiment in biodiesel operations, initiated by a senior student.

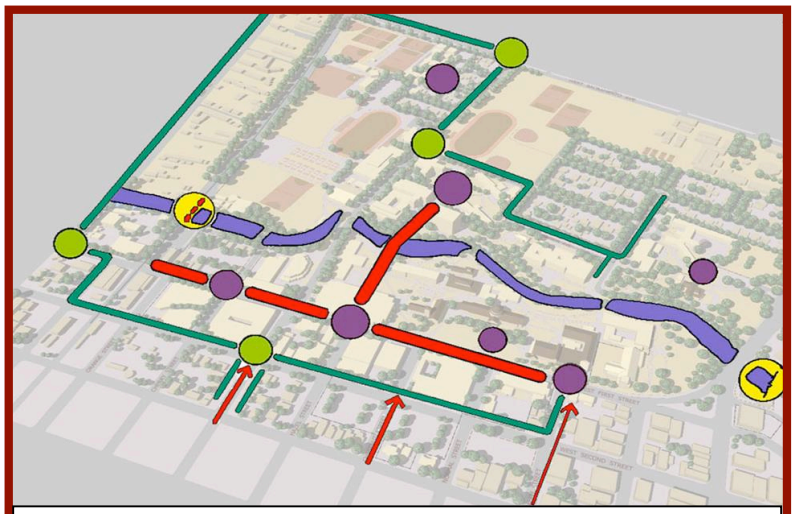
Twenty percent of the campus diesel fleet at UC Santa Cruz runs on biodiesel. The campus hopes to establish a small biodiesel refinery on campus, a priority outlined in the institution's 2004 Blueprint for Sustainability. The campus is also planning a compressed natural gas station.

Opportunities and Ideas

In the near future

- Incentives for car-free students – CSU, Chico could give dorm residents first choice in selecting a dorm if they agree not to bring a car to campus. (Many residential campuses already do not allow first-year students to bring cars.)

- Survey of transportation modes – Conduct regular surveys of students, faculty and staff to help determine baselines and then the effectiveness of campus transportation programs.



This slide from the campus master plan shows plans for enhancements to Chico Creek and the campus perimeter, as well as open space and "place making" developments.

- Expanded transportation survey with City of Chico – This survey could be especially effective if conducted by both the City of Chico and CSU, Chico. A joint study could indicate the best opportunities for planning and designing City and campus systems to meet needs in an integrated fashion – an appropriate approach since the campus is a significant part of the urban core and campus users represent a major segment of the local population.

- Incentives program – As student, staff and faculty fuel consumption are officially beyond the jurisdiction of the University, coming up with creative ways to increase transit ridership or encourage cleaner fuel consumption are an alternative tactic for Transportation officials.

- Diesel Engine Filters – Engine standards have not been a focus in the reduction of diesel emissions. Chico could stand to benefit from an endeavor to fit all diesel engines with particle filters. This is a feasible, cost-effective, and highly effective first step to tackling diesel emissions - the crux of the emissions challenge.

- Biodiesel course – Students could learn not only about alternative fuels, but also how to make biodiesel fuel from waste oil. The class would initiate the construction of a student-run biodiesel pump station that would provide fuel to the campus fleet free of charge and for profit to members of the community, while acting as a demonstration site for alternative fuels.

- Staff and faculty focused trip reduction measures – The non-student population can be continually moved toward alternative transportation. Measurement of and marketing toward their preferences could improve the likeliness that they will enroll in trip reduction programs.

- Parking incentives – The University will benefit by implementing ridesharing, trip reduction programs, improvements to bicycle facilities, and incentives such as specific parking spaces for carpoolers or reduced parking rates for alternative and multi fuel vehicles.

- Take advantage of emerging teleconferencing technology to reduce the need for long-distance travel, especially for meetings with regularly assembled groups (e.g., standing meetings with CSU Chancellor's office staff).

Long term

- Campus fleet – Through campus purchasing policies, ensure that all campus vehicles purchased are either hybrid or alternative-fuel, low-emissions vehicles, with the goal of achieving a campus fleet of zero-emissions vehicles.

- New funding configuration to support systemic change – Currently, the self-funding mechanism for parking is isolated from other transportation funding, even though automobile use imposes substantial spillover costs on users of other transportation modes. Alternatively, the funding arrangement could use parking to cross-subsidize alternative methods that currently must find funding in other areas that are less related to transportation. A gradual increase of parking fees (through permits, fees for first-year on-campus students, and meter rates) will provide funding for alternative modes of transportation and bicycle and pedestrian improvements on the campus.

Pie in the Sky
Transportation

All emissions from fossil fuel powered trips to campus will be included toward campus greenhouse gas (GHG) limit. With a policy of no net GHG emissions, fossil fuel use will require the campus to purchase carbon offsets sequestration – or to supply more GHG-free power than it uses.

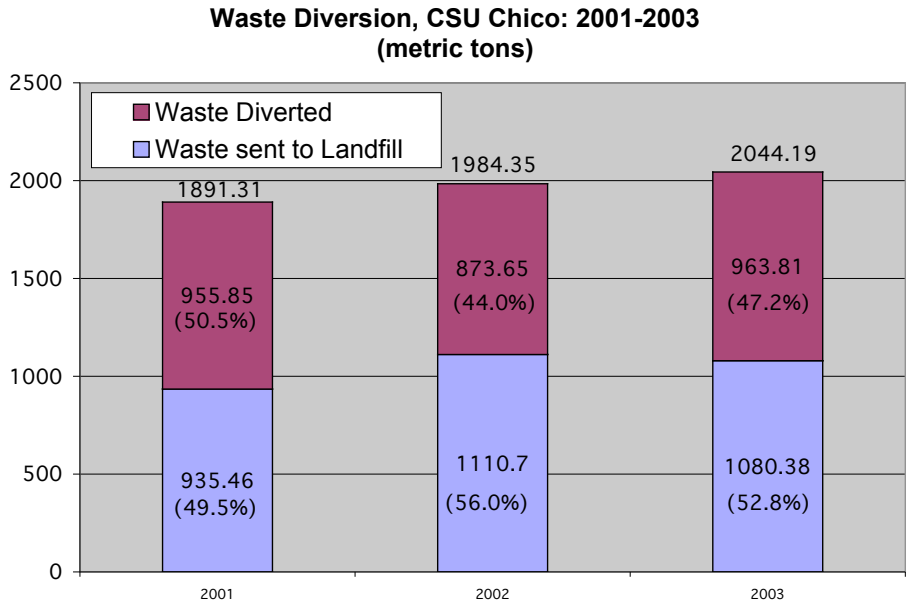
Why does this indicator matter?

Reusing and recycling items is critical in preserving our non-renewable resources. In addition to reducing pressure on landfills (and associated air and water pollution), it reduces the need to mine and manufacture new materials, which saves energy, water and resources. It is essential to have a complete and efficient recycling infrastructure to enable the campus community to landfill less solid waste and increase the diversion rate or recycling rate. This indicator examines Chico's organizational strategy for on-campus recycling and what materials are recycled.

What did we measure? How is Chico doing?

Waste Stream Statistics

Chico recycled approximately 47% of its waste stream during the 2003-2004 academic year. This was part of a generally strong performance in recent years, as measured by the recycling rate (the percentage of total waste diverted from the landfill). Projections for the 2004-2005 academic year predict an improvement to a 55% diversion rate. This is significant because the campus is mandated to achieve a 50% recycling rate.



However, there are other important numbers to consider in understanding waste performance. For example, despite the consistently high recycling rate, the campus appears to be generating more trash overall. On average, each campus user now generates 135 pounds of waste annually. This means that, despite a rising recycling *rate*, the campus is still sending the same amount of trash to the landfill.

Recycling Infrastructure and Waste Reduction

Waste reduction is just as important as recycling, if not more so. CSU, Chico's waste and recycling programs address this key challenge by providing a strong recycling infrastructure and many reuse and waste reduction programs

A solid recycling infrastructure is in place – many trash cans have adjacent recycling bins (a total of 550 recycling containers campus-wide). There is recycling available for several regular but unusual waste streams: fluorescent bulbs, embalmed animals, chemistry lab chemicals, vehicle gas and oil, oil filters, Freon, and car batteries. In addition, old computers are donated for use at local elementary schools (see Diversion Excursion under *Reuse and Exchange Programs* below).

Indoors, common areas such as department offices, labs, dorms, and print labs have a trash can and a recycling bin for all paper. Labs have special waste bins for glass, and other lab materials that have been contaminated.

In 2001-2004, the campus recycled large quantities of construction waste, and an estimated 90% of construction waste was recycled in 2004. Most of the recycled material has been concrete, asphalt and rubble. The removal of the buildings behind the BMU was the source for most of the diverted waste. (Tracking construction waste is a new task, and it is still difficult to track and calculate exact quantities.)

Students play a vital role in the campus recycling program – thereby both contributing to campus environmental performance and learning valuable skills outside the classroom.

The campus provides outdoor recycling bins for cans, plastic and glass bottles. The associated Students Recycling Program provides recycling collection services for office paper, beverage containers and compost. Student staff collects white paper, mixed paper, newspapers, shredded paper, magazines, books, cardboard, toner cartridges, aluminum cans, glass and plastic bottles, and bi-metal (tin cans). Collections programs include Office Recycling, the Faculty Call-in Program, Special Event Recycling, Phone Book Collections and the Saturday Donation Center (10-2pm)

Landscape practices

Facilities Management & Services has developed an Integrated Pest Management (IPM) strategy with a focus on planting more native or well-adapted species. Volunteers help pull invasive species in riparian areas. The athletic fields are still sprayed with herbicides.

Print Charging

Students pay a fee to print (now 10 cents per copy). This simple incentive has a significant impact on the waste stream and saves the campus money. (Campuses that institute print charging often find an immediate drop of 70-80% in print volumes.) Since paper makes up 38% of the waste stream nationwide, this is an important waste reduction strategy.

Composting

Pre-consumer food scraps are collected from five kitchen areas on campus, including the Garden Café, Whitney Dining Hall, the Butte Culinary Academy, and Primo Espresso Cart and Café. Food scraps are taken to the University Farm or the Compost Display Area for composting. Our grounds department utilizes a wood chipper to provide compost for bedding material on campus. University Farm composts all its cuttings. The farm also has surface ponds for animal waste and have recently received a grant for a methane digester for animal waste to produce a value-added product.

Reuse and Exchange Programs

Started in 2001, the *Diversion Excursion* is a joint project of AS Recycling and University Housing and Food Services. Booths set up for dorms accept: clean clothes, shoes, books, appliances, blankets, computers and computer accessories, sheets and towels, unused toiletries, construction materials (PVC, cinderblocks), unopened non-perishable food, and partially used shampoos, lotions, dish and laundry soaps.

Products from the Diversion Excursion are placed with a wide variety of community organizations, including the Esplanade House, Chico Community Shelter Partnership, Square Deal Mattress Factory and Computers for Classrooms.

Used vehicles and equipment are sold at auction. Property Management either donates or sells 95% of the campus' surplus items (about 120,000 pounds in 2002). For example, about 400 used campus computers were donated to Computers for Classrooms in 2004. The remaining 5% is either used for parts or thrown away because it is dangerous or there simply is nothing else to do with it.

Most of the surplus furniture is stored for reuse, sold or donated. Reusable office supplies such as folders, binders, envelopes and paper are given away on campus and to non-profit organizations for reuse. Offices and departments often donate office supplies they no longer want. Other special wastes include packaging materials (plastic peanuts) which are often reused. Toner cartridges are picked up from office personnel who inquire about recycling services.

Laboratory Chemical Exchange

The main areas that use chemicals are the Departments of Chemistry, Biology and Microbiology, and the College of Agriculture. There is no formal system for laboratory supply and chemical re-use throughout the campus, but there is some informal inventory management to reduce the purchase of new chemicals. Surplus chemicals on campus are called into Environmental Health and Safety (EH&S) to be picked up and disposed of. In the case of large quantities of a given chemical, EH&S will check with the chemical stock rooms to see if that chemical is needed.

All labs order chemicals individually, so chemicals are very specific to the labs that they are ordered for. Most labs order a sufficient amount of chemicals and do not have much excess stock, and the waste stream is highly varied based on the diversity of lab experiments. Therefore, chemical re-use on campus is rare. Also, given the need for purity, even minor contamination can prevent reuse.

What can we learn from others?

Recycling rates differ widely from one institution to the next, but CSU, Chico's recycling rate clearly excels. Nationwide, the residential and commercial recycling rate is around 30%; high-performing municipalities and universities achieve rates of 40%, with a large handful recycling over 50% of the waste stream. (CSU, Chico's recycling rate is especially impressive, given that tipping fees at Neal Road Landfill are $27 a ton, a low level that provides little financial incentive.) However, the best performers are still improving, so CSU, Chico will need to raise the bar in order to keep pace.

Just as at CSU, Chico, waste *reduction* continues to prove difficult. Even many communities with high recycling rates are sending increasing per-person quantities of waste to landfills. This remains an important challenge.

Opportunities and Ideas

In the near future

- Waste stream analysis – Perform a detailed assessment of the waste stream that is currently being landfilled. Possible questions to pursue:
  - Can collection containers be reduced in size? Most dumpsters are not weighed, and have to be calculated using a conversion factor of X pounds per yard for the entire volume – they could all be half full year round and there would be no change in the annual tonnage.
  - Does the waste stream going to landfill contain significant quantities of recyclables that could be otherwise captured? We suspect unbroken cardboard boxes to be a likely candidate for redirection. Identify sources of recyclable materials ending up in the waste bins and redirect.
  - Put in place some means to prevent green waste bins from becoming contaminated with non-green waste materials, in which case the entire eighteen-ton container ends up in the landfill. (Currently, this happens several times every year.)

- Recycling at athletics events – Establishing an organized and convenient recycling system for all athletic events, but especially those with larger crowds, should make recycling the conspicuous and easy choice.

- Expand recycling program to include special waste streams – A more diverse recycling program could include items like CDs and video cassettes. Such a program may increase recycling rates, especially in residence halls.

- Explore opportunities for a more complete Chemical Exchange Program – An effective exchange program saves money by reducing new chemical purchases, disposal needs and inventory costs.

Long Term

- Set diversion goals and track diversion performance *for specific materials*, just as the institution tracks recycled content in the purchasing of certain materials. (The use of material-specific tracking and goals will ensure that certain waste streams do not get lost in the aggregate data on waste and recycling, and that the institution has the information necessary to address particular waste streams.)

Pie in the Sky

No virgin materials for construction and renovation.

CSU, Chico will meet its needs for construction materials entirely with reused and recycled products. In partnership with local construction companies, the University will foster a local market for reused materials (such as concrete, aggregate and wood) and products made from 100% recycled content.

Why does this indicator matter?

Although direct use of resources such as water and energy is obvious and tangible, we often have far greater effects on health, the environment and our own finances through the costs and impacts of the things we buy. These embodied impacts – "upstream" in the extraction of natural resources, manufacturing, transportation and packaging, and "downstream" in final disposal or recycling – are less visible but very large.

These impacts are the reasons for looking at materials and waste streams (see Materials & Waste section). This section addresses specifically *how we purchase* as an institution in order to understand performance and opportunities in this area. As a large university, Chico purchases substantial amounts of products such as paper, computers, printers, copiers, chemicals, office equipment, cleaning supplies, building materials, and food. Making environmentally preferable purchasing choices involves thinking about the upstream and downstream environmental and human health effects that are a direct result of purchased products.

Life-cycle thinking in purchasing also has the potential to lower costs for the institution. With a deeper look at the life cycle, purchasers are likely to account more completely for maintenance costs, disposal costs and long-term risks – all factors that are easily ignored when upfront price is the overriding consideration.

What did we measure? How is Chico doing?

Campus Purchasing provides standard tools and information for campus buyers: best-value decision-making, contract language, information resources and major supplier relationships. Like most conventional criteria and tools, current purchasing guidelines place an emphasis on upfront price. However, Chico is beginning to incorporate life cycle costs, depreciation and maintenance into purchasing decisions. In addition, the Purchasing Department regularly sends memos to individual purchasers with information or recent findings about products.

There is no single set of campus-wide purchasing policies. There are four major, independent purchasing units at Chico, all with different policies and procedures: the Library; Associated Students; Research and Foundations; and Procurement and Contracting. Still, as a California government agency, CSU, Chico is encouraged to meet certain specific criteria for its purchases. For example, Cal/EPA has a goal of 100% recycled-content toilet paper and paper towels by June 2005 (though there are no precise mechanisms for monitoring or enforcing this goal, and it is not a strict mandate). There is, however, no policy for unbleached or chlorine-free paper products.

Recycled-Content Purchasing

The state requires that the University report the percentage of purchases that contain recycled content. In addition, Chico must report purchases of certain items, including antifreeze, compost, glass, oil, paint, paper, plastic and steel products, tires, solvents and tire-derived products.

These reporting requirements are extremely helpful in demonstrating progress on several fronts. Although the specific reporting format often includes only dollar values (rather than physical units such as gallons or pounds), we can still assemble a general picture of some of the campus' important material flows:

Selected Products	Purchases ($)	% RCP* ($)	% RCP (quantity)
Printing and writing paper	$258,532	51.2%	NA
Plastic products	$209,569	14.6%	NA
Other paper products	$92,847	79.4%	NA
Paint (unit: gallons)	$22,949	21.1%	28.1%

*Recycled Content Products

The table above shows significant recycled content for several large product classes. In fact, there is recycled content in a significant portion (slightly over 50%) for all tracked products (which includes several other lower-budget products). Some of these products (such as paint, which is not always easy to source with recycled content) are toxic or otherwise resource-intensive to produce from virgin materials. Thus, these aspects of purchasing represent an area of impressive environmental performance by the campus.

Life-Cycle Management of Computer Hardware

Since 1999, CSU, Chico has spent over $10 million on computer hardware from Dell, Gateway and Apple. The campus manages this inventory to meet the immediate needs of campus users.

However, the campus has few and weak policies and procedures to monitor the ultimate destination of electronics and computer *waste*; although CSU, Chico is in compliance with all applicable laws, IT purchasers increasingly recognize that our regulatory framework does not adequately address the problem. So-called “e-waste” is an important emerging issue. Computers, monitors and other IT hardware contain many toxic heavy metals (including lead, chromium and cadmium), and unless the waste stream is closely tracked and managed, these products tend to end up in highly unsafe and environmentally unfriendly trash and recycling operations, especially in developing countries in Asia. This end-of-life issue has become a sufficiently prominent problem that both Dell and Hewlett-Packard have begun computer take-back programs. Nonetheless, many large IT purchasers, including most colleges and universities, continue to ignore the issue.

Also, the campus does not have a purchasing policy that ensures upfront, proactive action to minimize the life-cycle impacts of computer ownership. Purchasing policies that ensure energy efficiency, longevity and recyclability (or take-back opportunities) not only lower the negative impacts of the computer life cycle but can also result in significantly lower long-term costs of equipment ownership.

Purchasing Processes

Commodity bids are awarded based on price, as a matter of policy, to “the lowest responsive and responsible bidder.” Software and other similar purchases/licensing do consider long-term maintenance costs as well. By comparison, best value considerations are included in Requests for Proposals (RFPs) that are awarded not on low bid, but highest points. For example, life-cycle costing was evaluated when selecting copiers to purchase in previous years.

It is not uncommon that bids for paper specifically include a request for pricing on recycled paper, but it is not campus policy to do so. A statement about our interest in increased purchase and use of recycled products is typically included on bids for items that fall into one of the other reportable categories. Bidders are asked to advise if the product they are bidding is of recycled content. We do not, however, provide preferences for recycled products.

There are already models of strategic sourcing to improve sustainability performance *and* improve the campus’ bottom line. For example, construction contracts are written to include language to

account for concrete, asphalt, aluminum, metal and rubble reuse. Similar RFP, contract and bid language could coax vendors and consultants to raise performance.

What can we learn from others?

The University of California at Santa Barbara (UCSB) has adopted a recycling program and policy that includes the purchasing of recycled paper. The policy requires that the university purchase paper products of the highest recycled content and that the paper is within 5% of the price of non-recycled paper.

The University of Oregon has also mandated a policy of buying recycled paper. As well, the UO takes advantage of such strategies as double sided printing, electronic communication and half sheets for campus flyers and communication.

Increasingly, campuses are managing all parts of the computer hardware life cycle. This is most effective when it integrates all aspects of purchasing, use and disposal – often a challenge, since it involves collaboration among purchasing units, IT departments, and many campus users.

Opportunities and Ideas

In the near future

- Centralize and coordinate paper purchasing – Tracking of paper purchasing will allow the campus to better understand its practices and needs, and assist in future recycled paper efforts.
- Double-sided printing and copying – Require that all computer labs and copiers can print double-sided, and set printer defaults to doubled-sided printing.
- 100% recycled content – Require policies that all paper be 100% post-consumer recycled paper and free of chlorine.

Long term

- Campus-wide Environmentally Preferable Purchasing – Institute a policy and program to cover all high-volume and high-impact products. An initial list for consideration could include custodial chemicals, paint, building materials and paper. With awareness-building and buyer education around uniform criteria and pre-selected vendors and products, the campus will be able to make decentralized purchasing meet environmental performance standards. The campus can also potentially save money by leveraging larger volumes of fewer products in its vendor relationships.

Pie in the Sky
Cradle-to-cradle materials use

CSU, Chico will buy *nothing* that cannot be recycled, composted or otherwise 100% reclaimed.

LEARNING & GOVERNANCE FOR SUSTAINABILITY

Why does this indicator matter?

By educating future leaders and active members of our global community, Chico must take steps towards shifting our society's understanding of its challenges and the practices needed to address those challenges. The institution has the opportunity to enhance and augment the programs and approaches to analyzing sustainability, and incorporate sustainability awareness into the general requirements of liberal arts education. Knowledge and awareness are the crucial elements that enable students, faculty and staff to begin to change behavior and decision making, and it is up to the University to encourage development of the Chico curriculum to take on this challenge. This indicator explores the number and audience of current courses and programs that present sustainability ideas.

The indicator also looks at governance and decision making for the campus as a whole, including both facilities and academic units. The challenge of sustainability is new and complex, so we cannot expect old decision making processes and forms to meet all emerging needs.

What did we measure? How is Chico doing?

In the Classroom: Curriculum

In the 2003-2004 school year Chico offered 90 sections out of 6,153 lecture-type sections with substantial environmental studies content in social science, natural science, and society and human values. The enrollment in environmental courses during the 2003-2004 academic year was 2,302 students out of about 16,000 enrolled students (representing as much as 14% of the study body).

Professor of...ecoliteracy?

CSU, Chico may be the only institution in the nation with a high-profile professorship devoted entirely to ecoliteracy. The position of Rawlins Endowed Professor of Environmental Literacy, currently held by Jim Pushnik, has a daunting mandate: "prepare all students of all majors across the campus for dealing with a world environment which is being continually diminished by loss of species, disappearance of habitats, and degradation of air, water and soil." The professor works with student government and off-campus groups to improve the environmental programs. The endowment also supports special projects, student internships and scholarships.

Chico's Environmental Studies Program is offered as a minor, but not as a major. This program falls under the Geography and Planning Department but does not receive general funding. General Education requirements can be met with a few environmental classes (GEOG 104-Environmental Issues, GEOS 130-Introduction to Environmental Science and ENVL 005-Environmental Literacy, which also satisfies a state requirement in the lifelong learning area).

All undergraduate students must complete a nine-unit theme that provides the opportunity to integrate and apply skills and knowledge gained through college experience to specific issues. *Theme D: Environmental Issues* is one of eighteen themes from which undergraduates may choose. The environmental theme explores the many ways in which humans use and have an impact on the environment. The theme objectives are 1) to impart an understanding of and an appreciation for the place of the human species in the global ecosystem; 2) to examine the ways that the environment has influenced human behavior; 3) to provide skills and

information necessary to assess human impact and 4) to pursue ways to maintain Earth's life-support systems.

Outside of the Classroom: Organizations, Activities and Special Resources

The Environmental Affairs Council is a student group with funding from Associated Students (AS). It aims to create environmental awareness among students and does so in part by funding the environmental action and resource center (EARC). Other environmental student groups funded by AS activity fee funds include: CAVE's ESEP (Elementary School Environmental Program) and CAVE's Whiskeytown Environmental School. Students earn credit through these programs that are offered every semester through the AS. AS Recycling's RARE (Recycling and Rubbish Exhibit) and AS Recycling's Compost Workshops are also a part of the Associated Students. These are student run activities where education is integrated into activism. The RARE program includes elementary school classes and the compost workshop is open to all students and community members.

There are also numerous student-run events on campus during Earth month, part of a slate of forty environmental events in thirty days. Events include speakers, workshops, Eco-Fest (an environmental concert), Children's Environmental Faire, Environmental Information Faire, Eco-Business Faire, eco-videos, panel forums and nature hikes.

In addition, the Bidwell Environmental Institute comes out of the CSUC Research Foundation and focuses on environmental research, the campus ecological reserves and the environmental literacy program. The College of Engineering's Environmental Projects has an impressive list of efforts. In addition, the Butte Outdoor Classroom (BCOC) is an environmental classroom funded through the College of Behavioral and Social Science. The BCOC engages in hands-on environmental education with local elementary students. The BCOC is located at the Honey Run Unit of the Butte Creek Ecological Preserve.

Formal Decision Making for Sustainability

CSU, Chico has no single position or deliberative body charged with looking broadly at sustainability issues. Despite the lack of on-going, formal governance systems for sustainability, Chico has nonetheless demonstrated a commitment. The campus Master Plan calls for the school to preserve natural environments, including the creek, trees and green spaces. CSU, Chico has also signed the Talloires Declaration, a ten-point action plan for incorporating sustainability and environmental literacy in teaching, research, operations and outreach at colleges and universities. Over 300 university presidents and chancellors in over 40 countries have signed it. (CSU, Chico has included sustainability as one of the strategic objectives in its master plan, a more concrete demonstration of this commitment.)

What can we learn from others?

Other campuses (including UC Berkeley and Michigan State) have cursorily assessed the sustainability content of academic offerings using similar keywords searches, but methodologies are too crude for comparisons to be useful.

The University of Vermont boasts one of the largest Earth Day celebrations among college campuses across the nation and The Consortium for Ecological Living (CEL) has been successful in bringing many speakers to the school to discuss sustainability with the student population. (Chico's 2005 Earth Month should rival UVM's annual celebrations in scale and scope.)

The California Student Sustainability Coalition (CSSC), set up by students in the UC system, provides a state-wide network for campus sustainability. This organization has contacts at all UC institutions in an effort to bring together environmental organizations and consolidate efforts. Although this group is still working to establish itself, the long-term achievements of such a group will likely prove beneficial, and its work is expanding to include the CSU system.

In recent years, many campuses have created new positions and hired sustainability *coordinators* to facilitate and connect campus-wide initiatives, events and other activities. In addition to small colleges (such as Middlebury and Bowdoin) and large research universities (such as Yale, Harvard, UNC Chapel Hill, University of British Columbia, University of Colorado at Boulder and Michigan State University), this list includes many public universities at a roughly similar scale to CSU, Chico (such as UNC Greensboro, University of Oregon, Oregon State University, Portland State University, UC Santa Cruz and UC Santa Barbara).

Many campuses (including some with coordinators and others without) have created sustainability committees to convene concerned stakeholders from different parts of the campus. The most effective of these committees advise decision makers and the campus community with insights that come only from cross-unit collaboration and communication.

Opportunities and Ideas

In the near future

- Campus Sustainability Committee – Appoint a committee modeled after successful committees at other institutions: a formal governance body, with broad representation, clear responsibilities and goals, and reporting to particular campus decision makers.

- Establish a current and updated list of sustainability-related courses – As demand for this topic increases, the university should create a system where students can find courses of interest.

- Use the Book in Common as a tool, as with Lester Brown's *Plan B* this past academic year. It was so successful… sustainability issues lend themselves particularly well to interdisciplinary discussion and thought

Long term

- Lead by example, teach by example: service learning for sustainability – Encourage sustainability-related service-learning courses where experiential learning contributes to the community beyond the Chico campus while providing students with important professional experiences.

- Academic committee for sustainability – Create a governing board that monitors and supports all sustainability courses, ensures new topics of research and interest are offered, and documents the number of Chico graduates in relevant fields.

- Revolving fund for sustainable practices – CSU, Chico could follow in the footsteps of other campuses that have established revolving loan funds to provide resources for money-saving projects. As projects earn cost savings, the money is returned to the fund for reinvestment in new projects.

Pie in the Sky
Curriculum for Sustainability

The University will adopt, as part of its mission, to integrate the concepts and principles of sustainable development into formal educational requirements. Students will study the interdependence among environmental, economic and social issues, while acquiring skills in systems thinking and learning to be organizational change agents.

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