



# Sustainability Plan Part 1

For Construction, Retrofitting, and Operations

December 17, 2009

City College of San Francisco

**Sustainability Plan                      Part 1**

**For Construction, Retrofitting, and Operations**

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## **Executive Summary**

In May of 2006, Board Resolution “Sustainability Efforts at City College of San Francisco” directed the College to create a Sustainability Plan, including specific tasks and implementation and reporting schedules.

The need for all colleges and universities to reduce their impact on the environment is undeniably apparent. Like other public education counterparts, community colleges are taking steps to reduce their carbon footprints, their generation of solid waste, and other negative impacts on the environment. Recognizing the relevance of environmental concerns to our educational mission of service to the community, the Board of Trustees expressed interest in sustainability policy at CCSF as early as 1996. The Overview of this document describes major milestones along this pathway. Significant leadership in sustainability at CCSF is being taken by the Board and the Chancellor, by students, faculty, staff and administrators---truly a college-wide mandate and collective effort.

CCSF’s Sustainability Plan is published in a two-part format. Part 1 of the plan addresses sustainability in construction and retrofitting, as well as in day-to-day operations (e.g., purchasing, landscaping, transportation). This document sets out policies and programs and for managing resources, at and for all CCSF campuses, using a sustainability approach. Management resource principles emphasize prevention of impact over mitigation after the impact. Many valuable resources, ideas, and standards have been brought together in this document, with the help of community input, to provide an indispensable framework for sustainability in operations and facilities. It can be found online at the following link where it will serve as a guide for the CCSF and the community: [http://www.ccsf.edu/Offices/Research\\_Planning/pdf/SustainabilityPlanPart1Dec09.pdf](http://www.ccsf.edu/Offices/Research_Planning/pdf/SustainabilityPlanPart1Dec09.pdf).

Part 2, published separately, addresses in a sustainability context the following areas: education (curriculum, green careers and partnerships, workforce development); commitment to sustainability (environmental awareness of students and employees, staff development, communicating to the community the CCSF commitment), student services, and social and economic sustainability.

The CCSF Sustainability Plan will include the normal cyclical elements of planning, budgeting, implementation, and evaluation. Several sustainability efforts planned in this document have already begun and that some are on-going as of the time of its publication. Parts 1 and 2 of the Sustainability Plan will be followed by specific implementation planning, which will include timelines, the prioritization of the most critical tasks in each time period, and assignment of responsibility to given individuals and units. Links with the budgeting system will be established through the College's annual planning and budgeting process, which will include the vigorous exploration of various funding sources. The College will of course base its facilities development, as well as all of its efforts on educational, environmental, social and economic fronts, on a rational exploitation of its resource base in keeping with the goals of this Sustainability Plan.

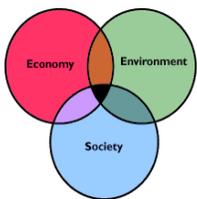
Various means of evaluation for implementation of the Plan will also be developed in further detail as part of specific action plans. Based on results of those assessments, the cycle of planning and implementation will continue so that the necessary adjustments and improvements can take place.

# CHAPTER 1 OVERVIEW

## Background

City College of San Francisco (CCSF) has 3,500 faculty and staff and serves a diverse community of over 100,000 students. With its focus on retraining and workforce development, on immigrant education lifelong learning, on second chance opportunities and preparation for transfer, CCSF is uniquely situated to promote education for sustainability to a broad audience.

For over 70 years, the College has served the educational needs of the City and its environs in the truest populist tradition. The College, one of the largest community colleges in the country, has 10 campuses located throughout the City of San Francisco. The main campus, Ocean Campus, is located in the southwestern part of the City. On all of its campuses and at all sites, the College takes seriously the responsibility of exemplifying environmental awareness and responsibility in its operations and educational services.



The Chancellor and CCSF Board of Trustees have encouraged everyone at the College to share in the responsibilities of citizenship and service in the global community. In December 1996, the Board of Trustees adopted a policy (PM 7.22, Facilities) relating to sustainability (including solid waste management; hazardous materials; conservation and air quality; transportation; purchasing; grounds-keeping; facilities; and curriculum, education and staff development). In 2003, the College adopted a Master Plan (MP) which serves as a guide for development of all new facilities and renovation of existing facilities. An Environmental Impact Report (MPEIR) was prepared per the requirements of California Environmental Quality Agency (CEQA) in 2004, which identified the potential environmental impact of all the projects and provided recommendations for mitigating these impacts. In 2005, the College joined the Association for the Advancement of Sustainability in Higher Education (AASHE).

In May 2006, the Board of Trustees passed Resolution 060525-S3 mandated, among other things, the creation of this Plan. In Spring 2007, a Shared Governance Sustainability Committee was created, with students, faculty, staff and administrators appointed by their constituencies. In February 2007, a Sustainability Prospectus was circulated by college-wide email to all employees. The purpose of the prospectus was to propose a CCSF sustainability initiative that would address not only environmental sustainability but also social and economic sustainability.

This first part of the College Sustainability Plan focuses on such endeavors as the following, as they relate to sustainability:

- Green principles in the planning, design, and construction of new buildings and facilities;
- Environmentally appropriate renovation projects and retrofits;
- Sustainable college operations, maintenance and custodial operations;
- Sustainable purchasing practices and procurement of local materials;
- Waste diversion, management and recycling activities;
- Water conservation measures;
- Restoration of natural elements such as vegetation;
- Environmentally friendly transportation policies;
- Energy conservation and onsite and offsite renewable energy opportunities.

## **Commitment to Sustainability**

Higher education is increasingly incorporating sustainability as a societal value and ideal, regarding it as a natural and essential element within the educational mission. A sustainable society meets the needs of the present without sacrificing the ability of future generations to meet their own needs. Put simply, sustainability requires that we limit our negative impact on the natural, social, and economic environments, while at the same time positively impacting these environments.

Environmental sustainability is a cornerstone of Part I of this Plan, which contains many strategies that will greatly enhance our environment, including some exciting programs which have already been initiated. It also strongly underpins the educational programs, staff development and other content in Part 2.

Social and economic sustainability are addressed in Part 2, which also continues to plan for further environmental sustainability. As a whole (Parts 1 and 2), this Plan will become a roadmap for the College to take responsible and farsighted measures that will have positive local, regional, and global impact for many years to come., e.g., in the following areas:

- (i) Maintaining a college environment that is sustainable in social, environmental and economic terms, expanding the incorporation of sustainable practices into day-to-day operations and environmentally friendly transportation practices;
- (ii) Continuing to expand the use of sustainable practices in the planning, design and construction of all new facilities and retrofitting of existing facilities to provide superior quality campus environment for all faculty, staff, students and the community;
- (iii) Educating faculty, staff and administrators about their roles in maintaining a safe and healthy environment for the present and future generations;
- (iv) Communicating our commitment to sustainability to students and the community;
- (v) Incorporating the value of sustainability into student services;
- (vi) Infusing sustainability throughout curricula; and
- (vii) Preparing students for new careers and providing work experience related to sustainability.

The CCSF Sustainability Plan Part 1 for Operations, Construction, and Retrofitting will primarily address (i) and (ii) in the above list. The remaining objectives will be addressed in the CCSF Sustainability Plan Part 2 for Education.

## **Purpose of the Sustainability Plan**

Part 1 of the Plan presents the guidelines for the long-term development and operation of sustainable campuses. It is intended to be used as an educational resource for all offices, departments, and Shared Governance bodies. It will serve as a guide for all employees involved in planning, design, construction, operations, maintenance and deconstruction activities, and procurement of all materials, supplies and equipment. Like all CCSF plans, Parts 1 and 2 of the Sustainability Plan rest on the Mission Statement of the College. They will make explicit the intention of the Strategic Plan to meet the needs of the community in a socially, environmentally and economically responsible way.

## **Disclaimer/Limitations**

The Sustainability Plan does not contain comprehensive listings of federal, state and local regulations pertaining to specific programs and projects. Every effort has been made to identify corresponding local, state and federal requirements, codes, laws and regulations. This document cannot be used as a substitute for all applicable codes, laws and regulations.

## **Funding**

The cost of sustainable construction practices (described in Chapter 2) for new and renovated buildings will be included in the construction budgets, and will come from voter-approved bonds, including the 2001 and 2005 bonds, as well as state construction funds.

Funding for sustainable operations (described in Chapter 3) will occur in a combination of ways. Some sustainability measures involve no additional cost to the College and may even result in additional cost savings. Some efforts can be funded through reallocation of resources; a good approach when an initial investment can yield a net savings. The following additional revenue strategies can be pursued:

- ◆ Aggressively research and pursue all possible sources of funding, such as donations and grants, to develop, establish and promote these sustainability initiatives.
- ◆ Redeem the recovery value for all recyclable and compostable materials collected on college campuses and sites.
- ◆ Designate any additional monies or savings gained from implementation of that or other sustainability strategies to fund future sustainability projects instead of returning that revenue or savings to the District's general fund.
- ◆ Assess students an optional Green Fee, payable at registration, to help fund sustainability work.

## **Implementation**

All of the objectives of the Sustainability Plan will be met by the year 2018. Some of the objectives of the Sustainability Plan are already being implemented or in the planning stages. Others will be implemented through resolutions at the Board of Trustees and action by the administration.

Refer to the Implementation Table (Appendix 1, Page 29) for all objectives and timelines.

## **Evaluation of Implementation Activities**

Whenever possible, evaluation of implementation activities will determine the environmental, social and economic impacts of the measures implemented. The College will develop baseline data and adopt metrics by which to monitor progress. In some instances, a metric may be specified by law or regulation. The Office of Facilities Planning and Construction, along with the Office of Buildings and Grounds, will present to the Board of Trustees or its committees annual reports of new sustainability initiatives as well as progress towards sustainability targets. All such reports will also be made available to the community.

# CHAPTER 2: SUSTAINABILITY REQUIREMENTS FOR CONSTRUCTION PROJECTS

## **Selection of Project Team**

The Requests for Qualifications/Proposals (RFQ/RFP) for design and construction teams on each project will mention sustainable building design and construction. The criteria by which the design and construction firms will be measured will include experience/qualifications relating to sustainability. The CCSF Sustainability Plan Part 1 will be included in all RFPs/RFQs sent out to prospective design and construction teams.

## **Selection of Green Building Standards**

Four environmental rating systems were reviewed in the development of this Plan:

- ◆ The United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Rating System for New Construction, Major Renovation Projects and the Existing Buildings,
- ◆ Collaborative for High Performance Schools (CHPS) Best Practices Criteria,
- ◆ United Kingdom Building Research Establishment Environmental Assessment Method (BREEAM) for schools,
- ◆ Green Globes Design Environmental Assessment for New Buildings and Green Building Challenge.

The USGBC LEED Rating system was selected for all College projects because most design and construction professionals are more familiar with the LEED rating system than all the other models. The LEED model was also developed from the BREEAM model, the first and oldest green model. The Sustainability Plan also incorporates some standards and practices from the other specifications that are not contained in LEED.

Since drafting this document, the City of San Francisco and the California legislature have put in place new local and state requirements for all new construction and major renovation projects which the College must follow.

## **Conceptual Design to Post Construction**

The CCSF goal for all new and future construction projects, major renovation projects, existing building operations and upgrades will be to attain at a minimum a LEED silver rating or higher according to the latest LEED standard.

- The CCSF goal will be to comply with Chapter 7, Section 705 and 706 of the City of San Francisco's Environment Code Resource Efficiency Requirements, whether such projects are registered for certification or not;
- All capital project teams will review the College Sustainability Plan and information in the College Sustainability Tracking Database. The teams will use the College's Sustainability Scorecard provided in the Plan as a guide to research and incorporate creative measures to establish goals and achieve a project sustainability standard equal to LEED Silver Rating or higher;
- Where applicable, each project team should include a commissioning agent licensed through the California Commissioning Collaborative to help coordinate the sustainability concepts in the conceptual and construction phases of the project;
- Project teams will quantify and track the progress of sustainability goals set for the project from the design through the construction phase;
- During construction, the project teams will develop and implement a systematic commissioning plan to ensure that the energy and atmosphere goals and operational requirements of the project are attained; and will verify installation and performance of systems, provide training, operation and maintenance documentation, and may be required to train the College's maintenance staff;

- Construction teams will complete a commissioning report along with a 'project mission accomplished' report which will include a summary of sustainability goals accomplished, design and construction challenges encountered, strategies to tackle these challenges, critical success factors, failures, lessons learned and successes. This information will be used to update the College's Sustainability Tracking Database;
- Project teams will finalize all as-built project information and the College may develop and implement additional commissioning requirements to ensure that all commissioning related matters are resolved within one year after construction completion;
- During project handing over, construction teams may be required to provide building occupants with facility tour and informational sessions on building systems and recycling and other matters.

## **Mitigation Monitoring and Auditing Program for Master Plan Projects**

Objective To reduce the environmental impact resulting from the construction of the Master Plan projects

Activities Institute the appropriate monitoring and reporting program for mitigation measures identified in the Master Plan Environmental Impact Review Report (MPEIR). The components of the program will include the following:

- Summary of significant impacts identified in the MPEIR
- Mitigation measures recommended for each impact
- Monitoring requirements for each mitigation measure
- Timelines and monitoring frequency
- College Department responsible for monitoring and reporting

Perform periodic environmental audits to resolve actual or potential compliance problems.

## **Sustainability Tracking Mechanism**

CCSF will develop a project reporting system to track the planning, design, construction and post construction, and occupancy phases of all projects. The system will be used to track design and construction challenges encountered, strategies used to tackle such challenges, critical success factors, lessons learned and successes. This application will be designed to be interactive and will be a knowledge-base for all staff involved in any aspects of planning, design, construction, post construction and/or maintenance of projects. The system will provide the framework for continuous learning and improvements and will serve as the performance evaluation tool for sustainability initiatives and building systems. The College will require all prospective construction professionals associated with any phase of the project to review this information. Parties awarded any phase of the project will be asked to abide by these conditions.

## **College Facilities Standards**

CCSF will review and improve its current campus standards to outline required products and mandatory design constraints for all construction on College campuses. The standards will be complimentary to specific project requirements and may be modified at the discretion of the College's Representative. The standards are not meant to dictate design solutions, as this is the function of each project's design professional. The standards will provide the College with functional and durable buildings based on experience with existing campus buildings, systems, products and materials used.

## **Sustainable Sites**

The College is cognizant of local and federal laws and will comply with specified regulations related to Sedimentation and Erosion Control, Selection of Sites, and other relevant laws pertaining to Sustainable Sites.

### ***Reduced Site Disturbance***

**Objective** To conserve existing natural areas, restore damaged areas, provide habitat and promote biodiversity

**Activities** The College's Master Plan presents plans and recommendations for the long-term development of all campuses. Selected project locations and designs will have minimal footprint to reduce site disruption. Established construction boundaries will be clearly marked to minimize existing site disturbance and restore previously degraded areas to their natural state. Site disturbance including earthwork and clearing of vegetation will be limited to 40 feet beyond building perimeter, 5 feet beyond primary roadway curbs, walkways, and main utility branch trenches, and 25 feet beyond pervious paving areas that require additional staging areas and a minimum of 50% of remaining open area will be restored with native or adapted vegetation.

### ***Development footprint***

Development footprint (including building, access roads and parking) will be reduced to exceed local zoning's open space requirement for project site by 25% where possible. CCSF will consider multi-story buildings within the limits of San Francisco zoning restrictions to reduce the size of land required for construction, where this is cost effective and feasible.

### ***Landscape and Exterior Design to Reduce Heat Islands***

**Objective** To reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat

**Activities** Thirty percent or more of non-roof impervious surfaces including parking lots, walkways, and plazas will be shaded with landscape features to minimize the overall building footprint. The College may specify and use ENERGY STAR roof-compliant, high-reflectance and high emissivity roofing to reduce heat absorption. "Green" (vegetated) roof may be installed for at least 50% of the roof area if considered feasible.

### ***Light Pollution Reduction***

**Objective** To eliminate light trespass from the building site, improve night sky access, and reduce development impact on nocturnal environments

**Activities** CCSF will adopt a site lighting criteria to maintain safe light levels and avoid off-site lighting and night sky pollution. The Illuminating Engineering Society of North America (IESNA) foot-candle level requirements stated in the Recommended Practice Manual: Lighting for Exterior Environments will not be exceeded. Site lighting may be modeled using a computer simulation to determine the minimum site lighting where possible. The College will consider other technologies used to reduce light pollution such as full cutoff luminaires, low-reflectance surfaces, and low-angle spotlights.

### ***Plan for Green Site and Building Exterior Management***

**Objective** To encourage grounds/site/building exterior management practices that have the lowest environmental impact possible, and to preserve ecological integrity, enhance diversity and to protect wildlife while supporting building performance and integration into surrounding landscapes

**Activities** The College will institute a low-impact site and green building exterior management plan to address overall site management, chemical/fertilizer/pest management and building exterior cleaning and maintenance practices. This plan will include the following:

- Green cleaning materials/chemicals (with list of certified vendors/manufacturers), and maintenance practices with minimal environmental impact.
- Green landscape practices which focus on using native plants, reducing size of lawns, changing maintenance practices, reducing the use of power equipment, storm-water control, minimal use of fertilizers, composting waste, applying integrated pest management, avoiding/removing invasive plants, protecting natural areas and using plants to reduce heating and cooling needs.
- Integrated Pest Management (IPM) for safe, effective and economical pest control management.

- Other Activities such as using mulching mowers to reduce yard waste generation, fertilizer needs and water consumption through retention of organic matter.

### ***High Development Density Buildings and Areas***

Objective Channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources

Activities CCSF will give preference to occupying high development density buildings in urban locations with high development density

### ***Existing Buildings Only***

In addition to the above strategies for all projects, the following will apply to the operating performance and upgrading of existing buildings:

### ***Age of Building***

Objective To provide a distinction between buildings considered for new construction certification and buildings that are eligible to apply existing building certification. The CCSF goal for the operating performance and upgrades of all buildings two years and older will be to seek to attain LEED-Existing Building Silver Rating or higher, 43+ points.

Activities Sustainable operations and maintenance strategies will be developed and implemented.

## **Water Conservation**

Governor Schwarzenegger has put forth a goal of 20 percent reduction in water use by 2020. City College will meet or exceed this 20 percent reduction goal through the use of the construction standards described in this section, and by implementing the practices described in Chapter 3.

### ***Water Appliance Standards in New and Remodeled Buildings***

All new and replacement plumbing fixtures shall meet or exceed federal water conservation standards. Plumbing fixtures shall be upgraded to these standards when any part of a building is remodeled or renovated, as follows:

1. New toilets: All toilets installed in new facilities or new restrooms shall be high efficiency models that are rated at 1.28 gallons per flush or lower.
2. Replacement toilets: When a building is being remodeled, all toilets in the building that have a flush volume of 3.5 gallons per flush or greater will be replaced by high efficiency models that are rated at 1.28 gallons per flush or lower. However, in the case of older buildings with sewage slope lines that are below modern standards in terms of pitch, toilets of 1.6 gallons per flush may be used.
3. Urinals: All urinals installed in new or remodeled facilities or restrooms shall be high efficiency models that are rated at 0.5 gallons per flush or less. Waterless urinals may also be used.
4. Sinks: New and replacement faucets and faucet aerators shall have a maximum flow rate of 1.5 gallons per minute at a flowing water pressure of 60 pounds per square inch. Gooseneck faucets will be installed.
5. Autoflush appliances: The College will not install automatic flush toilets and urinals or motion-activated sinks. Any existing automatic water appliances will be replaced when the building is remodeled
6. Showerheads: All showerheads shall be low-flow devices having a maximum rated flow of not more than 2 gallons per minute at a flowing water pressure of 80 pounds per square inch. Showers shall not have more than one showerhead per stall.

### ***Leak Testing and Repair***

The College will initiate a program to test all buildings district-wide for leaks. Any building undergoing any amount of renovation or modification will be tested for leaks. All buildings will be tested for leaks by the year 2013. Leaks will be repaired within 90 days of detection.

### ***Water Efficient Landscaping***

Objective To minimize or eliminate the use of potable water for landscape irrigation

Activities Landscape design and water use will conform to the water efficient landscape ordinance outlined by the California Department of Water Resources Model Ordinance. To reduce or eliminate the need for irrigation, soil/climate analysis will be performed to determine appropriate landscape types and design for each landscaping project and drought-tolerant plants and shrubs will be specified. Other measures will include installation of high efficiency and/or temporary irrigation systems in areas that may require irrigation and artificial turf for active play areas and fields. Permanent irrigation systems that are not high efficiency will be avoided, and CCSF will continue to research the possibility of using municipally supplied reclaimed water for irrigation.

### ***Stormwater Management Infrastructure***

Objective To reduce negative impact on water and air quality by increasing on-site infiltration, minimizing storm-water runoff, and reducing contaminants during and after construction

Activities To meet stormwater compliance requirements and to minimize and/or prevent sediments from entering the combined sewer system, CCSF will follow the best management practices outlined by the State Water Resources Control Board and will comply with the 2003 EPA Construction General Permit (CGP). The project site will be designed to maintain natural storm-water flows and to improve infiltration. Pervious paving will be specified and used to minimize impervious surfaces. Where possible, stormwater may be collected and used for non-potable uses such as landscape irrigation.

For construction area of 1 acre or greater, CCSF will apply for the Construction General Permit. Techniques such as the installation of a sedimentation tank will be used to collect and pre-treat storm-water before discharging into the City's combined sewer system for further treatment. The College will follow the requirements of the San Francisco Bay Regional Water Quality Control Board for post construction stormwater management practices. Techniques to be employed will include but not be limited to reduced use of impervious surfaces, installation of porous pavements, filtration basins and trenches, and grassy swales.

## **Energy**

### ***Minimum Energy Performance***

Objective To establish the minimum level of energy efficiency for proposed building and related systems

Activities The building envelope and systems for new construction and major renovation projects will be designed to maximize energy performance and to exceed the Title 24 - 2007 California energy efficiency standards by 10%. Computer simulation model will be used to assess energy performance and to identify the most cost effective energy efficiency measures. This will be compared to the Title 24 - 2007 baseline building. For existing buildings, annual electricity bill, including cost and usage amounts will be analyzed to identify energy savings opportunities. Energy-efficiency retrofits and energy-saving techniques will be implemented to reduce energy use to meet this goal.

### ***CFC Reduction in HVAC&R Equipment***

Objective To reduce ozone depletion

Activities For existing HVAC systems, inventories will be conducted to identify equipment that uses chlorofluorocarbons (CFC) refrigerants and CCSF will adopt a schedule to replace these refrigerants. For new buildings, new HVAC equipment with zero use of CFC-based refrigerants will be specified.

### ***Optimize Energy Performance***

Objective To achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use

Activities Building envelope and systems will be designed to maximize energy performance. Computer simulation models will be leveraged to assess the energy performance and to identify the most cost effective energy efficiency measures. Regulated energy components will include HVAC systems, building envelope, service hot water systems, lighting and other regulated systems as defined by the American Association of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) (see details at [www.energycodes.gov/implement/determinations.com.stm](http://www.energycodes.gov/implement/determinations.com.stm)). Energy performance will be quantified and compared to a baseline building. Sensors for lighting will be repaired and/or replaced throughout the College. For existing buildings, energy-efficiency retrofits and energy-saving techniques will be implemented to reduce energy use to the level required to meet this credit.

### ***Renewable Energy***

Objective To encourage and recognize increasing levels of self-supply through renewable technologies to reduce environmental impacts associated with fossil fuel energy use

Activities All new and future projects will be assessed for renewable energy potential including on site solar and wind strategies along with other savings by design programs being offered by local utilities agencies and third party financing options.

The performance of the system will be evaluated from the annual energy output using the Department of Energy (DOE) Commercial Buildings Energy Consumption Survey (CBECS) database as a guide to determine the baseline electricity use. If any of these above stated strategies are employed, CCSF will take advantage of the net metering with the respective local utility agency.

The College will evaluate the electrical consumption trends on all existing buildings and will identify opportunities for using renewable energy sources. Where such opportunities can be exploited, CCSF will work with the local utility company and/or other renewable power companies to guarantee credit from fraction of electric power derived from net non-polluting renewable technologies.

The College will engage in a green power contract with local utility agencies where such opportunities exist and when considered viable.

### ***Additional Commissioning***

Objective To verify and ensure that the entire building is designed, constructed, and calibrated to operate as intended

Activities The College will contract with a Commissioning Authority (CA) during the design phase of a project to conduct project reviews before, during, and after construction documents are complete; develop a commissioning manual for the building and review project at near-warranty end. For projects considered for certification, CA will be involved in the early planning and design phase of the project.

### ***Ozone Depletion and Additional Ozone Protection***

Objective To reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to global warming

Activities For all new construction and renovation projects, refrigeration and fire suppression systems that use no HCFCs or halons will be specified and installed. For existing buildings, inventory of existing systems using refrigerants and fire suppression chemicals will be taken and systems containing CFCs, HCFCs or halons will be replaced accordingly.

### ***Performance Measurement, Verification and Enhanced Metering***

Objective To provide for the ongoing accountability and optimization of building energy and water consumption performance over time, and add incentives for additional energy reduction

Activities For all new construction and renovation projects, energy and water systems will be modeled to determine potential savings. Buildings will be designed and equipped with the appropriate systems to measure energy and water performance. Building performance plans will be developed and implemented during building operations to monitor predicted savings.

For existing buildings, items listed above will be metered where possible and CCSF will develop and implement a program to evaluate and improve their performance over time. International Performance Measurement and Verification Protocol (IPMVP) Volume I: Concepts and Options for Determining Energy Savings may be used to track energy savings of specific energy-efficiency measures implemented in buildings.

### ***Sustainable Building Cost Impacts Documentation***

Objective To document sustainable building cost impacts and select a lifecycle cost model for determining the lifecycle cost of any new facilities.

Activities Sustainability Tracking Mechanism

CCSF will design a project reporting system that can be used to track the planning, design, construction and post construction, and occupancy phases of all projects, along with challenges and successes experienced on each project. This application will be designed to be interactive and will become a knowledge-base for all staff involved in all aspects of planning, design, construction, post construction and/or maintenance of projects. The system will provide the framework for continuous learning and improvements and will serve as a performance evaluation tool for sustainability initiatives and building systems. Building operating costs will be reviewed periodically to identify any positive impacts relative to sustainable performance improvements to building systems and operations.

### ***Existing Building Commissioning***

Objective To verify that fundamental building systems and assemblies are performing as intended to meet current needs and sustainability requirements

Activities CCSF will evaluate existing building systems to ensure that the fundamental building elements and systems have specified functional and efficient performance. A 5-year improvement plan will be developed to repair/upgrade and/or repair components that do not meet specifications. Intended improvements will meet the requirements of current building usage, and address heating, cooling, humidity control lighting and safety systems, along with building automation control systems.

## **Materials & Resources**

The requirements listed in this section of the Sustainability Plan were initially based upon the USGB LEED book of October 2005, and later reviewed with the November 2008 USGB LEED book. The CCSF stated requirements meet the minimum standards of the LEED book and in some cases, CCSF sets higher goals than outlined in the LEED book.

### ***Building Reuse: Maintain 75% Existing Shell, OR Maintain 100% Shell Walls OR Maintain 100% of Interior & Non-Shell***

Objective To extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport

Activities Existing and previously occupied buildings, including structure, envelope, and elements will be reused where possible on site as a first priority. Elements that pose contamination risk to building occupants will be removed and components that may improve energy and water efficiency such as windows, mechanical systems and plumbing fixtures will be upgraded.

***Construction, Demolition and Renovation Waste Management: Divert/Recycle 50%-75% of Construction Waste***

Objective To divert construction, demolition and land-clearing debris from disposal in landfills and incinerators, redirect recyclable recovered resources back to the manufacturing process and redirect reusable materials to appropriate sites at City College.

Activities CCSF will develop and implement a Waste Management Policy aimed at reducing overall waste generation and will employ deconstruction, salvaging and recycling techniques to reduce the quantity of debris generated. At a minimum, a goal of 50% or better will be established for diverting waste from landfills and incinerators and this will be part of the general requirements for any construction project. Each project team will develop and implement a construction waste management plan which will include the following: application of deconstruction techniques to reduce the quantity of waste generated on the site; recycling cardboard, metal, brick, acoustical tile, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation; designation of an area on the construction site for collection of recyclable materials; collection of data and calculation of the weight of recycled materials versus total weight of waste generated to track recycling efforts throughout the construction process; identification of construction haulers and recyclers to handle the designated materials; and reporting.

***35% Reuse of Materials/Resources***

Objective To reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources. Although LEED specifies a 5-10% reuse figure, CCSF will make every effort to reuse at least 35% of materials and products on every project.

Activities For major renovation projects, deconstruction techniques will be employed to salvage materials such as beams and posts, flooring, paneling, doors and frames, cabinetry and furniture, brick and decorative items. These salvaged materials may be reused in the project and/or other projects and/or sold to recycled material vendors.

***Recycled Content: 25%- 50% and to optimize the use of Alternative Materials: 10% - 50%***

Objective To increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials, and to reduce the environmental impacts of the materials acquired for use in the operations, maintenance, and upgrade of buildings.

Activities Construction Projects

A recycled content material goal for each construction project will be set at 25% or better. The City of San Francisco's Green Building Materials Resource Guide, along with other resources, will assist the College to identify products/materials and suppliers that will assist in achieving this goal. Products/materials will be evaluated based on their environmental, economic and performance benefits and products/materials that offer the most benefit will be selected.

Activities An alternative materials goal for each construction project will be set at a minimum of 10%, seeking to achieve a target of 50%.

***Regional Materials: 10-50% Manufactured, Extracted, Harvested, or Recovered Regionally***

Objective To increase demand for building materials and products that are extracted, harvested, or manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation

**Activities** A goal of 10-50% will be established for materials manufactured regionally. Although LEED specifies a 10-20% regional goal for materials that are extracted, harvested, or recovered regionally, CCSF will have a goal of 10-50%. Project teams will research products/materials and suppliers that may be used to achieve this goal. Materials will be selected based on their environmental, economic and performance benefits. The project team will quantify and track the percentage of regionally manufactured, extracted, harvested or recovered products/materials that are installed, relative to all materials installed.

### ***Rapidly Renewable Materials***

**Objective** To reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials

**Activities** Specify rapidly renewable materials for 5% or more of total building materials. The following materials will be considered where applicable: bamboo flooring, wool carpet, strawboard, cotton batting insulation, linoleum flooring, poplar oriented strandboard (OSB), sunflower seed board, and wheatgrass cabinetry. Rapidly renewable materials installed on the project during construction will be quantified and tracked by the project team.

### ***Certified Wood***

**Objective** To encourage environmentally responsible forest management

**Activities** All new construction projects and renovations will use 50% or better Forest Stewardship Council (FSC) certified wood products, including natural renewal wood substitutes such as bamboo.. Each project team will keep record of the total percentage of FSC-certified wood products installed on the project.

### ***Source Reductions and Waste Management: Policy and Waste Stream Audit***

**Objective** To establish minimum source reduction and recycling program elements and quantify current waste stream production volumes

**Activities** Waste Management Policy. The College has a policy aimed at reducing wastes generated on all campuses. Periodic waste stream audits will be conducted to establish the current building waste baseline. The identified waste types will be evaluated and techniques will be implemented to encourage source reduction, reuse and recycling. The waste management policy will include procurement/management procedures to reduce waste stream through source reduction purchasing strategies, reuse, recycling, composting, collection station equipment and agreements, and occupant education to ensure successful implementation.

### ***Optimize Use of Indoor Air Quality (IAQ) Compliant Products: 45-90% of Annual Purchases***

**Objective** To reduce the IAQ impacts of the materials acquired for use in the operation, maintenance and upgrades of buildings

**Activities** CCSF will specify the above listed sustainability criteria for all materials, supplies and/or equipment purchases.

### ***Storage and Collection of Recyclables***

**Objective** To facilitate the reduction of waste in new and existing buildings

**Activities** In new construction and existing buildings, CCSF will designate easily accessible and well-lighted areas for collection and storage of non-toxic recyclable materials (paper, cardboard, glass, plastics, metal, etc.) Designated areas at all buildings will be equipped with separate and appropriate collection bins for recyclable and non-recyclable wastes. Bins will be clearly labeled.

### ***Reduced Mercury in Light Bulbs***

**Objective** To establish and maintain a toxic material source reduction program to reduce the amount of mercury brought into existing buildings through light bulbs

Activities CCSF will initially institute and follow a light bulb purchasing program that keeps the weighted average mercury content below 100 picograms of mercury per lumen hour. Subsequently, the College will work with the SFPUC to establish and implement a light bulb purchasing program that keeps the weighted average mercury content of all mercury-containing light bulbs below 80 picograms per lumen hour of light output.

## **Indoor Environmental Quality**

### ***Indoor Air Quality (IAQ) Performance***

Objective To establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants

#### Activities

*Indoor Air Quality Management Program* The College will develop an indoor air quality management program to address related and potential problems. For construction/renovation related activities, CCSF will work with all contractors and subcontractors to implement a construction Indoor Air Quality (IAQ) management plan in accordance with the requirements of the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) IAQ Guidelines. The Indoor Air Quality (IAQ) Management Plan will be implemented during the construction and pre-occupancy phases of the building as follows: during construction, minimum requirements of the SMACNA IAQ Guideline for Occupied Buildings under Construction will be met or exceeded. On-site stored or installed absorptive materials will be protected from moisture damage, and all filtration media will be replaced immediately prior to occupancy. As part of the project general requirements, all contractors and sub contractors will be required (at minimum) to adhere to following procedures:

- a. All ducts, equipment and absorptive materials will be protected during the construction process to prevent contamination. Air handlers will not be operated during construction. The contractors and subcontractors will be required to install suitable filters in the air handlers prior to start-up for testing and balancing and following the completion of all interior construction.
- b. The College may contract with an independent commissioning agent to provide feedback on the IAQ management practices being employed on project sites and all contractors and/or subcontractors will be required to correct problems identified. All testing and balancing will be conducted following the completion of interior construction.
- c. Pollution source control measures will include but not limited to the following:
  - i. Protection of all building materials against moisture exposure
  - ii. Monitoring the use of porous materials. Any porous materials that have been exposed to moisture must be dried before installation. Any porous material that remains wet longer than 48 hours, or shows signs of visible mold will be discarded and replaced. Implementation of appropriate measures to ensure that the construction process does not result in moisture intrusion.
  - iii. Use low-emitting products that comply with Volatile Organic Compound (VOC) requirements of the South Coast Air Quality Management District. All Material Safety Data Sheets (MSDS) must be approved by a College representative and stamped before they are used in the project.
  - iv. Measures to prevent transport of pollutants into work areas by limiting access to the interior of building during stud framing, drywall and installation of the mechanical equipment.
  - v. High-VOC materials must be allowed to off-gas prior to installation. New plastic, fabric, laminates, or assembled materials that are packaged or rolled-up will be opened up and ventilated for a minimum of four days outside of buildings. Subcontractors will be encouraged to off-gas materials in their shop and supply a Letter of Certification to a College representative prior to its arrival on site.
  - vi. HVAC equipment will be stored in a clean, dry location until they are fully installed.
  - vii. All applicable means and methods will be employed to minimize dust.
  - viii. The work will be sequenced to ensure that porous materials are installed after a new building is closed in and dried in, and carpeting will be furnished after the interior finishes have fully cured.

Ventilation systems will be designed to meet or exceed the minimum outdoor air ventilation rates as described in the ASHRAE standard. The impacts of ventilation rates on energy use and indoor air

quality will be balanced to optimize for energy efficiency and occupant health. The ASHRAE 62 Users Manual will be used for detailed guidance to meeting this requirement.

### ***Carbon Dioxide (CO<sub>2</sub>) Monitoring***

**Objective** To provide capacity for indoor air quality (IAQ) monitoring to sustain long-term occupant health and comfort

**Activities** HVAC systems will be designed with carbon dioxide monitoring sensors where possible and sensors will be integrated with the building automation system (BAS).

### ***Increase Ventilation Effectiveness***

**Objective** To provide for the effective delivery and mixing of fresh air to support the health, safety, and comfort of building occupants

**Activities** HVAC systems and building envelopes will be designed to optimize air change effectiveness. Air change effectiveness will be optimized using a variety of ventilation strategies including displacement ventilation, low-velocity ventilation, plug flow ventilation such as underfloor or near-floor delivery, and operable windows. The air change effectiveness of all buildings will be tested after construction.

For Mechanically Ventilated Spaces, heat recovery will be used where possible to minimize the additional energy consumption associated with higher ventilation rates.

For Naturally Ventilated Spaces, the following eight design steps described in the Carbon Trust Good Practice Guide 237 – 1) will be adopted:

1. Develop design requirements;
2. Plan airflow paths;
3. Identify building uses and features that might require special attention;
4. Determine ventilation requirements;
5. Estimate external driving pressures;
6. Select types of ventilation devices;
7. Size ventilation devices;
8. Analyze the design.

Public domain software may be used to analyze room-by-room airflows includes NIST's CONTAM, Multizone Modeling Software, LoopDA, and Natural Ventilation Sizing Tool.

### ***No- or Low- Emitting Materials***

**Objective** To reduce the quantity of indoor air contaminants which are odorous or potentially harmful to the health and comfort of installers and occupants

**Activities** No- or Low-Volatile Organic Compound (VOC) materials will be required in the construction documents for all projects. VOC limits relating to adhesives, sealants, paints, coatings, carpet systems, and composite woods will be clearly stated in each corresponding section of the Technical Specification.

### ***Indoor Chemical & Pollutant Source Control***

**Objective** To avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality and/or reduce exposure of building occupants and maintenance personnel to potentially hazardous particle contaminants which adversely impact air quality, health, building finishes, building systems and the environment

**Activities** Separate exhaust and plumbing systems will be designed for rooms with contaminants to physically isolate them from the rest of the building. Permanent architectural entryway systems such as grills or grates will be installed to prevent occupant-borne contaminants from entering buildings.

***Non-Cleaning System – Reduce Particulates in Air Distribution:*** In-place filters with particle removal effectiveness MERV 13 or greater will be installed and maintained for all outside air intakes and returns for the re-circulation of inside air. Maintenance and replacement schedules will be established for these filters.

*Non-Cleaning – Isolation of High-Volume Copying/Print Rooms/Fax Stations:* CCSF will install structural deck-to-deck partitions with separate outside exhausting, no air re-circulation and negative pressure to contain and isolate high-volume copying/print rooms/fax stations. A plan will be developed to minimize unnecessary use of convenience printers and copiers by moving larger copying and printing jobs currently being done on convenience copiers and printers to high- volume printers and copiers in isolated spaces.

### **Controllability of Systems**

Objective To provide a high level of temperature, ventilation and lighting control by individual occupants or specific groups in multi-occupant spaces (e.g., classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants

Activities Buildings will be designed with occupant controls for airflow, temperature, and lighting. Additional strategies to be considered will include but are not limited to task lighting, operable windows and underfloor HVAC systems with individual diffusers.

### **Thermal Comfort**

Objective To provide for a thermally comfortable environment that supports the productive and healthy performance of the building occupants

Activities CCSF will comply with the ASHRAE Standard 55-2004 for thermal comfort standards including humidity control within established ranges per climate zone as funding may allow. Building envelopes and HVAC systems will be designed to maintain comfort ranges based on established temperature and humidity comfort ranges. Humidity monitoring systems will be installed and maintained in buildings to automatically adjust building conditions as appropriate.

### **Daylight & Views**

Objective To provide a connection between indoor spaces and outdoor environments through the introduction of sunlight and views into the occupied areas of the building

Activities Buildings and/or facilities will be designed to maximize daylight and viewing opportunities. Techniques will include but are not limited to building orientation, shallow floor plates, increased building perimeter, exterior and interior shading devices, high performance glazing, and photo-integrated light sensors. Model daylighting strategies with a physical or computer model may be used to assess footcandle levels and daylight factors achieved.

### **Contemporary IAQ Practice**

Objective To enhance IAQ performance by optimizing practices to prevent the development of indoor air quality problems in buildings, correcting indoor air quality problems when they occur and, maintaining the well-being of the occupants

Activities CCSF will institute a program to enhance IAQ performance by optimizing practices to prevent the development of indoor air quality problems in all buildings in order to maintain and/or improve the well-being of all occupants. Building systems will be periodically evaluated in order to identify and repair IEQ problems. The program will include ongoing problem prevention measures which will include prevention of moisture accumulation and mold in buildings and procedures to maintain a high level of IAQ on an ongoing basis. For additional information, the EPA Web site, [www.epa.gov/iaq/largebldgs/baqtoc.html](http://www.epa.gov/iaq/largebldgs/baqtoc.html) , will be consulted.

### **Green Cleaning**

Objective To reduce exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particle contaminants which adversely impact air quality, building finishes, building systems and the environment.

### Activities

*Entryway Systems:* All exterior entrances with entryway systems (grills, grates, mats etc.) will be designed to catch and hold dirt particles and to prevent contamination of the building interior. Exterior stone, brick or concrete surfaces will drain away water from building entrances, as will low-maintenance vegetation

incorporated in the landscape design for building entrances. Plants, trees and bushes that yield berries, flowers and leaves that are likely to be tracked into the building should be avoided at building entrances. The plant selection will be based on the appropriate Integrated Pest Management approach to eliminate pesticide applications with diffusion into buildings. Where possible, water spigots and electrical outlets will be provided at entryways for maintenance and cleaning activities.

*Isolation of Janitorial Closets:* Structural deck-to-deck partitions or related material will be used to separate outside exhausting, no air re-circulation and negative pressure in all janitorial closets. Hot and cold water and drains plumbed for appropriate disposal of liquid waste will be provided in janitorial equipment storage areas and locations for mixing water and cleaning chemical concentrate. CCSF will implement policies, procedures and mixing systems that minimize exposure of cleaning staff to concentrated cleaning chemicals.

### ***Existing Buildings Only: Outside Air Introduction and Exhaust Systems***

Objective To establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the health and well-being of the occupants

Activities Visual inspection of Outside Air (OA) vent/dampers will be conducted and any OA air vent/louver obstructions that restrict full OA capacity from entering the distribution system will be removed. The airflow will be monitored, recorded in CFM and compared to design flow for each unit. Operation of each exhaust fan will be tested to ensure that the exhaust airflow meets design requirements/intentions. CCSF will adopt the U.S. EPA Guidelines for HVAC System Maintenance which provides guidance on developing, implementing and maintaining an HVAC System Maintenance Program to ensure the proper operations and maintenance of HVAC components.

### ***Asbestos, Lead and other Hazardous Material Removal or Encapsulation***

Objective To reduce the potential exposure of building occupants to asbestos, lead and other hazardous materials and prevent associated harmful effects in existing buildings

Activities CCSF will solicit the services of a hazardous material consultant to develop and implement a hazardous material management program. The program will identify the applicable regulatory requirements and procedures for the removal, handling and disposal of hazardous materials in buildings. Hazardous material related work done on prior projects will be reviewed and the data will be used to prepare a history-based component of the hazardous material survey and will include but are not limited to: (1) location of removed materials, (2) locations expected to have hazardous materials, and (3) removal procedures. This survey will be updated periodically with other information such as: (1) sampling of expected locations, (2) results from test samples, and (3) new locations.

### ***Polychlorinated Biphenyl (PCB) Removal***

Objective To reduce the potential exposure of building occupants to PCBs and PCB combustion by-products in case of fire in the building

Activities CCSF will develop and implement a PCB management program which will identify the applicable regulatory requirements and procedures for addressing PCBs on an ongoing basis.

### ***Outdoor Air Delivery Monitoring***

Objective To provide capacity for a ventilation system monitoring program to help sustain long-term occupant comfort and well-being

Activities CCSF will install and/or maintain permanent monitoring systems that provide feedback on ventilation system performance to ensure that the systems maintain minimum ventilation rates

# Chapter 3 Sustainable Operations

## Overview

CCSF will avoid depletion of natural resources and environmental degradation in its operations. It will maintain environments that are healthful and conducive of learning and working. Included in this effort will be a continual updating of science knowledge to best balance the habitability concerns of our college community with our desire to reduce our negative environmental impact on our surroundings. The College has put a number of policies in effect to promote sustainability in operations. Some of the plans that follow predate the creation of this document and are well underway; in other cases implementation has only begun or will be effectuated in accordance with implementation timelines to be developed in 2008-2009. **Note that many effective sustainable operations strategies will depend on staff development. In-service training and all professional development and awareness efforts will be covered in the CCSF Sustainability Plan Part 2.**

## Policies

The College will continue to develop and to implement policies, programs and practices to enhance its commitment to environmental sustainability. The following policies have been adopted to govern the planning, design and construction of physical facilities, to ensure efficient use of resources, and to minimize waste generation:

- Provision and operations of physical facilities
- Development and implementation of the Master Plan
- Ban on sales of tobacco products on all College campuses
- CCSF Injury and Illness Prevention Program for Workplace Security (IIP) Plan
- CCSF Emergency Plan
- Environmental Quality procedures for administering the College's responsibilities under California Environmental Quality Act (CEQA)
- Conservation of Energy Resources Policy

Environmental policies and activities to govern areas of Solid Waste Management, Hazardous Materials, Conservation and Air Quality, Transportation, Purchasing, Grounds-keeping, Facilities, and Curriculum, Education and Staff Development (Policy Manual 7.22, Facilities)

## Transportation Demand Management (TDM)

Objective To reduce air pollution on all campuses and to decrease the percent of automobile trips, by promoting transit use, carpooling, bicycling and motorcycling, to all campuses; pursue a goal of 15-20% reduction over the next five to ten years.

### Activities

*Transit One Program for Faculty and Staff:* Continue to offer (through AFLAC) Transit One, a pre-tax transportation program allowing employees to put aside up to \$100 each month pre-tax from their paycheck for their public transit costs. Explore extension of this benefit to student workers. Investigate the feasibility of partial subsidization of the cost of Muni and BART passes for students and employees.

*Campus Police Escort Program:* Continue the Police Escort Program, whereby individual students, staff, and faculty are escorted by foot to bus stops and parking lots on campus or immediately adjacent (excluding BART). Provide escorts when available. Pursue the possibility of hiring a designated campus control officer to take primary responsibility for providing Police Escort Services.

*Ride Share Program:* Encourage ridesharing by posting <http://www.ridenow.org/carpool> and 511.org on CCSF main website. Explore the idea of an internal database to further promote ridesharing within our community.

*Parking Fees:* Study parking arrangements/fees as these relate to students and employees. Discuss with College community and students how parking fees directly promote the use of environmentally friendly alternative transportation. Raise the issue of employee parking fees in collective bargaining. Continue and increase financial incentives for staff and faculty who do not drive to work (such as free transit passes or discounts on dining).

*MUNI/BART Class Pass for Students:* Continue discussions with MTA to establish a class pass program for students. A Class Pass sticker attached to the students' ID card would allow them free MUNI access.

*Bicycle Accommodations:* Establish a streamlined and well publicized process to honor student/ staff requests for bicycle rack installations. Continue partnerships with the SF Bicycle Coalition to develop and update bike routes between key feeder neighborhoods and nearby campuses and between campuses.

- The CCSF goal will be for new construction projects and renovation projects to include transportation amenities such as bicycle racks and showering/changing facilities in or near all buildings.
- Create and identify bike routes with signage (such as the "sharrows" identifying city bike routes) on campuses. Include and prioritize bike and pedestrian routes in new construction.
- Include bicycle rack and bicycle service locations in all new maps for City College. Make these maps and public transit maps and information available at campus bookstores.
- Introduce and encourage innovative programs such as bicycle-sharing programs, indoor bike parking (e.g., the SFSU "Bike Barn") or expandable spaces for bicycle parking, bike kitchens (spare parts, bike repairs, etc.), bike swaps, and used bike sales. The student club, CCSF Green Corps, established a bike kitchen on the Phelan Campus in Fall 2008.

*Replacement of Existing Vehicle Fleet:* Study, develop and implement a 5-year plan to replace existing vehicle fleet with low or no emission high mileage vehicles with consideration for alternative fuels and electric vehicles.

*Site Improvements to Support Transit Access:* Collaborate with San Francisco Municipal Transportation Agency (MTA) to improve access to public transit system. Such improvements may include the construction of sidewalks, installation of pedestrian crosswalk signals, provision of sufficient spaces for required number of bus stops, pedestrian safety, ease of bicycle and pedestrian access to College facilities especially from mass transit stops. Install signage at strategic locations to promote the safety of drivers, bicyclists and pedestrians on bicycle routes.

*Pedestrian and Bicycle Safety Program:* The College's Police Department will continue to work to provide a safe environment for all faculty, staff and students. Continue the pedestrian safety program, aimed at reducing the number of pedestrian related accidents on all campuses, and expand the program to include bicycle safety. Through the CCSF Police Department, promote and provide resources on pedestrian and bicycle safety and security on all campuses, enforce traffic laws, provide safety tips for bicycle riders and other road users.

*Campus Locations:* Continue the strategy of locating campuses in the hearts of local communities, reducing automobile trips to these campuses.

*Car Share Program:* Use the City Care Share program to provide short-term and emergency vehicle access at key campus locations for faculty, staff and students including facilities' staff. Utilize only low-emitting and fuel-efficient vehicles.

*Surrounding Neighborhood:* Work with CCSF neighbors to identify and manage potential changes to residential parking and to effectively discourage students, faculty, and staff from parking in surrounding neighborhoods.

*Shuttle Services* Continue to research the use of shuttle services to support public transportation. The shuttle, if considered feasible, will service off-campus sites, including the Balboa Park BART Station and other College campuses. The College will also evaluate the possibility of joining other universities and colleges to establish a shuttle service which employs low emissions/alternative power vehicles and includes carseats and booster seats.

*Additional Services:* Continue to evaluate the feasibility of providing additional services such as restaurants, banking, etc., on all campuses, and a mid-week farmers' market at various campuses.

*Reduction or Elimination of the Sale of Bottled Water*

## **Air Quality**

*Indoor Air Quality (IAQ) [See Chap. 2]*

### **Green Cleaning and Indoor Pest Management**

#### Low Environmental Impact Cleaning Equipment Policy

The College will develop, implement, and maintain a policy for the use of janitorial equipment that maximizes effective reduction of building contaminants with minimum environmental impact. The College will work with the janitorial staff to evaluate current janitorial equipment and practices and a plan of action will be developed and implemented to upgrade and/or replace this equipment. [See also Purchasing section.]

#### Low Environmental Impact Pest Management Policy

The College will review current indoor pest management procedures and will develop a plan to upgrade these procedures. A College policy will be instituted and implemented to maintain a low environmental impact integrated indoor pest management program. Any cleaning products included in the integrated pest management program will meet the requirements described in Material and Resources Section.

## **Water Conservation Program**

Objective \_To reduce the overall water consumption and to ensure that water usage does not exceed 200,000 gallons per day

Activities Use the Energy Policy Act of 1992 fixture performance requirements to calculate the baseline water use. The baseline will take into consideration the expected increase in enrollment and facilities expansion over the next several years. Implement the following measures to achieve the water use goals:

All replacement water systems must be high efficiency and low-flow. High efficiency fixtures and dry fixtures such as waterless urinals, low flow shower heads, low-flow toilets, low flow sinks, water efficient dishwashers, cooling towers, and washing machines, water efficient faucets, etc. will be specified and installed in all new construction and renovation projects and retrofits.

High efficiency irrigation design and technology, drought tolerant plants and shrubs will be specified to limit the use of potable water for irrigation.

Separate meters will be installed at various locations on the campuses and/or buildings to monitor water consumption and the generation of waste water.

Annual audits of portable water use and wastewater volumes will be done at each campus.

Responses to leakages will be improved to reduce water loss and to prevent pollutants from entering the water supply system.

Water conservation measures will be incorporated in all new buildings and modernization projects, existing buildings and retrofits; this should include the phasing in of replacement drinking faucets that allow refilling of reusable water bottles.

A new maintenance program will address and improve leakage reporting and response.

The conservation program will be evaluated annually and improvements instituted.

The College will consider installing rainwater catchment systems and explore the feasibility of piloting (and later installing) greywater systems for existing buildings Districtwide.

The College will explore alternatives to the use of bottled water throughout the district, as well as directed by the Board of Trustees Resolution No: 090823-S3, such as improving the quality of the tap water on all campuses.

## **Landscaping**

Objective To implement landscape planning, design, construction and practices that conserve water, reduce waste generation, minimize air, water, and soil pollution, require minimal maintenance and provide pleasant visual effects on all campuses

### Activities

*Landscape Planning and Design Guidelines:* Develop a Landscape Master Plan and Design Guidelines as a framework for landscaping initiatives. These initiatives will be used to preserve, improve and reinforce the overall integrity of open spaces based on their historical significance, preservation of natural resources and usage intensity. Emphasis will be placed on the interaction among the campus community and physical barriers will be eliminated where possible. Pedestrian and wheelchair access to buildings and public spaces will be improved, and pedestrian, bicycle and vehicular circulation on campuses will be improved to reduce conflicts. Landscaping should be designed to encourage pollinators and attract birds and other species as well as to provide wildlife corridors.

The College and seek the help of habitat restoration experts (for example, faculty experts). Landscape design and plant selection will feature and prefer the use of native plants. Plants selected must contribute positively to habitat and wildlife corridors, and add to the attractiveness and enjoyment of the campus. Drought and wind tolerance, purchase cost, usefulness and safety, maintenance requirements, suitability for specific location, and compatibility with other plants will also be acknowledged as significant considerations in plant selection and landscape design. Lawns that are not regularly used by students to sit on are to be replaced with low-water-use native ground covers.

The College community will have advisory input into landscaping decisions on any campus. Departments which could be affected will be contacted before plants are removed or destroyed.

Landscape design and water use will conform to the water efficient landscape ordinance outlined by the California Department of Water Resources Model Ordinance. Perform soil/climate analysis to reduce or eliminate the need for irrigation by determining appropriate landscape types and design for each landscaping project.

*Efficient Irrigation System:* Specify high efficiency irrigation design and technology for all new construction and renovation projects. Institute a phased-in plan to replace inefficient irrigation systems with high efficiency systems. Install a greywater irrigation system to reduce potable water usage. Replace inefficient sprinklers with low-water-use drip irrigation systems in all areas except lawns. Cover exposed areas between plants in woodchips or landscape fabric to reduce water use and weeds. Assess the feasibility of using cisterns with collection of roof-top rain and dew.

*Minimum use of pesticides and fertilizers:* Utilize organic gardening practices including companion planting in lieu of pesticides and synthetic fertilizers.

*Tree Care:* Follow the same general guidelines for selection of trees as in selection of other plants (see Plant Selection). Solicit, as needed, the services of a State certified arborist to evaluate mature trees for any problems that may threaten the life of the tree. Design a care program to promote tree health and ensure their value will continue to grow. Where trees may be affected by a construction project, consult an arborist in the planning. The arborist may be required to work with the project teams throughout each construction project. Construction teams will adopt appropriate methods to reduce adverse impacts on mature trees. The College community will have advisory input into major decisions affecting trees on any campus.

**Fences, Walls and Gateways:** Use architectural tools such as gateways to provide identity, scale and create a sense of community for the campuses. Provide gateways with adequate lighting, circulation, planting and signage. The height of any fences should enhance the view.

**Paving:** For all applicable projects, specify light-colored porous paving material along the sidewalks, parking areas, plazas and other hard surfaces to reduce storm water runoff. Specify paving material with up to 100% recycled content. The selection of recycled materials should be done with attention to the existing soil and underlying rock structure at each site.

**Site Lighting:** Adhere to the vehicular/pedestrian lighting requirement of the City of San Francisco. Improve existing light quality without increasing offsite light impact to adjacent properties. Utilize pedestrian level bollards and/or pole lights; make lamping consistent with adjacent buildings and/or properties. For new construction, continue to phase in solar-powered, LED, and sensor-driven lighting fixtures. Pursue a long-term goal of replacing all fixtures in this way. Utilize fixtures that cast light downward, not upward.

**Site Furnishing:** Select Site furnishing (e.g., benches, tables, litter/ash receptacles, planters, bike racks, and bollards) for functional and aesthetic purposes. Seek first to reuse existing furnishings, purchasing new ones with 100% recycled content as a second option. For furnishings that must come from wood, the College should only purchase FSC-Certified (Forest Stewardship Council) wood. Develop a plan to replace and or repair old site furnishings.

**Landscape Maintenance:** Establish a maintenance program including regular inspections, mulching, fertilizing, pruning, and problem detection, to provide necessary landscape care.

### ***Innovative Wastewater Technologies***

**Objective** To reduce potable water demand and wastewater generation

**Activities** The College's water conservation program will target appropriate measures to reduce potable water use for building sewage conveyance by 50% through the use of technologies such as waterless urinals, and other water efficient fixtures.

### ***Discharge Water Compliance for Existing Buildings Only***

**Objective** To protect natural habitat, waterways and water supply from pollutants carried by building discharge water.

**Activities** Each project team will follow the National Pollutant Discharge Elimination System (NPDES) requirements where applicable, and the team will also use technical information on the EPA requirements as reference for compliance. Where an NPDES Permit has been obtained, the team will establish a Discharge Monitoring Report (DMR) process to keep the permit in compliance.

### **Conservation of Resources and Materials**

**Objectives** To reduce solid waste generated, meeting or exceeding State requirements to recycle 75% of solid waste generated and to purchase products/materials with 40% recycled content.

#### **Activities**

**College Recycling Program:** Increase recycling revenue and implement the Municipal Health Code Sec. 293.1 throughout the District. This code discourages removal of any recycling materials from any CCSF recycling containers or collection site. i.e. *CRV- California Redemption Value (beverage containers)*.

Continue, and as feasible, expand current recycling efforts now in place throughout the District, with the addition of designated collection sites at all campuses. This expansion will include all potential recyclable materials.

Expand the college "Reuse Program," which utilizes and exchanges all surplus and reusable District furniture and other materials.

Manage all electronic waste and universal waste throughout the District to ensure that all toxic and electronic wastes generated from the College's operation and activities are safely collected, recycled and disposed of properly.

Maintain the Electronic Recycler's Pledge of True Stewardship created by the Basel Action Network (BAN). The pledge holds participating e-recyclers to a set of high standards including a ban on export, land dumping, incineration, and use of prison labor for toxic components and verify that toxic fractions of e-waste end up in responsible destinations.

Take measures to encourage reduction of plastic beverage containers on CCSF campuses and encourage additional reuse (e.g., sell steel or otherwise reusable water bottles at College bookstores).

*Composting Program:* As part of the College goal to reduce solid waste by 75%; develop compost infrastructure throughout the campuses. Require all vendors to comply with San Francisco's recent ordinances that ban any non-reusable, non-compostable or non-recyclable "to go" containers.

Develop additional on-site composting programs in conjunction with the Environmental Horticulture and Culinary Arts and Hospitality Studies Departments at all campuses where these programs are offered.

## **Sustainable Purchasing and Procurement**

### ***Purchases and other Procured Products/Materials***

The College's Purchasing Department will abide by the October 2005 California State Senate's law on recycled product requirements and /or the above stated sustainability criteria. The overall minimum goal for products/material will be 25% or better. Included in this legislation: paper products, writing and printing papers, janitorial papers, file folders, copy paper, offset, forms, computer printout paper, envelopes, newsprint, manila envelopes, note pads, post its, posters, calendars, magazines, etc.; toner for copiers and printers, paint, antifreeze, lubricants; glass products: windows, test tubes, beakers, lab supplies, deburring media, fiberglass, etc.; plastic products: including, but not limited to wastebaskets, buckets, mats, signs, binders, trays, plastic lumber, carpet; metal products: including, but not limited to staplers, paper clips, scissors, chairs, desks, file cabinets, shelving, lockers, nails, screws and construction materials.

### ***Toxic Material Source Reduction: Reduced Mercury in Light Bulbs***

Objective To establish and maintain a toxic material source reduction program to reduce the amount of mercury brought into buildings through purchases of light bulbs

Activities CCSF will initially institute and follow a light bulb purchasing program that keeps the weighted average mercury content below 100 picograms of mercury per lumen hour. Subsequently, the College will work with the SFPUC to establish and implement a light bulb purchasing program that keeps the weighted average mercury content of all mercury-containing light bulbs below 80 picograms per lumen hour of light output.

### ***Sustainable Cleaning Products and Materials***

Objective To reduce the environmental impacts of cleaning products, disposable janitorial products, and floor coating products

Activities Include sustainable cleaning materials and disposable janitorial products, when these are the most sustainable option. Institute a low-impact environmental cleaning products and housekeeping policy that will address sustainable cleaning and hard flooring coating systems products and utilization of concentrated cleaning products. Floor coating products will be free of zinc.

### ***Internal/External organization materials & equipment reuse program***

Institute a materials and equipment reuse program, to include, but not to be limited to the following:

Building Materials – Lumber, tools, windows, doors, light fixtures, paint, plumbing supplies and fixtures, architectural pieces, fencing, hardware, and materials left over from other projects.

Office Furniture and Supplies – Desks, tables, chairs, filing cabinets, credenzas, shelving units, stacking trays, tape dispensers, notebook binders, folders and other equipment and office supplies

Computers and Electronics – Personal computers, printers, fax machines, televisions, video cassette recorders, videocassettes, etc

Art Materials – Fabric, painting, lumber, stage props, paints, brushes, etc.

Others – Boxes, bags, stoves, refrigerators and freezers (that do not contain CFCs, HCFCs or halons), etc

### ***Reduction in Paper Usage***

All paper procured by the District will contain at least 35% recycled material. Departments, employees, and students will be required to use double-sided printing and photocopying. The District will adopt a policy requiring setting “default” margins on all District printers to no wider than 1”.

### ***Food Purchasing***

The College will pursue a sustainable food purchasing policy to encourage sustainable farming and socially sustainable labor practices. Affordability and competitive pricing will continue to be an important criterion, as will the provision of vegetarian and vegan options.

- When prices are comparable within 20% of the least expensive acceptable mass market alternative, preference will be given to high quality food grown, processed and transported under any of the following conditions: fair trade or unionized working conditions; sustainable farming practices or certified organic; locally or U.S. West Coast grown; meats, poultry, dairy and eggs with no antibiotics and/or free range or cage free as applicable.
- The College will encourage the development of a farm-to-college program to increase the use of local/organic produce.
- CCSF will explore purchasing partnerships and best practices of other local colleges in order to overcome logistical barriers to implementation of this policy.
- This policy will apply to contracted vendors at any CCSF campus as well as the cafeteria and any other CCSF food service.

### **Energy Conservation Program**

Objective To maximize energy performance in buildings and to exceed Title 24 - 2001 California energy efficiency standards

Activities Identify, review and implement energy savings initiatives including but not limited to the following: Perform periodic energy audits to identify economically viable improvements that will contribute substantially to energy savings.

Set all thermostats at the most efficient comfort levels; no higher than 68 degrees at night during the winter months. Audit thermostat function.

Discontinue the use of air conditioning and electric heaters, except in areas where there is sensitive equipment, or where environmentally-friendly alternatives are found infeasible to ensure comfortable conditions for employees and students. Keep doors closed in any air-conditioned or heated areas.

Develop and implement a plan to phase in renewable energy sources on existing rooftops (e.g., wind turbines and/or solar photovoltaic and solar thermal panels).

Purchase and use Energy Star rated equipment such as computers, printers, fax machines and scanners. Replace existing CRT monitors with flat-screen LCD monitors as funding may allow.

Use departmental coffee makers and refrigerators instead of personal units.

Replace light bulbs with more efficient compact fluorescent and LED bulb lighting.

## **Operations and Maintenance Program**

Objective To implement cost-effective procedures and practices to ensure that all College facilities and building systems are reliable, safe, and energy efficient.

### Activities

*Operations and Maintenance Manual:* Develop and deploy an Operations and Maintenance Manual to guide Operations and Maintenance management and technical staff. See Sustainability Plan Part 2 regarding staff development uses of the manual.

*Building Systems Maintenance and Monitoring Programs:* The guide will include a comprehensive Best Practices Equipment Preventative Maintenance Program to manage in-house maintenance services and/or contractual services for post-warranty maintenance. Use automated systems to monitor equipment functions and indoor conditions where possible, and provide training on all new systems.

## **Alternative Transportation**

Objective To reduce pollution and land development impacts from automobile use

Activities The College has outlined a Transportation Demand Management (TDM) Program to reduce air pollution on all campuses. The College's strategy will include measures to decrease the percentage of automobile trips to all campuses by 5-10% each year. Elements of the program are described below:

*Public Transportation Access:* All campuses are well served by the San Francisco and Bay Area mass transit network, and the College will continue to site buildings and/or facilities within ½ mile of existing, planned and funded commuter rail or light rail or within ¼ mile of one or more stops for two or more public bus lines. Routine transportation surveys will be carried out to identify and to respond to transportation needs of existing and future building occupants.

*Bicycle Rack, Storage and /or Changing Rooms:* The CCSF goal is for new construction projects and renovation projects to include bicycle racks and showering/changing facilities in or near all buildings.

*Parking Capacity and Demand Control Measures:* The College's parking supply will not exceed the minimum local zoning requirements and will not be expanded beyond existing levels without the implementation of all feasible TDM measures. Demand will be evaluated continuously to monitor and to minimize traffic on all campuses. CCSF will continue to work with Municipal Transportation Agency (MTA) to improve pedestrian and bicycle access to all campuses.

## **Operations and Maintenance**

Objective To support appropriate operations and maintenance of buildings and building systems so that they continue to deliver target building performance goals over the long term

### Activities

*Building Systems Maintenance:* CCSF will develop a comprehensive Best Practices Equipment Preventative Maintenance Program to provide in-house maintenance services and/or contractual services to deliver post-warranty maintenance.

*Building Systems Monitoring:* Automated systems will be used to monitor equipment function and indoor space conditions where possible. This will help in early detection of system problems and quick response to such problems.

## **Performance Measurement: Emission Reduction Reporting**

Objective To document emission reduction benefits of building efficiency actions, retire a portion of the reductions and reduce emissions in the supply chain

Activities CCSF will identify and address significant pollutants delivered by building energy systems. These include all pollutants identified to have negative health problems along with other environmental and economic impacts such as carbon dioxide (CO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), mercury (Hg), small particulates (PM<sub>2.5</sub>), large particulates (PM<sub>10</sub>) and volatile organic compounds (VOCs).

**Appendix 2: Implementation Table**

| Sustainability Requirements for all Construction Projects (Chapter 2) | Objectives (Activities are described in detail in body of plan; all projections are based on funds available)   | Status as of December 2009  | Status as of March 2017  |
|---|---|---|--|
| Conceptual Design to Post Construction                                | To attain LEED Silver Rating  | Joint Use Facility (expect Gold in Fall 2010); Chinatown (expect Gold in 2012)                                | Multi-Use Building (Joint Use Facility) awarded LEED Gold certification for New Construction by the U.S. Green Building Council in March 2011.<br><br>Chinatown/North Beach Center awarded LEED Gold certification for New Construction by the U.S. Green Building Council in March 2014 |
| Mitigation Monitoring and Auditing Program for Master Plan Projects   | To reduce the environmental impact resulting from the construction of the Master Plan projects  | Check with Peter Goldstein on EIR   | Completed  |
| Reduced Site Disturbance  | To conserve existing natural areas, restore damaged areas, provide habitat and promote biodiversity   | Completed; annual report on work with Environmental Horticulture/Floristry Dept & Buildings and Grounds Dept. | Completed  |
| Landscape and Exterior Design to Reduce Heat Islands                  | To reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat   | Revisit in 2011 as funds become available   | Ongoing work   |
| Light Pollution Reduction   | To eliminate light trespass from the building site, improve night sky access, and reduce development impact on nocturnal environments   | For new buildings in progress, for older buildings as funds are available                                     | Ongoing work   |
| Plan for Green Site and Building Exterior Management                  | To encourage grounds/site/building exterior management practices that have the lowest environmental impact possible, and to preserve ecological integrity, enhance diversity and to protect wildlife while supporting building performance and integration into surrounding landscapes  | Ongoing; continue to work with Environmental Horticulture/Floristry Dept to implement                         | Ongoing work   |
| High Development Density Buildings and Areas                          | Channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources   | In progress for new buildings, for older buildings as funds are available                                     | Facilities Master Plan is in development   |
| Existing Buildings only   | To provide a distinction between buildings considered for new construction certification and buildings that are eligible to apply existing building certification. The CCSF goal for the operating performance and upgrades of all buildings two years and older will be to seek to attain LEED-Existing Building Silver Rating or higher, 43+ points | Survey in 2011 if funds become available  | Ongoing work   |

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| Water Conservation  | Governor Schwarzenegger has put forth a goal of 20 percent reduction in water use by 2020. City College will meet or exceed this 20 percent reduction goal through the use of the construction standards | Completed for new buildings; for remodels ongoing; can provide reports for last 3 yrs by month                     | <ul style="list-style-type: none"> <li>In Fall 2015, four lawns converted to water frugal, drought tolerant landscape. The overhead watering system was converted to a low volume drip irrigation system.</li> <li>In Fall 2016, six lawns converted to water frugal, drought tolerant landscape.</li> <li>Continued practice of mulching cuttings and use them around plantings to reduce water usage.</li> <li>Water frugal, drought tolerant ornamental grasses with drip irrigation and some overhead irrigation installed around Ocean Campus Student Health and Child Development Center.</li> </ul>                             |
| Water Efficient Landscaping                                 | To minimize or eliminate the use of potable water for landscape irrigation   | Completed; ongoing report annually   | <ul style="list-style-type: none"> <li>In Fall 2015, four lawns converted to water frugal, drought tolerant landscape. The overhead watering system was converted to a low volume drip irrigation system.</li> <li>In Fall 2016, six lawns converted to water frugal, drought tolerant landscape.</li> <li>Continued practice of mulching cuttings and use them around plantings to reduce water usage.</li> <li>Water frugal, drought tolerant ornamental grasses with drip irrigation and some overhead irrigation installed around Ocean Campus Student Health and Child Development Center.</li> </ul>                             |
| Stormwater Management Infrastructure                        | To reduce negative impact on water and air quality by increasing on-site infiltration, minimizing storm-water runoff, and reducing contaminants during and after construction                            | Partially completed; ongoing for construction projects; report annually  | Ongoing work   |
| Minimum Energy Performance                                  | To establish the minimum level of energy efficiency for proposed building and related systems  | Completed for Joint Use, Chinatown, Performing Arts  | Sustainability Facilities Design Standard provides guidelines for energy performance.  |
| CFC Reduction in HVAC&R Equipment                           | To reduce ozone depletion  | Partially completed; ongoing for any new purchases; report annually  | Ongoing work   |
| Optimize Energy Performance                                 | To achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use                     | Partially completed; continue to work with PGE to monitor and reduce usage   | <ul style="list-style-type: none"> <li>February 2008 Energy Audit completed, identified energy conservation measures for existing facilities.</li> <li>2012 Statewide Proposition 39 Clean Energy Jobs Creation Act passed by electorate, funds energy efficiency projects for California public education institutions</li> <li>Ocean Campus Batmale Hall energy efficiency project completed, funded by Proposition 39.</li> <li>Ocean Campus Creative Arts Extension energy efficiency project completed, funded by Proposition 39.</li> <li>Additional energy efficiency projects in process, funded by Proposition 39.</li> </ul> |
| Renewable Energy  | To encourage and recognize increasing levels of self-supply through renewable technologies to reduce environmental impacts associated with fossil fuel energy use  | Completed for Joint Use, Chinatown; for existing buildings survey as funds available                               | Ocean Campus Utility Infrastructure Replacement Project, funded by Statewide Proposition 51 (November 2016), will afford opportunity to consider hydrogen fuel cells, solar photovoltaics, wind turbines.  |
| Additional Commissioning                                    | To verify and ensure that the entire building is designed, constructed, and calibrated to operate as intended  | Completed for Joint Use, Chinatown, and all new construction projects  | Commissioning conducted at Batmale Hall and Creative Arts Extension, as part of required measurement and verification of Proposition 39 funded energy efficiency projects.   |
| Ozone Depletion and Additional Ozone Protection             | To reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to global warming  | Completed for Joint Use, Chinatown   | Non-HCFC and halon-based refrigeration and fire suppression systems are used on new construction and renovation projects.  |
| Performance Measurement, Verification and Enhanced Metering | To provide for the ongoing accountability and optimization of building energy and water consumption performance over time, and add incentives for additional energy reduction                            | Completed for Joint Use, Chinatown; for existing buildings survey and implement recommendations as funds available | Commissioning conducted at Batmale Hall and Creative Arts Extension, as part of required measurement and verification of Proposition 39 funded energy efficiency projects.   |

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| Sustainable Building Cost Impacts Documentation  | To document sustainable building cost impacts and select a lifecycle cost model for determining the lifecycle cost of any new facilities.  | Effective immediately; lifecycle cost model to be used as part of the analysis for any projects placed on future college bond measures – the date of the next bond measure has not been determined yet | Total cost of ownership lifecycle cost modeling developed for Performing Arts Education Center, Ocean Campus Wellness Swimming Pool heating system. |
| Existing Building Commissioning  | To verify that fundamental building systems and assemblies are performing as intended to meet current needs and sustainability requirements  | 2012 for verification and 2017 to implement identified improvements  | Retrocommissioning of large buildings under consideration for next round of Proposition 39 funded energy efficiency projects.                       |
| Building Reuse: Maintain 75% Existing Shell, OR Maintain 100% Shell Walls OR Maintain 100% of Interior & Non-Shell | To extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport   | Ongoing work   | Ongoing work  |
| Construction, Demolition and Renovation Waste Management: Divert/Recycle 50%-75% of Construction Waste             | To divert construction, demolition and land-clearing debris from disposal in landfills and incinerators, redirect recyclable recovered resources back to the manufacturing process and redirect reusable materials to appropriate sites at City College.   | Ongoing work   | Ongoing work  |
| 35% Reuse of Materials/Resources   | To reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources. Although LEED specifies a 5-10% reuse figure, CCSF will make every effort to reuse at least 35% of materials and products on every project. | Ongoing work   | Ongoing work  |
| Recycled Content: 25%- 50% and to optimize the use of Alternative Materials: 10% - 50%                             | To increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials, and to reduce the environmental impacts of the materials acquired for use in the operations, maintenance, and upgrade of buildings.                                     | Completed for Joint Use and Chinatown; ongoing work  | Ongoing work  |
| Regional Materials: 10-50% Manufactured, Extracted, Harvested, or Recovered Regionally                             | To increase demand for building materials and products that are extracted, harvested, or manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation   | Completed for Joint Use and Chinatown; ongoing work  | Ongoing work  |
| Rapidly Renewable Materials  | To reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials  | Completed for Joint Use and Chinatown; ongoing work  | Ongoing work  |
| Certified Wood   | To encourage environmentally responsible forest management   | Completed for Joint Use and Chinatown; ongoing work  | Ongoing work  |
| Source Reductions and Waste Management: Policy and Waste Stream Audit  | To establish minimum source reduction and recycling program elements and quantify current waste stream production volumes  | Implemented through wide District and Solid Waste Management Program; provide annual progress reports  | Recycling and solid waste management program is in place, resulting in 68% of solid waste stream diversion from landfills.                          |

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| Optimize Use of Indoor Air Quality (IAQ) Compliant Products: 45-90% of Annual Purchases | To reduce the IAQ impacts of the materials acquired for use in the operation, maintenance and upgrades of buildings  | Partially completed; ongoing work as funds available  | Ongoing work  |
| Storage and Collection of Recyclables   | To facilitate the reduction of waste in new and existing buildings   | Implemented through District and Solid Waste Management Program; provide annual progress reports        | \$500,000 in grants and donations secured for storage and collection infrastructure.  |
| Reduced Mercury in Light Bulbs  | To establish and maintain a toxic material source reduction program to reduce the amount of mercury brought into existing buildings through light bulbs  | Mercury light bulbs no longer purchased; replace existing bulbs as funds become available               | Ongoing work  |
| Indoor Air Quality (IAQ) Performance  | To establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants   | In 2012 conduct assessment and implement recommendations as funds available                             | Ongoing work  |
| Carbon Dioxide (CO <sub>2</sub> ) Monitoring  | To provide capacity for indoor air quality (IAQ) monitoring to sustain long-term occupant health and comfort   | In 2012 conduct assessment and implement recommendations as funds available                             | CO <sub>2</sub> monitoring is utilized in controlling the operation of the ventilation system of the Ocean Campus Multi-Use Building. CO <sub>2</sub> monitoring is promoted in HVAC Facilities Design Standards.   |
| Increase Ventilation Effectiveness  | To provide for the effective delivery and mixing of fresh air to support the health, safety, and comfort of building occupants   | In 2012 conduct assessment and implement recommendations as funds available                             | Ongoing work  |
| No- or Low- Emitting Materials  | To reduce the quantity of indoor air contaminants which are odorous or potentially harmful to the health and comfort of installers and occupants   | Completed for Joint Use, Chinatown; annual reports from Building and Grounds Dept. and Purchasing Dept. | Ongoing work  |
| Indoor Chemical & Pollutant Source Control  | To avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality and/or reduce exposure of building occupants and maintenance personnel to potentially hazardous particle contaminants which adversely impact air quality, health, building finishes, building systems and the environment | In 2012 conduct assessment and implement recommendations as funds available                             | Ongoing work  |
| Controllability of Systems  | To provide a high level of temperature, ventilation and lighting control by individual occupants or specific groups in multi-occupant spaces (e.g., classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants  | In 2012 conduct assessment and implement recommendations as funds available                             | Direct digital controls installed at Ocean Campus Multi-Use Building, Wellness Building, Student Health Center, Conlan Hall, Batmale Hall, Creative Arts Extension, Chinatown / North Beach Center.   |
| Thermal Comfort   | To provide for a thermally comfortable environment that supports the productive and healthy performance of the building occupants  | In 2012 conduct assessment and implement recommendations as funds available                             | <ul style="list-style-type: none"> <li>• Direct digital controls installed at Ocean Campus Multi-Use Building, Wellness Building, Student Health Center, Conlan Hall, Batmale Hall, Creative Arts Extension, Chinatown / North Beach Center.</li> <li>• Ocean Campus Batmale Hall energy efficiency project completed, funded by Proposition 39.</li> <li>• Ocean Campus Creative Arts Extension energy efficiency project completed, funded by Proposition 39.</li> <li>• Additional energy efficiency projects in process, funded by Proposition 39.</li> </ul> |
| Daylight & Views  | To provide a connection between indoor spaces and outdoor environments through the introduction of sunlight and views into the occupied areas of the building  | Completed for Chinatown, Joint Use, Performing Arts buildings   | Ongoing work  |
| Contemporary IAQ Practice   | To enhance IAQ performance by optimizing practices to prevent the development of indoor air quality problems in buildings, correcting  | In 2012 conduct assessment and implement recommendations as funds available                             | Indoor environmental quality program is in development, incorporating best practices to promote healthful indoor environments.  |

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|   | indoor air quality problems when they occur and, maintaining the well-being of the occupants   |   |   |
| Green Cleaning  | To reduce exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particle contaminants which adversely impact air quality, building finishes, building systems and the environment | Partially completed; ongoing work as funds available                        | Ongoing work  |
| Existing Buildings Only: Outside Air Introduction and Exhaust Systems | To establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the health and well-being of the occupants  | In 2012 conduct assessment and implement recommendations as funds available | Ongoing work  |
| Asbestos, Lead and other Hazardous Material Removal or Encapsulation  | To reduce the potential exposure of building occupants to asbestos, lead and other hazardous materials and prevent associated harmful effects in existing buildings  | Ongoing; provide annual progress reports                                    | Ongoing work  |
| Polychlorinated Biphenyl (PCB) Removal                                | To reduce the potential exposure of building occupants to PCBs and PCB combustion by-products in case of fire in the building  | Ongoing; provide annual progress reports                                    | Ongoing work  |
| Outdoor Air Delivery Monitoring                                       | To provide capacity for a ventilation system monitoring program to help sustain long-term occupant comfort and well-being  | In 2012 conduct assessment and implement recommendations as funds available | Direct digital controls installed at Ocean Campus Multi-Use Building, Wellness Building, Student Health Center, Conlan Hall, Batmale Hall, Creative Arts Extension, Chinatown / North Beach Center. |

| <b>Sustainable Operations (Chapter 3)</b> | <b>Objectives (Activities are described in detail in body of plan)</b>   | <b>Timeline</b>  |   |
|---|--|--|---|
| Transportation Demand Management          | To reduce air pollution on all campuses and to decrease the percent of automobile trips, by promoting transit use, carpooling, bicycling and motorcycling, to all campuses; pursue a goal of 15-20% reduction over the next five to ten years. | 5 – 10 years; monitor report yearly as funds available for EIR Report recommendation                                   | Collaborating with City Planning, SFMTA, BART on Balboa Area TDM framework. 3 out of 13 TDM measures are existing; 4 out of 13 are in development as part of the Facilities Master Plan; 2 out of 13 are under current consideration. |
| Water Conservation                        | To reduce the overall water consumption and to ensure that water usage does not exceed 200,000 gallons per day   | Completed for Joint Use and Chinatown; effective immediately for all new buildings; retrofit as funds become available | Landscape irrigation water reduced by 34% from 2014 to 2016.  |
| Landscaping                               | To implement landscape planning, design, construction and practices that conserve water, reduce waste generation, minimize air, water, and soil pollution, require minimal maintenance and provide pleasant visual effects on all campuses     | Completed for Joint Use and Chinatown; effective immediately for all new buildings; retrofit as funds become available | Ongoing work  |
| Innovative Wastewater Technologies        | To reduce potable water demand and wastewater generation   | Completed for Joint Use and Chinatown; effective immediately for all new buildings; retrofit as funds become available | Ongoing work  |
| Water Use Reduction                       | To protect natural habitat, waterways and water supply from pollutants carried by building discharge water.  | Partially completed; ongoing work  | Landscape irrigation water reduced by 34% from 2014 to 2016. Ongoing work.  |

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| Conservation of Materials and Resources                            | To reduce solid waste generated, meeting or exceeding State requirements to recycle 75% of solid waste generated and to purchase products/materials with 40% recycled content. | Implemented through District and Solid Waste Management Program; provide annual progress reports   | Recycling and solid waste management program is in place, resulting in 68% of solid waste stream diversion from landfills.  |
| Sustainable Purchasing and Procurement                             | Meeting or exceeding State requirements to purchase products/materials with 25% recycled content   | Completed for Joint Use, Chinatown; annual reports from Building and Grounds Dept. and Purchasing Dept.                                  | Ongoing work  |
| Toxic Material Source Reduction: Reduced Mercury in Light Bulbs    | To establish and maintain a toxic material source reduction program to reduce the amount of mercury brought into buildings through purchases of light bulbs                    | Mercury light bulbs no longer purchased; replace existing bulbs as funds become available  | Ongoing work  |
| Sustainable Cleaning Products and Materials                        | To reduce the environmental impacts of cleaning products, disposable janitorial products, and floor coating products   | Partially completed; ongoing as funds available  | Ongoing work  |
| Internal/External organization materials & equipment reuse program | Institute a materials and equipment reuse program  | Completed; implemented via Recycling dept., Purchasing, Buildings and Grounds, and Food Services   | 20 tons of materials – mostly furniture and equipment – is exchanged annually through reuse program.  |
| Reduction in Paper Usage   | All paper procured by the District will contain at least 35% recycled material   | Ongoing via Purchasing Dept. and Duplicating Services; encourage 2 sided copying   | Ongoing work  |
| Food Purchasing  | The College will pursue a sustainable food purchasing policy to encourage sustainable farming and socially sustainable labor practices.  | 50% local & sustainable in the Cafeteria / TasteBuds in 2 years, 75% in 4 years and 95% in 6 years. In the PCR, 95% in less than a year. | Ongoing work  |
| Energy Conservation Program  | To maximize energy performance in buildings and to exceed Title 24 - 2001 California energy efficiency standards   | Completed for Chinatown, Joint Use; ongoing for new buildings; retrofits as funds become available                                       | Ongoing work  |
| Operations and Maintenance Program                                 | To implement cost-effective procedures and practices to ensure that all College facilities and building systems are reliable, safe, and energy efficient                       | Partially completed; ongoing work  | Direct digital controls installed at Ocean Campus Multi-Use Building, Wellness Building, Student Health Center, Conlan Hall, Batmale Hall, Creative Arts Extension, Chinatown / North Beach Center. New Maintenance Scheduler position approved in Program Review; responsibilities will include development of a preventive maintenance program. |
| Alternative Transportation   | To reduce pollution and land development impacts from automobile use   | 5 – 10 years; completed; annual progress reports   | Transportation survey conducted Spring 2016 to inform ongoing work toward reduced automobile trips. Facilities Master Plan is in development, to inform development of alternative transportation facilities.   |
| Building Operations and Maintenance                                | To support appropriate operations and maintenance of buildings and building systems so that they continue to deliver target building performance goals over the long term      | Partially completed; ongoing work  | Direct digital controls installed at Ocean Campus Multi-Use Building, Wellness Building, Student Health Center, Conlan Hall, Batmale Hall, Creative Arts Extension, Chinatown / North Beach Center. New Maintenance Scheduler position approved in Program Review; responsibilities will include development of a preventive maintenance program. |
| Performance Measurement: Emission Reduction Reporting              | To document emission reduction benefits of building efficiency actions, retire a portion of the reductions and reduce emissions in the supply chain                            | Conduct survey in 2012 as funds become available   | Ongoing work  |

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## **Appendix 2: Sustainability Plan Part 2**

**PLEASE REFER TO PART 2, CIRCULATED SEPARATELY, FOR THE FOLLOWING:**

**OVERVIEW (of Part 2) Introduction to Part 2**

**How This Plan Will Be Implemented**

**Building CCSF Capacity for Sustainability  
Implementation**

**Chapter 1 Professional Development**

**Chapter 2 Instructional Programs**

**Chapter 3 Student Services and Student Communications**

**Chapter 4 Community Partnerships**

**Chapter 5 Social and Economic Sustainability**