

Sustainability Management Plan

REV 04-19-18



Foothill College
12345 El Monte Road
Los Altos Hills, CA 94022

foothill.edu

Foreword

This Sustainability Management Plan has been revised to align with the updated Educational Master Plan 2016 and the updated Facilities Master Plan 2016. A workshop hosted by Gensler & Associates in March 2016 brought key stakeholders together at the De Anza campus (students, staff, faculty and administrators) to work together holistically to identify what is important for the district as overarching guidelines and how the college campuses can support those goals while still maintaining their own set of values. This document reflects and expands the work that was done in the one-day workshop.

Additionally, the new Sunnyvale Education Center opened in fall of 2016. The goals and metrics established for Foothill College will apply to the center. For more information on this LEED Platinum building, refer to the Table of Contents.

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Introduction

Foothill College opened the doors to its 122-acre campus in Los Altos Hills, California, on Sept. 5, 1961. The site of the new campus was chosen for its potential to contribute to the development of a distinct and special institution for students. Foothill College (Foothill), the recently opened Foothill College Sunnyvale Center, and De Anza College (De Anza) make up the Foothill-De Anza Community College District (district).

The architectural firm Kump, Masten and Hurd won two awards for the Foothill campus design before the first shovel hit the ground. Foothill College became a national model for community college construction and development. Architectural Forum Magazine stated “Foothill’s chief significance may not reside in its architecture, excellent as it is, but in its underlying social premise... a community college which goes far beyond academic and vocational instruction in its functions... it is really a multipurpose cultural resource serving an entire region.”

More than 50 years later, our goal is to be a leader in sustainability and green awareness, while continuing to practice our core values through curriculum and daily business practices.

In 2007, the chancellor of the Foothill-De Anza Community College District and presidents of Foothill College and De Anza College signed the Presidents’ Climate Commitment document, which called for the reduction of greenhouse gas emissions throughout the district.

During Summer 2008, the first formalized emissions inventory was undertaken using the Clean Air, Cool Planet methodology. These data were presented to the district in August 2008 and the district board of trustees in September 2008.

The Foothill College Sustainability Committee was formed in 2008 with the primary goal of developing campus wide programs as part of an evolving and formalized environmental and sustainability emphasis. The initial group began with six members, engaging in various environmental activities, with documentation running ex post facto to their activities.

The Foothill College Sustainability Management Plan (SMP) addresses the district goals, charter and mission of the sustainability committee, and forms a foundation for areas of interest, developing goals, metrics, data-collection procedures, analysis and reporting functions. We continue to look for ways to maximize our effectiveness. As systems develop, we will determine how to partner with the district, De Anza, local governmental agencies and organizations on future sustainability endeavors. The mission statement (Appendix A) and sustainability policy (Appendix B) represent input from a shared governance process involving staff, faculty, students and administrators. To review the latest SMP report card, see Appendix G. For past reports, please refer to the Sustainability website www.foothill.edu/sustainability/.

At the onset of the Sustainability Committee there were six members, each with a passion and dedication for a particular category.

The initial six categories were:

- Community & Civic Engagement
- Hazardous & Solid Waste Reduction & Control
- Transportation, Energy Conservation
- Efficiency & CO₂ Reduction, Water-Use Reduction & Control,
- Green Procurement, and Green Building Design

– Construction & Renovation

The new categories have been renamed and are similar to the previous intent. The new categories are detailed throughout the body of this document.

With the latest revision of the SMP, we are fully aligned with the district and while separate, we are much more in harmony with our sister college, De Anza.

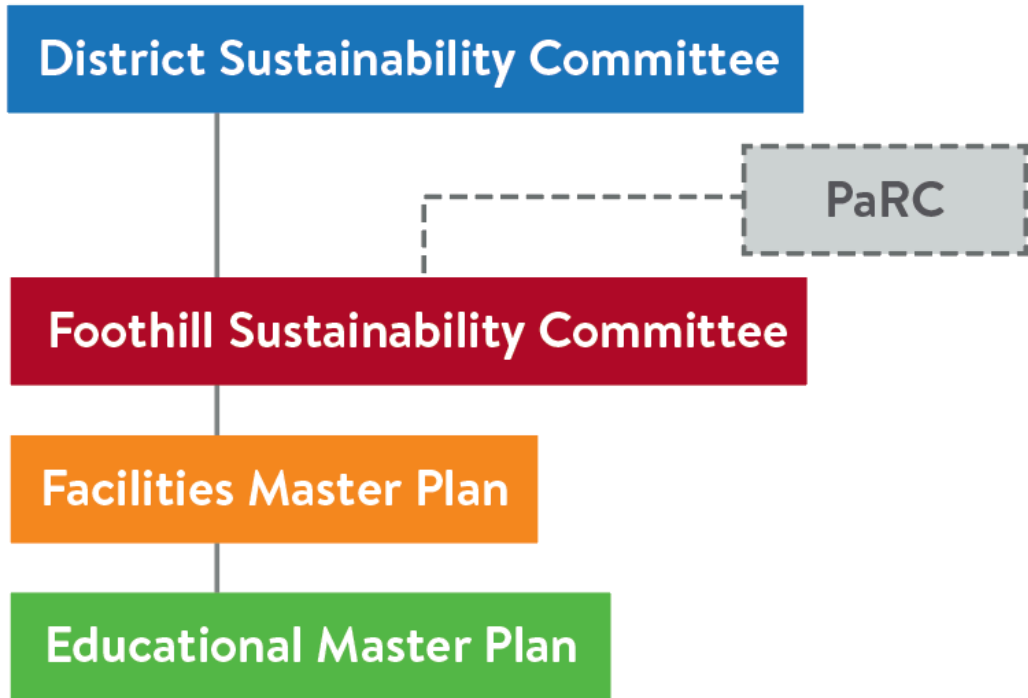
New Organizational Structure

As suggested by our new College President, Dr. Thuy Nguyen, whereas the Sustainability Committee was previously more of a stand-alone committee only loosely tied to the shared governance process, with this revision every effort has been made to align the Committee with the District's governance structure.

At the College level, this includes strengthening and formalizing our reporting relationship with the Planning and Resource Group (PaRC), with the Associated Students of Foothill College (ASFC), and with the College Educational Master Plan and the Facilities Master Plan. Our goals are to increase access to available resources; to enhance the campus-wide visibility, effectiveness, and awareness of our efforts; and to provide a more formalized and efficient decision-making structure for committee members.

Additionally, the College Sustainability Committee will now be guided by a dotted-line reporting structure to the District's Energy Manager. The Energy Manager will serve as the Chair of the District-wide Sustainability Committee who will coordinate efforts, track progress and help address energy issues.

Under the leadership of faculty member Scott Lankford and Student Representative Unchitta Kanjanasaratool, quarterly newsletters highlighting recent Sustainability initiatives and challenges under the logo of the Foothill Center for a Sustainable Future have been implemented. The Committee is working closely to coordinate its outreach and information efforts more closely with the Foothill Marketing and Public Relations office, in line with their Summer 2018 rollout of an enhanced College website redesign.



2017-18 Foothill Sustainability Committee

- Julie Ceballos, Classified Staff Representative
- Brenda Davis-Visas, Chair
- Robert Cormia, Faculty Representative
- Unchitta Kanjanasaratool, Student Representative
- Scott Lankford, Faculty Representative
- Daniel Moll, Student Representative
- Paula Schales, Staff Representative
- Gillian Schultz, Faculty Representative

Sustainability Committee History & Philosophy

The sustainability steering committee came together in 2008 at the request of Foothill College President Judy Miner, Ed.D., who was previously Vice President of Educational Resources and Instruction at De Anza College. DeAnza was at the forefront of sustainable initiatives for higher education. Likewise, district facilities personnel had documented sustainable efforts in support of previous Foothill-De Anza Chancellor Martha Kanter, who served on the board of the Presidents' Climate Commitment Committee. The original Foothill sustainability steering committee was comprised of six members from the ranks of faculty, classified staff, administrators and district central services. The committee then developed a plan to present current sustainability efforts to faculty and staff at Foothill's Opening Day convocation on September 19, 2008.

Each member of the initial sustainability steering committee was the sponsor for one of the six focus categories. As projects were developed by subcommittees under one of the categories, it was the responsibility of the sponsor to see that projects were initiated and incremental goals met. In addition, it was the sponsor's responsibility to complete a Project Log Sheet, monitor the project's progress and report quarterly results.

The sustainability committee used a bottom-up approach rather than a top-down, meaning that our projects were generated by various members based on their individual interests and not necessarily mandated by senior management. Projects were documented and procedures implemented. This method allowed the group to try different ideas and/or approaches and determine what would be most effective.

Sustainability Workshop

As part of the Facilities Master Plan committee meetings a more focused approach to identifying sustainability issues and concerns involving the entire district emerged. Sustainability goals were explored through two headings; Resource Stewardship and Social Equity with ten themes. The themes under Resource Stewardship were Material Procurement & Waste Management, Greenhouse Gases & Climate Action, Site & Habitat, Water & Wastewater, Energy Conservation & Generation. The themes under Social Equity included Transportation & Access, Health & Wellness, Education & Culture, Student & Community Engagement, Monitoring & Reporting.

The participants "cast votes" using colored tags, to indicate high, medium and low priorities. Energy conservation and generation received the the highest percentage of votes at 23%. Education and culture, a relatively new term, received 13% of the votes; with Water & Wastewater and Health & Wellness, tied at 11%. Rounding out the top five, Site & Habitat received 9% of the votes. For the full graph, see page 10.

Priorities by topics, another way to gauge interest and cross-reference prior information, showed energy efficiency to be the number one concern of the majority of participants. Education (sustainability in curriculum) ranked second; healthy food and beverages ranked third. The fourth item of interest was heating and ventilating systems in buildings, with renewable energy following. The committee felt renewable energy is part of the first item, energy and efficiency, and chose to go to the sixth item, non-potable water opportunities as the "top five" priorities for Foothill College.

Planning for Sustainability



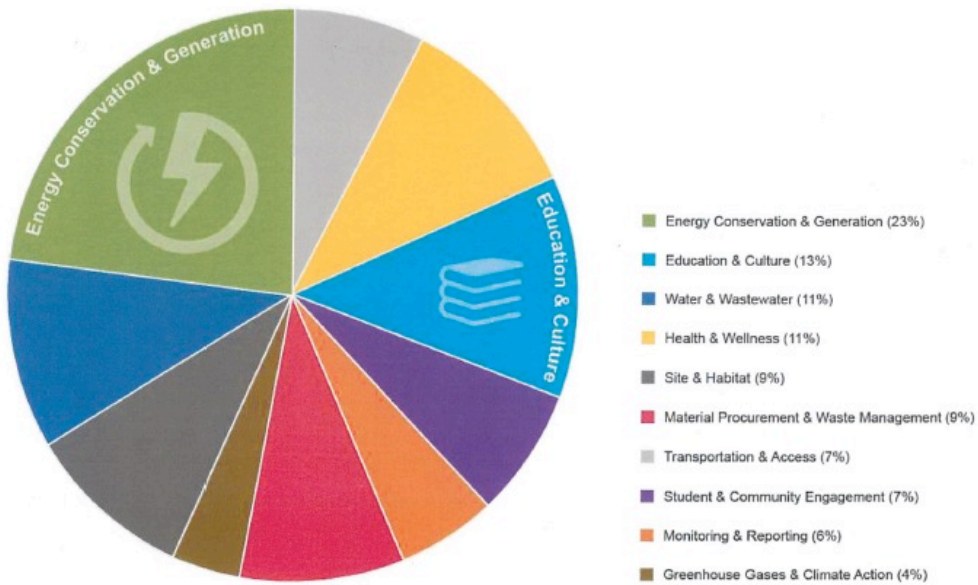
Visioning



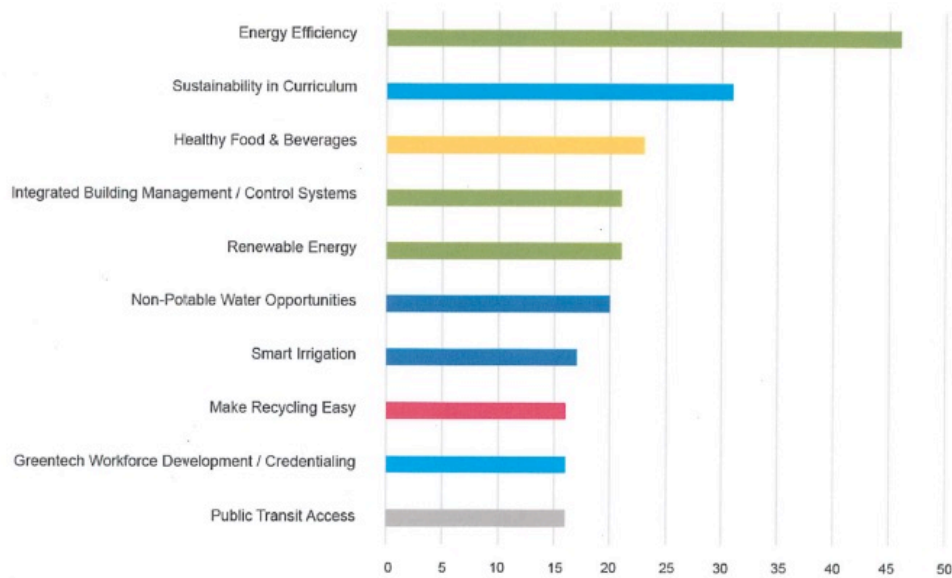
Setting Priorities



Priorities by Themes



Priorities by Topics (Top 10)

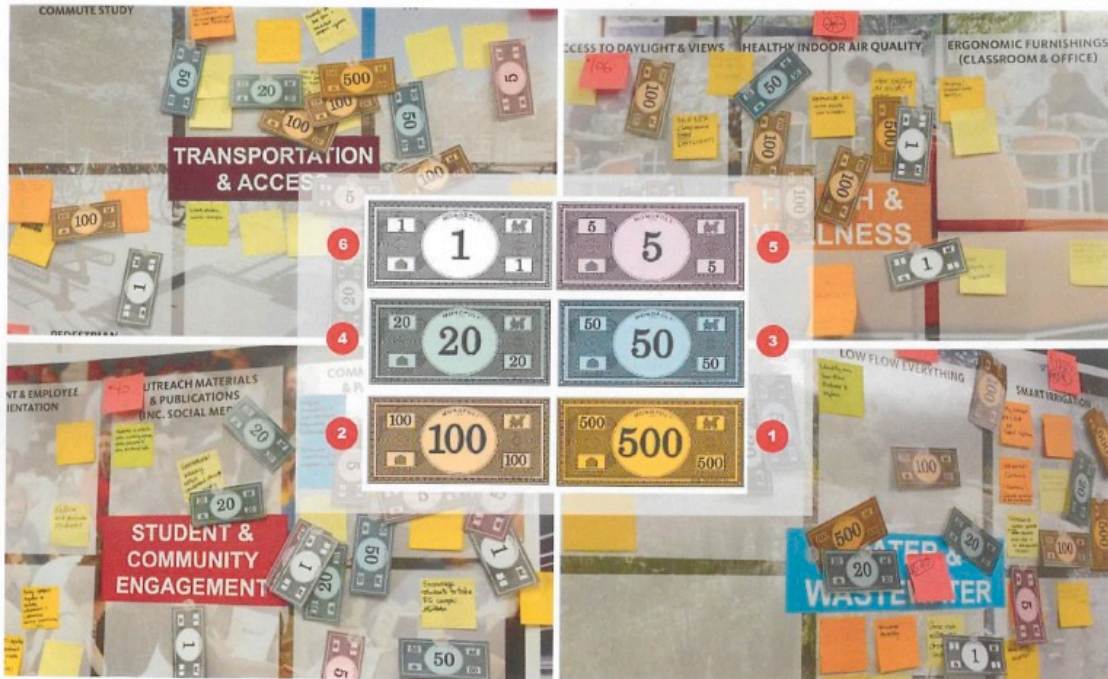


After the initial identification portion of the workshop, the workshop group focused on prioritizing what had been identified as the next activity. Each participant was given \$51.00 in Monopoly money to “fund” their priorities. The majority of attendees, once again, displayed their commitment to Energy Conservation & Generation, with the largest amount of funding allocated, Water & Wastewater, second, with Health & Wellness, third. Education, while second in previous polls, comes in fourth in this exercise and Site & Habitat rounds out the top five. While the top five categories change slightly in ranking, the participant’s messages are still strong. Their top concerns are energy, water, health, education and the environment.

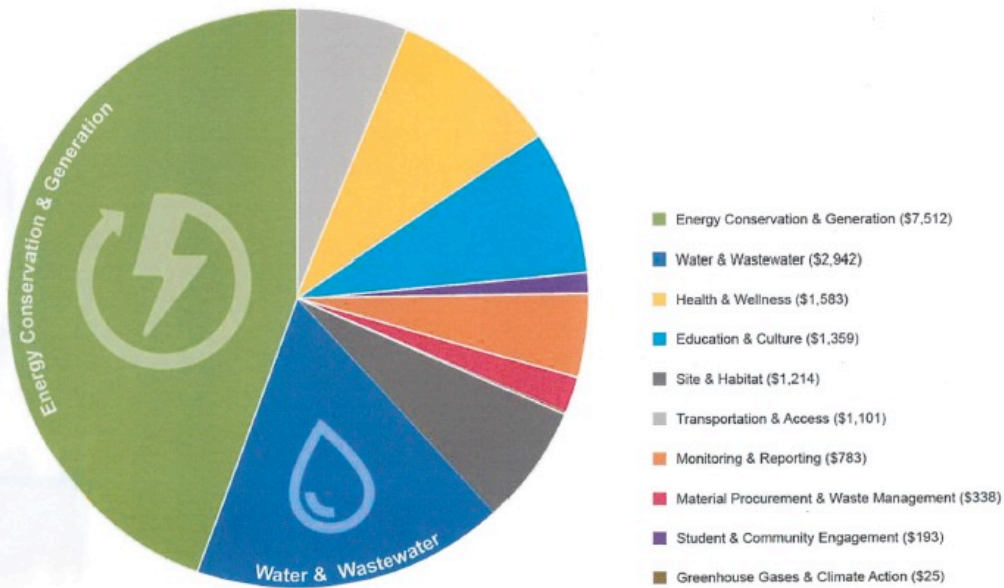
Investments by Topics (graph on page 15) shows the top ten by participants. Again, Energy Efficiency continues to be the top concern and was demonstrated through “active allocation of funds.”

Priorities versus Investments (graph on page 16) shows Energy Efficiency again as the ranking top contender.

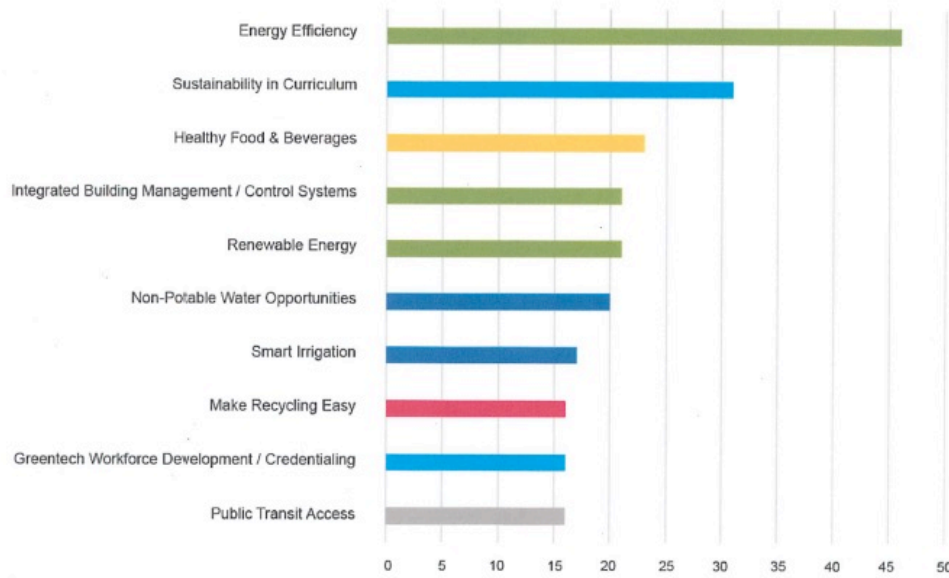
Prioritizing Investments



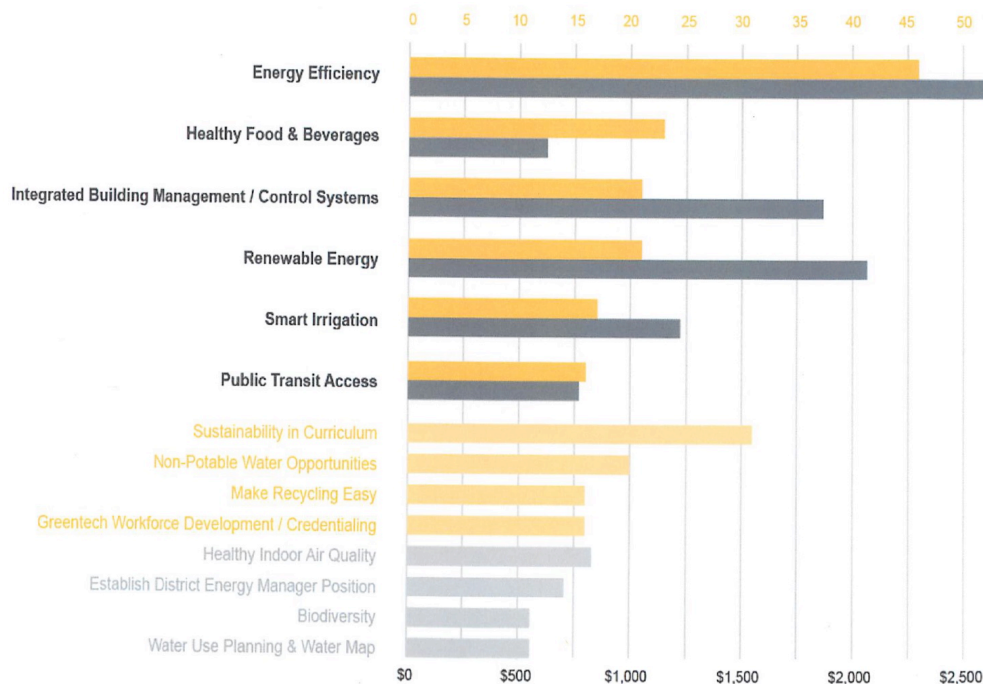
Investments by Boards



Priorities by Topics (Top 10)



Priorities vs. Investments (Top 10 Topics)



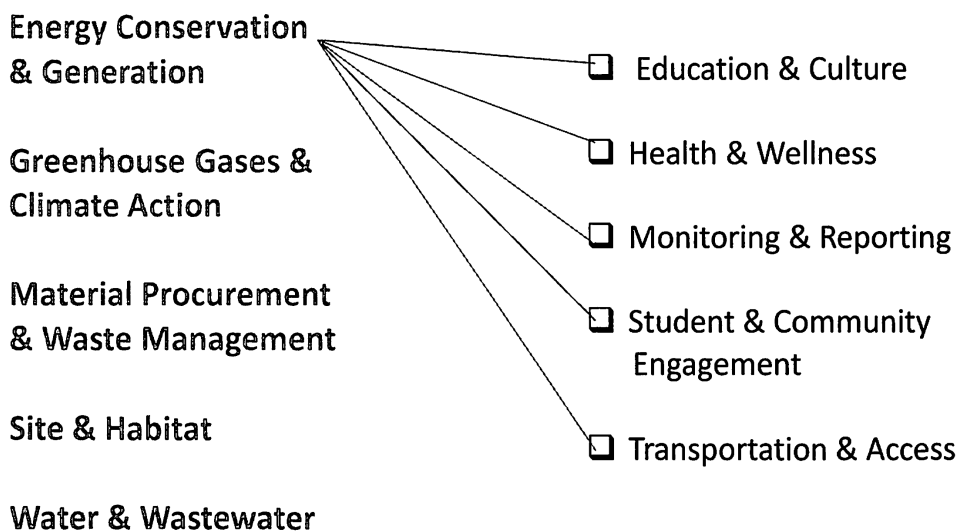
implemented. For example, each of the line items below can be, and should be, applied to the line items above. Utilizing the social equity measurement creates deeper, more involved levels of engagement.

Social Equity

- Education & Culture
- Health & Wellness
- Monitoring & Reporting
- Student & Community Engagement
- Transportation & Access

Utilizing what was learned at the De Anza workshop, a follow-up work session was held with the Foothill Sustainability Committee May, 2017, to further develop how each of the social equity categories “informs” the categories above, as illustrated below.

CROSS REFERENCE CHECK



By conscientiously checking off each of the social equity listings against the resource stewardship list, a tangible tool is provided to thoroughly review and analyze how each of the components contributes to the overall desired outcome.

Sustainability Workshop

Focus Categories

I. Education

Nurture environmental stewardship and literacy across the campus

Stewardship of the environment refers to protecting the environment through recycling, conservation, regeneration, and restoration, and means taking responsibility for our choices. By educating our community, the responsibility for environmental quality is shared by those whose actions affect the environment.

Environmental Stewardship can be defined through, organizations putting systems in place that will enable them to use resources efficiently, reduce waste and minimize negative impacts on the environment, translate reduction in consumption and waste into financial savings and provide a healthy, more efficient and effective working environment.

“Foothill College’s primary mission is to educate students. To augment the curriculum and the learning opportunities Foothill College strives to model exemplary sustainable practices that will become a part of the students’ everyday lives as they progress through the education system and begin their careers. As part of Foothill’s concern for its students, they are committed to minimizing the College’s impact on the physical environment, to be accountable for their actions and to provide guidance for future endeavors.” – Foothill College Site Design Concepts

Inter-twined with core curriculum classes, environmental study classes have been developed and offered, gaining popularity each quarter they are presented.

Goals Identified in the Workshop

- Promote Sustainability Through Curriculum
- Create additional curriculum and program on sustainability
- Develop themes and messages to encourage and promote sustainability practices across the campus.
- Create additional curriculum focusing on the green workforce
- Broaden on-site green-collar workforce training program
- Environmental education focusing on renewable energy
- Environmental education focusing on energy management
- Environmental education focusing on organic agriculture

The benefits of implementing Environmental Stewardship include economic benefits, human health benefits and protection and conservation of the environment.

II. Energy & Emissions

Continue as a Leader in Energy Efficiency

The Foothill De Anza Energy and Emissions task force (committee) is developing a long-range strategic plan for energy infrastructure, with associated energy use and greenhouse gas (GHG) emissions, as part of an effort to purchase, install, and operate new energy technology, and to reduce campus expenditures, energy use and associated GHG emissions. The energy and emissions group has begun efforts with five principle goals for fall 2017.

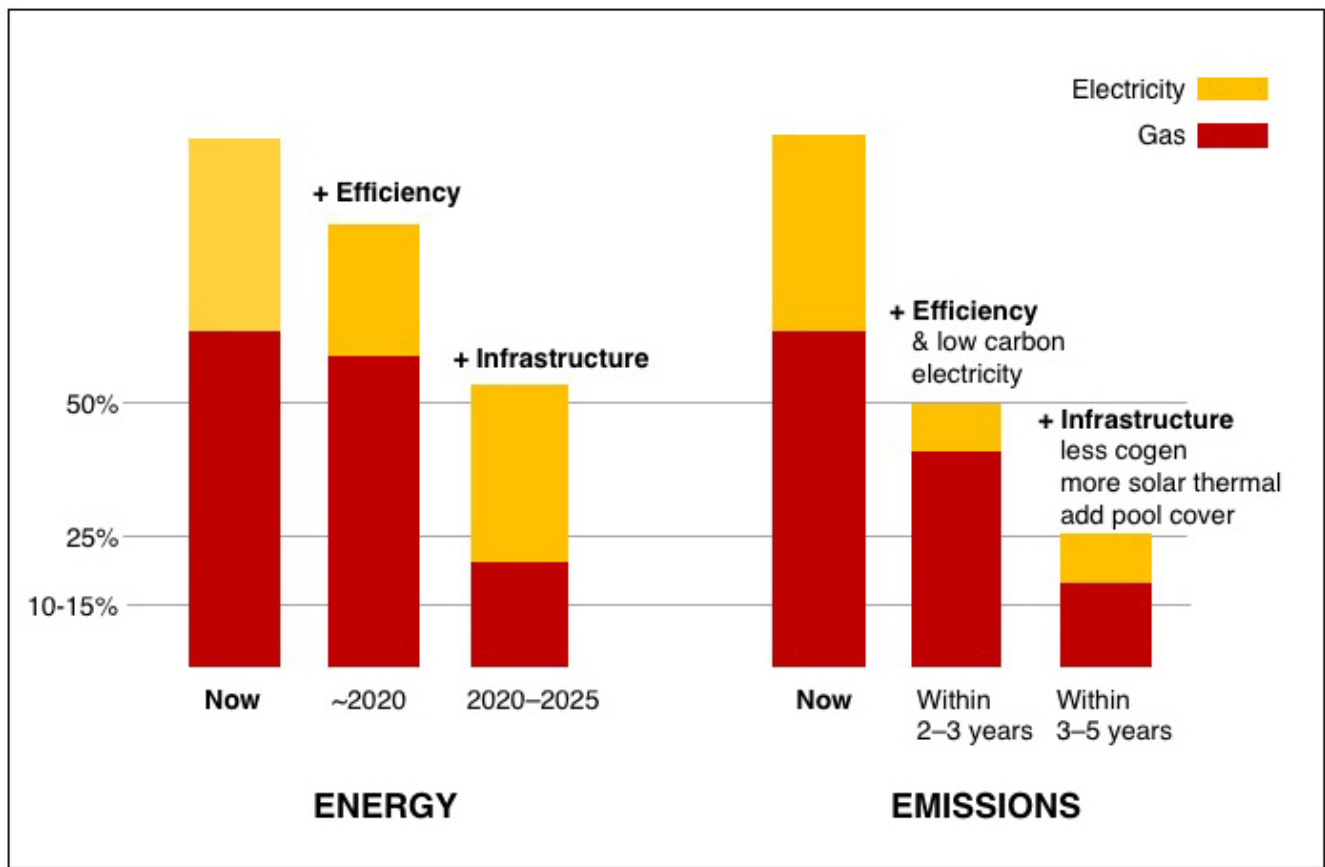
1. Determine an energy and emissions baseline for Foothill campus.
2. Organize current energy assets.
3. Develop an accurate model of power and energy use at Foothill campus.
4. Consider new types of energy technology that could be funded by the next bond measure.
5. Develop 5, 10 and 15 year projections for energy use and emissions.

Over the next year, the Energy and Emissions Committee will focus on developing accurate Energy Use Intensity(EUI) information that combines both imported and self-generated energy. The goal is to understand when, where and how energy is being used; i.e. the partitioning of electricity between heating/ventilating/air conditioning (HVAC) equipment, lighting and plug loads, and natural gas for heating and cogeneration (thermal energy for the pool) is paramount. A detailed energy study will provide the aforementioned criteria for analysis.

After a plateau in annual electricity use during years 2011-2015 Foothill experienced a rise in electricity use in 2016 of approximately 10%. While an exact understanding is not immediately apparent, we think that a combination of major construction in building 3500, deferred maintenance of the central plant (boilers and chillers) and the lack of adequate building (HVAC) controls contributed to the rise. However, with some modest effort beginning in late spring 2017, this energy rise has been stemmed and we appear to have at least leveled off. Similarly, natural gas use, which was level between 2011-2015 also increased a similar amount, approximately 10% in 2016. Not coincidentally, the twelve-month trailing natural gas use, also appears to have leveled. Since both electricity and natural gas increased in calendar year 2016, but appear to have leveled in the twelve months trailing, we suspect building controls are the culprit. As described in future actions, the funding of a comprehensive building management system (BMS) through bond funding is critical.

Visioning Future Energy Use in Carbon Emissions

Achieving significant and substantive reduction in energy and greenhouse gases, consistent with the District's commitment with sustainability (and to regional greenhouse gas (GHG) reduction goals) will require a combination of efficiency, energy procurement strategy, and new technology infrastructure. For example (as shown in the graph above) energy efficiency could achieve an approximate 15 to 25% reduction in energy use intensity by 2020-2022. Achieving significant reductions in GHG emissions as shown in EMISSIONS will require low carbon electricity generation (contracts), and replacement of natural gas (thermal infrastructure) with advanced electric technology. Investment in both energy management and generation technology could achieve a 50% reduction in greenhouse gases in 2-3 years, and as much as 75% reduction in 3-5 years with a shift in energy use and carbon intensity used for heating and cooling, as well as, re-evaluating the heat source for the swimming pool.



III. Health

PROMOTE HEALTHY LIVING CULTURE

As a College campus, we believe in “living what you learn.”

Foothill’s Physical Education & Kinesiology division offers a multi-dimensional approach to well-being that promotes individual responsibility. They focus on the active process of becoming aware of and making choices towards a healthier, more fulfilling life by giving students the skills and knowledge needed to establish and sustain an active lifestyle. Students, faculty, staff, and the general population are encouraged to sign up for a class and work out in the Wellness Center. Yoga and boot camp type classes are offered in the early morning before work or school as well as late afternoons and early evenings.

Bike riding to campus is increasing. Through the last bond, a portion of the multi-use bike/pedestrian path was built and additional bike racks were installed at the major entrance thresholds. A specific campus map indicating bike routes and bike racks is under development for the sustainability website. Additional development to complete the bike path was identified in the Facilities Master Plan for future bond funding.

Foothill was awarded a \$10,000 grant, through Truth Initiatives to employ student aides to remind students, staff, administrators and visitors that Foothill is a non-smoking campus. Additional signage was also funded and displayed, identifying cessation assistance.

Promoting reusable water bottles in the last few years was started at the District Board level and has become a daily practice on the campus. Bottled water is not served at campus functions. Hydration stations around the Foothill and Sunnyvale campuses calculate how many water bottles have been saved by refilling an existing container. Additionally, the student governing body, Associated Students of Foothill College promotes the use of a water bar (filtered water) to remind students to hydrate and refill their refillable water container. Avoidance of water that has been stored in plastic bottles for months and would then land in garbage cans or recycle containers is a much healthier practice for everyone.

Art is often overlooked in the area of health. Foothill has recently resurrected painting murals around the campus. Murals provide design and color, but also tell a story and bring vitality to the surroundings.

Various organizations on the campus promote special events featuring health as the major theme.

Leadership in Energy and Environmental Design (LEED)

Buildings on the campus are another measurement of the healthy environment the college promotes. The LEED organization was developed in 2000 and has become a cornerstone in building standards and environmental concerns. The goal of LEED is to make sure the performance of each building meets the environmental needs of the community, as well as the building, itself, maintaining a more eco-friendly design. The Physical Sciences and Engineering (PSEC) Building on the Foothill campus and the Sunnyvale Education Center have met LEED criteria. As new buildings are built, the goal is to meet at least minimum LEED standards.

The very location of Foothill College promotes serenity and meditation. The meandering paths, bamboo garden, trails leading into the Los Altos Hills, are just a step away from promoting mindfulness and de-stressing in and among natural beauty and solitude.

GOALS OF THE WORKSHOP

Provide Healthy Food & Beverages

- Provide natural / organic food at the cafeteria
- Continue offering natural/organic food at the cafeteria.
- Contact vending machine operators to offer healthier choices in vending machines.

Improve Indoor/Outdoor Air Quality

Indoor Air Quality (IAQ) refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants.

Indoor air quality can also be influenced by pollutant sources such as central heating and cooling systems, building materials, and tobacco.

With the addition of the new District Energy Manager position, evaluation of existing building systems and future bond funding will be evaluating specific criteria. Building controls are an on-going issue with continual modifications and upgrades. Many of the building heating, ventilating, air conditioning systems (HVAC) were replaced under the Measure E and C bond programs and there are many more improvements slated for a future bond. As the District priorities become more focused and refined, changes will be made to maximize efficiency and cost.

During construction, when new products and furniture are added to a building, the schedule will be evaluated to provide the maximum amount of time for the furniture to “out-gas”, or dissipate the “new car smell” prior to occupants moving in. Mechanical system air filters are replaced (even though they are often less than a year old) to remove construction debris and dust.

Foothill campus is located on a hilltop, not a valley and therefore has relatively good air quality, even being adjacent to a major highway. The campus is a non-smoking campus, with limited smoking areas, designated in parking lots. This minimizes second hand smoke exposure to pedestrians, keeps second hand smoke away from building entrances and the major campus thoroughfare.

Outdoor Air Quality (OAQ)

The Bay Area Air Quality Management District Board of Directors adopted the 2017 Clean Air Plan/Regional Climate Protection Strategy, titled Spare the Air-Cool the Climate, which addresses air quality improvement and greenhouse gas reduction for the nine-county Bay Area region. This plan is the roadmap for tackling regional air pollution and climate pollutants while improving the health of Bay Area residents for the next several decades. Below is a list of their goals for the year 2050. Foothill’s goals align with BAAQMD.

- Buildings will be energy efficient – heated, cooled and powered by renewable energy.
- Transportation will be a combination of electric vehicles, both shared and privately-owned autonomous public transit fleets; with a large share of trips by bicycling, walking and transit.
- The Bay Area will be powered by clean, renewable electricity and will be a leading incubator and producer of clean energy technologies leading the world in the carbon efficiency of our products.
- Bay Area residents will have developed a low-carbon lifestyle by driving electric vehicles, living in zero net energy homes, eating low-carbon foods and purchasing goods and services with low carbon content.

- Waste will be greatly reduced, waste products will be re-used or recycled and all organic waste will be composted and put to productive use.

Provide access to natural ventilation

This particular issue was highlighted during our Sustainability Workshop and dovetails under energy efficient buildings. As part of our recommended design principles, operable windows are always preferred over stationary windows. This principle was utilized in the Physical Sciences Engineering Building, but was not followed in the Sunnyvale Education Center based on specific design criteria. As the Sustainability Management Plan is adopted into the shared governance system, and more stakeholders are aware of the issue, the Committee recommends operable windows become a College standard for ALL new buildings.

Provide light through operable windows

Utility costs can be decreased when daylighting is properly designed to replace electrical lighting. Along with the importance of energy reduction, studies have demonstrated the non-energy related benefits of daylighting. Humans are affected both psychologically and physiologically by different spectrums provided by various types of light. These effects are the less quantifiable and easily overlooked benefits of day lighting. Daylighting has been associated with improved mood, enhanced morale, lower fatigue and reduced eyestrain, as well as, meeting the need for contact with the outside living environment (National Renewable Energy Laboratory).

Daylighting data shall be used to evaluate new building spaces prior to constructing or renovating new buildings.

Commit to initiate tangible actions to reduce greenhouse gases

Changes in lifestyles and consumption patterns that emphasize resource conservation can contribute to developing a low-carbon economy that is both equitable and sustainable. Education and training programs can lead to the acceptance of energy efficiency and bring significant reductions in greenhouse gas emissions.

Ten Ways to Reduce Greenhouse Gases

This list can be found as a stand-alone document on the Sustainability website. The following is a list of 10 steps to reduce greenhouse gas emissions:

1. Reduce, Reuse, Recycle

Buying products with minimal packaging reduces waste. By recycling half of your household waste, you can save 2,400 pounds of carbon dioxide annually.

2. Use Less Heat and Air Conditioning

Adding insulation to walls and installing weather stripping or caulking around doors and windows can lower heating costs more than 25 percent, by reducing the amount of energy needed to heat and cool your home. Turn off the heat while away during the day or night, and keep temperatures moderate at all times. Install a programmable thermostat, setting it just 2 degrees lower in winter and higher in summer could save about 2,000 pounds of carbon dioxide each year.

3. Replace Light Bulbs

Lighting accounted for 10 percent of US residential energy use in 2016. Home lighting upgrades are

an easy way to lower your utility bill, reduce energy use, and help cut greenhouse gas emissions. Changing out compact fluorescent lamps (CFL's) to LED's, utilize long lasting light bulbs that use less energy and provide the same light output.

4. Drive Less and Drive Smart

Less driving means fewer emissions. Besides saving gasoline, walking and biking are great forms of exercise. Explore the local transit system and check out options for carpooling to work or school. When you do drive, make sure your car is running efficiently. For example, keeping your tires properly inflated can improve your gas mileage by more than 3 percent. Every gallon of gas you save not only helps your budget, it also keeps 20 pounds of carbon dioxide out of the atmosphere.

5. Buy Energy-Efficient Products

Home appliances now come in a range of energy-efficient models, and compact florescent bulbs are designed to provide more natural-looking light while using far less energy than standard light bulbs.

6. Use Less Hot Water

Use low-flow showerheads to save hot water and about 350 pounds of carbon dioxide yearly.

7. Use the "Off" Switch

Save electricity and reduce global warming by turning off lights when you leave a room, and using only as much light as you need. And remember to turn off other equipment (computer, overhead projector, etc.) when not in use.

8. Plant a Tree

Trees absorb carbon dioxide and give off oxygen. A single tree will absorb approximately one ton of carbon dioxide during its lifetime.

9. Monitor Energy Use

Understanding trends, high-demand timeframe and plug loads are easy ways to assist in monitoring energy used.

10. Encourage Others to Conserve

Share information about recycling and energy conservation with your friends, neighbors and co-workers, and take opportunities to encourage public officials to establish programs and policies that are good for the environment.

Less energy use means less dependence on the fossil fuels that create greenhouse gases. Ten steps anyone can implement, resulting in reducing energy use and influencing the future.

BE RESPONSIBLE FOR ENVIRONMENTAL HEALTH AND BIODIVERSITY

Commit to ecologically responsible landscaping, installation and maintenance

Foothill College is one of the most esteemed examples of college campus planning to be realized within the last 50 years. The design of the campus was to: 1) relate to the background and tradition of the area, 2) express informality, and 3) produce an air of quiet dignity and sophistication appropriate to a college. Under Measure C Site Improvement projects, an opportunity presented itself to address landscaping issues and campus interconnectivity in a holistic way and seize opportunities for sustainable design practices where possible. Site improvement projects outlined in the Foothill College Site Design Concepts brochure included intuitive way finding to streamline pedestrian and

vehicular mobility; low-flow irrigation and drought-tolerant planting; energy efficient lighting and building a bicycle friendly infrastructure.

The campus features six landscape typologies. The Campus Green consists of gently sloping open green areas and meandering pathways emulating the adjacent foothills. The Main Courts consist of the landscape supporting individual disciplines within the campus, including classroom spaces, and small courtyards which serve classrooms. Academic Courts are remnants of a historical landscape which supports the existing structures from the original site use at the campus. These spaces are generally low use spaces but have great historical reference and significance (recessed areas in courtyards, now used as planters. We were able to keep the historical aspect, but mitigate the American with Disabilities issues of access, for example). The walkway around each building is considered a Building Frame, and serves as main points of entry into the center of campus and facilitates circulation between classrooms and offices. A Landscape Buffer is used as a transition between parking lots and campus pedestrians. Inviting entrance thresholds are gateways into the central campus to provide a welcoming atmosphere as opposed to the previous “coming in the back door” experience.

All of these areas were landscaped with hardy, low maintenance, drought-tolerant plants, and on specific sloped areas, plants included specifically for erosion control.

Additionally, all new or renovated parking lots included bioswale design and implementation. Bioswales are landscape elements designed to remove silt and pollution from surface runoff water. They consist of a drainage course with gently sloped sides (less than six percent) and filled with vegetation, compost and/or riprap.

Responsible landscaping also looks at what “lives” in the landscaping. The definition of “biodiversity” is the variety of life in a particular habitat or ecosystem. Foothill College, located in rural Los Altos Hills, has a large population of wild animals at various times on the campus such as deer, jack or cotton-tailed rabbits, coyote, raccoons, skunks, along with the typical, squirrels, rats, mice, voles, etc. There is a large bird and rapture population that inhabits the campus as well. Landscape that discourages nesting rodents and traps that keep the rodent population sequestered are used to ensure the rapture population are not poisoned though the spread of pesticides in the food chain.

PROVIDE PUBLIC TRANSIT ACCESS

Create Foothill-De Anza bus line and/or carpool system

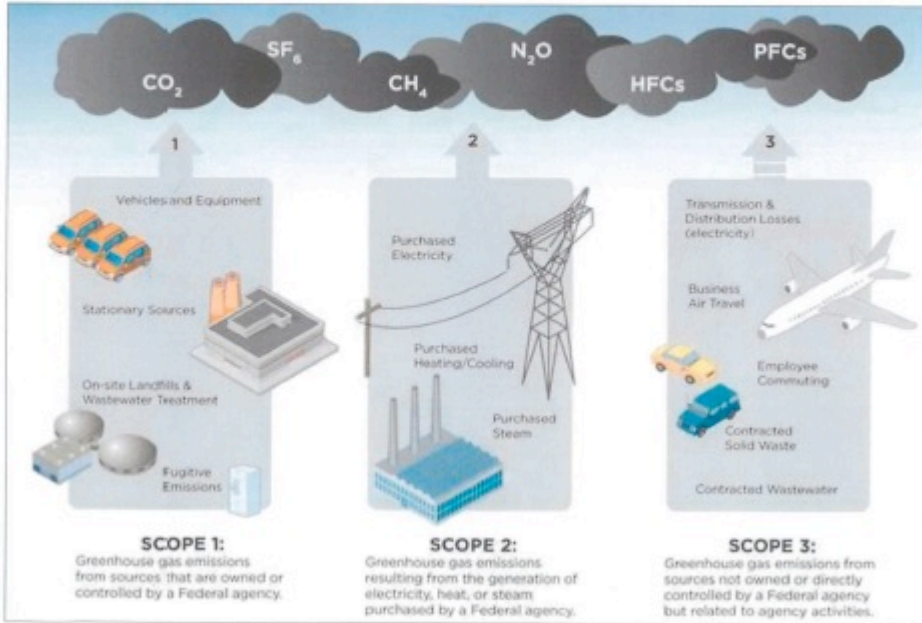
Foothill and De-Anza are commuter colleges, which means students must travel to attend classes as there are no dormitories or student housing available on site. The colleges do have bus routes through Santa Clara County Valley Transit Authority (VTA) which serves students. The bus line used to provide a bus connecting Foothill with the De Anza campus, so students could access both colleges. Now, with the addition of the Sunnyvale campus, a triangular route may benefit students. The Committee will reach out to Santa Clara VTA to open discussions about the feasibility of a new route. Foothill will be researching alternative transportation options through utilizing a district owned van, the possibility of hiring a driver, evaluating the cost of insurance and doing a “pilot program” by providing a district shuttle service.

The zip car rental program was established on campus approximately five years ago. Due to the block class scheduling, individual work and personal schedules, etc. this was not a robust program.

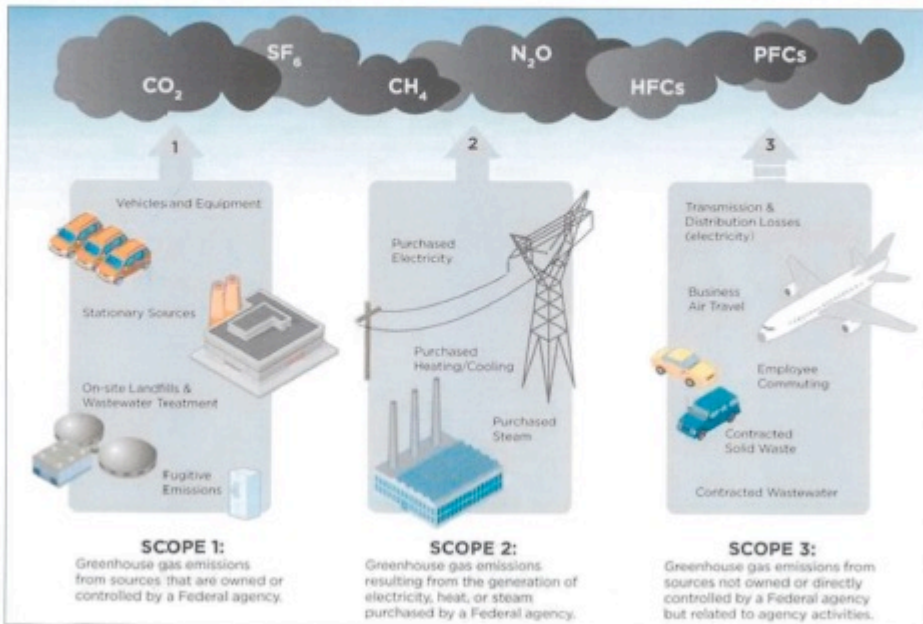
Additionally, preferential car-pool parking was also attempted. This program worked modestly well for

faculty, but it was difficult at best to monitor for students.

Carbon & Climate Action: Typical GHG Sources



Carbon & Climate Action: Typical GHG Sources



Carbon & Climate Action: GHG Scope 1&2

IV. Monitor & Report

Metering hardware and energy monitoring tools are cost effective for benchmarking and analyzing building operations.

It has long been said, “what isn’t monitored, isn’t reported.” What isn’t reported isn’t addressed. What isn’t addressed continues to proceed on its own timetable and rarely is a positive outcome. Monitoring provides the power of actionable information. Information allows proactive, informed choices to be made to effect the bottom line. Economic success is intertwined with environmental responsibility. For example, efficiency strategies can be leveraged to schedule appropriate use of heating, ventilation and air conditioning equipment or best maximize the consumption of energy. Identifying key energy initiatives will fall to the District Energy Manager with input from the campuses.

Benefits of Energy-Related Facility Improvements

Tangible

Energy Savings
Operation savings
Personnel savings
Time savings
Reducing occupant complaints
Property value

Intangible

Occupant satisfaction
Occupant comfort
Productivity
Goodwill
Environmental impact
Social responsibility

Energy efficiency is not a one-time activity. The District and College need to focus on sustaining and improving energy use over time, which requires continuous monitoring, analysis and reporting of building performance. Efficiency strategies can be leveraged to schedule appropriate use of heating, ventilation, and air conditioning (HVAC) equipment or best maximize the consumption of energy. Integrated building management systems can be utilized to limit the loss of energy and conserve electricity. Reducing energy use, and minimizing energy loss due to leak and waste, can reduce the cost of running a building. A new building automated system (BAS) has been identified for inclusion in future bond funding with remote energy monitoring.

Periodic reports will help keep issues at the forefront, and provide trending and monitoring data for analytical use.

- Sustainability Annual Report
- Overall Campus Energy Use
- Energy Use by Building (load profiles, total consumption)
- Reports on specific buildings with the greatest potential for energy enhanced savings through energy conservation measures
- Reports to identify building deviations from expected results

Promote Green Building Construction and Renovation

Outperform Title 24 Standards for all new buildings

Title 24 is the 24th title within the California Code of Regulations (CCR). The CCR is divided into 28 separate titles numbered 1 through 28, each based on subjects or state agency jurisdiction. CCR 24 is reserved for state regulations that govern the design and construction of buildings, associated facilities and equipment. These regulations are also known as building standards. Title 24 applies to all building occupancies, related features and equipment throughout the State of California and contains requirements for structural, mechanical, electrical and plumbing systems, and requires measures for energy conservation, green design, construction and maintenance, fire and life safety and accessibility.

Target for Leadership in Environmental and Energy Design (LEED) Certification for all new buildings

LEED is an internationally recognized green building certification system. This process offers third-party verification that a building or community was designed and built using strategies aimed at reducing energy and water usage, promoting better indoor air quality, and improving quality of life.

In order for a building project to earn LEED Certification, it must meet certain criteria and goals within the following categories:

- Location and Transportation - how close the project is to mass transit
- Materials and Resources - were locally sourced, sustainable products used
- Water Efficiency - reduce potable water usage
- Energy and Atmosphere - improve energy performance and indoor air quality
- Sustainable Sites - utilize nearby natural resources and ecosystems that can naturally take part of the design, minimizing environmental pollution
- Regional Priority Credits - addressing a particular concern based on location
- Innovation - any idea not covered under the main LEED categories.

The benefits of LEED Certification include:

- Reduced energy and water usage
- Reduced maintenance and operation costs
- Reduced construction waste during the building process
- Reduced liability
- Increased indoor air quality
- Increased employee performance, satisfaction, and retention
- Promotes usage of recycled material
- Attracts companies, employees, and tenants who value sustainability

As Foothill builds new buildings, our goal is to pursue LEED Certification or at least build to the level of LEED criteria should we choose not to pursue the official designation/paperwork.

Develop methods to monitor consumption activity and routinely report

Remote energy management through the use of dashboards, smart building meters, data loggers, Building Automated Systems (BAS), and network controllers have been discussed for the campus for many years. As local bonds are passed, we expect to move forward with this endeavor.

Customized reports are key to obtaining real information to manage resources. A high-level dashboard can provide a holistic view of energy use across the campus. This enables observable details such as carbon emissions, goals versus actuals, month-to-month comparisons, quarterly, seasonal, annual trends, etc.

“The same strategies and data measurements used to show a strategy is working can also help determine and prioritize further improvement.” –Monitoring Energy Use: The Power of Information

V. Recycle

Promote a culture of reduce, reuse, and recycle.

There are a number of programs that support this philosophy already in existence.

Cafeteria utensils, plates and napkins are completely compostable and instituted approximately five years ago at the Sustainability Committee’s request.

Used printer cartridges have been recycled for years and reported on in the Annual Report Card.

A new non-profit program, Bay Area Furniture Bank, is currently renting modular space from Foothill College. This program redistributes donated furniture from local hotels, to local families in need. Our own students have been recipients of their generosity.

Bio-link, a science-based, non-profit company is housed on Foothill campus. This group stages donated science equipment and hosts “open houses” for local schools to enable them to augment their material and equipment needs at no cost.

Healthy alternative vending machines are replacing existing machines.

Hazardous and Solid Waste Reduction and Control / Minimize Waste Generation

– Maximize use of recyclable materials

Reports generated by the Environmental Health and Safety Director tracks the District’s annual use of hazardous waste.

Landfill versus recycled building material content is also tracked through construction project reports.

Foothill College has utilized Milliken Carpet systems and been awarded “Respect Our Earth” certificates from Milliken for selecting carbon neutral products to use in renovated buildings. All products used have zero carbon footprint.

- Make recycling easy by providing paper recycling receptacles in classrooms/offices

During spring quarter 2018, all classrooms will be surveyed to ensure appropriate recycling bins are in place. Additionally, “stickers” will be applied to recycling bins explaining ‘single source’ recycling principles, so people understand that even if custodians are not separating trash, the garbage company does.

Green Purchasing and Procurement Controls in the College Supply Chain

- Strongly encourage the use of vendors that demonstrate their commitment to sustainability

Foothill has standardized on using furniture from KI Systems. The company uses regional materials (less greenhouse gas emissions), low-emitting materials (better air quality), certified delivery trucks (less fuel = less greenhouse gas emissions), CARB compliant (less formaldehyde emissions = better air quality), and all products can be recycled at the end of the product’s use (end of life recycling). See Appendix F.

Vendors that provide products to Foothill should all be evaluated with the same criteria that KI exhibits.

- Implement managed print service

The District is in the process of implementing central print machines and removing multiple individual printers. We hope to see this program on the Foothill campus in 2018-2019.

VI. Water

The San Francisco Public Utilities Commission (SFPUC) owns and operates the San Francisco Regional Water System, a complex system connecting the Hetch Hetchy Valley, Tuolumne River and Crystal Springs Reservoir. The system provides Hetch Hetchy water, flowing more than 160 miles from Yosemite National Park, to the San Francisco Bay Area. It is driven wholly by gravity except where local watershed-treated waters are introduced. Foothill College is located in the Lower Peninsula Watershed, a 98-square-mile tract of land encompassing six cities, seven creeks and two reservoirs.

Foothill purchases water from the Purissima Hills Water District (PHWD), an autonomous agency and part of the Bay Area Water Supply & Conservation Agency (BAWSCA). One-hundred percent of this water is received from the San Francisco Public Utilities Commission (SFPUC). Foothill purchases this water untreated, and is the largest user of water within the water district, which meters our water usage and charges a flat rate.

- Manage building and site water

Through Measure C, irrigation repairs were made resulting in a major water savings, along with limiting irrigation to landscape.

The District monitors water use annually. Our water consumption in the past year was 57,152 gallons per month. Landscaping utilizes the majority our consumed water. Currently we do not have any

campus water collecting systems (rain or gray) and this could be a potential project in the future.

The Sunnyvale Ed Center does use recycled water for landscape irrigation.

– Optimize building water efficiency

Restroom fixtures were converted to low-flow systems to augment water savings.

– Incorporate xeriscaping / drought-tolerant plants

Any plants incorporated into projects under Measure C were/are drought-tolerant.

As new bond measures are voted on, the committee encourages making drought-tolerant plants a campus standard.

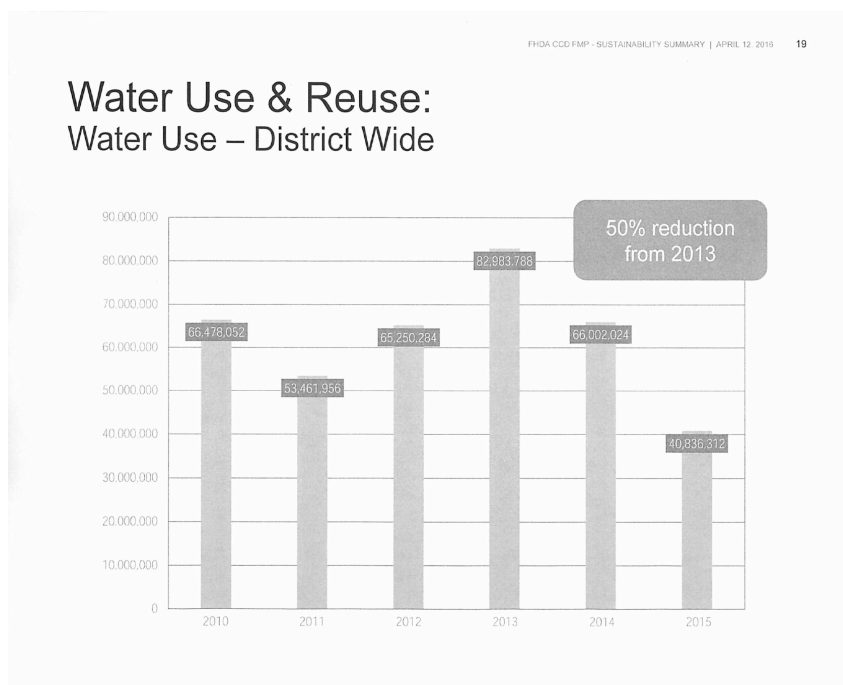
– Convert current irrigation system to smart system

The existing campus irrigation system is a “smart system”. Computerized controllers (Rain Water Oasis brand) are located at various locations on site to control specific locations, timing of sprinklers and duration.

– Encourage rainwater harvesting

As reported in previous annual Report Cards, the Horticulture department built a water capturing system to educate students and capture rainwater. Until last year, our particular region did not have a lot of rain, in fact, Northern California suffered a drought.

The graphs below were produced and submitted by Gensler Architectural team during the Sustainability Workshop.



Sunnyvale Education Center

The new Sunnyvale Education Center was built to LEED standards and received a Platinum rating. This is the highest rating a building can receive. The project was exemplary in the following categories:

1. Recycling site demolition waste: 99.08% of non-hazardous materials including 46,122 tons of crushed concrete; 11,322 tons of steel and 519 tons of copper, aluminum and stainless steel were recycled.
2. The building is energy efficient with a predicted EUI (as per energy model) of 25.42 l- that compares to a baseline building (Baseline is ASHRAE 90.1-2007) EUI of 48.914.
3. Indoor and outdoor potable water savings are achieved by using highly efficient fixtures and systems and non-potable water for irrigation and maximum LEED points were achieved in these credit categories.
4. Low volatile organic compound (VOC) adhesives and sealants, paints and finishes, third party, certified flooring and finishes and forest stewardship certified (FSC) wood products were used in the building, complying with environmentally sound production practices and healthy air quality practices.
5. Integrative design processes.

The Center is located within the Moffett Park area of the City of Sunnyvale and sits on the former Onizuka Air Force Station site. The building was constructed on a 9.2-acre site acquired through a Public Benefit Conveyance application with the Department of Education and through agreements with the City of Sunnyvale. The building is a two story, 55,000 square foot space and a 556-space parking lot, with a 16,000 square foot campus courtyard. A follow-on phase for another 55,000-square foot building and four story parking structure has been discussed.

The building mechanical system utilizes both passive and highly energy efficient equipment to provide comfort heating and cooling. The western end of the building (40%) utilizes a low velocity, variable air ventilation (VAV) reheat air handling system. The eastern side of the building that shares the two story atrium (60%) classroom spaces use a radiant heating and cooling slab system for maintaining space temperature, while an engineered natural ventilation system with fan assist provides outside air. Chilled and hot water are provided by an air-cooled heat recovery pump system that provides free heating when there is a simultaneous heating and cooling load. The natural ventilation system consists of motorized louvers in the exterior walls and an advanced control system that provides passive cooling when outside conditions are favorable. It also responds to room CO₂ concentration to ensure adequate ventilation year-round.

The electrical system was sized and set up to accept connection of a future 700KW photovoltaic system to offset 100% of the current and any potential future energy load.

The lighting design focused on high efficiency sources and fixtures, and integrates with daylighting controls. Light emitting diode (LED) fixtures have been used predominately. Lighting controls are provided throughout to meet Title 24 energy code requirements and the LEED goal project requirements. Classrooms are provided with daylight sensors connected to fixture dimmers. When sufficient light is available in the space, the lights dim down accordingly. During the day, the lights in the public spaces are on and respond to available daylight levels monitored through the Building Management System (BMS).

Office areas are provided with a plug load control system to allow certain plug loads to be controlled with the room lighting, turning off when no one is present.

An energy monitoring system is provided for a future photovoltaic system, as well as for each branch circuit panel and large load connected directly to the main switchboard, such as the elevator. Energy meters are located adjacent to the panel boards that they serve and are interconnected with low voltage wiring. Meters connect back to the BMS system for recording and displaying energy usage data.

Summary

The Sustainability Management Plan has been revised to align with the Educational Master Plan and the Facilities Master Plan. We are appreciative of the assistance and guidance provided by Gensler & Associates.

Within the document, identified goals and metrics will be reported on in the end of year 'report card' for accountability.

Foothill College is a long-standing, reputable college with sustainability exhibited from the very beginning in its architecture and placement among the Los Altos hills.

A participatory reporting structure within the college's shared governance system will provide visibility, direction and accountability to the activities and processes related to the sustainability management plan.

The Sustainability Committee was formed in 2008. The committee began with a few employees and now includes students.

The core sustainability concerns (energy, water, site/habitat) have remained the same over the past several years. However, what is new, is the social aspects around sustainability (well-being, curriculum, greentech workforce) which add to the urgency to incorporate the tangible with viable metrics.

With the recent addition of the long-awaited District's Energy Manager position, we anticipate moving the "energy" needle forward by using building data, metrics and oversight.

Foothill College and the Foothill De Anza Community College District have been actively engaged in sustainability efforts and activities for almost a decade, with notable metrics in place. It is clear, however, that the College/Committee needs a thorough process to share their accomplishments and a platform to "tell their story". We believe the campus is the "best educational tool" we can employ. With a revised reporting structure, monthly meetings, published meeting minutes, a published annual Report Card, sustainable features highlighted on campus through signage, and a newly updated website, the committee is on target with Foothill's mission to help educate students "beyond the classroom."

Appendix

- A Sustainability Committee Mission Statement
- B Foothill College Sustainability Policy
- C Foothill De Anza Board on Sustainable Practices
- D Foothill College Climate Action Plan
- E Energy Manager's Job Description
- F KI Vendor Documentation
- G 2016-2017 Annual Report Card

Appendix A

Sustainability Committee Mission Statement

The mission of the Foothill College Sustainability Committee is to take a leadership role in promoting, developing and modeling sustainability initiatives for students, staff, faculty and other public entities that are served by the college. Sustainability concepts will be incorporated into the academic and daily affairs of the college, minimizing the college's impact on the environment, and providing opportunities for, and encouragement of, student leadership roles in the endeavor.

Appendix B

(Revised August 2017)

Foothill College Policy on Sustainable Practices

Foothill's primary mission is to educate students. To enhance the curriculum and learning opportunities, Foothill will strive to model exemplary sustainable practices that will become a part of our students' everyday lives as they progress through the educational system and begin their careers. The sustainability efforts are committed to minimizing the college's impact on the physical environment, be accountable for our actions and provide guidance for our future endeavors.

The college president shall appoint a sustainability committee composed of representatives of stakeholder groups from the college community. To achieve Foothill's goals, the sustainability committee will develop priorities and implement decisions regarding sustainability practices.

Sustainability Committee Structure

The sustainability committee's primary responsibility is to develop a Sustainability Management Plan (SMP) which will outline goals, implement programs, monitor and evaluate results, and provide an annual report to the college president. The SMP will align with the college's Educational Master Plan and Facilities Master Plan. As part of the reporting process, the committee will examine past practices and revise and redefine parameters as necessary to produce meaningful data.

The committee and subcommittees may appoint additional members. The committee shall meet as a whole approximately once per month. All terms are two years, with the exception of the student member(s), whose term shall be one year. There are no term limits. Subcommittees shall be appointed and meet as necessary.

The college president shall review the scope and structure of the sustainability committee every five years. With this commitment, a viable road map and annual reporting to the college president, Foothill

is positioned to move sustainably into the future.

Appendix C

Board Policy 3214—Sustainable Practices

Environmental sustainability is critically important to the Foothill-De Anza Community College District, the state of California and the nation. Efficient use of resources is central to this objective. The district is committed to stewardship of the environment and to reducing the district's dependence on nonrenewable energy sources. The Foothill-De Anza board of trustees recognizes the importance of new initiatives to incorporate sustainable practices. Such sustainable practices shall include:

- Incorporate the principles of energy efficiency and sustainability in all capital projects, operation and maintenance within budgetary constraints and programmatic requirements.
- Minimize the use of nonrenewable energy sources by creating a portfolio approach to energy use, which would include on-site energy production (e.g., photovoltaic), purchasing local renewable energy; purchasing green power from the grid, and conservation measures that reduce energy consumption.
- Minimize greenhouse gas emissions on district facilities, and incorporate fuel- efficient vehicles and practices into the district's fleet of vehicles.
- Promote alternate means of transportation to and from the campuses.
- Minimize the amount of district-generated waste sent to the landfill through an aggressive recycling program for all products, which can be diverted from the landfill.
- Utilize the district's purchasing power to reduce packaging, purchase green products and evaluate life cycles of products to determine how they will be disposed of at end of life cycle.
- Establish communications strategies for students and employees to understand and promote these values.

The board of trustees will regularly review progress toward these goals.

See Administrative Procedures 3214; Title 5 Sections 57100, 57121; Title 14, Div 6, Chapter 4
Approved 8/16/1999; Revised _/ /

Appendix D

Foothill College Climate Action Plan; December 2009

Authors: M. Casey, R. Cormia, B. Davis-Visas, S. Schmidt

Introduction

Martha Kanter, a former chancellor of the Foothill-De Anza Community College District, and Foothill College President Judy Miner signed the American College & University Presidents' Climate Commitment (ACUPCC) along with 600 other signatories in an effort to address global warming by pursuing climate neutrality for their campuses and developing the expertise of their faculty, staff and students to help society do the same. There are two colleges within the Foothill-De Anza Community College District: Foothill College (Foothill) and De Anza College (De Anza). The district, in addition to the ACUPCC commitment, supports California's S-3-05 and AB 32 bills. Foothill committed within two years to develop and begin implementing a plan to accomplish carbon neutrality. Within one year of signing the commitment, all signatories pledged to begin measuring and publicly reporting their GHG emissions inventory.

This document will describe the efforts of Foothill in developing both a sustainability mission statement and sustainability working group, and specific efforts in Foothill's Climate Action Plan to reduce energy use and greenhouse gas emissions.

The Foothill College Sustainability Committee was convened April 9, 2007, at the request of Chancellor Kanter and President Miner in response to our ACUPCC commitment. Prior to this commitment, a handful of staff and faculty engaged in various green activities on campus, such as recycling coffee grounds for composting, paper collection and reuse, and performing small-scale refuse and recycling audits. Representatives from various shared governance groups were requested. The resulting committee consisted of the director of facilities as chairperson, and included one staff representative, one classified representative, two faculty representatives, the director of maintenance and plant services, and the special assistant to the president. Sustainability coordinator duties were added to the job description of the special assistant to the president effective Fall 2009.

The committee's first task was the development of a mission statement. Once accomplished, the committee set to work to create a campus sustainability policy. During this time, the district was also revising Board Policy 3214 to align its sustainability policy with both Foothill and De Anza.

In September 2008, the district and Foothill held respective opening day activities with sustainability as a key theme for both. On Sept. 18, the district held a panel discussion to introduce sustainability issues to faculty and staff. Panel participants from Foothill included Robert Cormia (faculty), Charlotte Thunen (faculty) and Sarah Snow (Foothill student trustee). Snow presented the initial results of the GHG audit performed in Summer 2008. At Foothill's opening day on Sept. 19, the theme was One College, One Community, One World, and the committee hosted an information table that featured green promotional items, as well as a sign-up sheet to participate in future sustainability efforts. As a result of that recruitment effort, the sustainability committee membership now includes six steering members, 12 faculty representatives, 15 staff representatives, three administrators and three student representatives from the Foothill Environmental Technology Club. Two of the members also report to the academic and classified senates with monthly updates from committee meetings. Monthly meeting minutes are recorded and copies are distributed to the president's cabinet. A sustainability website has been created and monthly meetings and sustainable events are posted, along with green tips and other pertinent information.

As the committee began to work on the Sustainability Management Plan (SMP) for the campus, six

focus areas emerged: awareness/civic engagement, hazardous and solid waste reduction, water conservation, transportation, energy conservation, efficiency and CO2 reduction, green procurement, and green building and construction. Issues and initiatives within the six categories are brought to the monthly meetings for discussion, review, implementation or resolution. As part of the committee's work around the SMP, elements from the plan are being incorporated into the college's upcoming Educational & Strategic Master Plan, which will be finalized by Fall 2010. Comprehensive reviews of the SMP are anticipated every three years with minor annual revisions.

Foothill's Climate Action Plan dovetails with the Transportation, Energy Conservation, Efficiency, and CO2 Reduction section of the SMP. Foothill conducted its first GHG emissions and report in August 2008. Per the ACUPCC commitment, this audit and report will be repeated every two years. The 2008 GHG audit/report will be the baseline for future improvements and interim targets for the reduction of GHG emissions.

On June 1, 2005, Governor Arnold Schwarzenegger signed S-3-05, an executive order stating that California will reduce greenhouse gases to specific targets to avoid future catastrophic climate changes. AB32, called the Global Warming Solution Act of 2006, gives California the authority to regulate greenhouse gas emissions as follows:

- by year 2010, greenhouse gases will be reduced to the year 2000 levels;
- by year 2020, greenhouse gases will be reduced to year 1990 levels; and
- by year 2050, greenhouse gases will be reduced 80 percent below year 1990 levels.

Foothill performed a GHG inventory using the Clean Air, Cool Planet process and submitted these results to AASHE in Fall 2008. The following year, the district developed an approach for measuring, managing and reducing GHG emissions to 2000 and 1990 levels. During the period of 1990–2010 and beyond, the district has embarked on a series of renovations of existing buildings, as well as the construction of new buildings, which has increased Foothill's building footprint by almost 50 percent. Deploying energy efficiency measures in the late 1990s reduced our energy use per square foot by 20 percent, with minimal gain of energy/emissions per full-time student (FTES) load. We are in the middle of ongoing construction, with plans to address energy efficiency, monitoring and management through renovation and additional technology, including state-of-the-art building-monitoring and significant addition to onsite PV electrical generation.

The district's energy use and GHG emissions, shown in Appendix 1, are typical of noncommercial service organizations, where 50 percent or more of stakeholder emissions are attributable to transportation, i.e., Foothill is a commuter school. Buildings built before 1978 were not designed with conservation and energy savings in mind. Forthcoming legislation in California will require all new buildings beginning in 2020 to be built utilizing net-zero energy. New buildings will follow Leadership in Energy Efficiency & Design (LEED) building design, and additionally be separately metered to monitor, regulate and reduce energy and water use. The district has committed to incorporate LEED engineering principles in all new construction, which will lower energy use, emissions and future operating costs for the district.

Regional studies by Sustainable Silicon Valley (SSV), Joint Venture Silicon Valley and the California Climate Action Registry (www.climateregistry.org) indicate the major cause of regional GHG emissions is transportation, with natural gas and electricity use in buildings the second largest contributor. Toward that end, a significant component of future GHG reduction will entail a comprehensive transportation plan for Foothill employees and students. California has made energy efficiency a primary goal for both

reducing energy use and controlling GHG emissions. California no longer burns coal. However, but during periods of peak demand will purchase electricity from out of state where coal comprises a significant portion of electrical generation. California produces 50 percent of its natural gas and electrical energy resources, and purchases the remainder from the United States, Canada and Mexico.

Climate Commitments

We live in an era of numerous climate commitments, including SSV's commitment to reduce energy use and GHG emissions and California's landmark climate legislation AB32 and ACUPCC, with reduction targets. These commitments are qualitatively and quantitatively similar to the Kyoto Protocol, which while the U.S. did not sign, serves as a guide for reduction targets to the above climate commitments. Notably, the district is unique among the 100 SSV signatories in that the district is the only one to actually have several years of past energy data from which we can baseline and benchmark our progress internally and comparatively to organizations of similar in size.

The ACUPCC identified seven tangible actions that could have immediate impact. Foothill has elected to pursue the following actions:

- All new campus construction will be built to the U.S. Green Building Council's LEED silver standard or equivalent.

Foothill is currently in the process of design and construction of its Physical Science & Engineering Center, and is pursuing LEED silver standard certification. The Foothill and district sustainability plans include provisions regarding new buildings meeting or exceeding LEED standards.

- Adopt an energy-efficient appliance purchasing policy requiring the purchase of Energy Star-certified products in all areas for which such ratings exist.

Foothill has included provisions for purchasing or replacing appliances to be specified as Energy Star-rated when available, as part of the green procurement section of the SMP.

- Encourage use of and provide access to public transportation for all faculty, staff, students and visitors at our institution.

Foothill is serviced by the Santa Clara Valley Transportation Authority (VTA) bus routes. As part of a comprehensive transportation plan currently in development, Foothill is seeking ways to encourage and increase ridership to and from campus via mass transit. The committee is working with VTA to look closely at ways of increasing/improving bus routes and encourage ridership. Foothill is considering the adoption of an Internet-based rideshare program and has implemented a monthly raffle to incentivize faculty and staff to carpool. Additionally, Foothill is in the process of raising funds for a new multiuse path to be used by pedestrians and cyclists.

- Within one year of signing this document, begin purchasing or producing at least 15 percent of our institution's electricity consumption from renewable sources.

Foothill's second installation of photovoltaic solar panels has been installed in Parking Lot 1H. Planning is under way for further photovoltaic installations on campus.

The following recommendations were not feasible for Foothill to undertake at this time. However, they will be reviewed and implemented if/when practical:

- Establish a policy of offsetting all GHG generated by air travel paid for by our institution.
- Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where our institution’s endowment is invested.
- Participate in the waste minimization component of the national Recycle Mania competition, and adopt three or more associated measures to reduce waste.

A 10-Point Plan

Foothill and De Anza have both implemented energy- saving projects, and created and implemented strategic master plans since the inception of the institutions. Rising energy costs, shrinking budgets, campus growth and recently enacted legislation make developing a strategy for cutting carbon emissions challenging but very necessary. Foothill will address its GHG emissions through a 10-point multidimensional program, which includes energy efficiency and retrofitting, a comprehensive transportation plan, smart campus technology (VMT/trip reduction), installation of additional on-site photovoltaic energy sources, sourcing cleaner electricity (wind/PPA), investing in carbon- sequestering projects (carbon offsets), and waste stream and supply chain management (procurement).

Details of the plan are discussed below, followed by a summary of our energy and GHG audits, plans to implement the CAP, monitor energy use, and track performance against GHG-reduction targets.

1. Energy Efficiency & Retrofitting

Energy efficiency and retrofitting will unfold over the period of the next three to five years, and is dependent on state budget conditions. Investment in energy efficiency projects will continue as part of the campus renovation master plan (Measure C), including installation of additional on-site photovoltaic systems. Foothill retained Chevron Energy in the late 1990s to help with an energy management system/ building management system (EMS/BMS), resulting in significant energy reduction in the late 1990s. Additional energy efficiency projects will build on the current EMS/ BMS, including replacing inefficient HVAC systems, adding insulation and improving window glazing, and implementing new electrical energy technology (ILT). Projected energy and emission savings are estimated at 10 to 15 percent of current electrical and natural gas use.

2. Smart Energy/Demand Response (DR)

Foothill is currently engaged in planning a campus wide smart-metering effort, reporting building-by-building energy use, enhancing energy efficiency retrofitting efforts, and optimizing our EMS/BMS efforts, which will provide the ability to monitor and manage heating and cooling with better precision. These meters will eventually integrate bidirectional and demand-response (DR) capabilities. Incremental energy and emission savings, when coupled with retrofitting projects, are estimated at 5 to 10 percent of current electrical and natural gas use.

3. Comprehensive Transportation Plan

Foothill has begun an effort to develop a comprehensive transportation plan for employees and students, focused on ride sharing, trip reduction and alternatives to personal vehicle use. Foothill conducted an informal survey of student driving in Fall 2007, which yielded driving habits of our on-campus ‘traditional’ student. These data were used to calibrate our statistical / ZIP code analysis of student registration records, used to estimate Scope 3 GHG emissions for the President’s Climate Commitment

(ACUPCC). The survey was repeated in Fall 2009 using both on-campus and electronic data collection (Web survey). Foothill College is in the process of adopting an Internet-based ridesharing portal with a goal of increasing ridesharing from an estimated 20 percent to a range of 30 percent (often) to 40 percent (often or frequent). Student driving accounts for roughly two-thirds of total GHG emissions, hence a reduction of 10 percent student driving (not including trip reduction) would reduce total college GHG emissions by roughly 6 percent.

4. Smart Office Technology

Following the lead of De Anza College, Foothill will begin integrating smart room technology in all new buildings starting in 2010–2011. These efforts will include integrated wireless networking, projector and audio/video capture technology in larger conference rooms, meeting areas and lecture rooms. The goal of these efforts is twofold. First, to capture meetings and presentations for later playback and distribution, and archiving. Second, to facilitate participation by a broader audience through real-time teleconference capabilities. This increases productivity for faculty, staff and administrators, who often must juggle meeting conflicts, and will help to either reduce trips to campus, and/or add flexibility to daily schedule, allowing more ridesharing opportunities. Additionally, this technology may be integrated into office/workflow, allowing staff and administrators to more easily telecommute, e.g., as part of a flex Friday policy, enabling employees to work a reduced schedule while ridesharing. Flex Fridays encourage ride sharing and allow the EMS/BMS to begin reducing HVAC in the early afternoon on Fridays. Estimated energy/GHG reduction is initially 2 percent of employee vehicle miles traveled (VMT), with an eventual goal of 5 percent employee VMT reduction.

Enhanced Video Classroom / iTunesU (VMT reduction) Foothill is planning a pilot program to capture audio/video from classrooms, to allow playback of lectures for students who miss a lecture or class meeting, or who plan to attend a lecture remotely as part of web-enhanced classroom delivery strategy. Audio/video capture may later transition to a pilot iTunesU project, enhancing both traditional and online education, and reinforcing the development of hybrid classrooms in which students fill a larger section and participate both remotely and in person.

6. Source Clean Electricity

In addition to procurement of fixed photovoltaic (PV) energy systems, Foothill will explore purchasing energy that combines lower carbon content through an enhanced renewable portfolio (or a PPA with a remote renewable energy provider), and carbon offsets. Pacific Gas and Electric offers a carbon-offsetting product, ClimateSmart™, which if bundled with a lower carbon electricity product, could help the college reduce the amount of Scope 2 (electrical) emissions to offset.

7. Photovoltaic & Cogen On-Site Electricity Production

Foothill installed 100KW of PV electrical capacity in 2001– 2002. In June 2009, the college contracted with Chevron Energy to install an additional 400KW on premises, adding to the initial 100KW installed as shaded parking lot structures. This additional electrical generation will produce approximately 600,000 KwHrs annually, about 10 percent of annual electrical use. This additional electrical generation will offset a total of 720,000 pounds of CO2 annually, about 10 percent of total Scope 1/Scope 2 emissions. Foothill also operates four 60KW micro turbines, producing on-site electrical generation with enough waste heat to heat the college's Olympic-size swimming pool.

8. Invest in Carbon Sequestering & Renewable Energy

Foothill will work with PG&E to develop a plan to offset our delivered electricity, regardless of contract source. Our intention is to evaluate ClimateSmart™ offsets as part of a bundled energy solution, which may include lower carbon content, perhaps through an RE-PPA enhanced PRS contract. Given the size of the California Community Colleges system, and service territory of PG&E in Northern California, a combination of California offsets (carbon- sequestering projects maintained in California) and

renewable energy (RE) added to California's installed base, purchased as a renewable energy credits (REC), might be the most affordable and cost-effective method for colleges and universities to offset GHGs in a protracted and restricted budget environment.

9. Waste Stream Minimization

Foothill is working on enhancing on-site recycling, composting and waste stream minimization, through both general awareness and using a small cadre of students in a green academy. We currently defer about 65–70 percent of waste, with a goal of 75-percent reduction by 2012–2013. We are evaluating a more aggressive sifting of recyclables from waste dumpsters.

10. Supply Chain Management

Foothill is working with vendors to source the least carbon- intensive products and process, and requesting that vendors state the carbon content of products they sell/ deliver to us, and their plans to reduce carbon content.

Energy & GHG Audit Results

The goal of the President's Climate Commitment (ACUPCC) is two-fold: To reduce energy-related GHG emissions and offset those emissions. In the discussion above we described our 10-point plan to reduce and offset GHG emissions. In the following section, we will show how this plan will unfold over time, and specifically meet the numerical target emission reductions specified in the ACUPCC.

Simply attempting to reach energy/emission reductions avoids the value of understanding the relationship between and among raw energy use, building evolution and service (product/output). In this section of the report, we describe our multidimensional analysis of electricity and natural gas use, total building envelope (square footage) and student population (headcount and FTES). Table 1 shows electrical and natural gas use for Foothill and the district (same meter). Using factors from PG&E, we converted kWhrs (electricity) and therms (natural gas) to carbon dioxide (CO₂), the primary GHG warming the atmosphere. Included in Table 1 is the square footage (gross and assigned) for each campus, headcount (total number of students served) and FTES (a measure of total student contact hours, and thus a proxy for total time students would be on campus).

These data immediately show one surprising result. There is no immediate or obvious correlation between the number of students served (FTES) or contact hours (student time on campus) with either electrical or natural gas use. In fact, there are three trends, shown in Figure 2, which show a negative correlation among these variables, i.e., energy use increased in the mid-1990s as student headcount decreased, and energy declined, significantly, in the early 2000s as student headcount increased. In the last few years, energy has increased again while student headcount has stabilized to a norm of about 30,000 FTES. These trends occurred on both campuses, both simultaneously and independently of each other, making interpretation of the data analysis even more interesting.

These results suggest that changes in energy use are primarily driven by changes in the number, size and energy management of buildings, rather than student enrollment. During the late 1990s a number of buildings were taken offline for remodeling and retrofitting, and additionally an EMS/BMS was installed. The addition and subtraction of square footage, combined with addition of new HVAC systems, didn't begin to equilibrate until the period of 2005–2007, including new buildings entering service in 2007–2008. As such, there appears to be no reliable or single metric during the period of 1991–2007 from which energy use can be accurately predicted. However, three conclusions can be drawn from analysis of these results.

– First, the addition of EMS/BMS in the late 1990s had a significant impact in reducing energy, and

those efforts need to be revisited during the current period of new building and recommissioning;

– Second, the addition of both square footage and HVAC will trend energy use higher in summer and winter, hence the addition of individual building meters and enhanced smart energy systems will be required to optimize the use of energy integral with master scheduling systems (classrooms, students, etc.); and,

– Third, addition of PV energy systems will be essential for peak shaving of air-conditioning load as temperatures continue to rise (see Global Climate Change Impacts in the U.S.).

It is not enough to reduce student trips to campus to decrease the GHG emissions per student- learning output. We must manage our buildings wisely. Smart energy systems are the best solution for this challenge, and fortunately the district is at the center of a geographical nexus focused on that problem. Over the next three to five years, integrating energy analytics to smart metering with our EMS/BMS systems should allow the district to bring electrical energy use back down to 1990 levels, even with the addition of square footage, and greater use of HVAC. Investment in LEED buildings, which use natural ventilation in addition to HVAC, and additional PV-electrical generation, will be a key component of that strategy, and protect the district from escalating electrical prices in future decades.

As we continue to grow in headcount and much of it in distance (online) and hybrid (partially online) instruction, it is likely that our energy productivity will be close to our early 1990 levels, when student enrollment was higher and HVAC use was lower. As we gain access to lower carbon electrical energy products, including solar power purchase agreements (PPAs), our electrical GHG emissions will decrease. Combining energy efficiency and on-site PV-electrical production with a lower carbon intensity electrical product will lower electrical GHG emissions to approximately 1990 levels. Natural gas use can be reduced 10 percent through combined efficiency and EMS/BMS measures. Mitigating transportation emissions will be the larger part of our emission reduction plan. Developing a comprehensive transportation plan, including a ridesharing portal, smart campus technology and flexible block scheduling (hybrid instruction), has the potential of reducing petroleum emissions by roughly 20 to 30 percent.

The climate plan described above addresses Scope 1 (on-site), Scope 2 (electrical) and Scope 3 (indirect/transportation) by reducing roughly 20 percent of current levels, nearly bringing the district and both colleges to 1991 energy use. Reducing emissions beyond that would require purchase of low-carbon solutions for electricity and natural gas, which may be accessible through group energy purchases through the Community College League of California (CCLC). Offsetting carbon (GHG) emissions is straightforward, and Scopes 1 and 2 can be addressed through mechanisms similar to PG&E ClimateSmart™, which could be financed as easily as a \$1 per academic term donation should students choose to engage this effort. Most importantly, the district will lead by example, integrating smart energy and technology solutions that enhance service delivery while decreasing energy use and GHG emissions. We are at the center of the emerging clean and green technology economy, and embrace the many opportunities to visibly participate in this effort.

Managing Energy

In developing the Climate Action Plan (CAP), it was evident that returning to our gross energy baseline of 1991 wasn't realistic given the almost 50 percent increase in building footprint (487,000 sq. ft. in 1991 to 680,000 sq. ft. in 2015). Following the directive of the California Community College Chancellor's Office, Foothill has reported energy use per square foot, in BTUs, as a common measure of both energy use and comparative efficiency. Annual energy use in BTU per square foot is reported in (Table 1.2) for calendar years 1991–2009, and estimated for calendar years 2010–2015. These values are derived from standard energy conversion (3,412 BTU per KwHr and 100,000 BTU/ therm), and

serve as both a standard measure of internal energy use, independent of new construction, and as a benchmarking tool for comparison with other colleges and universities. Estimates of BTU/square foot are also more realistic in projecting future total energy use, as trends from previous years are better integrated into current and future estimates, and aggregate energy use will be more realistic, helping in developing better budgeting tools for future energy expenses (additionally helping to plan strategic investments in energy efficiency and renewable energy). These data show that Foothill will likely return to the 1991 energy-intensity footprint of 100,000 BTU per square foot / year by 2015, which is, by comparison, a reasonable value for colleges of our size, scope and location.

Foothill Energy Balance Table

Year	utility kWh	cogen kWh	PV total	kWh total	therms	BTU (kWh)	BTU(therms)	BTU total	kWh/therm
2006	4,578,449	1,521,120	153,688	6,253,257	409,535	2.13E+10	4.10E+10	6.23E+10	0.52
2007	5,352,160	1,880,240	157,098	7,389,498	510,107	2.52E+10	5.10E+10	7.62E+10	0.49
2008	6,521,958	1,529,120	157,209	8,208,287	520,754	2.80E+10	5.21E+10	8.01E+10	0.54
2009	6,854,885	872,080	232,513	7,959,478	417,353	2.72E+10	4.17E+10	6.89E+10	0.65
2010	6,437,431	354,410	672,039	7,463,880	335,073	2.55E+10	3.35E+10	5.90E+10	0.76
2011	4,559,427	968,400	2,102,126	7,629,953	437,843	2.60E+10	4.38E+10	6.98E+10	0.59
2012	4,319,212	1,291,920	2,355,708	7,966,840	479,133	2.72E+10	4.79E+10	7.51E+10	0.57
2013	4,788,761	1,144,640	2,391,709	8,325,110	487,440	2.84E+10	4.87E+10	7.71E+10	0.58
2014	4,419,747	1,577,040	2,261,931	8,258,718	466,847	2.82E+10	4.67E+10	7.49E+10	0.60
2015	4,374,371	1,539,200	2,216,835	8,130,406	484,440	2.77E+10	4.84E+10	7.62E+10	0.57
2016	5,021,288	1,604,240	1,748,619	8,374,148	514,196	2.86E+10	5.14E+10	8.00E+10	0.56
2017	4,318,401	1,643,300	2,247,860	8,209,561	483,228	2.80E+10	4.83E+10	7.63E+10	0.58
			10 yr average	8,052,638	462,162	2.75E+10	4.67E+10	7.37E+10	0.59
			std dev	296,160	51,518	9.75E+08	5.12E+09	6.03E+09	0.19
						BTU (kWh)	BTU(therms)	BTU total	kWh/therm
2006-07	4,950,640	1,722,640	158,695	6,831,975	453,826	2.33E+10	4.54E+10	6.87E+10	0.51
2007-08	6,159,167	1,722,080	156,499	8,037,746	558,891	2.74E+10	5.59E+10	8.33E+10	0.49
2008-09	6,598,853	1,248,400	105,203	7,952,456	454,990	2.71E+10	4.55E+10	7.26E+10	0.60
2009-10	6,631,434	488,080	515,336	7,634,850	355,430	2.61E+10	3.55E+10	6.16E+10	0.73
2010-11	5,445,121	853,530	1,245,234	7,543,885	435,164	2.57E+10	4.35E+10	6.93E+10	0.59
2011-12	4,241,589	1,019,520	2,434,398	7,659,507	415,072	2.61E+10	4.15E+10	6.76E+10	0.63
2012-13	4,858,930	1,191,120	2,309,096	8,359,146	489,739	2.85E+10	4.90E+10	7.75E+10	0.58
2013-14	4,529,928	1,359,120	2,481,525	8,370,573	462,597	2.86E+10	4.63E+10	7.48E+10	0.62
2014-15	4,194,828	1,508,640	2,224,324	7,927,792	448,664	2.70E+10	4.49E+10	7.19E+10	0.60
2015-16	4,779,849	1,578,340	2,097,778	8,455,967	523,747	2.89E+10	5.24E+10	8.12E+10	0.55
2016-17	4,662,596	1,678,480	1,896,163	8,237,239	527,075	2.81E+10	5.27E+10	8.08E+10	0.53
			average	8,017,916	465,927	2.74E+10	4.66E+10	7.41E+10	0.59
			std dev	315,198	54,447	1.08E+09	5.44E+09	6.49E+09	0.20

Foothill College 2006-2017 Energy Balance From Detail of Bills (electric and natural gas)

Appendix E



FOOTHILL-DE ANZA
Community College District

Office of Human Resources and Equal Opportunity Administrator Job Description

MANAGER, ENERGY SYSTEMS

DEPARTMENT: Plant Services
COLLEGE: Central Services
SALARY GRADE: A2/A3 - G

POSITION PURPOSE:

Under the general direction of the Executive Director of Facilities and Operations, the Manager, Energy Systems is responsible for District-wide energy management and sustainability initiatives. The Manager, Energy Systems focuses on five key areas; 1) Sustainable Facilities Management and Operations; 2) Green Building and Sustainable Design Integration; 3) Energy and Utility Analysis and Reporting; 4) Communications and Outreach, and; 5) Program development, administration and oversight. A high degree of independent judgment and creativity is required to develop and implement complex initiatives with multiple stakeholders. Consequences of errors in judgment will be costly in loss of staff and student productivity, safe and comfortable working and learning environments and critical data to insure efficient operations, particularly in terms of energy and utility consumption. Public contact is extensive, with staff, colleagues and the community for the purpose of providing information, assistance, advice, and appropriate support.

NATURE and SCOPE:

The Manager, Energy Systems directs the work of district HVAC technicians, Boiler technicians and BMS/EIS (building management systems and energy information systems) technicians and serves as Project Manager for capital projects related to energy efficiency. This position requires an individual with excellent scheduling abilities, the ability to utilize independent judgment to perform technical and analytical studies of energy usage and electrical demand; a customer-service driven work ethic, good communication and organizational skills, and the ability to remain focused with little or no direct supervision. Knowledge in development, implementation, use, and calibration of complex facility and energy management systems is a basic requirement for this position.

KEY DUTIES and RESPONSIBILITIES:

The following duties and responsibilities are typical but not limited to the following:

1. Oversees the full life cycle (identification thru verification) of energy, sustainability, efficiency, conservation and other utility maintenance and management efforts.
2. Supports Facilities and Operations staff in developing and implementing operational improvement strategies.
3. Serves as the District's in-house technical expert and research analyst on utility services, energy consumption, resource reduction and renewable energy sources.
4. Advocates for District's sustainability initiatives and energy efficiency projects and goals during capital and operational project development and implementation.
5. Consults with architects, engineers, builders and other departments to incorporate the District's standards on energy efficiency and sustainability; Serves as an advisor on application and administration of sustainable design standards.
6. Acts as Project Manager for capital improvement projects that are specifically designed to improve the efficiency of mechanical and electrical systems.
7. Works internally and externally to identify and procure professional services for energy and sustainability oriented efforts; insures alignment of District planning strategies and building program implementation.

Appendix G

Annual Report Card 2015-2016:

<https://foothill.edu/sustainability/docs/sustainability-reportcard-2015-16.pdf>