Environmental Sustainability Management Plan

Revised December 2015

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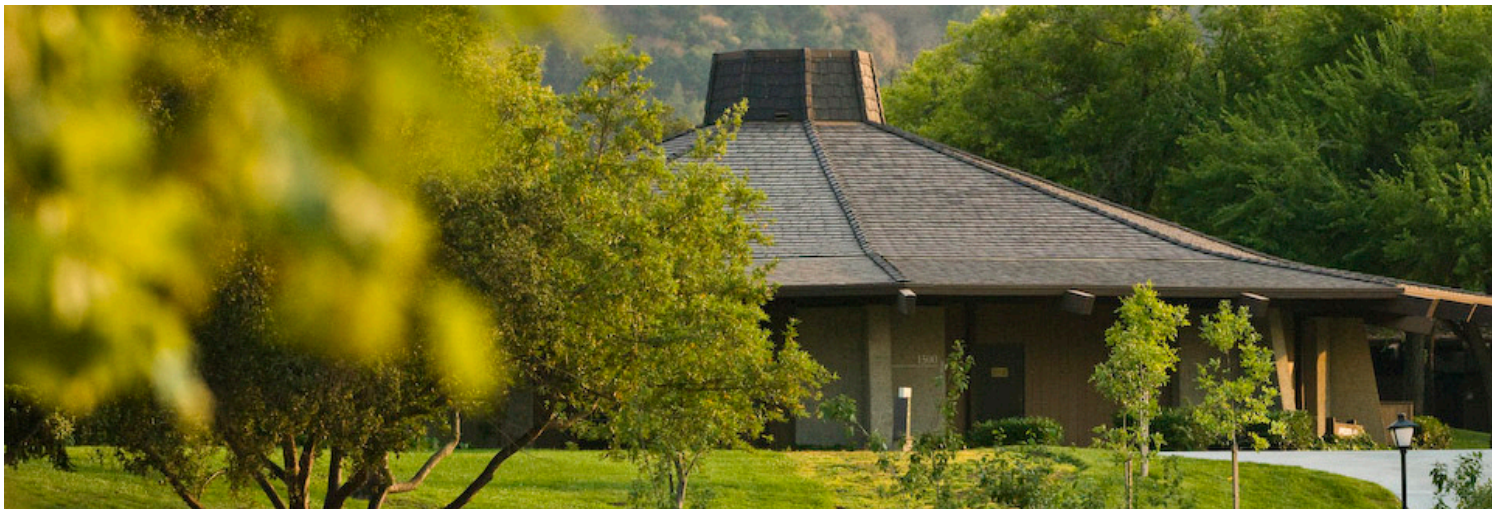

Foreword

In the eight years since our first Sustainability Management Plan (SMP), the College experienced significant changes in personnel and responsibilities that impacted the continuity and organization of the original team. That said, with perseverance and dedication to the larger Sustainability mission, we made significant progress in a number of key areas as indicated by the report card, including a plateau in imported energy demand and Greenhouse Gas (GHG) emissions (even with a larger building footprint), a number of key water projects, and a larger awareness of sustainability across campus. We are proud of the improvements, awareness and programmatic shift we've seen since undertaking sustainability goals and projects. As we move forward, we anticipate being more closely aligned with the educational master plan goals; 1) Re-organize and support a campus culture that values ongoing improvement and stewardship of resources, 2) strengthen a sense of community and commitment to the colleges mission and expand participation of resources, and 3) partner with the District and build on our successes.

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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. Foothill College (Foothill) along with its sister school, 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, we hope to become known for an additional distinction, as 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 college has updated its Association for the Advancement of Sustainability in Higher Education (ASHEE) GHG inventory with emissions from 2010–2014, and is updating the Climate Action Plan (CAP) to include a smart energy campus strategy.

The Foothill College Sustainability Committee was formed with the primary goal of developing campuswide 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 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. Our progress will determine if or when to pursue the ISO 14000 environmental management program. As programs and systems develop, we will determine how to partner with the district, De Anza, local governmental agencies and organizations on future sustainability endeavors. The sustainability 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 SMP report card for the past five years, see Appendix K.

The proposed actions identified in the SMP will require the involvement of many members of the college community to support activities that promote environmental stewardship, fiduciary responsibility and community engagement (service learning).

- The core of the college's SMP addresses six categories:
- Community & Civic Engagement
- Hazardous & Solid Waste Reduction & Control
- Transportation, Energy Conservation, Efficiency & CO_2 Reduction
- Water-Use Reduction & Control
- Green Procurement
- Green Building Design, Construction & Renovation

Specific information can be found within the category sections beginning on page 7.

It is critical that our initiatives intertwine with and support the overarching policy goals of the district. We will make every effort to coordinate our activities with both the district and De Anza to maximize potential, reduce duplication and provide a united sustainability pursuit.

We are excited about the opportunities for Foothill College to engage in meaningful activities that will promote our sustainability goals now and into the future.

Sustainability Committee History & Philosophy

The sustainability steering committee came together in 2008 at the request of Foothill College President Judy C. Miner, Ed.D., who was previously vice president of educational resources and instruction at De Anza. De Anza, Foothill's sister college, was at the forefront of sustainable initiatives for higher education. Likewise, district facilities personnel have 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 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 directed 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.

2014–2015 Foothill Sustainability Committee

- Brenda Davis-Visas, Chairwoman
- Robert Cormia, Faculty Representative
- Linda Robinson, Classified Staff Representative
- Daniel Svenson, Faculty Representative
- Yulia Yukina, Faculty Representative

Goals

Over the next five years, Foothill's three most important goals will be to engage more students in all phases of sustainability, monitor and measure energy consumption and engage the campus community in sustainability awareness and engagement.

A survey for students is planned for Fall 2015 to solicit campus sustainability concerns that can be addressed within the nine-month academic year. The sustainability committee is looking for inclusive, honest and mutually beneficial input to deepen our understanding of our students' concerns, values and interests.

Beyond A Sustainable Campus—Teaching Sustainability To Future Generations

Sustainability continues to be included in the strategic initiatives outlined in the Educational Master Plan and continues to be one of Foothill's core values.

Celebrating & Sharing Our Achievement

It is important to share our initiatives, progress, successes and failures with the campus community and the greater community. Doing so affords us the opportunity to thoroughly analyze our effectiveness, as well as enhance and encourage public support and participation for our endeavors.

Challenging the Campus & Greater Community to Implement Green Solutions

By modeling unique programs and ideas, and encouraging participation, the committee is reinforcing and inspiring the community to find ways to incorporate sustainability in daily life.

Finding the Best Methods to Measure Our Progress

What isn't measured isn't managed, and therefore cannot be addressed. Benchmarking the campus progress against baseline information will provide data demonstrating how well our initiatives are working. In addition, measuring our results against other entities will provide an incentive and validate our efforts. The committee is continually researching and developing the best methods of tracking and measuring our efforts. Over the past seven years, this has been an extreme challenge because of budget constraints, and personnel layoffs and resignations.

Guidelines

Plan the work, work the plan, and document the results of the plan.

The following are some of the methods used to capture and record information:

Records: Individuals were responsible for documenting their information. Often this information became difficult to locate. The committee agrees that it would be beneficial to utilize a districtwide database to ensure that recorded information and documentation is consistent, meaningful and readily accessible throughout the three entities (district, Foothill and De Anza).

Procedures: It would be extremely difficult to formalize procedures without first determining possible projects that may evolve. Many of Foothill's sustainability activities are ad hoc. Concepts are brought before the committee, discussed and then implemented. Any activities that unfold are documented in meeting minutes and distributed through shared governance groups.

Metrics: Metrics establish baseline criteria, a starting point to successfully measure progress. Metrics ensure that the district is moving in the right direction, reinforce the process and allow validation of our information. We continue to advocate with senior management and the district for assistance with this issue. We believe a central database will be helpful to track metrics as well.

The final analysis of the American Association of Sustainability in Higher Education (AASHE-STARS) transparent, self-reporting framework for colleges and universities to gauge relative progress toward sustainability rating system was released in February 2010. The sustainability committee reviewed this rating system for our campus in 2010–2011. Since its initiation, STARS' user feedback has revealed that the STARS system is time consuming and requires a dedicated, full-time staff employee to maintain the database.

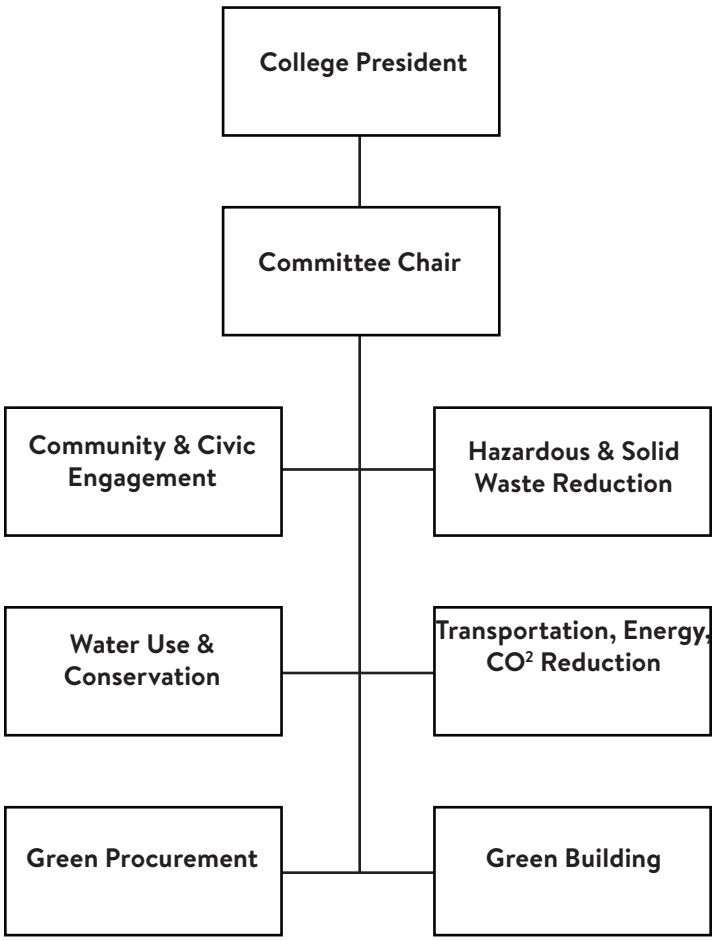
Tactics & Rules for Projects

Projects were set up to be a component of one of the six identified categories. To establish guidelines for initiatives or projects that were not known was not possible, and some projects would never require them. However, for those projects that are complex or anticipate participation by many individuals, guidelines should be written by the sponsor of each specific project.

Approval Process
Projects/guidelines are first presented to the sustainability committee, and then to the appropriate college governance committee(s), which may include Academic Senate, Classified Senate, Administrative Council and/or Planning & Resource Council (PARC). Doing so satisfies shared governance criteria, provides opportunity for stakeholders' input and ultimately gains approval for implementation.

It is not the sustainability committee's intent to put restraints on the entrepreneurial spirit of our members or eager participants. There are many facets in the daily operation of our district. By documenting our proposals and receiving prior approval, we avoid duplicate efforts, maximize our potential, steer clear of regulatory mishaps, and document our progress and successes.

Steering Committee Organizational Chart



Focus Categories & Initiatives

1. Community & Civic Engagement

A Sustainability Management Plan requires broad support from across the campus and community in order to be successful. To achieve that support, it is necessary to raise awareness, educate and provide opportunities for engagement.

Through these methods, Foothill will move toward the goals of our Sustainability Management Plan (SMP). Increased awareness and civic engagement, a global perspective, and service learning also contribute to student learning and success. By infusing sustainability and environmental literacy into our campus life and curriculum, we can prepare future generations for their role as responsible world citizens of a global economy. It is important to our future as a college, a community, and a world, to work together to build a culture of sustainability.

Where We Go From Here

Raising awareness begins with simple messages. These ideas begin to change perspectives, broaden viewpoints, and allow the seeds of change to take hold. From this groundwork, we gain support for initiatives and begin to move the campus forward in a more sustainable direction. Foothill College will build on the foundation of the past eight years in the areas of raising awareness, education and civic engagement.

Five-Year Projection: Goals 2015–2020

Category: Civic Engagement

Initiatives

1. Messaging: Continue to develop themes and messages to encourage and promote sustainability practices across the campus.
2. Special Events: Participation in national and local events to raise awareness of specific sustainability issues and engage the campus and surrounding community.
3. Website: Maintain website with meeting dates, agenda, meeting minutes and pertinent information.
4. Incorporation of sustainable themes and issues into general curriculum, as well as increase the number of sustainability-focused courses.
5. Green-Collar Training: Personal enrichment training that focuses on the six categories of sustainability. For example: How to read your utility bills; how to perform a home energy audit; online community education extension classes; etc.
6. Foothill College recognized as a leader in sustainability initiatives/education.

"Sustainability is not about recycling cans and bottles. It's about recycling our values and learning how to live differently. It involves acting now, and it involves acting on behalf of somebody other than just oneself."

—Scott McNall, Provost
California State University, Chico

2. Hazardous & Solid Waste Reduction & Control

The California Integrated Waste Management Board (CIWMB) has developed a uniform waste disposal characterization method for collecting data on the waste stream. The method was developed for California municipalities to use in meeting regulatory requirements for solid waste planning. The method was designed to collect information only on the disposed waste stream, not on materials that have been diverted through recycling, composting or source reduction.

Assembly Bill AB 75 was passed in 1999 and the State Agency Model Integrated Waste Management Act (Chapter 764, Statutes of 1999, Strom-Martin) took effect Jan. 1, 2000. This new law added new provisions to the Public Resources Code (PRC), mandating that state agencies develop and implement an integrated waste management plan (IWMP). AB 75 also mandated that community service districts providing solid waste services report disposal and diversion information to the city, county or regional agency in which the community service district is located.

The provisions of AB 75 require all state agencies and large state facilities to divert at least 25 percent of their solid waste from disposal facilities by Jan. 1, 2002, and at least 50 percent on and after Jan. 1, 2004. Another requirement of the law is that each state agency and large facility shall submit a biannual hazardous waste report.

Where We Go From Here

To minimize negative environmental effects, we must give priority to efficient safe use and disposal of hazardous, as well as non-hazardous materials. Foothill has demonstrated its commitment to this process and continues to do so. See Report Card Appendix K.

Five-Year Projection: Goals 2015–2020

Category: Hazardous & Solid Waste Reduction

Initiatives

1. Submit an annual report that details the previous year's diversion amounts and activities as of September 1 for state agencies, in accordance with PRC sections 40148, 40196.3 and 42920–42926.
2. Maintain current 70-percent diversion of waste, and explore strategies to increase diversion.
3. Spill cleaning equipment is available at all areas where hazardous materials reside to prevent them from entering a drain.
4. Employees are encouraged to report equipment leaks immediately.
5. Work toward reducing amount of e-waste.
6. Divert campus green waste to on-site composting.
7. Review current performance, equipment configurations, device-usage and equipment reports (photocopiers, networked and non-networked printers, scanners, etc.). Analysis of cost and current vendor contract terms and conditions with comparison of benchmark data.
8. Reduce the amount of printed course catalogs.

"Wisdom understands that in a world of ecological interconnectedness there is no such thing as 'away.' We don't throw things 'away,' we simply put them someplace where they defile the land, foul the water, pollute the air or change the earth's atmosphere. We forget that the water cycle and the life cycle are one."

—Jacques Cousteau

3. Water Use & Conservation

Conservation of potable water reduces the need for new supplies and treatment plants.

Understanding water usage is vital in conservation efforts. The sustainability committee makes every effort to understand our water use, conservation trends, what drives these trends, and what needs to be implemented to promote and communicate sustainable water use.

Water Sources

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.

Environmentally sensitive landscape design practices can have direct financial and human health benefits. The use of native or other ecologically appropriate plants reduces water consumption, maintenance requirements, the use of pesticides or herbicides, and increases the area's suitability for wildlife.

Where We Go From Here

Continued economic and population growth will add additional pressure on the region's finite water supplies. Foothill will do its part in reducing demand for water, with the most effective and economical strategies.

In 2014, the governor's office declared a state of emergency for a statewide water conservation campaign and encouraged personnel from the California Community Colleges system to reduce water by 20 percent. Foothill met the reduction as indicated on its Report Card (Appendix K). We continue to look at ways to be waterwise.

Five-Year Projection: Goals 2015–2020

Category: Water Use Reduction & Control

Initiatives

1. Propose future water-reduction ideas.
2. Continue to divert cooling tower water to irrigation.
3. Identify on-campus water closets, urinals and shower heads, that are not low-flow and modify them.
4. As additional on-campus areas are landscaped, utilize native drought-tolerant plants instead of grass.
5. Each spring, the district buildings and grounds department will add 3–5 inches of mulch to planting beds to minimize irrigation evaporation.

"How long can men thrive between walls of brick, walking on asphalt pavements, breathing the fumes of coal and of oil, growing, working, dying, with hardly a thought of wind, and sky, and fields of grain, seeing only machine-made beauty, the mineral-like quality of life?"

—Charles Lindbergh,
November 1939

4. Transportation, Energy, CO2 Reduction

In Spring 2015, Foothill updated the GHG inventory with ASHEE, posting results for calendar year 2014, and commenting on years 2010–2014. During that period, the 1 MW solar PV array in parking lot 3 came online, leading to a significant reduction of imported electricity, from 6.2 M kWh in 2010 to 4.5 M kWh annually in years 2011–2014. This trend also reflects experience managing energy in the new 60,000 sq-ft Physical Sciences & Engineering Center (PSEC), which came online in late 2012.

Energy Use Status

Electricity: Foothill's electricity use is ~ 8.5 million kWh a year, a little over half imported through a direct access contract with Constellation New Energy, and a little less than half generated on-site from solar PV and co-generation. This blends a traditional electricity product (CNE) with zero emission energy (on-site distributed generation) resulting in a carbon intensity that is ~ 0.5 pounds carbon dioxide per kilowatt hour, slightly less than PG&E's commercial product. The CNE product is a mixture of all generation types, and at some point the district may consider a Power Purchase Agreement (PPA) with a cleaner electricity portfolio (emission profile) product. Given the regional interest in Community Choice Aggregation (CCA) that might be a future path to investigate.

Natural gas: Foothill's natural gas use is slightly more difficult to analyze, as natural gas is used to heat buildings, as well as produce co-generated electricity (combined heat and power). Natural gas emissions are estimated using the standard conversion of 11.7 pounds CO2 per therm (100,000 BTU), and can vary from year to year depending on how much we rely on co-generation of electricity and heat for the physical education swimming pool. As discussed later, without metering of hydronics (cooling and heating) we don't really have a firm handle on exactly where this energy is used.

The results of the 2014 calendar year GHG emissions update were generally positive. Imported energy use declined more than 20 percent from 6.2 M kWh to 4.5 M kWh for each year from 2011–2014. Just as important, the energy provided from solar PV during hot afternoons offsets methane and other fossil fuels, leading to a significantly lower carbon intensity. Natural gas use has been flat in years 2011–2014, but was significantly higher than in 2010. This is most likely due to the new PSEC, and as mentioned earlier, an imprecise understanding of heating loads across campus and especially in newer buildings (lower campus, campus center, etc.) Because of the significant on-site generation of emission free electricity, and relatively conservative use of natural gas, Foothill's GHG emissions are slightly below average for community college campuses of our size.

That said, a more important measure of energy use, and a traditional reporting metric in high-performance buildings, is Energy Use Intensity (EUI), measured in BTU per sq-ft (annual). EUI combines kWh (3412 BTU/kWh) and therms of natural gas (100,000 BTU/therm). EUI includes both imported and on-site generation, and is a much better measure of building (and operations) energy efficiency than imported energy alone. EUI has been increasing steadily with renovation and new construction, and is front and center on the task list of the district energy manager, expected to be hired later this calendar year. Analysis of EUI shows no correlation with FTES trends, but does track new and renovated building occupancy, suggesting that proper commissioning and retro-commissioning of buildings, and implementing efficiency measures, including a campuswide energy management systems, building management systems (EMS/BMS), lighting and other electrical technology (inductive load etc.) will be needed to reign in energy use as our building footprint continues to expand. This will be especially critical as we attempt to meet the American College and University Presidents' Climate Commitment (ACUPCC) energy/GHG reduction goals and commitments, while simultaneously growing building footprints nearly 50 percent above our 1991 baseline. A smart energy campus is the key to intelligently and actively managing energy use, and part of our emerging distributed generation strategy. Our GHG report card is good, and we can do much better in the future.

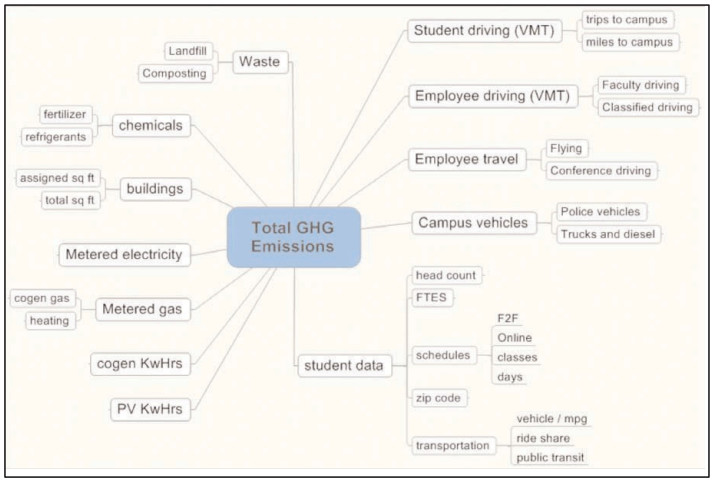
Indirect emissions from transportation (also known as scope 3 emissions) are more difficult to evaluate, as assigning Vehicle Miles Traveled (VMT) and estimates of petroleum consumption to student and staff driving is an imprecise measure at best, requiring statistics, assumptions, and at times, an educated guess. Nonetheless, in 2013 we used a student survey similar to the 2008 report, but this time Web-based with a much better response. From these data, which included Zip Codes, we estimated the average number of trips, mileage per trip, and average fuel economy. The survey data suggested a full-time student will travel to campus an average of 4.5 times per week, using about one gallon of gas per trip (depending on carpooling). At 20 pounds of carbon dioxide per gallon of gasoline consumed, this equates to ~ 90 pounds of CO2 per student per week, during our 36-week academic year. We subtracted 3,000 fully online students from our 12,000 full time equivalent student (FTES), resulting in 9,000 (FTES) students using ~13,500 tons of CO2. Staff driving, including classified employees, administrators, and full- and part-time faculty, was estimated using employment data but not ZIP Code analysis, hence probably a larger uncertainty, and results of ~ 1,500 tons of CO2 per year.

We are encouraging carpooling, telecommuting, smart meetings, etc. to reduce VMT and associated GHG emissions. Interestingly, in the past 18 months we have noticed a surprising large and growing number of plug in electric and hybrid vehicles in our parking lots. We'll be bringing limited EV charging to Foothill sometime in 2016–2017.

The total college GHG emissions (scopes 1, 2 and 3) are ~ 20,000 metric tons, a little less than reported in 2008. This may be because of the enhanced solar PV capability, as well as a slightly different approach in estimating student and employee driving. For an FTES, and averaging in online students, this is about 1.5 metric tons of CO2 per year. Given that some students may take only one course, but some four or more, there is a range of ~ 0.5 to 1 ton CO2 for part-time students, and 1.5 to 2 tons a year for full-time students. (These are numbers that ASHEE also computes and trends among all colleges). These results are generally in line with other California Community Colleges.

Methodology

The methodology for determining energy and assigning GHG sources is shown in the topic map below.



Where We Go From Here

Foothill College Sustainability Master Plan–Energy and GHG Summary

In summary, Foothill College's energy and GHG management strategy over the last eight years has been to monitor and manage energy carefully as new and renovated buildings came back in service. A key goal, to monitor energy at the building level, both electricity and hydronics (HVAC) hasn't been achieved, but is a high priority for new bond measures and funding going forward. While we have leveled off in imported energy over the last few years, the energy-use intensity (BTU/sq.-ft annual), a key measure of building and energy performance, appears to be higher than in the past, and we need to work to reduce it closer to 1990 levels. Once building energy- monitoring data are available, precise energy management becomes possible. A key component of that effort is hiring a dedicated manager in district facilities, which is in progress and expected 2016. To reduce GHGs further, a contract shift to a lower carbon product, either through Constellation New Energy (CNE), another direct access, or even Community Choice Aggregation (CCA) would be needed.

Five-Year Projection: Goals 2015–2020

Category: Transportation, Energy Conservation & CO_2 Reduction

Initiatives

1. District full-time position for an energy manager.
2. Report on CO2 reduction levels every two years in accordance with the Presidents' Climate Carbon Neutrality Commitment.
3. Interactive educational kiosk on campus for photovoltaic results to display real-time performance of the solar energy system.
4. Integrate systems for measuring energy use per building with annual energy-use intensity (EUI) reported.
5. Install electric vehicle chargers at the Foothill campus.

Plans for the Future

Plans for Reducing Energy Use

	Goal	Activity	Data Collection	Analysis	Reporting
Energy	Understand the use of energy on campus: How much electricity? How much natural gas? Amount of emissions? Where is it used? How does this use compare to past trends? 2015–2020 To Be Done	Collect energy data from facilities on a monthly basis. Work with district facilities personnel to gather data in an automated format (spreadsheet to spreadsheet). Install and monitor new energy meters. 2015–2020 To Be Done	Spreadsheet for collection of energy data. Gather sq. ft. (assigned and total) and FTES data. Gather degree-day data if possible. Use AASHE bench-marking to determine what other colleges are using. 2015–2020 To Be Done	Benchmarking. Compare to same month in prior year. Determine energy-use trends (year over year) energy per sq. ft. and energy per FTES. Use advanced metering to determine where efficiency measures are needed. 2015–2020 To Be Done	Foothill and district divisions, all students. SSV Report to Presidents' Climate Commitment (PCC). Report to AASHE. Annual report to Foothill president. 2015–2020 GHG Report submitted 2015. Next report due 2017.

In addition to logging energy data through interval reports, the district plans to conduct physical energy audits with a growing network of physical meters.

These ideas will become part of a larger directive as we make reasonable efforts to reduce GHGs through energy efficiency, conservation and lower carbon sources.

Plans for Reducing Vehicle Miles Traveled

	Goal	Activity	Data Collection	Analysis	Reporting
VMT (Vehicle Miles Traveled)	Reduce employee VMT by 20 percent in two stages. Target 10-percent reduction by 2008–2009 and 20-percent reduction by 2009–2010. Reduce student driving by 10–20 percent using a combination of ride share options. 2015–2020 Challenge to Students • Understand how much they drive. • How driving contributes to GHG emissions.	Conduct an additional survey. Compare to ZIP Code data. Get class schedule data and determine how many trips to classrooms must be made. Add a vehicle counting measure. 2015–2020 • Explore methods to reduce GHG emissions.	Survey data and scheduling data. Determine how many trips need to be made to campus. How many cars are entering the campus? Can we determine who is ride sharing? 2015–2020 We will explore data collection with our new energy management position.	How many trips? Student driving? Smart campus and block scheduling impact on trips to campus. Can iTunesU or video delivery increase student retention and decrease trips? 2015–2020 A process for data collection is required to answer these questions. In 2011 online enrollment was 16 percent and in 2015 online enrollment is up by 30 percent which decreases student trips to campus. The trend is more students are taking online classes.	Report data to each Foothill community, district, and track ride-share use. Report data to faculty to support classroom efforts. Report data to students/other groups. Use AASHE results table (from ES62B Final Project Cormia-Smith). 2015–2020 The Sustainability Report Card (Appendix K) will be the first official data report to help address these issues.

Climate Action Plan

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

- Energy efficiency/retrofitting
- Smart energy (EMS/BMS)/Demand Response (DR)
- Comprehensive transportation plan
- Smart office technology (VMT reduction)
- Enhanced building energy monitoring
- Source clean electricity (wind contract/RECs/PPA)
- Add additional photovoltaics and budget for energy storage (through EPIC funding, etc.)
- Invest in carbon-sequestering projects/offsets
- Reduce waste stream (recycle/reuse)
- Supply chain management (procurement)

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 nearly 50-percent increase in our building footprint (487,000 sq. ft. in 1991; 680,000 sq. ft. in 2015; 730,000 in 2016). Following the directive of the California Community Colleges Chancellor's Office, Foothill College 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 was calculated for calendar years 1991–2009, and estimated for calendar years 2010–2015 (in the first SMP). At that time the third solar PV project was close to completion, a 1 Mega-Watt (MW) system, added to Foothill's power grid. In the last five years (2010–2015), Foothill also finished renovation projects and completed construction of the new 60,000 sq-ft Physical Sciences & Engineering Center (PSEC). Foothill's annual imported energy has varied between 5.5 10^10BTU (2010) to 6.5 10^10BTU (2013) and now level at 6.25 10^10BTU, with an average of ~6 10^10BTU per year over the last five years. A key energy goal is to level and reduce imported energy, especially peak electrical demand. A second related goal is to accurately measure, monitor, and reduce energy-use intensity (EUI = BTU/sq-ft) on a building-by-building basis. For the last five years, Foothill's EUI has been ~100K and we have plans to add additional energy-monitoring tools to help measure, manage, and reduce this to below 100K, and ideally below our 1991 level.

EUI values were 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 (reference report from National Science Foundation). These data suggest that Foothill College will likely return to the 1991 energy-intensity footprint of 100,000 BTU imported per square foot/year, which is by comparison, a reasonable value for colleges of our size, scope and location.

A significant amount of energy on campus is probably used by electrical plug-loads. The biggest single use that can be reduced or eliminated is electric space heaters. These typically use 1 KW or more of power, throw off the energy balance inside a building, and require even more air conditioning to remove the excess heat. We estimate 20 to 30 (or more) space heaters are run during days that are either cold, or warm days when air conditioning is overused. Over the course of a day these can contribute tens to hundreds of kWh of extra energy use. Examining the set points in buildings, as well as zone-to-zone imbalances, by office inspection, is an effective approach to reducing these loads. Office refrigerators and microwave ovens are an additional source of building energy demand. Campuswide, a uniform policy is needed for permissible electric appliances, and if real cooling/heating problems exist, they must be remediated.

5. Green Procurement

Green procurement involves choosing products based on efficient use of energy and natural resources, product safety, and potential for safe, non-hazardous disposal. The district purchasing department, with input from the sustainability committee, will provide the Foothill College community access to the highest value of goods and services in a manner consistent with environmental stewardship and should make purchasing decisions based on sustainable and good business practices.

Green Procurement Goals

- Reduce supply deliveries.
- Implement new e-procurement system.
- Implement managed print service.
- Implement Banner document management.
- Reuse surplus furniture and equipment.
- Continue to reduce, reuse and recycle.

"Energy saved is energy found."

—Chevron USA

Where We Go From Here

Reduce supply deliveries: Every weekday the college receives deliveries of office supplies from a single supplier. All orders within the delivery are packaged separately and delivered to various departments throughout the campus. By reducing packaging and paper waste, we can further reduce environmental waste.

Educate and notify faculty and staff throughout campus, especially at the division level, of changes to the office supply delivery schedule.

Implement new e-procurement system: Currently, the district distributes paper documents for its requests for proposal, invitations to bid and requests for qualification. These documents can be several hundred pages and are sent out frequently to multiple contractors. Although the district has begun the process of moving some of its documents to an online e-procurement system, many paper documents continue to be distributed.

- The district will be contracting with a new e-procurement system and will begin the process of distributing all documents electronically.
- Evaluate and select new e-procurement system.
- Implement and train buyers and contractors on the new system.

Managed Print Service: Elusion Banner (Banner) is an integrated financial software system used by the district. Banner Document Management (BDM) is a module of the software that allows the attachments of PDF files to different modules in Banner. The college uses Banner to requisition supplies, services and equipment from the purchasing department. Currently, the requester enters the requisition in Banner and sends all of the paper back-up information via the interoffice mail. The district implemented BDM in November 2014 and plans to make using BDM a requirement to eliminate the sending and printing of paper documents.

Reuse Surplus Equipment: Where possible and practical, do not purchase new items. Instead, reuse surplus items. Desks, chairs, tables and filing cabinets are a small sample of what may be found in district storage facilities. Since the collection of surplus materials varies throughout the year, the district purchasing department should initiate online listing and storage practices to enable college divisions to efficiently find stored surplus items.

- Identify resources to create and maintain online listing of all surplus.
- Identify software to be used for online listing.
- Create surplus ordering procedures.
- Market this new program.

Product Selection: Know what we are buying. Learn about products that are eco-labeled compared to those that are conventionally produced. Look for products such as those with low-volatile organic content, office furniture from Forest Stewardship Council, certified timber, reduced-mercury fluorescent lamps, mercury- and lead-free high-pressure sodium lamps, and neutral cleaning products. Choose goods made of post-consumer waste and high-recycled content (e.g., printer paper made from 100 percent recovered materials from consumer use).

Durability: Choose quality. When buying anything, use performance specifications based on the North American Green Purchasing Initiative and the Environmental Protection Agency Procurement Guidelines for durability and long life spans.

Energy-efficient appliances: Consider Energy Star-rated appliances when shopping. Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy, which helps consumers save money and protect the environment through energy.

Five-Year Projection: Goals 2015–2020

Category: Green Procurement

Initiatives

1. Review process and procedures annually.
2. Broaden and strengthen the sustainability knowledge base of all three entities (district Foothill and De Anza), with a commonality and transparency of policies and overarching goals documented in the District Sustainability Master Plan.
3. Continue to promote the concept of cradle-to-cradle sustainable product design, in which waste equals food, by purchasing goods that are designed to be recycled and/or composted.
4. Conduct technology assessment for Foothill and district. Review of the current performance, current equipment configurations, device-usage and equipment reports (photocopiers, networked/non-networked printers, scanners, etc.). Conduct analysis of cost, and current vendor contracts terms and conditions with comparison to consultant benchmark data to become more efficient.

6. Green Building: Construction & Renovation

What Is Green Building?

Green building places a high priority on health, and environmental and resource conservation performance over a building's lifecycle. These priorities expand and complement the classic building design concerns, which include economy, utility, durability and aesthetics. Green building emphasizes a number of environmental, resource and occupant health concerns:

- Reducing human exposure to noxious materials.
- Conserving nonrenewable energy and scarce materials.
- Minimizing the lifecycle and ecological impact of energy and the materials used.

- Using renewable energy and materials that are sustainably harvested.
- Protecting and restoring local air, water, soils, flora and fauna.
- Supporting pedestrians, cyclists and users of mass transit, and utilizing alternatives to fossil-fueled vehicles.

Goals for green buildings:

- High quality
- Durability
- Reduced operating and maintenance costs
- Greater occupant satisfaction (thermal comfort)
- Low environmental impact
- Zero-net energy

Five-Year Projection: Goals 2015–2020

Category: Green Building

Initiatives

1. Realization of the second LEED building, gold rating, Foothill-De Anza Education Center.
2. Foothill-De Anza Education Center designed zero-net energy ready. Zero-net energy = The building is energy efficient and generates enough energy on-site to equal its annual energy needs.
3. Energy audits completed for all Foothill buildings and deficiencies identified for correction.
4. Work with a local company or grant to make Foothill buildings grid-neutral.

The Design Process for Green Building

Designing and constructing green buildings that meet ambitious performance goals can be a challenge for project teams. To design high-performance buildings, a set of concrete goals and following a sound design process is key. Along the way, optimization for both resource use and human comfort is essential. Usually energy use is the largest environmental impact.

Conventional processes do not facilitate the type of interdisciplinary collaboration and stakeholder engagement that is necessary to address all of the economic, social and environmental aspects of a truly green and sustainable project. The conventional process engages design and construction professionals on a need-to-know basis. An integrated design process (IDP) provides a framework for collective visioning and goal setting, with continued engagement among stakeholders and design and construction team members. The IDP works to identify and engage stakeholders early, in order to cohesively establish and work toward project goals.

Green Building Guidelines

Analysis of Sustainable Suggestions: During the schematic design development stage a list of sustainable measures shall be developed by the architect for consideration by the owner with a budget included for decision-making.

Site & Form of New Buildings: Location, orientation and building mass decisions made in the early stages of design have a major effect on the energy and environmental impacts of buildings. Early decisions establish the potential for solar-responsiveness, day-lighting, natural cooling and storm water management.

Building Envelope & Building Materials: The building envelope should maximize daylight, natural views to the exterior, and control or capture solar heat gain and traffic noise.

Per Foothill standards, windows must open where possible with the exception of safety-related issues. The exteriors of new buildings must integrate harmoniously with the existing surroundings and established buildings.

Space Planning & Interior Finishes: Interior space planning and finish materials significantly affect the distribution and effectiveness of daylighting, natural ventilation and passive solar gains. Green materials used in buildings are selected for low consumption of scarce raw materials; low pollution in their production, delivery, use and disposal; long life; low maintenance; and their suitability for salvage or recycling in addition to their aesthetic value.

Local manufacturers and products are specified, strengthening the community and local economy by using local products and services where they are available. Local materials reduce the CO2 and gas emissions of transporting materials long distances.

Healthy buildings are a result of healthy material choices. Constructing a new building with use of pesticides, engineered wood products, furniture containing formaldehyde, new carpets, plastic and rubber flooring, new paint, mineral and glass fiber insulation, glues and caulking contribute to indoor air-quality issues.

Water Systems: Continued economic and population growth will put additional pressure on finite water supplies. Environmental benefits of water conservation include less pollution from water and sewage treatment and improved habitat quality in the San Francisco Bay.

Water conservation is becoming more important and one of the many priorities when redesigning the landscaping and foliage throughout the campus. Primary goals should reflect landscaping projects that preserve beauty, maximize efficiency and integrate native plants into the landscape.

Foothill also has other reasons to reduce potable water consumption, such as the need to reduce the energy used to heat water. Heating water constitutes a large portion of the energy budget for our buildings. Most water is heated using natural gas, which produces carbon dioxide, the most important contributor to GHG.

Carbon dioxide is not the only air emission from water boilers and heaters. Air pollutants from poorly maintained natural gas water heaters and boilers include carbon

monoxide, nitrogen oxides, formaldehyde and other trace pollutants. Utilizing electric water heaters produces the same pollutants and sulfur oxides.

To reduce ecological impacts, water and water-heating energy conservation will be considered early in design, monitored during construction and properly commissioned to ensure proper installation and operation.

State-of-the-art water-conserving fixtures, fittings and appliances are used in our new buildings and retrofitted into renovated restrooms.

The use of Energy Star-rated appliances result in reduced energy and water costs, and essentially pay for themselves within two to three years. All dishwashers shall be Energy Star-compliant, with an ER of 0.55 or greater, which will result in a 20-percent reduction in water and energy costs.

Energy Star-compliant water heaters will be specified with higher efficiencies than the legally required minimum. Energy Star-compliant gas service water heaters must use less than 242 therms/year; electric units less than 4,700 kWh/year, verified by independent testing.

Electrical Systems: Electricity generation for California buildings has huge environmental impacts. Standard buildings consume approximately 40 percent of the total annual U.S. energy usage. Buildings, being one of the major consumers of fossil fuels, release carbon dioxide, nitrogen oxides, sulfur oxides, ozone and particulates.

Design Ideas for Consideration: Control of solar cooling loads; use sunlight for passive solar heating; use natural cooling and ventilation; incorporate day lighting; energy management system; use high-efficiency motors; review the advantages of a lighting specialist versus an electrical engineer for all lighting layouts; and select transformers with low-lifecycle cost. Transformers are mostly lightly loaded and should be selected for low-core losses. With higher load factors, transformers with low-winding losses save more. Utilize the EPA's Commercial & Industrial Transformer Cost Evaluation Model (CITCEM) and Distribution Transformer Cost Evaluation Model (DTCEM) software for life cycle analysis.

Title 24-2012 code requirements are the baseline of green building electrical guidelines. Surpassing code requirements, lifecycle cost assessment can be especially valuable when selecting equipment with large capital costs and long operational lives. New computer tools make it easy to produce energy simulations, assess energy conservation measures early and throughout the design process, focusing on peak energy loads, demand and consumption.

Lamp and fixture choices should optimize light distribution and fixture spacing. This not only reduces capital cost and energy consumption, it can also improve space aesthetics and atmosphere.

Photovoltaic (PV) systems use solar electric panels to directly convert the sun's energy into electricity. This conversion of sunlight to electricity occurs without moving parts and is silent. The solar electricity fed through electronic equipment is converted pollution-free in its operation. The solar electricity fed through electronic equipment is converted to utility-grade electricity for use directly in our buildings. The solar electricity can be used to offset the need for purchased utility electricity, or the PV electricity can be returned to the utility company, typically for credit.

PV panels require an unobstructed exposure to sunlight to obtain their maximum efficiency. Most PV panels are tested to meet electrical and environmental performance criteria. Experience with existing PV products over the past 20 years has shown that they have excellent reliability with very little maintenance requirements. Expected cost of electricity produced from a PV system is equal to approximately 24–50 cents per kilowatt-hour (kWh) when considering initial cost spread over the lifetime of the system, plus maintenance costs. This compares with an average rate of more than 9.53 cents per kilowatt for utility-supplied power. Many states and the federal government have active programs to reduce the capital cost and/or the installation cost of PV systems by providing tax credits, tax deductions and rebates. Some of the benefits are significant enough to make the PV electricity nearly competitive with utility-supplied electricity. Panel PV products provide environmental benefits because they do not produce pollution or carbon dioxide emissions like fossil fuel-based utility power. Unlike utility-supplied power, the cost of producing PV electricity remains constant over the life of the system, once purchased, since the only fuel used is sunlight.

As new technology emerges, the sustainability committee is committed to doing its due diligence to keep abreast of what the industry has to offer and how it might benefit Foothill and its students.

HVAC Systems: The primary role of heating, ventilation and air-conditioning (HVAC) systems is to provide healthy and comfortable interior conditions for occupants. Climate-responsive building design reduces heating and cooling loads, and thus the size of HVAC systems and equipment. Selection of more efficient HVAC equipment can further conserve nonrenewable energy, and reduce air pollution from electricity generation and on-site combustion. As demand for better equipment has increased, the cost of energy-efficient HVAC equipment has dropped.

Control Systems: Ideally, green buildings have simple lighting equipment and minimal HVAC systems since their form, structure and envelope are designed to provide comfort. Existing buildings, with their site and program constraints, require more extensive electrical and mechanical systems with automatic controls.

The best control strategy allows occupants to directly manipulate simple and understandable building features, such as windows and shades. However, when this is not

feasible, controls should provide immediate feedback on their effects, but should not require attention for safe, healthy indoor conditions, low-energy consumption and operating costs. Automatic building controls must ensure the building operates efficiently regardless of occupant behavior.

Direct Digital Control Systems: Direct digital control (DDC) allows precise, flexible management of electrical and mechanical systems, and allows monitoring and management of energy consumption and demand. Rapid advances in computer technology have provided improved digital control systems at moderate costs.

Daylighting Controls. Daylighting controls can allow the electric lighting energy to be reduced as much as 80 percent. Properly designed, controls are essentially unnoticeable and provide occupants with the ability to adjust space lighting to their own needs. Reduced lighting power translates into lower cooling loads, smaller HVAC equipment and reduced energy consumption.

Digital controls coupled with occupancy sensors for lighting and HVAC systems ensure that if lighting or space conditioning are not needed, they are not used. This helps to reduce the energy consumption and equipment needs of a building, and offset control costs. Similarly, variable-speed motor controllers ensure that energy is not wasted providing air or water flows that are unnecessary for comfort. Speed controller costs are falling quickly and are now economic in much smaller applications than before.

HVAC-Control Strategies: DDC systems allow optimal HVAC-control strategies that were difficult or expensive with older pneumatic controls.

Building energy (electricity and heating) is one of the largest users of fossil fuels, and associated GHGs carbon dioxide, nitrous oxide and pollutants, including nitrogen and sulfur oxides, ozone and particulates.

Design efforts to control solar gain, natural lighting, ventilation and cooling will be wasted unless the systems are set up and commissioned properly from the beginning. Proper testing, commissioning and documentation are essential for efficient operations, preventive maintenance and occupant satisfaction. Ensuring that all features and systems are built and function as intended is called building commissioning. Commissioning buildings usually covers air conditioning, electrical, communications, security and fire management systems and their controls. Other systems may be included if they are complex or unusual. Control technicians can operate many buildings from a remote central location making work time more efficient.

Older digital control systems have issues with interoperability– integrating building controls, sensors and actuators with security, communications and computer local area networks. Lonworks and BACNet are two protocols that have been established to allow equipment from many different vendors to “talk” to each other. Integrating one of these systems would ease the task of control integration in new designs and future retrofits.

Computer technology advancements are responsible for falling costs of DDC systems for buildings. DDC systems have much finer control and energy savings than pneumatic controls. Along with monitoring lighting and HVAC, fire, intruder alarms, security and access systems can be monitored through a DDC system.

For larger, more complex buildings, central controllers or centrally supervised zone controllers connected with a network offer the most flexibility and potential for energy savings.

Good design documentation for each controlled device should include schematic drawings, listings of control points, expected operating readings and acceptable range, and sequences of operation. Field review and commissioning should check to ensure compliance with document design intentions, and any changes made should be recorded for future reference by building operators.

Good communication and documentation are essential to a trouble-free control system. Sensors, actuators and controllers must be carefully commissioned and building operators must be trained in control system use.

The use of occupancy sensors to control lighting, heating and cooling according to motion detected within an intermittently occupied area is a strategy that is in use. Occupancy sensors can save up to 80 percent of the lighting and HVAC energy when properly applied. Sensors must be properly located, adjusted and calibrated in commissioning and regularly maintained. Two commissioning adjustments are critical for energy savings and occupant satisfaction:

1) Time out—How long equipment will remain on after last detection of motion. This will vary with space use and should be adjusted after occupancy;
2) Sensitivity—How small a change in infrared heat, movement or noise is required to trigger the sensor. Adjustment is important to prevent false-on and false-off signals.

Lamps and sensors should be adjusted after they have been installed, room furnishings are in place, fluorescent lamps have burned in for 100 hours, and HVAC systems are operating. Sensors, actuators and controllers must be carefully commissioned.

Commissioning: The purpose of building commissioning is to ensure that all features and systems are built and function as intended.

The scope of work usually covers mechanical systems, electrical systems, communications, security and fire management systems and their controls. It may also include

other systems and components, particularly if they are unusual or complex. Commissioning begins by hiring a third-party commissioning agent and documenting design intent for future reference. This is followed by testing components when they arrive on the job site, and again after they are fully installed. Adjusting (balancing) of air and water distribution systems to deliver services as designed, and checking and adjusting control systems to ensure energy savings and environmental conditions is the following step. Providing maintenance training and manuals for building staff is usually the last step of commissioning.

Along with drawings and equipment manuals, a final commissioning report is submitted to the owners by the third-party commissioning agent. A complete commissioning report contains all records of the procedures, testing results, deficiency notices and records of satisfactory corrections of deficiencies. Commissioning may also extend to testing the building and systems several months or a year after occupancy. See Appendix J for additional information on commissioning.

Summary

"Sustainability initiatives have gained a great deal of interest, attention, and emphasis at Foothill during the last eight years, with the realization that we have many challenging tasks before us. More than 50 years ago, when Foothill was first built, architects attempted to blend the new buildings into the serene landscape surrounding hillsides. Today, with key issues including energy, water, climate, pollution, traffic and congestion, environmental stewardship must stretch much further. The key focus areas described within this document each demand attention, management, and progress, and together support one another in striving for a sustainable campus.

As the SMP effort progresses with new and continuing projects, it does so with an understanding that concepts, ideas, and goals in both the first and updated document may need further clarification, revision, or be completely rewritten over time. This document is intended to serve as both a road map and lexicon of our vision, strategies, activities, and measures of key metrics, and will evolve over time including updates evolving from best practices in sustainability efforts.

Sustainability work is a dynamic and collaborative effort and requires a sustainability coordinator with time to advocate, organize, marshal, and direct the efforts of many others, especially but not limited to the sustainability committee. With the multitude of responsibilities that each member of the committee has in his/her primary jobs, the added efforts in sustainability can be challenging. A key outcome and goal of this document's revision will be reconstituting a district sustainability committee, including an energy manager, as well as active participation from facilities staff who are recovering from our budget challenges and associated reorganization. Challenges aside, we remain committed to sustainability as a core value at Foothill College, and the leadership role we play for both our students and the community at large.

When determining what actions to take within the six focus categories, we will use the Presidents' Climate Commitment guidelines for guidance:

- Moves the college toward sustainability, where there are no violations of the four principles;
- Eliminates our contribution to systemic increases in concentration of substances from the earth's crust in natural systems (fossilized carbon, scarce metals like mercury);
- Eliminates our contribution to systemic increases in concentration of substances produced by society into natural systems (such as toxic chemicals, chlorofluorocarbon (CFC)s, etc.);
- Eliminates our contribution to systemic degradation of natural systems by physical means (deforestation, erosion, flooding);
- Eliminates our contribution to the systematic undermining of people's capacity to meet their needs worldwide (supporting companies with unfair labor practices, perpetuating policies that create barriers to escaping poverty, etc.);
- Decisions are flexible enough not to lock the college and/or the college's resources into unsustainable practices for long periods of time; and
- Provides a sufficient return on investment in terms of financial, social and political capital to continue the process and reinvest in future actions toward sustainability.

Appendix

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
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. As part of the reporting process, the committee will examine past practices and revise and redefine parameters as necessary to produce meaningful data.

Implementation of action plans will focus on the following six areas:

- Community & Civic Engagement—Promote awareness and education.
- Hazardous & Solid Waste Reduction & Control—Decrease volume of waste generated and minimize the amount of hazardous and solid waste sent to landfills.
- Water Use & Conservation—Minimize resource use through ecologically responsible landscape.
- Transportation, Energy Conservation, Efficiency & CO2 Reduction—Research alternate energy sources, track, report and minimize GHG emissions and energy use.
- Green Procurement—Modify the college's purchasing processes and procedures to meet sustainability objectives.
- Green Building Design, Construction & Renovation—Modification of design specifications to address environmental issues.

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 in position to move sustainably through the 21st century and beyond.

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 GHG 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.

Appendix D

Resource Websites

AASHE STARS Program: stars.aashe.org
American Association of Sustainability in Higher Education (AASHE): www.aashe.org
American Cancer Society: www.cancer.org
Bay Area Water Supply & Conservation Agency: bawsca/org
Build It Green Materials Database: www.builditgreen.org
Building Green News: www2.buildinggreen.com
California Integrated Waste Management Costs & Benefits:
calrecycle.ca.gov/greenbuilding/design/costissues.htm#Cost&Benefit
California Materials Exchange: www.calrecycle.ca.gov/calmax
California Recycled-Content Products Database: www.calrecycle.ca.gov/rcp
Carpet & Rug Institute Indoor Air Quality: www.carpet-rug.org/CRI-Testing-Programs/Green-Label-Plus.aspx
City of Palo Alto: www.cityofpaloalto.org
Clean Power Estimator: www.consumerenergycenter.org
Database of State Incentives for Renewables & Efficiency (DSIRE): www.dsireusa.org
Electronic Product Environmental Assessment Tool (EPEAT) Silver-registered products or the equivalent: www.epeat.net
Environmentally Preferable Purchasing (EPP): www.epa.gov/epp
EPA Comprehensive Procurement Guidelines: www.epa.gov/epawaste/conserve/tools/cpg
Federal Tax Incentives: www.energytaxincentives.org
FEMP Buying Energy-Efficient Products: www1.eere.energy.gov/femp/pdfs/buyer_overview.pdf
Global Green USA: www.globalgreen.org
Green Biz News: www.greenbiz.com
Green Building Smart Market Report McGraw Hill Construction: greensource.construction.com/resources/smartMarket.asp
Green-e Renewable Energy Certification Program: www.green-e.org
Green Guard: greenguard.org/en/index.aspx
Green Seal GS-3740 Environmental Standard for Industrial & Institutional Floor Care: www.greenseal.org
ISO1400: www.iso.org/iso/home.html
Lawrence Berkeley Institute: www2.lbl.gov/ehs/waste/wmin_hazardous.shtml
Lean Construction Institute: leanconstruction.org
National Institute of Building Sciences: www.nibs.org
New Buildings Institute: newbuildings.org
Oikos Green Building Source: oikos.com
Presidents' Climate Commitment: presidentsclimatecommitment.org
Savings by Design: savingsbydesign.com
Sustainability Financial Incentives: www.dgs.ca.gov/dsa/Home.aspx
Sustainable Building Sourcebook: sustainablesources.com/
Santa Clara Valley Water District: www.valleywater.org
U.S. Green Building Council: www.usgbc.org/
Whole Building Design Guide C&D Recycler Tools: www.wbdg.org/tools/cwm.php?a+1

Appendix E
Foothill College Climate Action Plan; December 2009, Revised 2015

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 operations, 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 and rescinded when the position was eliminated in 2014.

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). Ms. 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 included 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 reported to the academic and classified senates with monthly updates from committee meetings. Monthly meeting minutes were recorded and copies distributed to the president's cabinet. A sustainability website was created and monthly meetings and sustainability-related events 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 were 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 were incorporated into the college's Educational & Strategic Master Plan, which was finalized Fall 2010. Comprehensive reviews of the SMP are anticipated every five years.

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 audit 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 GHG to specific targets to avoid future catastrophic climate changes. AB32, called the Global Warming Solution Act of 2006, gives California the authority to regulate GHG emissions as follows:

- by year 2010, GHG will be reduced to the year 2000 levels;
- by year 2020, GHG will be reduced to year 1990 levels; and
- by year 2050, GHG 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 have plans to address energy efficiency, monitoring and management through additional technology, including state-of-the-art building-monitoring equipment.

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 standards, and will 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, during periods of peak demand, Foothill 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 similar in size.

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

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

   The Physical Science & Engineering Center, is pursuing LEED silver standard certification. The Foothill and district sustainability plans include provisions regarding new buildings meeting or exceeding LEED standards.

2. 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.

3. 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 utilizing Zimride, a rideshare program and has implemented an Eco Bus Pass for students. Additionally, Foothill is in the process of raising funds for a new multiuse path to be used by pedestrians and bicyclists.

4. 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 has completed installation of all planned photovoltaic solar panels.

The following recommendations were not feasible for Foothill to undertake, however, they will be reviewed and implemented if/when practical:

1. Establish a policy of offsetting all GHG generated by air travel paid for by our institution.
2. Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where our institution's endowment is invested.
3. 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 campuswide 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 Presidents' Climate Commitment (ACUPCC). The survey was repeated in Fall 2009 using both on-campus and electronic data collection (Web survey). Foothill College adopted a Zimride 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/work flow, allowing staff and administrators to 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.

5. 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 a Renewable Energy Power Purchase Agreement (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 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 2020.

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 Presidents' 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 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 20–30 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 one-third increase in building footprint (487,000 sq. ft. in 1991 to 680,000 sq. ft. in 2015). Following the directive of the California Community Colleges Chancellor's Office, Foothill has reported energy use per square foot, in BTUs, as a common measure of both energy use and comparative efficiency. We currently are working to regain data access to on-site distributed generation production of electricity from our solar PV and cogeneration infrastructure. Until then, we don't have an accurate handle on energy use intensity. Hiring an energy manager will be a key goal in facilitating a better understanding of our energy use.

Foothill College Historic Data Table 1.1

Academic Year	Electricity	Gas	Electricity CO2 lbs.	Gas CO2 lbs.	Total CO2 lbs.	Tons CO2	Square Footage
1991–1992	6,493,091	311,463	3,895,855	3,644,120	7,539,975	3,770	367,055
1993	6,350,400	320,679	3,810,240	3,751,944	7,562,184	3,781	367,055
1994	6,403,200	339,751	3,841,920	3,975,087	7,817,007	3,909	367,055
1995	6,643,200	358,908	3,985,920	4,199,224	8,185,144	4,093	367,055
1996	6,352,800	240,859	3,811,680	2,818,050	6,629,730	3,315	367,055
1997	6,981,600	317,421	4,188,960	3,713,826	7,902,786	3,951	367,055
1998	7,312,800	395,436	4,387,680	4,626,601	9,014,281	4,507	367,055
1999	7,370,062	443,068	4,422,037	5,183,896	9,605,933	4,803	367,305
2000	7,475,188	341,564	4,485,113	3,996,299	8,481,412	4,241	367,305
2001	6,636,229	251,626	3,981,737	2,944,024	6,925,762	3,463	385,993
2002	6,155,964	241,348	3,693,578	2,823,772	6,517,350	3,259	385,221
2003	6,234,991	242,383	3,740,995	2,835,881	6,576,876	3,288	383,707
2004	6,466,556	250,863	3,879,934	2,935,097	6,815,031	3,408	382,022
2005	5,830,864	241,953	3,498,518	2,830,850	6,329,369	3,165	383,859
2006	4,283,862	392,052	2,570,317	4,587,008	7,157,326	3,579	347,995
2007	4,881,036	453,826	2,928,622	5,309,764	8,238,386	4,119	349,033
2008	6,031,808	558,891	3,619,085	6,539,025	10,158,110	5,079	427,924
							Does not include district 2009–2015
2009	6,654,876	454,990	3,992,926	5,323,383	9,316,309	4,658	383,070
2010	6,676,881	338,514	4,006,129	3,960,614	7,966,742	3,983	383,135
2011	6,300,000	500,000	3,780,000	5,850,000	9,630,000	4,815	383,135
2012	6,300,000	500,000	3,780,000	5,850,000	9,630,000	4,815	425,132
2013	6,500,000	550,000	3,900,000	6,435,000	10,335,000	5,168	425,037
2014	6,500,000	550,000	3,900,000	6,435,000	10,335,000	5,168	425,037
2015	6,500,000	550,000	3,900,000	6,435,000	10,335,000	5,168	425,037

Foothill Historic Energy Intensity Table 1.2

Academic Year	BTUs	Square ft (estimated)	BTU/sq ft	GHG/sq ft
1991				
1992	5.33E+10	487,000	1.09E+05	15.48
1993	5.37E+10	487,000	1.10E+05	15.53
1994	5.58E+10	487,000	1.15E+05	16.05
1995	5.86E+10	487,000	1.20E+05	16.81
1996	4.58E+10	487,000	9.40E+04	13.61
1997	5.56E+10	486,737	1.14E+05	16.24
1998	6.45E+10	486,737	1.33E+05	18.52
1999	6.95E+10	486,737	1.43E+05	19.74
2000	5.97E+10	486,737	1.23E+05	17.43
2001	4.78E+10	533,342	8.96E+04	12.99
2002	4.51E+10	533,342	8.46E+04	12.22
2003	4.55E+10	537,771	8.46E+04	12.23
2004	4.72E+10	541,472	8.71E+04	12.59
2005	4.41E+10	545,738	8.08E+04	11.60
2006	5.38E+10	494,941	1.09E+05	14.46
2007	6.20E+10	497,023	1.25E+05	16.58
2008	7.65E+10	544,176	1.41E+05	18.67
2009	6.82E+10	626,704	1.09E+05	14.87
2010	5.66E+10	621,208	9.12E+04	12.82
2011	7.15E+10	621,208	1.15E+05	15.50
2012	7.15E+10	621,208	1.15E+05	15.50
2013	7.72E+10	711,469	1.08E+05	14.53
2014	7.72E+10	711,469	1.08E+05	14.53
2015	**7.72E+10**	**711,469**	**1.08E+05**	**14.53**

Appendix F
Green Procurement Self-Assessment

Department/Service assessed _____ Date _____ _____ _____

Person completing this survey _____

Please return completed form to _____ By_____

Please comment, where applicable, on the extent to which your department follows these procurement practices, or what plans you have to implement them.

1. Reusing surpluses items: Where possible and practical, do not purchase new. Reuse surplus items. Desks, chairs, tables and filing cabinets are just a sample of what may be found in storage at the district's facilities department.

2. Product selection: Learn about products that are eco-labeled compared to those that are conventionally produced. Look for products such as those with low VOC content, office furniture from FSC-certified timber, reduced-mercury fluorescent lamps and mercury- and lead-free HPS lamps, neutral cleaning products, vegetable-based ink, and organic food products when available. Use biodegradable packaging and serviceware for food service and beverage service. Ask if vendors offer products with chemical-free materials.

3. Durability: Choose quality. When buying anything, choose products with long life spans and durability.

4. Energy-efficient appliances: Look for Energy Star appliances when shopping. Energy-efficient choices can save about one-third on an energy bill with similar savings of GHG emissions, without sacrificing features, style or comfort.

5. Locally produced: Supporting local manufacturers and food suppliers keeps jobs and money in our community, and cuts down on the emissions generated by transporting goods across the country (or world). In addition, items manufactured in developing countries may be subject to less stringent environmental laws, putting the ecosystem and workers at risk.

6. Recycled content: Ask if vendors offer products with recycled content. Choose goods made out of post-consumer waste and high-recycled content (e.g., printer paper made from 100-percent recovered scraps from consumer use).

7. Recyclability: Ask vendors to supply items that are recyclable. Because of the great benefits of recycling, it is important to purchase items that are designed to be recycled, e.g., furniture that disassembles into its component, recyclable parts.

Appendix G
Green Design Specifications
Revision of Existing Design Specifications.

Division 3: Concrete

Making Portland cement, for concrete, requires major gas and oil energy, and produces a great deal of carbon dioxide, a GHG.

Fly ash concrete is available in many regions as an alternative to conventional mixes. Fly ash is a waste material from coal-burning power plants. It can be used to replace up to approximately 30 percent of the Portland cement in conventional mixes. It is also mixed with ground blast furnace slag, a waste from metal smelting. Fly ash produces a superior concrete with excellent finishing characteristics, but only some types of ash are appropriate for certain applications, and the proportions are restricted.

- Foothill concrete specifications have been revised to make use of this recommendation. See Division 03: Section 033000, pages 1–4.

Using low-waste formwork is another resource conservation. Systems such as modular steel forms, slip forms, preformed blocks and others can substantially reduce waste material from concrete forming.

- Foothill specifications have been revised to recommend this method when applicable. See Division 03: Section 033100, page 5.

Form release agents are sometimes made from diesel oil, or other odorous petroleum oils that will produce emissions. Wax, mineral or vegetable oil-based products are available substitutes.

- Foothill specifications have been revised to recommend this method when applicable. See Division 03: Section 033100, Addendum 1.

Division 4: Masonry

Masonry and tile products are made from concrete, clay and various types of lightweight aggregates. Most masonry products are installed with mortar made from Portland cement, sand and lime.

Lightweight concrete blocks and bricks are available, made with expanded aggregates such as pumice to reduce weight and add insulating value. Brick and block products are available with waste and recycled contents.

- Foothill specifications will be revised to recommend this method when applicable. Glass block is available with recycled glass content.

Masonry sealers will be specified with a low-volatile content, water-dispersed product, not a solvent-based variety.

- Foothill specifications will be revised to recommend these methods when applicable.

Division: 5 Metals

Steel, aluminum, copper, stainless steel and brass are highly valued recyclables. Coatings such as powder coating have specific benefits. See Division 09 Painting below.

Steel may be specified with recycled content of 30 percent or greater, as applicable.

- Foothill specifications have been revised to recommend this method when applicable. See Division 05: 05 50 00, page 2.

Aluminum may be specified with a recycled content between 20–30 percent, as applicable.

- Foothill specifications have been revised to recommend this method when applicable. See Division 05: 05 50 00.
- Foothill specifications have been revised to reclaim recyclables for steel, aluminum, copper, stainless steel and brass. See Division 01: Section 01 7419, page 1.

Galvanized metals that are zinc coated use an energy-intensive process, but are relatively low in toxic emissions.

Division 6: Wood & Plastic

Appropriate forest management and wood salvage are keys to more sustainable wood sources. It is possible to find processed woods and wood substitutes that have the interest and properties of fine woods without depleting threatened species.

Nearly all plastics are made from nonrenewable petroleum feed stocks. The majority of plastics are used as interior finishes.

Engineered wood products make better use of low-grade fiber, small diameter trees and fast growing, less utilized tree species. Certified, sustainably harvested forest products from domestic wood producers are now available for some products. Careful attention when specifying these products must be given, to avoid harmful adhesives.

- Foothill specifications have been revised to recommend this method when applicable. See Division 01: 01 35 43, page 1.

Engineered wood products made with exterior type glues (phenolic resins) and polyurea or isocyanate adhesives (MDI-based) have the least emissions.

- Foothill specifications have been revised to recommend this method when applicable. See Division 06: 06 01 20, pages 1–3.

Division 7: Thermal Insulation & Moisture Protection

Thermal insulation is not typically considered during renovations, only during new construction. Typical Foothill architecture of 12-foot overhangs mitigates the effects of exterior temperatures.

Cladding and roofing materials should be appropriate for the climate and application. They should be the best quality material allowable within the budget. Durability is the most important criteria, and recyclability is the second.
Metal panels (galvanized steel, enameled or anodized aluminum) are appropriate for pitched roofs and cladding. The product uses a small amount of material and they are durable and recyclable.

Composite shingles, tiles and panels also are durable and may contain recycled content. These are not recyclable, but are good for durability and resource efficiency.

- Foothill specifications have been revised to make use of this recommendation. See Division 07: Section 07 21 00, page 2.

Stucco is an efficient resource and offers a durable finish. Acrylic stucco has good thermal performance.
Built-up roofing for flat roofs has important advantages, such as being fairly durable and repairable, and easily removed. An inverted roof design using a ballasted insulation layer over the membrane has advantages because the membrane is better protected from weather and damage. Flat and shallow pitched roofs can also be prepared with drainage mats and topsoil to grow grass if the structure allows. Green roofs help filter rainwater runoff, add insulation value to the building, and provide habitat for birds, butterflies, etc.

Hot-mopped asphalt roofing releases extremely high levels of air pollutants during installation.

- Foothill College specifications have been revised stating hot mopping can only be done when the majority of students are not on site. See Division 07: Section 07 52 16, page 7.

Sealants with the best service life will always be the best choice, considering high labor cost and potential for building leaks causing damage.

Acrylics, silicones and siliconized acrylics are typically the safest to handle and have the lowest solvent content.

Acoustic caulking, butyls and urethanes, which have quantities of solvent-based products should be avoided indoors.

- Foothill College specifications have been modified to include this language. See Division 07: Section 07 92 00, page 4.

Division 9: Finishes

There is no greater opportunity to reduce indoor air pollution than when specifying interior finish materials. Our goal is to emphasize low toxicity, recycled content and reusability/recyclability.

The best choices are those that contain the least amount of volatile organic compounds (VOCs), which evaporate and pollute indoor air. These are safer for people and the environment than the solvent-based products they replace.

- The healthiest floor, ceiling and wall coverings are those that release the least dust and do not support microbial growth.
- Paints and adhesives formulated to zero VOCs or low VOCs will be included in our design standards.
- Insulations containing no glass or mineral fiber, which are totally contained by a permanent barrier when installed, or made from plastics formulated for low-chemical emissions and fire resistance.
- Carpets tested to comply with low-emission carpet rating standards. Carpet with factory-installed dry adhesive (tac-tiles) is safer than field-applied wet adhesive. Carpet should minimize chemical emissions and have high-recycled content.
- Specifications will include engineered wood products containing no supplementary adhesive, or those using formaldehyde-free or other low-emission adhesives.
- Use caution in specifying rubber flooring and particleboard, which may have prolonged emissions.
- Smaller heating and cooling loads allow smaller, less expensive HVAC equipment and ductwork.
- Reduced energy costs can pay for HVAC equipment investment within two to three years.
- High-efficiency equipment tends to be higher quality, with longer service lives and warranties. A typical warranty runs approximately one to five years.

Gypsum board can have 10-15 percent recycled content. Gypsum board is highly recyclable if it has not been contaminated with paint or adhesives. Fiber gypsum should be considered for high use/wear areas. This board doesn't have a paper face, like other gypsum boards, and contains recycled wood and paper fiber, with perlite in the interior. It is strong and scratch-resistant.

- Foothill College specifications have been modified to include this language. See Division 01: Section 01 3543, page 1.

Wood & Plastics

Hardboards are durable and resource efficient. The boards are manufactured with wood fiber pressed and heated to form panels. Adhesive is not usually required because the natural lignin in wood binds the fibers. Wood demolition waste can be used for manufacturing this product.
Particle and medium-density fiberboard (MDF) panels are made from recyclable materials. However, they should be chosen for low-pollution potential. Acoustic panels, underlayment and tack boards are available from

100-percent recycled newsprint. Recycled plastic panels are available for interior uses and are made from consumer product waste. Fiber reinforced cement boards made with recycled fiber are durable and can be used as substrates for tile and decorative finishes.

- Foothill College specifications will be modified to include this language. Engineered wood products can be specified with (phenol formaldehyde), stabilized by ammonia treatment, which both have low emissions or formaldehyde which would be the lowest in emissions of all glue-bonded boards.
- Foothill specifications will be modified to include this language as applicable. High-pressure laminates are surface materials made by laminating paper and colorants together with melamine (phenolic) resin.

They are a relatively resource-efficient use of plastics because a very small quantity of materials suffices to produce a durable surface. At this time, there are no known manufacturers utilizing substantial recycled content in their products.

Ceramics & Terrazzo

Ceramics and terrazzo are among the most durable and low-emission finishes. Glazed or sealed products do not absorb odors or pollutants, are easily cleaned and resist abrasion and wear. The initial cost may be more than other materials. However, the life-cycle cost is among the lowest of all finishes, due to their long life and minimal maintenance.

- Foothill specifications have been modified to include local or regionally manufactured ceramics to reduce the costs of transportation to include 31–45 percent of recycled material. See Division 01: Section 01 35 43, page 2.
- Foothill College specifications have been modified to include terrazzo manufactured with recycled cement and crushed stone. See Division 09: Section 09 66 23.
- Sealers: Low volatile, acrylic or water-dispersed silicone types. No sealants with hazardous solvents. See Division 07: Section 07 92 00, page 2.

Wood Flooring

Salvaged, laminated and veneered products can be used with emphasis on the installation method and finish. Products that have a plywood or MDF core with a hardwood surface are durable and have a low-maintenance finish. However, this product is less repairable than solid wood.

Domestic hardwoods such as oak, maple, birch and ash and imported species such as Australian eucalyptus and Scandinavian beech are most likely from sustainable sources.

Resilient Flooring

Resilient flooring options (vinyl, rubber, linoleum and cork-rubber) are easy to maintain, and some are very durable. Some materials have renewable contents and others have recycled content.

- Foothill specifications have been modified to include this language. See Division 01: Section 01 35 43, page 2.

True linoleum is made with renewable materials (linseed oil, cork, wood dust and jute) as are cork products. Linoleum is very durable.

Recycled rubber tile and sheet goods are also available made with waste tires. These are good choices for heavy traffic and utility areas.

All resilient flooring products produce some air pollutant emissions, as do their adhesives. Interlocked rubber tiles and heavy linoleum can be laid without adhesives.
Flooring with sealed low-maintenance surfaces is preferred for reducing maintenance costs and cleaning products.

Carpeting

Carpets are high maintenance and have high-pollution potential. Products should be specified with recycled content, inherent lower pollution and lower maintenance requirements.

Polyester and nylon-blended carpets are available with recycled content from polyethylene terephthalate (PET) soft drink containers, which have similar properties to other polyesters. Releasable carpet tile and roll carpet systems can be picked up and cleaned or moved from high-traffic areas to rotate wear. Low pile, dense loop and needle-punch types trap the least soil and show the least wear.

- Foothill specifications have been modified to include this language. See Division 09: Section 09 68 13, page 3.

Carpet recycling is an industry priority today due to the large quantity sent to landfills, where it does not easily decompose.

- Foothill specifications have been modified to include this language. See Division 01: Section 01 35 43 Carpet Reclamation, page 2.

Carpet construction is one important factor in the air-pollutant emissions from the product. The vast majority of carpet is made by pressing the face fiber into a polypropylene mat, and then gluing it in place with a synthetic latex resin. The synthetic latex is a source of air pollution, including 4 phenylcyclohexene (4 PC), an irritant that is believed to contribute to sick building syndrome. One method of low-emission carpet construction is to eliminate the latex bond through fusion bonding. This type of carpet has a sponge plastic backing into which the face fiber has been heat welded. It is a good choice for reducing indoor pollution. Needle-punched carpets, which are very low pile and mass are also made without latex. Among all other latex-bonded carpets, including wool products, there is a wide

variability in emissions. A few manufacturers have made a great effort to provide low-emission products and some of these can provide full test results, listing VOC emissions at different time periods.

- Foothill specifications have been modified to include this language. See Division 01: Section 01 35 43, page 2.

Airing out new carpet has often been recommended as a pollution-reduction measure, but the evidence is not strong for the effectiveness of this method. Bake-out, where the building heat is turned up to the highest degrees possible over several days has been a more effective method to remove semi-volatile emissions.

Finished Concrete Flooring

Finished concrete flooring is an integral system of slab and finish, produced by adding colorants and sealers to the topping concrete, either before or after it cures. Systems with integral color added to the entire topping layer are more resistant to damage and less likely to require recoloring. The concrete is often stamped with tile patterns and grid lines that also control cracking. It is a durable and low-maintenance finish. Adding color(s) to the concrete gives the concrete a more complete look with very low maintenance.

Finished concrete is inherently low in emissions. Water-dispersed, acrylic sealers should be selected that meet low-volatile standards to maintain the low-emission rating.

- Foothill specifications have been modified to include this language. See Division 03: Section 03 35 00.

Painting is an important indoor air-pollution and toxic-waste consideration. Volatile emissions from liquid coatings (paint tends to be short term lasting a few days or weeks). The most toxic emissions from paints and coatings are usually evaporating solvents and a wide variety of volatiles released by oxidation. These volatiles are produced not only by solvent-based paints, but also water-based formulations. Water-based paints may contain up to 12-percent solvents, though some new formulations contain very little. Water-borne acrylics are preferable to alkyds (solvent-based oil paints); they are highly durable and produce no solvent use.

- Foothill College has used water-based paint for interiors prior to 1982. See Division 09: Section 09 90 00 Paint, page 3.
- Foothill College specifications have been modified to include this language. See Division 01: Section 01 35 43, page 2.

For exterior use, it is necessary to use solvent-based coatings. Where solvent coatings are required, the painters shall be required to recycle solvents.

- Foothill College specifications have been modified to include this language. See Division 09: Section 09 90 00, page 8.

Low-pollution options should include avoiding products that contain lead, mercury, hexavalent chromium and cadmium. Paints will be specified to meet the California low- or zero-VOC standard.

- Foothill College specifications have been modified to include this language. See Division 01: Section 01 35 43, page 3.

Ceiling Tile

Tile is made from wood fiber, including recycled material and often mineral fiber with added clay or gypsum fillers for fire retardation. It is then painted. Some tile has recycled content, though none currently are made with post-consumer contents. Ceiling tile is reusable and paintable.

All tile collects dust and absorbs odors. Tile with mineral fiber content may also begin to shred hazardous fiber if disturbed, or as it deteriorates. Both problems are of concern where the ceiling is used for a return plenum to carry air back to HVAC air handlers. If this type of return system is used, the tile should be checked for damage and the plenum space occasionally cleaned with a high-performance vacuum. If possible in new and renovation design, HVAC returns should be ducted instead of risking contamination by debris in suspended ceilings. On a case-by-case basis, renovation projects will be reviewed for the feasibility of new duct work.

- Foothill specifications have been modified to include this language, “post-consumer contents.” See Division 01: Section 01 35 43, page 2.
- Foothill specifications have been modified to include this language, “no mineral fiber contents.” See Division 09: Section 09 54 28, page 3.
- Foothill specifications have been modified to include this language, “tile checked for damage, HVAC returns ducted. See Division 09: Section 09 34 28, page 39.
- Foothill specifications have been modified to include this language, “plenums vacuumed.” See Division 01: Section 01 74 10, page 2.

Division 10: Specialties

Interior panels for office partitions and non-structural interior barriers allow reconfiguration without major demolition and waste. The cost of these systems is more than built-in walls. They are reusable and allow rapid changes to be made with minimal disruption.

- Foothill reuses panels as often as possible as a matter of practice.

Division 12: Furnishings

Furnishings are one of the most important resource efficiencies and the biggest indoor air-quality considerations. Furnishings represent a major cost and maintenance component.

Powder-coated metal finishes are an environmentally friendly substitute for painting and plating, using dry powder polymers applied to metal and then fused with heat. Powder-coated finishes are harder than many paints and can rival plating for durability.

Upholstery foams used in chairs are generally high-density urethane products. These were once manufactured with ozone-depleting CFCs but are now made with safer HCFCs. Chairs should carry labels certifying that the foams are non-CFC.

- Foothill's facilities office works with furnishings vendors to utilize the above whenever practical and has

Appendix H–Sample Project Log

Sustainability Committee Project Log

PROJECT NAME:	Carpet Reclamation 2-1 Control #
SPONSOR:	Brenda Davis-Visas
EXPLANATION:	As part of Foothill's efforts to divert landfill, products from projects will be recycled or reused whenever possible. Broadloom carpet being removed from our buildings during demolition and renovation will be returned to carpet manufacturers for melt down and reuse as carpet/carpet tiles.
START DATE:	8/08 Building 5000
METRICS:	1. 8/09 B/5000 Carpet and padding - vendors (Harry L. Murphy) take-off measurements for demolition. 10 tons (600 yds. of carpet) 2. 11/08 Office 1903, 34 yards (Harry L. Murphy)
EXPECTED RESULTS:	1. All carpet removed from the campus should be recycled if possible (adding carpet reclamation section into standard specifications for carpet replacement).
ACTUAL RESULTS:	2008—34 yards of carpet diverted from landfill 2009—10 tons of carpet diverted from landfill

Carpet Reclamation 2-1 1 5/28/08

Appendix I

Glossary

AASHE—Association for the Advancement of Sustainability in Higher Education, promoting sustainability in all sectors of higher education, from governance and operations to curriculum and outreach, through education, communication, research and professional development. Member institutions include two- and four-year colleges and universities throughout the United States and Canada.

AB32—The law requires that by 2010, the state must begin efforts to offset its carbon emissions from all sources, including educational buildings. By 2020, the state will be required to reduce its CO2 emissions by 30 percent, based on 1990 levels as established by the California Air Resources Board. In 2050, this will be raised to 80 percent.

ACUPCC—American College & University Presidents' Climate Commitment, which was launched in 2007, is a network of 650 signatory schools representing all 50 states and the District of Columbia. Its role is to garner institutional commitments to neutralize GHG and accelerate the research and educational efforts of higher education to equip society to re-stabilize the earth's climate.

Building Commissioning—Ensuring that all building features and systems are built and function as intended.

Carbon Footprint—The direct effect an individual's actions and lifestyle have on the environment in terms of carbon dioxide emissions.

Carbon Negative—Refers to a negative (less than zero) balance of sequestered or offset against carbon dioxide released.

Carbon Neutral—Refers to neutral (zero) total carbon release, brought about by balancing the amount of carbon released with the amount sequestered or offset.

California Climate Action Registry—A program of the Climate Action Reserve that serves as a voluntary GHG registry to protect and promote early actions to reduce GHG emissions by organizations. The registry provides leadership on climate change by developing and promoting credible, accurate and consistent GHG-reporting standards and tools for organizations to measure, monitor, third-party verify and reduce their GHG emissions consistently across industry sectors and geographical borders.

Certification Programs—For reliability certification should meet the following three criteria, including make their standards publicly available and free of charge; develop their standards openly and transparently; and thoroughly examine the claims a company makes. EcoLogo, Forest Stewardship Council, Green-e and Greenguard are among organizations that follow these steps.

Change Management—A structured approach to change in individuals, teams, organizations and societies that enables the transition from a current state to a desired future state. Change management provides a framework for managing the people side of these changes.

Climate Neutral—The effort to offset the carbon footprint (CO2 emissions) of an organization through investments in sustainable energy, agriculture, reforestation and energy efficiency, whose benefits offset or avoid an amount of CO2 equivalent to the organization's carbon emissions.

Community—The term generally means those who live, work, govern or go to school in an organization's hometown or city, and often means the people who are nearby neighbors of the institution.

Cultural & Biological Diversity—The adaptive interweave of people, language, place, culture and ecology, which is a source of exchange, innovation, creativity and cultural diversity. (Adapted from UNESCO). EcoLogo, Forest Stewardship Council (FSC) Green-e and Greenguard are among organizations that follow these steps.

Energy Management Plans—The plans to implement energy-efficiency projects such as sustainable green buildings, renovations, and wind and solar farms that will move the college toward energy independence. (Energy Policy Handbook)

Energy Star—Launched in 1982, this energy-efficiency rating system is administered by the U.S. Environmental Protection Agency and U.S. Department of Energy. It is a leading standard for energy efficiency for more than 50 product categories, including appliances, heating and cooling, electronics, lighting, food service and office equipment. Energy Star products use 25–50 percent less energy, have extended product lives and offer decreased maintenance costs.

Environmental Literacy—A basic comprehension of environmental sustainability, natural capital, exponential growth, carrying capacity, environmental history, ecology, biodiversity, energy, resources, pollution prevention, waste reduction, ethics, economic and political systems.

Environmental Performance—Incorporate continuous improvement and refers to continuous reduction of environmental, and social risks and impacts, over time, and continuous enhancement of social, environmental, and financial opportunities over time.

Green Building—A building that has been designed to reduce both direct and indirect environmental consequences associated with construction, occupancy, operation, maintenance and eventual decommissioning, and whose design is evaluated for cost, quality of life, future flexibility, ease of maintenance, energy and resource efficiency and overall environmental impact with an emphasis on life-cycle cost analysis.
(Energy Policy Handbook)

Green Seal—Independent nonprofit organization dedicated to safeguarding the environment and transforming the marketplace by promoting the manufacture, purchase and use of environmentally responsible products and services.

Green Washing—A result of misinformation or misguidance about the green benefits companies' claim that their products provide.

Interested Parties—See stakeholder.

ISO 14000—Environmental management standards that help organizations minimize how their operations negatively affect the environment and comply with applicable laws and regulations.

Labs for the 21st Century (Labs 21)—Shared guidelines and best practices by industry experts.

Leadership in Environmental & Energy Design (LEED)—The certification system developed by the U.S. Green Building Council (USGBC). It is the premier green building standard in the United States. The certification process for buildings involves rigorous documentation, which helps to ensure accurate, fair and meaningful standards. LEED certification includes criteria grouped into the following categories: Sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design.

Personal Sustainability—Plans and actions that individuals take at all stages of their lives to help ensure their physical, social and financial sustainability.

Renewable Energy Credits (RECs)—Available from a variety of nationwide retailers, RECs are created when a new renewable energy facility generates electricity and the environmental benefits of that electricity are sold to the REC buyer.

Silicon Valley Leadership Group—Organization involving principal officers and senior managers of member companies in a cooperative effort with local, regional, state and federal government officials to address major public policy issues affecting the economic health and quality of life in Silicon Valley.

Social Equity—Decisions and actions that require that we recognize the values and norms of other peoples and that our decisions and actions are guided by notions of justice and fairness that accept the integrity and validity of other cultures and lifestyles. (Adapted from United Nations University Press)

Stakeholder—Refers to anyone who is affected or perceives himself/herself to be affected by the college. Given the college's commitment to enhanced community engagement or involvement, the role of stakeholder is a critical continuing theme in this report. Stakeholders can include internal stakeholders (or interested parties), such as staff, faculty, administration and students, or external stakeholders (interested parties), such as families of employees, faculty, staff and students, other community members, voters, regulators, the legislature and the college district, or vendors of the college.

Stewardship—Having an ethical responsibility toward nature. Encouraging environmentally beneficial forms of economic growth in part by using energy and resources wisely.

Sustainably Managed Forests—Forests that are being managed through a professionally administered forestry management plan in which timber growth equals or exceeds harvesting rates in both quality and quantity.

Sustainability—To utilize components of social, cultural and biological diversity in a way and rate that does not lead to long-term decline, thereby maintaining the potential to meet the needs and aspirations of present and future generations. (Adapted from the "Conventions of Biological Diversity")

Sustainability Performance—Incorporate the notion of continuous improvement and refer to continuous reduction of social, environmental and social risks and impacts, over time and continuous enhancement of social, environmental and financial opportunities over time.

Sustainable Silicon Valley (SSV)—A collaboration of businesses, governments and nongovernmental organizations that are identifying and addressing environmental and resource pressures in the region.

Sustainability Tracking, Assessment & Rating System for Colleges & Universities (STARS)—This rating system was developed by AASHE, and is a voluntary, self-reporting framework for gauging relative progress toward sustainability for colleges and universities.

U.S. Green Building Council (USGBC)—Nonprofit organization dedicated to raising awareness about green buildings; developed the LEED certification rating system.

Vehicle Miles Traveled (VMT)—Miles traveled in a vehicle.

United Nations Educational, Scientific & Cultural Organization (UNESCO)—Founded in 1945 as a special United Nations agency, the organization functions as a laboratory of ideas and a standard-setter to forge universal agreements on emerging ethical issues. Promotes international cooperation among its 193 member states and six associate members in the fields of education, science, culture and communication.

Xeriscape—Water-efficient landscape design.

Zero-Net Energy—A building with zero-net energy consumption, meaning the total amount of energy used by the building on an annual basis is roughly equal to the amount of renewable energy created on the site.

Appendix J

Commissioning is a relatively new procedure that includes what was formerly referred to as testing, adjusting and balancing, but goes several steps further. Commissioning has been found to be very valuable, particularly with complex mechanical and electrical systems, to ensure that they operate as intended, and to realize energy savings and a quality building environment, which are often the reasons that more complex systems are installed. When special building features are installed to generate renewable energy generation, recycle waste or reduce other environmental impacts, commissioning is often necessary to ensure optimum performance.

The purpose of commissioning is to ensure performance of contractual obligations; quality of construction and correct operation of all functions; environmental quality and energy-efficient operation as designed; and complete as-built, operating and maintenance information are passed on to owners and operating staff.

Formal commissioning is recommended for buildings with complex and digitally controlled HVAC systems; renewable energy; on-site water treatment systems; daylighting or occupancy sensor-lighting controls; natural ventilation systems integrated with HVAC systems; and other unusual technologies. Commissioning is usually not used for projects with very little mechanical or electrical complexity. Commissioning should be done for new construction and major retrofits; medium or large energy management control systems (systems with more than 50 control points); unusually complex mechanical or electrical systems; on-site renewable energy generation systems, such as solar hot water heaters or photovoltaic arrays; and innovative water-conservation strategies, such as gray water irrigation systems or composting toilets.

Formal Commissioning Plan Preparation & Follow-Up
A plan is essential for successful commissioning:

- Determine the degree of commissioning required early in the design process;
- Assign responsibility for commissioning, also early in the process;
- Define commissioning requirements clearly in specification documents for all systems that require it;
- Instruct the contractor to coordinate and delegate commissioning duties among subcontractors; and
- Assign the commissioning coordinator or consultant (if involved) the coordination of all documents and commissioning work.

In the specifications, language must be emphasized to contractors during the bidding process so that they understand that more testing and verification will be required than has been standard practice.

Foothill has revised the design specifications to include a section on commissioning which addresses the above. See Section 01 91 00.

Appendix K

Sustainability Management Report
Report Card • April 2015

Category	Year & Initiative	Completed	Incomplete
All	Stars Tracking System Description: Review STARS tracking system and determine if it is the right fit for Foothill. Findings: Colleges that used the STARS tracking system reported that it took one full-time staff member to upload and manage the data. We have reviewed the technical manual and should staffing become available, we would like to reexamine this system. Foothill is complying with many of the sections, and we may be able to adopt additional recommendations over time.		X

Category	Initiative	Completed	Incomplete
Civic Engagement	**Messaging** Description: Develop themes and messages to encourage and promote sustainability practices across the campus. Events that have supported this initiative include: • LIBR 190X: Environmental learning community course developed Spring 2007. The class focuses on environmental awareness and action. Class met for 12 consecutive weeks. Topics discussed included global warming, climate change, carbon footprints, composting, garden sustainability, biodiesel, the slow food movement, solar, energy and wind power, personal sustainability and population growth. • Earth Day (April) 2008—As part of Earth Day activities, a fluorescent light bulb giveaway was conducted in conjunction with PG&E and Sierra Club. The message, green means go, was delivered, signaling the beginning of the Foothill movement toward a more sustainable campus. • Opening Day Activities Fall 2008—Sustainability was a major focus at Foothill's opening convocation. Two important messages were introduced to faculty and staff. The first was the emerald campus theme. Environmentally produced posters were distributed throughout campus in September 2008 (and can still be found around the campus). The poster posed some leading questions that were designed to inspire thought about sustainability and develop an environmental consciousness on campus. The second message, one college, one community, one world, introduced a global aspect and reminded all members of the campus community of our connection to the larger community and the world beyond Foothill. Both messages were carried on throughout 2008–2009. The Foothill Bookstore followed this theme by selling "One College, One Community, One World"-imprinted T-shirts and mugs, as well as the addition of a line of recycled binders, folders and other school supplies. Lanyards and plastic name tags that were traditionally used for opening day convocations were replaced with lanyards from recycled materials and plant-based name badge holders. Signage was put up in all departments/division offices reminding employees to turn off copiers and lights. Organic Garden—The overall goal of the garden was to demonstrate a sustainable and organic ecosystem on campus. It is an educational tool that teaches about our food system and its implications for the environment, health and nutrition, and our culture through modeling local, sustainable food production that is free of chemicals. The garden also models sustainability. As part of the design and building process, we diverted waste from landfill by building the garden from reclaimed materials. As a creative fundraising project, many plants, bushes and trees scheduled for destruction as part of new construction on campus, were sold at a Dig Your Own plant sale in May 2009. The money raised was then used to purchase needed materials to complete the garden. The on-site composting process helped reduce our waste stream by recycling leaves, manure from the on-campus veterinary technology facility, coffee grounds and other materials from the campus. Multiple disciplines, including biology, horticulture, anthropology and nutrition used the garden for instructional purposes. The college's environmental horticulture program has developed curriculum specifically designed around the organic garden and used the garden as an outdoor teaching space. Emerald Campus Speaker Series—Hosted outside speakers who addressed sustainability issues during free lectures presented to students, staff and faculty. Meatless Monday—Foothill's food service vendor serves a vegetarian entrée	X	

Category	Initiative	Completed	Incomplete
Civic Engagement	Special Events Description: Participation in national and local events to raise awareness of specific sustainability issues and engage the campus and surrounding community, e.g., Focus the Nation and Alternative Transportation Fair. On April 18, 2009, Foothill hosted a Focus the Nation town hall event. Focus the Nation is a nationwide project that assists campuses across the country to organize town hall events. These events open a dialogue between students, citizens and local and state politicians around issues of sustainability and clean energy. The event provided a perfect opportunity for civic engagement, and relationship building on campus and with our community. Political leaders in attendance included Los Altos Hills Mayor Jean Mordo, Mountain View Mayor Margaret Abe-Koga and Assemblyman Ira Ruskin. The Associated Students of Foothill College leadership class helped manage the event, and panelists participated from four of our service areas (Los Altos, Los Altos Hills, Mountain View and Palo Alto). Focus the Nation also helped lay a foundation for Foothill's long-term goals of building partnerships within the community and enhancing our relationships between Foothill-De Anza. Civic Engagement: The sustainability committee developed brown-bag lunchtime information seminars to provide students, faculty, staff and community members with sustainability information. Several of these presentations were devoted to water use and planting techniques, as well as how to choose ecologically responsible landscaping for their homes.	X	
Civic Engagement	2010–2013 Develop Website Description: Develop a sustainability website to serve as a vehicle for coordinating events and disseminating information, including collaborative tools and resources for the campus community. The sustainability website was launched Fall 2008 to enhance visibility, share information and keep the campus and community informed of projects and meetings. The site was expanded over time to include a green tips section, current sustainability initiatives, contact information, calendar of activities, links to resources, as well as a green bookshelf of recommended readings. The website will be redesigned to provide meeting minutes, contact information and major special events only.	X	
Civic Engagement	On-site green-collar workforce training. See Planning & Resource Council (PaRC) quarterly newsletter (Winter 2015 page 2), which describes Foothill's apprenticeship program. As part of future initiatives, Foothill hopes to broaden the program.	X	

WINTER 2015

Foothill College Planning and Resource Council (PaRC)

PaRC

Quarterly Newsletter

A Message from President Judy C. Miner

The new years affords us the time to remember how fortunate we are to be members of the Foothill College community. I thank everyone for their dedication that has resulted in the college's many accomplishments.

It is a privilege to be at this remarkable institution and a great pleasure to work with all of you. I want to thank our faculty and staff for their devotion and dedication to students. I also want to thank our students for drive and commitment to learning. All of this is what makes Foothill College a unique, vibrant place to work and to learn. I am often reminded how fortunate I am to be leading one of the nation's premiere community colleges and look forward to the coming year with optimism and excitement.

Again, I thank each of you for the great commitment you have shown to the college. I appreciate all your contributions and look forward to the good work we will do together in 2015!

2014-15 PaRC Meeting Calendar

PaRC meets from 1:30-3:00PM in the President's Conference Room, 1901 Administration Building, on the first and third Wednesday of each month during the academic year. The first meeting of the Winter Quarter will be held on **Wednesday, January 21, 2014**. Meetings are open to the campus. For PaRC agendas and materials, visit the PaRC webpage

BOOKMARK the PaRC webpage:
http://www.foothill.edu/president/parc/index.php

Upcoming Events – *Save the Date!*

Foothill College Authors Series: Lalita Tademy

New York Times bestselling author Lalita Tademy will read from her newest book, Citizens Creek: A Novel.

Hearthside Lounge, 2313
2/25/15 from 10:15 – 11:15AM

PaRC Workgroup Updates & Announcements

Five workgroups are included in PaRC's organization: Basic Skills Workgroup, Operations Planning Committee (OPC), Student Equity Workgroup (SEW), Transfer Workgroup & Workforce Workgroup

Basic Skills Workgroup & Student Equity Workgroup (SEW)

On October 6, 2014, the Board of Trustees approved the Student Success & Support Programs (3SP) Plan. The Board also approved the Student Equity Plan on December 8, 2014. The Student Equity Plan and Executive Summary are posted online for your review.

Funding proposals were due to the Basic Skills Workgroup and Student Equity Workgroup on December 5, 2014. The workgroups are scheduled to present their funding priorities at the February 4, 2015 PaRC meeting.

Workforce Workgroup

Apprenticeship Program Awarded Prop 39 Funds

Foothill College, through its Apprenticeship Program, has been awarded $295,000 in a grant under the Proposition 39 California Clean Energy Jobs Act. This funding will allow Foothill to establish linkages with public and private entities in the region to: 1) outfit training labs with the latest clean energy equipment; 2) make significant improvements to existing curriculum for clean and green technology; 3) provide professional development opportunities for instructors preparing to upgrade their courses to the latest green standards; and 4) increase employment opportunities for current or prospective students who plan to enter this field. The energy-efficiency programs affiliated with Foothill which stand to gain the most include: Electrical; Plumbing; Refrigeration; Heating; Ventilation and Air Conditioning; and Sheet Metal programs. Kudos to David Ellis for his work to get these funds for the college.

Successful Internship Summit held at Microsoft on November 6, 2014

The Foothill College Internship Program is the lead agency in the development of the annual Silicon Valley Internship Summit. With an overall goal of helping to ensure the workforce in Silicon Valley is prepared and trained to meet the needs of employers, this event brings employers and educators together to improve internship opportunities. Over 275 employers, educators and internship practitioners including large organizations such as Microsoft, Cisco, the City of San Jose, PricewaterhouseCoopers, and the Lucile Packard Children's Hospital at Stanford attended the event. Topics addressed included the importance of the school/business partnerships; how to start an internship program; legal aspects; best practices; and strategies for managing a successful internship program. Foothill faculty member Allison Meezan provided her experience and a community college perspective on a panel with other educators.

Category	Initiative	Completed	Incomplete
Hazardous & Solid Waste	Establish electronic waste baselines. California Integrated Waste Management board's website lists data for Foothill's tonnage diverted in prior years. To view this information, access www.ciwmb.ca.gov/StateAgency/SOARD/Diversion.asp?ORGID=204&UBID=204&DOCID=3185&RYR=2006	X	

Year	Date Submitted	Total Handled		Total Shipped Domestic		Total Shipped Foreign	
		Count	Pound	Count	Pound	Count	Pound
2009	1/15/10	1706	0	1706	0	0	0
2010	1/24/11	263	0	263	0	0	0
2011	1/27/12	363	0	363	0	0	0
2012	1/31/13	564	0	564	0	0	0
2013	1/30/14	166	0	166	0	0	0
2014	1/28/15	705	0	705	0	0	0

Source—K. Lauricella, Foothill-De Anza Environmental & Health Services Director

Category	Initiative	Completed	Incomplete
Hazardous & Solid Waste	Beverage containers (glass, aluminum, plastic) are discarded into the garbage receptacles and sorted by the garbage company. The sustainability committee will explore diverting as many items as possible into a revenue stream through use with alternate sources. Cardboard: Custodians and food service personnel break down boxes and put into dumpsters. The sustainability committee will explore diverting as many items as possible into a revenue stream through alternate sources. Foothill uses two different types of garbage cans, one for garbage and the other for recycle. To break down recycles further would require additional cost to provide additional recycle cans; this is not feasible or necessary. Developing additional revenue streams requires additional staffing. In this case, we would expend more funds than we would recoup; doing so is not fiscally responsible.	X	

Category	Initiative	Completed	Incomplete
Hazardous & Solid Waste	Increase construction debris recycling through project specifications and construction practices. Original specifications called for 50-percent diversion; new specifications call for 60 percent.	X	

Category	Initiative	Completed	Incomplete
Hazardous & Solid Waste **Year 2014**	Current goal for diversion of waste is 70%. Review alternative to improve diversion rate to meet goal. Out of 312 tons of trash, 159 tons were diverted from landfill.		51% of reduction

Source - J. Zirelli, Recology

Year	Project Number & Name	Total Waste (tons)	Recycled (tons)	Recycled %
2009	101; Forum 5000	118	85	72%
	123D/226A; PE Campus Center Flooring Finish	0.008	0.008	100%
	130A; Utility Lids, Phase 5	31	17	55%
Year Total		**149**	**102**	68%
2010	100C/2008; Pool Tile, Plaster & Chlorination Replacement	62	62	100%
	134; Exterior Signage	1	1	100%
	142; Soccer, Softball & Baseball Complex	122	106	87%
	147 & 149; Horticulture & Choral Rehearsal Hall	225	225	100%
Year Total		**410**	**394**	96%
2011	100E; Krause Center for Innovation HVAC Upgrades	1.55	1.55	100%
	100G; Library Glulam Beams	2	2	100%
	109 PE Lab Space Remodel	9	8	88%
	110 & 112; B1900, 5500, 6200, 6400, 6500 Renovation	31	27	87%
	113; New Press Box	219	219	90%
	120; Smithwick Theatre HVAC	24	16	66%
	154; Lots 2–3 Photovoltaics	1044	1044	100%
	Physical Sciences & Engineering Center	96	84	87%
Year Total		**1426.55**	**1401.55**	**98%**
2012	120; Smithwick Theatre	10	7	70%
	160; Physical Sciences & Engineering Center	311	280	90%
Year Total		**321**	**287**	**89%**
2013	105; Convert to Learning Support Center	267	254	9%
	160; Physical Sciences & Engineering Center	33	31	94%
Year Total		**300**	**285**	**95%**
2014	105; Convert to Learning Support Center	76	70	**92**%
	801; Education Center - Demo Phase	17344	13925	80%
Year Total		**17420**	**13995**	**80%**

Source—M. Hohl, On-Site Project Manager, Gilbane Building Company

Category	Initiative	Completed	Incomplete
Hazardous & Solid Waste	Confidential Paper: Foothill and district employ outside service to shred and recycle paper. The sustainability committee recommends a study group be formed to evaluate how much of this activity is used on our campus, what are various vendor rates, and is the shredded material used sustainably. Documents are taken to a local facility. Paper is sorted by color. After documents are shredded, they are processed into bales, which are then sent for further recycling into new paper products. The entire process is sustainable with very little waste.	X	

Year	Company	Totals
2010	Shred-It	779.95
	United Shredding	920.00
Total		**1699.95**
2011	Shred-It	1276.69
	United Shredding	1144.00
Total		**2420.69**
2012	Shred-It	1875.53
Total		**1875.53**
2013	Shred-It	2495.76
	Shred Ex	150.00
	Sure Shred	304.00
Total		**2949.76**
2014	Shred-It	2788.12
	Shred Ex	360.00
	Sure Shred	608.00
Total		**3756.12**
Grand Total		**12,702.05**

45% increase in "recycled" documents between 2010 and 2014.

Source—Foothill-De Anza Central Services Buyer John Pham
(Purchasing Services information only)

Category	Initiative	Completed	Incomplete
Hazardous & Solid Waste	Mixed Paper/Office Paper: Foothill recycles paper that has been used on one side only as scratch pads for employees, math labs, etc. This is a service managed by students enrolled in the college's Transition to Work (TTW) program. Students collect the used paper, sort it, glue it, work with the on-campus Print Shop to cut it into various sizes and redistribute it as scratch pads to the college community.	X	
Hazardous & Solid Waste	Yard Waste/Composting: Placed in separate dumpsters when not mulched into ground or spread onto hillsides. Mowers are all mulching mowers. The sustainability committee will look into this program further to define the sustainable efforts associated with it. The district will be encouraged to set up a composting program in coordination with the organic garden. In 2015 and going forward, the grounds crew has agreed to compost lawn and landscape trimmings and turn the pile periodically to produce usable compost.		X
Hazardous & Solid Waste	Printed Course Catalogs: Each year, there are unused catalogs that are discarded into garbage cans. Currently, the catalogs are recycled. However, unused catalogs equal hundreds of pounds of wasted paper, ink, labor, and GHG for delivery and removal. Abandoning printed catalogs by 2016–2017. The college's marketing and communications office anticipates publishing an online version of the course catalog.	X	

Category	Quantity of Catalogs Printed	+/- %
2012–2013	1,700	
2013–2014	2,000	+ 18%
2014–2015	2,000	+ 18%
2015–2016	1,000 Goal	– 50%

Source—A. Hanstein, Foothill Marketing & Public Relations Director

Category	Initiative	Completed	Incomplete
Hazardous & Solid Waste	Fluorescent Lights: Foothill maintenance crews collect all spent light bulbs. Bulbs are placed in the Universal Waste Shed at the district parking lot, and a vendor periodically removes them for disposal. The district is utilizing "green bulbs." These bulbs have different names, but are often referred to as "green" bulbs because they have green markings, such as a green printed monogram, green end-caps or other green indicators. (Per sustainability committee's research, green bulbs may be nonhazardous, but they still contain mercury. Mercury, even at very low levels, can become airborne and be deposited into the environment, such as lakes and other water bodies. Green fluorescent bulbs should not be disposed as a general solid waste unless the generator can document that the waste is nonhazardous. This information should be provided in writing. Note: Even if the bulbs are nonhazardous waste, some landfills may not accept any type of mercury-containing waste. The sustainability committee will encourage the district to track its metrics). The bulbs do contain mercury, but in smaller amounts. Green bulbs are considered universal waste (U-waste). U-waste, including batteries, mercury thermostats and non-PCB light ballasts, are shipped on nonhazardous manifests. There are no taxes paid on nonhazardous manifests or county fees for hazardous material quantities, and are, therefore, not tracked. There would be a cost associated with tracking these items further. Source—Foothill-De Anza Environmental Health & Safety Director K. Laurelled	X	
Hazardous & Solid Waste	Food Grease: Recycled by Salinas Tallow. The sustainability committee will look into this program to define the sustainable efforts associated with it. The tallow is recycled into biofuel. Every three to four weeks, a 50-gallon drum is picked up from the campus. This equates to 750 gallons per year x 8 years = 6,000 gallons. The campus is paid 35 cents per gallon resulting in $2,100, which goes to a student services budget. Source—Pacific Dining Owner Rick McMahon	X	

Category	Initiative	Completed	Incomplete
Hazardous & Solid Waste	Hardback Books: Until 2008, a 40-yard dumpster was provided at zero cost to recycle books. The program was eliminated due to cost increases to the garbage company. Approximately 30–50 medium-sized boxes of books were recycled each year. Since the recycling service is no longer available, interior pages of books were recycled in regular recycling dumpsters, and hard covers discarded to landfill. Recycling falls within the area of responsibility of the collection development librarian. In 2014, 29,166 books were culled from the college library's collection. Of those, 26,249 (90 percent) were sent to Better World Books and 2,917 (10 percent) were recycled into bins for the pages and covers to landfill. The efficiency of recycling a book yields 97 percent as usable fiber. Source—Foothill Librarians P. Wilkes and M. Thomas	X	
Hazardous & Solid Waste	Inkjet/Laser/Copier Toner Cartridges: The district has a recycling program though Office Depot, which picks up recyclable items at the same time a delivery is made. 1. Cartridge recycling prices started at $3 for any cartridge. The amount was reduced to $2 and now stores will not provide any credit for recycled items unless products are purchased first and tied to an account. Foothill has found other companies that will buy the used cartridges, but at much less of a profit. To date, recycled cartridges have resulted in $585 deposited into the Foundation's multi-use path account, the purpose of which is to build bicycle paths and walkways around the entire campus.	X	
Hazardous & Solid Waste	Pest Management: Foothill does not advocate spraying on site. Trapping and off-site location release is used instead.	X	
Hazardous &	Designated smoking areas have been relocated to parking lots, reducing second-hand smoke exposure to students, faculty, staff and campus visitors.	X	

Category	Initiative	Completed	Incomplete
Transportation, Energy Conservation & CO2 Reduction	Baseline for transportation and energy use. 1. Accurately track & analyze energy use intensity. 2. Work with students to better track transportation.		X

Student driving Fall-Winter Spring					
FTES	F2F FTES	trips/wk	total wks	total trips	gal R/T
12,000	9,200	3.5	36	1,159,200	1
Student driving Summer (total students = 4,000)					
Full time	Part time	trips/wk	total wks	total trips	gal R/T
2,666.667	1,333.333	3	6	72,000	1
Faculty driving					
Total	FTEF	trips/wk	total wks	total trips	gal R/T
574	300	3	40	137,760	2
Staff driving					
Full time	TEA	trips/wk	total wks	total trips	gal R/T
140	10	5	44	66,000	2
Air Travel					
Faculty 100	Admin 10	Total 110	Trips 1	Average miles 3,000	Total miles 330,000

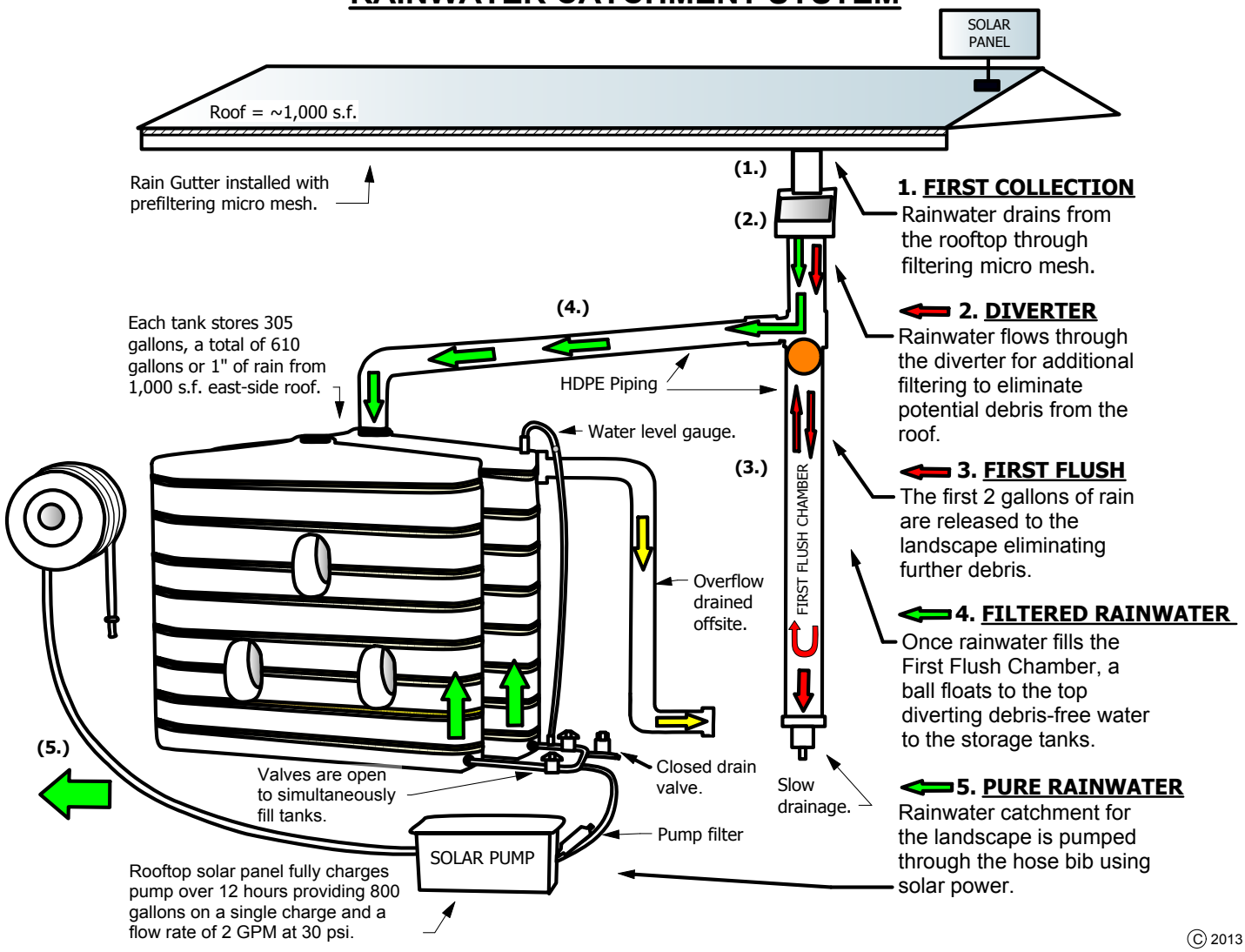
Category	Initiative	Completed	Incomplete
Transportation, Energy Conservation & CO2 Reduction	2009 10-Point Action Plan	X	
Transportation, Energy Conservation & CO2 Reduction	Report on CO2-reduction levels every two years, in accordance with the Presidents' Climate Carbon Neutrality Commitment.	X	
Transportation, Energy Conservation & CO2 Reduction	Interactive educational kiosk on campus for photovoltaic results to display real-time performance of the solar system. 1. Dashboards that monitor building utilities were designed as part of a science-on-display activity at the new Physical Sciences & Engineering Center, completed December 2013. However, it was not implemented by the contractor or the district. A Foothill faculty member ordered Fluke Power Loggers to record data. To date, this is still not in place.		X
Transportation, Energy Conservation & CO2 Reduction	Incentives for individuals utilizing alternate commuting systems rather than single-driver, single-vehicle. Carpool drivers registered with the facilities and special projects director. Registered drivers were then eligible for a raffle ticket each day they drove a carpool. At the end of the week, one ticket was selected and that driver was awarded a prize for carpooling. Prizes were purchased from the Staples retail store using funds from the cartridge-recycling program. An average award was approximately $12 (pen or office accessory). Staples discontinued the program and this promotion was stopped. Zimride, a rideshare service, was introduced to the Foothill campus community. Zimride connects intercity drivers and passengers through social networking and is the largest rideshare program in the U.S. The service has more than 350,000 users, is active on 125 university campuses and has partnerships with Facebook and Zipcar. Eco Passes: The Associated Students of Foothill College (ASFC) agreed to tax students $1, which is used to subsidize Eco Passes for students who need rides to school. Eco Passes are purchased by AFSC, which then provides students with unlimited rides on VTA buses and light rail in Santa Clara County. Earth Day Car Show—On more than one occasion, Foothill has hosted car shows in its centrally located library quad. Electric cars, hybrids and cars that have been converted from regular gas engines to electric battery systems have been displayed. These car show events also serve as a topic of conversation for students, faculty and staff.	X	

Category	Initiative	Completed	Incomplete
Transportation, Energy Conservation & CO2 Reduction	Incentives for individuals who use alternate-commuting systems rather than single-driver, single-vehicle. See above entries.	X	
Transportation, Energy Conservation & CO2 Reduction	Conducted GHG-emissions inventory using the Cool Air, Clean Planet (PCC/AASHE) model and reported results. Conducted a number of primary student and employee commute surveys to determine how people get to campus, and establish a statistical approach to validate our use of a ZIP Code analysis for estimating student trips, and associated GHG emissions traveling to campus.	X	
Transportation, Energy Conservation & CO2 Reduction	Energy audits completed for all campus buildings and deficiencies identified for correction. 1MKw Challenge—As part of the challenge, a grant was awarded to Foothill. The goal was to reduce Foothill power consumption by 5 percent through student participation. The end goal is to have students apply what they learn on campus at home and in their communities. Grant funds were used to purchase the Gridium software system ($5,000). The software has been helpful in reviewing campus energy trends, Mondays through Sundays. The software displays Foothill energy loads every 15 minutes, as well as campus base load and the highs and lows. District plant services personnel are working toward installing Fluke loggers at various points on campus to read energy consumption at specific buildings.		X
Transportation, Energy Conservation & CO2 Reduction	Systems for measuring energy use per building in place and annual measurements being reported.		X
Transportation, Energy Conservation & CO2 Reduction	Smart Office Technology – Retrofitting classrooms with smart technology began in 2007, which included integrated wireless networking, and projector and audio/video capture technology in conference room and meeting areas. The goal was twofold; capture meetings/presentations for later playback and facilitate participation by a broader audience through real-time teleconference capabilities. This allows staff to telecommute, reducing GHG emissions.		In Progress
Transportation, Energy Conservation & CO2 Reduction	Foothill will explore purchasing energy that combines lower-carbon content through an enhanced renewable energy portfolio with a remote renewable energy provider and carbon offsets.	X	

Category	Initiative	Completed	Incomplete
Transportation, Energy Conservation & CO2 Reduction	Photovoltaic & Cogen On-Site Electricity Production: Foothill produces approximately 600,000 KwHrs annually, about 10 percent of annual electrical use. This electrical generation offsets 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 campus' Olympic-size pool.	X	
Transportation, Energy Conservation & CO2 Reduction	Invest in Carbon Offsets: Foothill will work with PG&E to develop a plan to offset our delivered electricity regardless of contract source. Our intention is to evaluate Climate Smarts offsets as part of a bundled energy solution, which may include lower-carbon content. Given the size of the California Community Colleges system and service territory of PG&E, 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 credit might be the most affordable and cost-effective way for colleges and universities to offset GHGs in a protracted and restricted-budget environment.		X
Transportation, Energy Conservation & CO2 Reduction	In 2010 Foothill College brought an additional 1 MW of solar PV into production, which now produces nearly 1.7 M kWh of electricity a year, offsetting the largest part of our afternoon demand curve, and reducing our GHG emissions by nearly 1,00tons annually. Together all three solar PV array locations (100KW, 440KW, and 1 MW) produce nearly 2.5 M kWh of emission free electricity, reducing fossil fuel generated electricity by 30% of our total annual demand, and saving the College $300K in annual electrical costs. The solar PV also provides a learning opportunity for our students to study distributed generation energy systems. The solar PV is also the foundation for more complex energy management systems. Foothill College is also recognized as a leader in deploying energy technology, and has attracted the interest of the surrounding technology community for collaboration and partnering in forward looking energy projects.		X
Water-Use Reduction & Control	Faculty and staff will be encouraged through a campaign to conserve water and report leaks to maintenance.Flyers were posted on the campus, deans were advised to call district plant services to report malfunctioning equipment.	X	
Water-Use Reduction & Control	Reduce evaporation of swimming pool water. Investigated the cost of a cover and automatic opener for the Olympic-size pool, which was prohibitive.	X	
Water-Use Reduction & Control	Food Services Equipment: A list of equipment will be generated indicating energy ratings and gallons of water used to identify replacements, when recommended, that use less energy and water.	X	
Water-Use Reduction & Control	Water mains will be identified and verified that all have shut-off valves. For those that do not, the sustainability committee will work with district plant services to develop and implement a plan.	X	

Category	Initiative	Completed	Incomplete
Water-Use Reduction & Control	Campus Wells: Investigate if this is a viable source of water for campus irrigation. It has been determined that the campus has two on-site surface water sumps that have been used as sources of water for campus landscape irrigation. These are not really wells, as they employ a 5-hp pump and the water is leached from the surrounding areas not tapped into a source. During the drought of Summer 2014, one sump was completely dry and the other at a very low level.	X	
Water-Use Reduction & Control	Water filling hydration stations. In an effort to reduce the use of plastic water bottles, hydration stations were installed at new or renovated construction projects. Additionally, the existing drinking fountains were modified to enable the campus community to fill their own sustainable containers. Most campus functions provide large containers of ice water and no longer promote the use of plastic bottles. It is impossible to quantify a number of "unused" bottles.	X	
Water-Use Reduction & Control	The sewer charge can be affected by decreased water use. As of last July, cooling tower water, which was being discharged to the sanitary sewer, is now diverted to tanks and used for irrigation.	X	
Water-Use Reduction & Control	Water Harvesting: The environmental horticulture and design department researched the amount of water being used to cool the campus air-conditioning chillers. After discovering that this was fresh, potable water that was regularly cycled to the sewer system, water quality tests were conducted. The tests revealed that the water was essentially clean drinking water. Using grant money from the 11th Hour Project, the department, along with district plant services designed a system to recapture and store water for campuswide irrigation. An average 455 gallons a day x 5 days a week x 4.3 weeks per month x 6 months = 58,695 gallons has been reclaimed to date. (Chillers run only during warm months when the demand for air conditioning is at its highest in mid-April to mid-October.) This project was selected as an award winner by the 2015 Water Conservation Awards Coalition. The winners were honored at an awards ceremony March 23, 2015.	X	
Water-Use Reduction & Control	Rainwater from the environmental horticulture and design department's propagation and construction buildings is captured and used to irrigate nursery plants, saving 30,000 gallons of water per year. Not only have these projects saved water, they are used to showcase water-conservation techniques to numerous tour groups. They are also highlighted in more than a dozen courses and all-day seminars, including Mastering Drip: Strategies for Correct Watering in a Drier California and Saving Water: Creating Beauty with California Native Plants workshops.	X	

RAINWATER CATCHMENT SYSTEM



610 Gallon Storage

7500 Gallon Storage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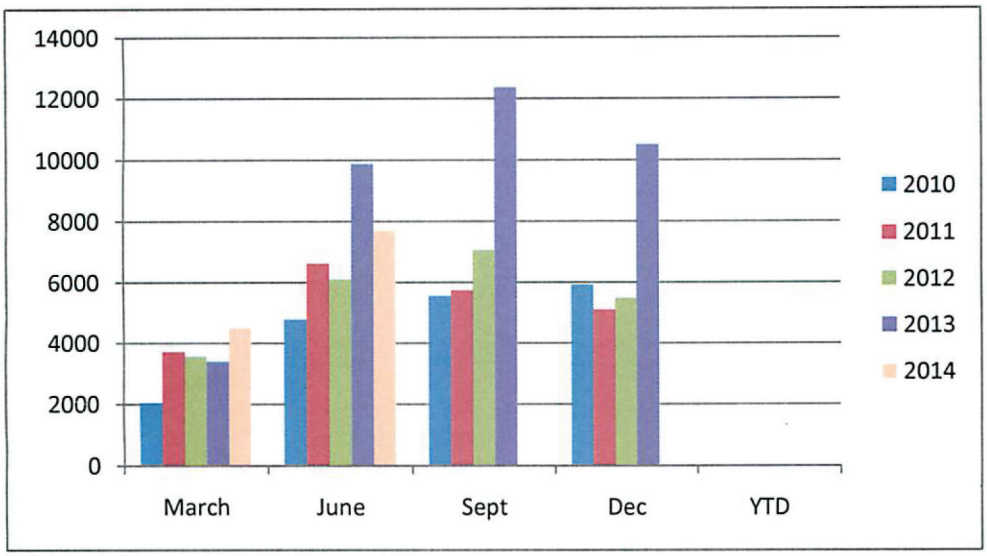
Category	Initiative	Completed	Incomplete
Water-Use Reduction & Control	Where possible, the use of gray water for irrigation will be considered.	X	
Water-Use Reduction & Control	Campus water features will be reduced through the Measure C Site Improvement Project. Two of the existing decorative fountains (located in the Library Quad and adjacent to Building 1500) will be renovated and the third (located in the Administration Building patio) will be converted to a planter that features drought-tolerate plants. Design and drawings are being developed by grounds personnel for the planter.		In progress
Water-Use Reduction & Control	Plants appropriate for site and climatic conditions will be selected. As-built drawings detail the plants used for the landscape project.	X	
Water-Use Reduction & Control	Each spring, the grounds department will add 3–5 inches of mulch in planting beds to minimize irrigation evaporation.		X
Water-Use Reduction & Control	Metropolitan area courtyards near division offices will be replanted with drought-tolerant and native plants, as planned in the Measure C Site Improvement Project.	X	
Water-Use Reduction & Control	Synthetic turf will replace a portion of natural turf at the new soccer and softball fields, which will reduce water consumption.	X	
Water-Use Reduction & Control	Replacement of high-maintenance campus lawns with drought-tolerant native grass plugs will be recommended, as planned in the Measure C Site Improvement Project. This will also help reduce emissions from frequent blowing and mowing of existing lawns. Not Approved by senior management.		X
Water-Use Reduction & Control	Controllers with adjustable watering schedules and moisture sensors to account for seasonal variations will be part of the Measure C Site Improvement Project. Installed RainMaster DX2 irrigation system (computerized smart system tied to a weather head)	X	
Water-Use Reduction & Control	Foothill will verify that landscape designers are utilizing WATERGY software to analyze the potential of water savings and associated energy savings with installation of water-efficient devices. A survey will indicate the number and location of sprinklers. Under Measure C Site Improvement Project, a new irrigation system will be installed, resulting in decreased water use and reduction in the need for hand-watering by grounds department staff.	X	
Water-Use Reduction & Control	Low-volume, low-angle sprinklers for lawn areas are being considered, where appropriate.	X	

Category	Initiative	Completed	Incomplete
Water-Use Reduction & Control	Sprinkler heads that fit the size and shape of the areas to be watered are under review. Completed under Measure C landscape project.	X	
Water-Use Reduction & Control	Drip irrigation will be reviewed for trees, shrub beds and areas of groundcover to eliminate evaporation losses. Completed under Measure C landscape project.	X	
Water-Use Reduction & Control	Review landscaping and water requirements; establish baseline for future water reduction. Completed under Measure C landscape project.	X	
Water-Use Reduction & Control	Purissima Hills Water District (PHWD) reports that Foothill conservation measures have resulted in significant reduction in water use. Due to three consecutive years of low rainfall, PHWD instituted voluntary water-use reduction in 2009. In 2014, the state mandated a 20-percent reduction in water use.	X	
Water-Use Reduction & Control	Water district audit and shared-reduction strategies with Los Altos Hills town residents.	X	

On the next three pages, graphs from PHWD show quarterly consumption and units. In 2013, water use was high due to the construction of Foothill's Physical Sciences & Engineering Center (PSEC), which added approximately 60,000 new square footage.

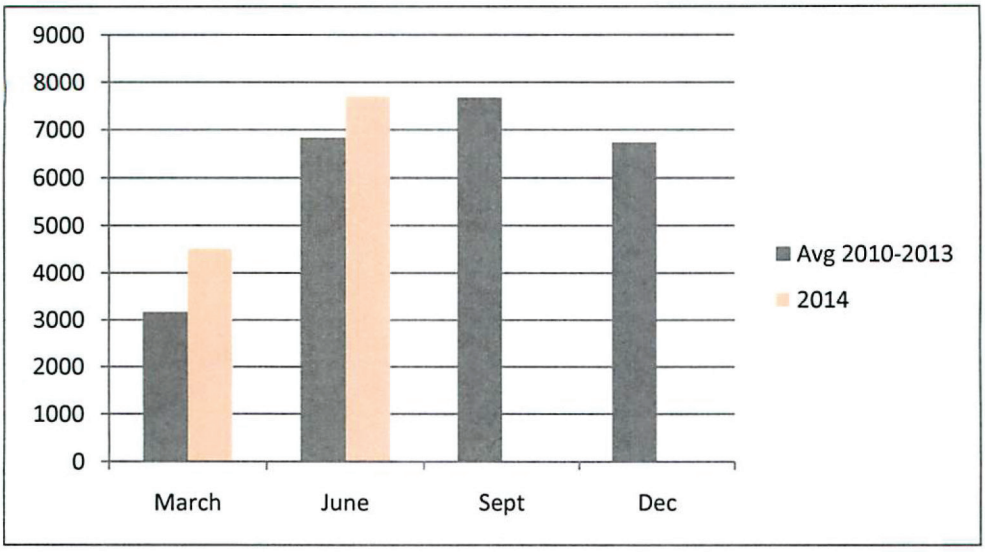
Foothill College
Water Consumption, Units

	March	June	Sept	Dec	YTD
2010	2027	4756	5535	5900	
2011	3725	6642	5737	5097	
2012	3548	6100	7064	5467	
2013	3365	9851	12354	10485	
2014	4527	7715			
2014 vs.2013	**35%**	**-22%**			**-7%**



Foothill College
Water Consumption, Units

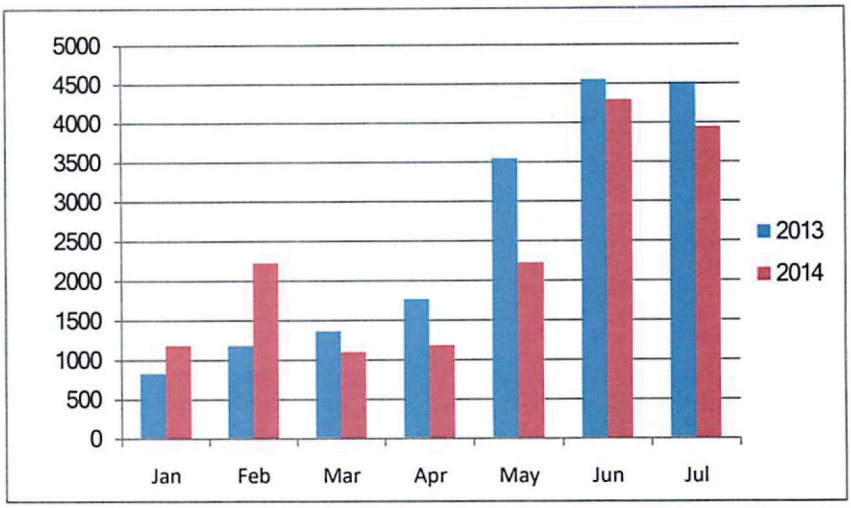
	March	June	Sept	Dec	YTD
Avg 2010-2013	3166	6837	7673	6737	
2014	4527	7715			
2014 vs.Average (2010-13)	**43%**	**13%**			**22%**



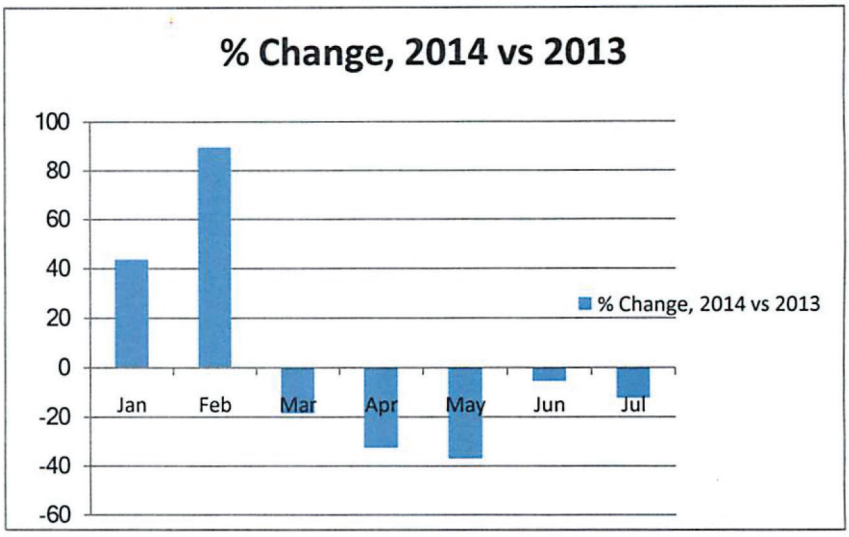
Graphs provided by S. Kitchen (FHDA) and Purissima Hills Water District.

2013 & 2014 Monthly
Water Consumption, Units

	2013	2014
Jan	829	1190
Feb	1178	2230
Mar	1358	1107
Apr	1764	1187
May	3540	2227
Jun	4547	4301
Jul	4508	3950

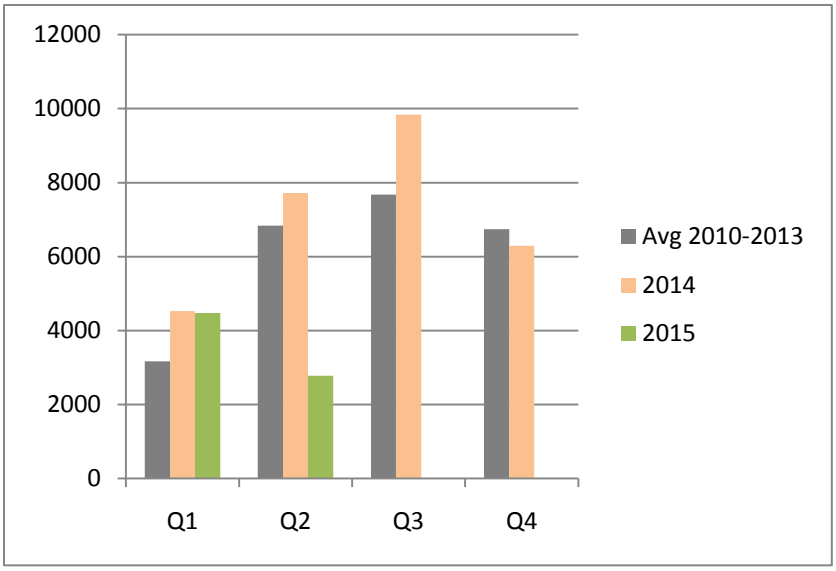


	% Change, 2014 vs 2013
Jan	44
Feb	89
Mar	-18
Apr	-33
May	-37
Jun	-5
Jul	-12



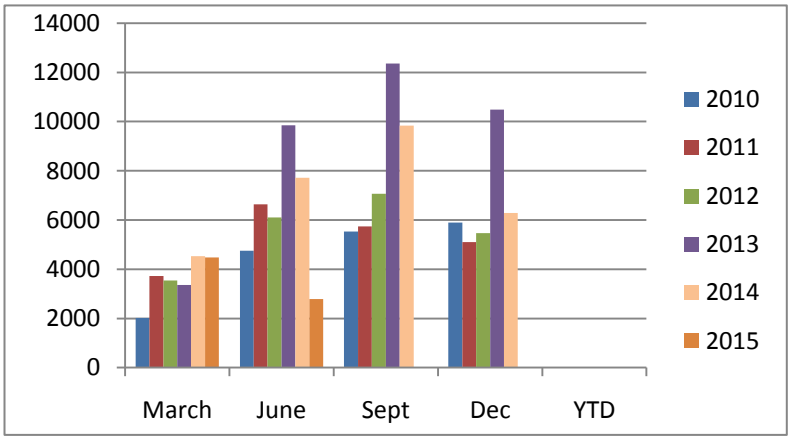
Foothill College

	Q1	Q2	Q3	Q4	YTD
Avg 2010-2013	3166	6837	7673	6737	
2014	4527	7715	9841	6290	
2015	4479	2783			
2014 vs.Average (2010-13)	43%	13%	28%	-7%	16%



Foothill College
Water Consumption / Qtr, Units

	March	June	Sept	Dec	YTD
2010	2027	4756	5535	5900	
2011	3725	6642	5737	5097	
2012	3548	6100	7064	5467	
2013	3365	9851	12354	10485	
2014	4527	7715	9841	6290	
2015	4479	2783	0	0	
2014 vs.2013	**35%**	**-22%**	**-20%**	**-40%**	**-21%**
2015 vs 2013	**33%**	**-72%**			**-45%**



Category	Initiative	Completed	Incomplete
Green Procurement	Promote sustainability awareness through purchasing processes. Completed under Measure C landscape project.	X	
Green Procurement	Review process and procedures annually.	X	X
Green Procurement	Styrofoam: There is currently no way to economically recycle this product. Vendors will be requested to use recyclable packaging (sustainability committee will work with the procurement department to change this).		
Green Procurement	Energy Star-Rated Appliances: Energy Star clothes washers are available in a range of capacities. These washers accommodate larger loads, so they are more efficient. Initial costs may be higher, but the payback of reduced energy can be realized between two to three years. Washers should be specified with an energy rating (ER) of 2.6 or greater for a 20-percent reduction in water and energy costs. This information will be shared with the district procurement department. Commercial dishwashers should also be Energy Star-rated. This will use less hot water and save 40 percent of water and energy costs. Noncommercial dishwashers should have an ER rating of 0.55 for more than a 20-percent reduction in water and energy costs. This information will be shared with the district procurement department.	`X	

Category	Initiative	Completed	Incomplete
Green Building	Foothill's Physical Sciences & Engineering Center (PSEC) is awarded a silver rating and is the first LEED building on campus.	X	
Green Building	Revise Foothill's design specifications and standards: Reviewed, revised and rewritten to incorporate greener choices. See Appendix G.	X	
Green Building	Foothill design specifications have been revised to include local manufacturers and products, whenever possible. Three local manufacturers/products will be specified, whenever possible.	X	
Green Building	Design specifications have been revised to use environmentally friendly products, which eliminates formaldehyde and other toxic substances.	X	
Green Building	Foothill will commission all major renovations and new construction. Steps include documenting design intent for future reference; testing components when they arrive on the job site and again after they are fully installed; adjusting (balancing) of air and water distribution systems to deliver services as designed, and checking and adjusting controls to ensure energy savings and environmental conditions; and final commissioning report (including all records of commissioning procedures, testing results, deficiency notices, records of satisfactory corrections of deficiencies, and any requirements or recommendations to test the building several months or a year after occupancy).		X

Category	Initiative	Completed	Incomplete
Green Building	Foothill will install occupancy sensors in all new and renovated buildings to meet Title 24 requirements. The sustainability committee will be tasked with identifying existing rooms without the sensors and a plan will be developed with district plant services.		X– New buildings do have occupancy sensors. However, a plan for rooms without occupancy sensors has not been developed.
Green Building	Electric hand-dryers in restrooms: As renovations occur and new buildings are built, electric hand-dryers are installed to reduce the amount of paper towels used. This eliminates the paper manufacturing, bleaching process and delivery, thereby reducing waste and GHG.		In Progress
Green Building	Foothill HVAC temperatures are driven by set point and schedule. Ultimately, we try to fill classrooms for maximum hours of the day and review the set points. Much can be gained in energy savings by delivering less cool and warm air.	X	
Green Building	Boilers: annual inspection and preventative maintenance includes calibration of the boiler exhaust, which ensures the cleanest exhaust possible. The annual inspection of water heaters is conducted at the same time as inspections of boilers and/or electrical equipment.	X	
Green Building	At Foothill, where applicable, services are provided by a central boiler system located in Parking Lot 6. By utilizing existing boiler capabilities, the campus avoids using premium square footage in academic buildings, thereby reducing maintenance.	X	
Green Building	Investigate free and rebate programs. Proposition 39	X	
Green Building	All pneumatic controls have been eliminated and HVAC is digitally controlled, which is more reliable and eliminates moving parts and maintenance labor.	X	
Green Building	Develop a plan to incorporate the latest sustainable practices, trends and information to make future buildings grid neutral. Worked with architect to develop plan for the new Foothill-De Anza Education Center, which will open in 2016.	X	