Monday, November 23, 2009 Washington, DC Number 073

Dear Board Members:

I hope that you have been able to catch up with the work that was postponed by your attendance at our November meetings in Washington, DC. I appreciate the sacrifices that each of you makes to govern our national association, and I thank you for a very successful series of events that included meetings of our Corporate Council, Commissions, Board Committees, and the Board. We continue to strengthen our relationships with the Obama Administration as evidenced by our meeting with Secretary Solis, the keynote presentation by Undersecretary Kanter, and the participation by Assistant Secretary Jane Oates, Deputy Assistant Secretary Glenn Cummings, and Director Gail Schwartz.

Congratulations to Board Chair Mary Spilde on being named an Alumni Fellow of Oregon State University. Mary was recognized late last month at the OSU Homecoming. We credit her for inspiring the OSU football team in its win over UCLA.

Congratulations also go to Board member Eduardo Marti. Queensborough Community College recently dedicated the new \$5.5 million Harriet and Kenneth Kupferberg Holocaust Research Center and Archives.

10,000 Small Businesses. I was recently appointed to the Advisory Council of a Goldman Sachs Foundation-funded initiative, *10,000 Small Businesses*, that will be cochaired by Warren Buffett, Michael Porter of Harvard Business School, and Goldman Sachs Chairman and CEO Lloyd C. Blankfein. The initiative is intended to support a network of accessible, experienced community colleges and community development financial institutions (CDFIs) to deliver services in their local communities in order to assist in the economic recovery. We will keep the field informed as this initiative is developed. I have attached a copy of the Fact Sheet.

"Help Wanted: Postsecondary Education and Training Required." I have attached a recent publication from The Georgetown University Center on Education and the Workforce that analyzes our current and projected job market and reaches two conclusions that are significant for community college leaders: postsecondary competencies and awards have become the arbiter of middle-class earnings and status in the United States, and the United States is headed toward an immense education supply problem.

Generation E. AACC is a sponsor of National Wildlife Federation's today new study of *Generation E: Students Leading for a Sustainable, Clean Energy Future,* which highlights the unique and critical role college students are playing in reforming sustainability programs that lower their campus' carbon footprint. A copy of the study report is attached.

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Council on Competitiveness. The Council on Competitiveness released its new report, Drive. Private Sector Demand for Sustainable Energy Solutions: A Comprehensive Roadmap to Achieve Energy Security, Sustainability and Competitiveness at its National Energy Summit and International Dialog in Washington, DC, held September 23-24. You can order or download a copy of the report at http://www.compete.org/publications/detail/1125/drive/.

CCSSE. The Community College Survey of Student Engagement released its 2009 report on Monday, November 16 (www.ccsse.org/publications/national_report_2009/CCSSE09_nationalreport-10-26.pdf). This year's report focuses on the importance of relationships among students, faculty, and staff, and with institutions themselves: how they evolve, the value they add, and the importance of building and sustaining these critical connections. A number of examples of successful practices at colleges across the country are included.

Plus 50. I have attached a copy of the executive summary of the first year evaluation of our Plus 50 initiative. The report describes the initiative and the significant progress it has made since it began.

Improving College Completion. The Institute for Higher Education Leadership & Policy (IHELP) at Sacramento State released a report (copy attached) offering a framework for guiding educators in using available knowledge and data to improve student outcomes. The report, titled "Steps to Success: Analyzing Milestone Achievement to Improve Community College Student Outcomes," illustrates the need for better use of available data to help diagnose the reasons students fail to make progress toward a degree. The framework is also useful to better demonstrate the progress students make along the pathway to a degree.

Leadership Development: On Friday, November 6, I was a keynote presenter at the Iowa State University Community College Leadership Institute, hosted by Johnson County Community College in Overland Park, Kansas. On Friday, November 13, I spoke to the William and Mary Education Policy, Planning, and Leadership class at its Washington, DC, facility. On Friday, November 20, I was a keynote presenter at the Community College of Philadelphia annual leadership institute.

WISE. From Sunday, November 15 through Thursday, November 19, I attended the first annual World Innovation Summit for Education (WISE) in Doha, Qatar. The summit was attended by about 1,000 delegates from 100 countries. Sandra Serrano, Chancellor of the Kern County Community College District in California, and I were the only community college participants. The summit was the first of its kind focused on global education and recognizing excellent achievement of selected innovative projects throughout the world. Topics included sustainable education, pluralism and inclusiveness, quality assurance, innovation, special needs education, education in conflict zones and in poverty, education and civil rights, and educational infrastructure

and governance. The Qatar Foundation was the primary sponsor. WISE will likely become an annual event, and will recognize exemplary programs around the world.

At the conclusion of the WISE conference Dr. Serrano and I met with the Steering Committee for the planned Qatar Community College. If any of you are interested in assisting the new community college in Qatar with curriculum development or employment of faculty, please let me know. The Steering Committee is determined to open the new college in September and has the necessary resources.

Other events and meetings of note:

- Monday, October 26, a meeting with David MacDonald and Barbara Glover from the Canadian Department of Human Resources and Skills Development regarding college access, affordability, and financial aid.
- Tuesday, October 26, with Lynn Barnett, a meeting with Mary Ellen Duncan, Sarah Brown, and Andrea Kane regarding a partnership with the National Campaign to Prevent Teen and Unplanned Pregnancy.
- Tuesday, October 27, a meeting with Michael Nettles and Catherine Millett from ETS regarding collaboration on and planning for a March conference on adult learning.
- Thursday, October 28, a keynote presentation at the ABET conference in San Antonio, TX, on pathways to engineering and technology careers from community colleges.
- Sunday, November 1, a keynote presentation at the Community College Business Officers (CCBO) conference in Palm Springs, CA.
- Monday, November 2, a CEO panel presentation on college issues at the CCBO conference in Palm Springs, CA.
- Tuesday, November 3, a response to a presentation by Bill Bowen on his new book, *Crossing the Finish Line: Completing College at America's Public Universities* at the Secretariat meeting. Note that this book has an important chapter on transfer from community colleges.
- Tuesday, November 3, a Secretariat meeting with Undersecretary Bob Shireman regarding the importance of encouraging institutions to begin migrating to Direct Lending.
- Tuesday, November 3, with Noah Brown, a meeting with Secretary Margaret Spellings, Holly Kuzmich, Dina Powell, and Noa Meyer regarding the Goldman Sachs Foundation-funded initiative to support small businesses.
- Wednesday, November 4, a telephone conversation with Governor Christine Todd Whitman regarding the Clean and Safe Energy Coalition and the need for community colleges to prepare skilled energy workers.
- Wednesday, November 4, a lunch meeting with Gabe Rench from EMSI (formerly CC Benefits).
- Friday, November 6, a telephone interview with Kevin Thompson from the *Palm Beach Post* regarding the community college enrollment surge.
- Sunday, November 8, through Monday, November 9, attendance at the AACC Washington Institute.

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- Friday, November 13, a meeting with Tom Robinson from *Today's Campus* regarding current issues in higher education.
- Friday, November 13, a meeting with the ITC Board of Directors regarding AACC issues.
- Friday, November 13, with Ann Boggs, attendance at the CRD Benefactor Awards Banquet.

Until next time, best wishes.

George

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10,000 Small Businesses Executive Summary

Goldman Sachs has an established track record through *10,000 Women* and other initiatives that bring together people, capital, and ideas to address social and economic challenges. Building on these efforts, Goldman Sachs is announcing *10,000 Small Businesses*, a \$500 million initiative that will unlock the growth and job-creation potential of 10,000 small businesses across the United States through greater access to business education, mentors and networks, and financial capital. It is based on the broadly held view of leading experts that a combination of education, capital, and support services best addresses the barriers to growth for small businesses.

The program includes:

Practical Business and Management Curriculum for Small Business Owners

10,000 Small Businesses will contribute \$200 million to program partners, including local community colleges, universities and other institutions, to provide scholarships predominantly to underserved small business owners and build educational capacity. A pragmatic, skills-based curriculum will include accounting, marketing, human resources management, and other practical business skills. Leading business schools will contribute to national curriculum development, which will be tailored by community colleges to address the specific needs of local business owners. Business schools will also work closely with community colleges to expand their capacity to educate small business owners by training faculty and sharing best practices. After an initial pilot year, we will explore opportunities to extend the reach of the initiative through an e-learning platform and by delivering the program in multiple languages.

Getting Capital Flowing to Small Businesses

Goldman Sachs will invest \$300 million through a combination of lending and philanthropic support to Community Development Financial Institutions (CDFIs). The investment will increase the amount of growth capital available to small business owners in disadvantaged communities and expand the capacity of the CDFIs to deliver enhanced technical assistance to small businesses. In addition, *10,000 Small Businesses* will provide technical assistance to graduates of the program to help them access other sources of capital.

Goldman Sachs will identify and work in partnership with CDFIs based on their track record and focus on small businesses, demonstrated success in lending, overall financial strength, and their organizational and strategic capacity to meet the program goals and to deploy the capital. Graduates of *10,000 Small Businesses* will be referred to CDFIs as a potential source of capital, technical assistance, and business advisory services.

Providing Critical Support Services for Small Businesses

Small business owners, particularly those operating in disadvantaged communities, often face challenges accessing mentoring, networking, and expert advice. While support services in each of these areas exist, the field is highly fragmented. A handful of pioneering programs, such as the Small Business Administration's (SBA) e200, InnerCity Entrepreneurs, and Pacific Community Ventures, have begun to integrate training with essential support services, but few have been able to achieve significant scale. These models demonstrate the value of the approach on which the *10,000 Small Businesses* initiative will build.

Participating business owners will have the opportunity to take advantage of support offered by community colleges and similar institutions, partner universities and business schools, and national organizations such as the National Federation of Independent Business, National Urban League, and United States Hispanic

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Chamber of Commerce. Partner CDFIs, when possible, will also provide pre- and post-loan support services. As they have for *10,000 Women*, the people of Goldman Sachs will volunteer their time and professional skills to help in a variety of ways, including mentoring, guest lecturing, and serving on selection committees.

Advisory Council

10,000 Small Businesses will be guided by an Advisory Council co-chaired by Warren Buffett, Michael Porter of Harvard Business School, and Lloyd C. Blankfein, Chairman and CEO of The Goldman Sachs Group, Inc. The Advisory Council will assist in the development, execution, and evaluation of the program.

In addition to the co-chairs, founding Council members include:

- George Boggs, President and CEO, American Association of Community Colleges
- Dan Danner, President and CEO, National Federation of Independent Business
- Glenn Hubbard, Dean, Columbia Business School
- Robert Litan, Vice President for Research and Policy, Kauffman Foundation and Senior Fellow in Economic Studies at the Brookings Institution
- Marc H. Morial, President and CEO, National Urban League
- Javier Palomarez, President and CEO, United States Hispanic Chamber of Commerce
- Hilary Pennington, Director of Education, Postsecondary Success and Special Initiatives, Gates
 Foundation
- Thomas S. Robertson, Dean, The Wharton School of the University of Pennsylvania
- Leonard Schlesinger, President, Babson College
- Ellen Seidman, Vice President, National Policy and Partnership Development, ShoreBank Corp.
- David J. Skorton, President, Cornell University
- Margaret Spellings, Former Secretary of Education
- Thomas J. Tierney, Chairman and Co-Founder, The Bridgespan Group

Initial Partners

10,000 Small Businesses is working in partnership with community colleges and similar institutions in select disadvantaged communities to deliver the certificate program and provide additional wrap-around services. In addition, the initiative will work with a number of national and local partners to build the capacity of these community colleges to deliver targeted, locally relevant services at each site.

Initial partners include:

- American Association of Community Colleges
- Association of Community College Trustees
- Babson College
- United States Hispanic Chamber of Commerce
- Initiative for a Competitive Inner City
- LaGuardia Community College
- National Federation of Independent Business
- National Urban League
- The Amos Tuck School of Business Administration at Dartmouth College
- UCLA Anderson School of Management
- The Wharton School of the University of Pennsylvania

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Background on 10,000 Small Businesses

I. Why Support Small Business Owners in Disadvantaged Communities

<u>Small businesses are the engines of employment and growth in the U.S. economy</u> The 2.2 million small businesses in the U.S. represent 45 percent of all employment and 65 percent of all new jobs during the past decade.¹ According to the Milken Institute, small businesses and "entrepreneurship drive economic innovation and job formation…Increases in both entrepreneurship and small business ownership are key policy and program development goals for fostering economic growth."²

The connection between entrepreneurship and small business ownership is particularly salient for low- and moderate-income (LMI) communities, as Milken points out in *Entrepreneurship in Emerging Domestic Markets*: "Entrepreneurship may yield a double dividend in LMI communities. Many of the retail and service establishments available in higher-income (HI) areas, such as grocery stores, often are not available to LMI people because they tend not to be located in LMI places. Many LMI people face transportation challenges. Entrepreneurial activity not only provides income to the entrepreneurs and perhaps others in the community, but it also provides needed goods and services. The entrepreneurs themselves do not need to be LMI people for the community to profit from this double dividend, however. Benefits also arise from the location of entrepreneurial enterprises developed and operated by HI people, but located in LMI communities."

Racial and ethnic minorities, often a majority of the population in LMI areas, play a key role in using small businesses to generate jobs and economic growth. In analyzing the characteristics and trends of minority businesses, Ronald Langston, the National Director of the Minority Business Development Agency (MBDA), concluded: "Minority business enterprises are an engine of employment growth and economic expansion in America. As minority businesses grow in size, scale, and capacity, so does the American economy. With a fast growing minority population that will approach 50 percent of the nation's population by 2050 and a highly competitive global market, America's competitiveness will increasingly depend on the innovation and strength of minority business enterprises."⁴

The potential is significant. This is perhaps best demonstrated by the Inner City 100, the Initiative for a Competitive Inner City's (ICIC) annual list of the fastest growing firms located in inner cities across the U.S. Between 1999 and 2007, these firms created 63,000 net new jobs, compared to a net loss of 49,000 jobs by all other inner city firms. Even more, these high-growth firms:

- Hire nearly twice as many local inner city residents as other inner city firms, and six times the regional average,
- Are more likely to offer benefits than their inner city and U.S. peers, and
- Spend approximately twice as much of their total payroll annually on training as large corporations in the U.S.⁵

¹ U.S. Census Bureau, Statistics of US Businesses, 2006 (Firms, Employment & Payroll) and 2002 (Revenue).

² James R. Barth, Glenn Yago and Betsy Zeidman, April 2006, Barriers to Entrepreneurship in Emerging Domestic Markets: Analysis and Recommendations. Milken Institute.

³ Kelly D. Edmiston, November 2007, "Entrepreneurship in Low- and Moderate-Income Communities," In Entrepreneurship in Emerging Domestic Markets: Barriers and Innovation, edited by Glenn Yago, James R. Barth, and Betsy Zeidman, Milken Institute.

⁴ Minority Business Development Association, March 2008, Characteristics of Minority Businesses and Entrepreneurs: An Analysis of the 2002 Survey of Business Owners.

⁵ Dr. Michael Porter, 15 October 2009, "Growing Successful Inner City Businesses: Findings From A Decade of ICIC Data," Inner City Economic Forum Summit 2009.

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The objective of this initiative is to help thousands more small- and medium-sized businesses in LMI areas achieve this type of growth and impact. As Dr. Michael Porter, Founder and CEO, Initiative for a Competitive Inner City; and Bishop William Lawrence University Professor, Harvard Business School, stated, "A small number of rapidly growing firms can have a tremendous impact on inner city job creation and economic revitalization."

The current recession has severely affected small businesses throughout the country

During the past year small businesses have struggled with falling sales and scarce credit. Analysis conducted by the National Federation of Independent Business (NFIB) indicates that more than 60 percent of all small businesses had decreased sales in each of the last 12 months.⁶ Business bankruptcies were up 52 percent during the first half of 2009 compared to the same period last year.⁷

Small businesses in low- and moderate-income areas face even greater challenges

The economic challenges faced by the entire country are especially acute in low- and moderate-income (LMI) areas. Research using data from the U.S. Census and the Department of City Planning in New York City, for example, indicates that even in better economic times, LMI areas have less than a third as many businesses as upper-income areas.⁸ They have limited access to traditional financial institutions and financing opportunities to help them stabilize or scale their businesses. CDFIs, which are mission-driven and promote community development, are able to assist these underserved businesses through extensive technical assistance and by engaging in a more customized under-writing.

The LMI areas in which these business owners live and operate significantly limit their opportunities for economic success. Research from the Milken Institute highlights how insufficient financial resources, educational attainment, language and technical skills, work experience, and role models impede the ability of business owners to build and grow their own enterprise.⁹ According to Professor Porter, the 100 largest inner cities lost nearly 50,000 jobs between 1998 and 2007 while the surrounding metropolitan regions added 6.7 million jobs. As he and the ICIC note, external factors comprise only a small portion of the challenges underserved urban businesses face—regional economic performance accounts for less than 10 percent of inner city performance.¹⁰

II. Why Deliver Through Community Colleges and Similar Institutions

"A diverse chorus of researchers, employers, philanthropies, state and local officials, and now the president himself, articulates the importance of raising national educational attainment for achieving broad-based economic growth and strengthening the middle class. Community colleges will be critical to any such effort. These two-year public institutions are present in most every U.S. community, enrolling 45 percent of the nation's college student population, and even higher shares of students of color and those from lower-income backgrounds. The education and training they provide help to fill important labor market needs, including some in the economy's fastest-growing occupations."

Brookings Institution¹¹

8 Goldman Sachs research.

⁶ NFIB Small Business Economic Trends, October 2009. William C. Dunkelberg and Holly Wade.

⁷ Christine Dugas, 1 July 2009, "Business bankruptcies up 240% since 2006; Most are the small firms our economy relies on for recovery." USA Today.

⁹ Zoltan J. Acs and Kadri Kallas, 2007, "State of Literature on Lon-Income Small to Medium-Size Enterprises and Entrepreneurship in Lon-Income Communities," In Entrepreneurship in Emerging Domestic Markets: Barriers and Innovation, edited by Glenn Yago, James R. Barth, and Betsy Zeidman, The Milken Institute.

¹⁰ Michael Porter, 15 October 2009, "Growing Successful Inner City Businesses: Findings From a Decade of ICIC Data." ¹¹ Sara Goldrick-Rab, Donglas N. Harris, Christopher Mazzeo, and Gregory Kienzi, May 2009, Transforming America's Community Colleges: A Federal Policy Proposal to Expand

Opportunity and Promote Economic Prosperity, Brookings.

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"Strengthening the U.S. educational system is a long-term project, and the full results will likely not be seen for a decade or more, when today's students enter the labor force. But its importance cannot be overstated – education will drive productivity growth, national competitiveness, improved living standards and lower income inequality." ¹²

Goldman Sachs Global Markets Institute

<u>Community colleges and similar institutions are at the center of economic development</u> In July 2009, the President's Council of Economic Advisers stated that "in many respects, community colleges are the epicenter of the U.S. post-high school education and training system...They can be nimble allies of employers and other workforce partners in providing customized training that is specific to the needs of a particular employer or industry."¹³

This is particularly true for urban and LMI areas. In a May 2009 report titled *Transforming America's Community Colleges*, Brookings argued that "community colleges are among the most metropolitan of our nation's educational institutions, drawing most of their students from their local areas, and graduating those same students into the regional labor market...*The route to higher national educational attainment and economic advancement for all runs in part through these metropolitan institutions*. By improving their ability to serve their students better, the federal government would enhance not just metropolitan performance, but generate greater prosperity for the nation as a whole."

Community colleges disproportionately serve low-income and minority students

Community colleges and similar institutions are committed to education and career training for low-income individuals—35 percent of their students are minorities; 39 percent are first-generation college students.¹⁴ In addition, they have experience educating adult, part-time students who, like business owners, must balance educational opportunities and work obligations.

The U.S. Department of Education's *National Postsecondary Student Aid Study* found that low-income students represent 10-20% more of the student body at community colleges than at four-year institutions. According to the American Association of Community Colleges, community colleges are also the primary providers of post-secondary education for minorities, educating 46% of black undergraduates and 55% of Hispanic undergraduates.

Non-credit programming, a core component of educational offerings at community colleges, is geared toward non-traditional students. According to the American Association of Community Colleges, 44% of community college students are on the non-credit side (5M of 11.5M students). Community colleges regularly develop customized training programs, while very few leading universities deliver this kind of programming and those that do have a higher cost structure.

Furthermore, community colleges have experience working with employed students. Brookings notes that over half of all community college students are employed, versus 37% at 4-year institutions. Eighty-three percent of part-time community college students are employed, according to the American Association of Community Colleges.

¹² Sandra Lawson and Amy C. Semaya, 2009, "Learn More, Earn More: Getting Abead in America," Goldman Sachs Global Markets Institute.

¹³ Council of Economic Advisers, July 2009, Preparing the Workers of Today for the Jobs of Tomorrow, Executive Office of the President.

¹⁴ American Association of Community Colleges, January 2008, "Community Colleges Fast Facts."

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Momentum is building around investing in community colleges as a solution

Community colleges currently face a variety of challenges, including increasingly limited funding—perstudent funding decreased nearly six percent from 2002 to 2006. However, a number of significant efforts have begun to address these issues. The Obama administration is focusing on community colleges, "one of America's underappreciated assets." The American Graduation Initiative, proposed by President Obama in July, is seeking \$12B to add five million additional community college graduates by 2020.

Philanthropic investment in community colleges is also increasing. The Bill and Melinda Gates Foundation has recently refocused its education strategy to double the number of people who earn a postsecondary degree or certificate—"meaningful credentials with value in the workplace and labor market." Many of the Gates Foundation's efforts are focused specifically on helping community colleges and similar institutions meet this objective. According to Hilary Pennington, Director of Education, Postsecondary Success and Special Initiatives:

"There's never been a more important time to help these [low-income] students break down the barriers that slow or prevent their educational success and ultimately their economic security."

Gates has chosen this focus based on substantial research that postsecondary education is "the critical pathway to leading individuals and their families out of poverty." Gates notes that by 2014 more than half of all new jobs will require more than a high school diploma, and 22 of the 30 fastest-growing career fields will require some postsecondary education. Serving millions annually, community colleges are well positioned to provide the education that is critical to create these jobs of the future.

In conjunction with the Gates Foundation, Achieving the Dream (backed by over \$74M over eight years from the Lumina Foundation) is also working to strengthen the community college system by shifting to a focus on student outcomes. Achieving the Dream links education through community colleges directly with the nation's economic strength and competitiveness, finding that increasing a state or the country's average level of schooling by one year can increase economic growth by 5 to 15 %.¹⁵ According to the coalition:

"Americans turn to community colleges to provide education that leads to greater economic opportunity and improved quality of life. This work is becoming more critical—and more challenging—as we strive to maintain a sound, competitive economy and a well-functioning democracy."¹⁶

III. Why Provide Capital to Community Development Financial Institutions (CDFIs)

"The \$300 million this program is investing in CDFIs will make a significant impact on CDFI financing for small businesses, particularly now. This is the largest single-source pool of capital dedicated to CDFI small business financing."

Mark Pinsky, President and CEO, Opportunity Finance Network

The majority of small business financing is provided by commercial banks and other depository institutions.¹⁷ However, many community-based businesses are unable to obtain credit from traditional sources and rely on CDFIs to fill the financing gap. CDFIs are specialized financial institutions that work in market niches that are

¹⁵Carnevale, Anthony P., and Desrochers, Donna M. (July 2004). "Why Learning? The Value of Higher Education to Society and the Individual," in Keeping America's Promise, Education Commission of the States and the League for Innovation in the Community College.

¹⁶ Achieving the Dream Fact Sheet (July 2006), "Community Colleges: Challenges and Benefits."

¹⁷ Small businesses are generally defined by the Small Business Administration ("SBA") as those having 500 employees or less in manufacturing industries and \$7mm annual revenue or less in service industries.

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underserved by traditional financial institutions. They provide a unique range of financial products and services in economically distressed target markets, including technical assistance, commercial loans, and investments to small start-up or expanding businesses in low-income areas.¹⁸ Underserved small businesses rely on CDFIs to access capital and technical assistance.

IV. Selection Criteria

Selection criteria for the scholarship program for owners of small- and medium-sized businesses will be based on criteria of comparable successful programs and tailored to the specific community in which the *10,000 Small Businesses* program operates. Broad characteristics of business owners targeted include, but are not limited to:

- Business revenues between \$150,000 and \$4M in most recent fiscal year
- At least four full-time employees
- Business in operation for at least two years
- Business model that could scale to create more jobs
- Predominantly in underserved markets

The selection criteria used by CDFIs to select small businesses for financing will vary by loan product and program, but will generally be based on sound underwriting criteria.

Measuring success

Goldman Sachs is committed to achieving and measuring results. Just as with *10,000 Women*, the firm will hold this initiative to the highest standards of measurement and evaluation and strive to produce meaningful change by expanding economic opportunity for business owners and their employees in disadvantaged areas. The measurement system will track business revenue and job growth, as well as other indicators of success. This commitment to rigorous monitoring and evaluation will ensure accountability and transparency, and drive a process of continuous learning and improvement.

Built on experience

Model programs such as Goldman Sachs' *10,000 Women* initiative, SBA's e200, and ICIC's IC100 illustrate the power of delivering integrated services to help small businesses create jobs locally.

Goldman Sachs' *10,000 Women* program clearly demonstrates the power of high quality business education linked with the provision of critical support services and access to capital. A rigorous yet practical and readily applicable curriculum that provides much needed business skills predominantly to underserved small business owners is proving of enormous value: graduates of the program around the world are increasing their revenues and hiring additional employees.

¹⁸ Community Development Financial Institutions Fund, United States Department of the Treasury.

This chapter argues that postsecondary competencies and awards have become the threshold requirement for middle-class earnings and status.

Help Wanted: Postsecondary Education and Training Required

Anthony P. Carnevale, Jeff Strohl, Nicole Smith

For most of the twentieth century, high school was enough for a shot at middle-class status and wages. Today no one goes anywhere in the American job market without some postsecondary education or training.

The increasing importance of education and training beyond high school in allocating economic opportunity results from broad social and economic trends.

These are the major trends: the rise of the global knowledge economy; the slow and painful demise of the American blue-collar economy in which workers, mostly white males, earned good wages with a high school education or less; welfare reform and the emergence of "work first" as the guiding principle in social policy; and a society where men, women, and youth are fully mobilized at work.

The notion that some kind of postsecondary education and training has become the threshold requirement for middle-class earnings and status has not been lost on the American public. More than two-thirds of Americans go on to postsecondary education or training after high school, although only 34 percent of students in eighth grade will later go on to get a degree from a two-year or four-year school. Access to college has become the essential goal for K–12 education. Middle-class employability is now the penultimate standard for K–16 educational adequacy (authors' calculations using data from National Center for Education Statistics, 1988, and CPS Utilities, 2007).



Data from the Current Population Survey (CPS) show that between 1973 and 2007, the share of prime-age workers, between thirty and fiftynine years old, with at least some college increased from 28 percent to almost 60 percent. Over that same period, the share with a B.A. or better doubled from 16 percent to 32 percent, while the share of subbaccalaureate attainment more than doubled from 12 percent to 28 percent. Associate degree holders currently comprise a third of the subbaccalaureate workforce while those with some college but no A.A. or B.A. comprise roughly twothirds (authors' calculations from data in CPS, 2007). The rising tide in career-related human capital development has come in every venue and shows that the full array of degrees, certificates, and other awards is not captured by the traditional degree categories.

One of the more striking trends in these data is the steady increase in female participation over males below the doctoral level. Average earnings increase progressively with the standard hierarchy of certificates and degrees. The difference between male and female wage hierarchies is one possible explanation for the relative increase in female participation in postsecondary education; earning less at each degree level, women need more postsecondary education to make male wages.

More education is generally better than less, but the curriculum and the occupational focus are sometimes more important.

Until recently the economic value of education has largely been a matter of degrees: whoever had the most education and the highest degree level got the best jobs. As education connects more closely with the economy and the share of Americans going on to postsecondary education, however, these historical relationships between degree attainment and earnings are changing. Now it matters not only if you go and graduate; what you take, where you go, and what occupation or industry you enter into matter more and more. The earnings differences among people with different degree levels are growing. For instance, 22 percent of those with an occupational or vocational A.A. earn more than the median earnings of those with a B.A. and 14 percent earn more than the median earnings of people with graduate degrees. In turn, 25 percent of those with a B.A. earn less than those with an A.A. degree, and 23 percent earn less than those with a license or certificate but not an A.A. Not only is the overlap between people with different degrees growing, but so are the earnings differences among people with the same degree.

The strength of the relationship between postsecondary education and opportunity has increased in both the real economy and American politics.

Americans welcome the increasing reliance on postsecondary education as the arbiter of economic opportunity because, in theory, it allows us to expand merit-based opportunity without surrendering individual responsibility. After all, we each have to do our own homework to make the grades and do well on the tests that get us into college and in line for good jobs. Education-based opportunity complements our other key preferences for an open economy and a limited government. Education has become the nation's preferred third way between the economic instability that comes with runaway global markets and the individual dependency that Americans associate with the welfare state.

The growing economic power of postsecondary education allows us to anchor economic opportunity in individual talent and effort without government interference in the economy or the labor market.

With no substantial terminal vocational alternative in high school, "College for All" and its homely country cousin, "Postsecondary Education and Training for All," resonate with our recent experience on the ground in the real economy.

Most new jobs that require postsecondary preparation have been created in white-collar office jobs, education and health care jobs, and hightech jobs—the signature occupations and industries in the often-cited "new knowledge economy."

The increasing reliance on postsecondary education as the arbiter of opportunity is a direct result of the rise of the postindustrial service economy and the increasing share of office workers. The share of white-collar office jobs, the workforce in the new service economy, has risen from 30 to 40 percent since 1973. In 1973, only 38 percent of office workers had some kind of postsecondary education. Today 69 percent of office workers have some postsecondary education: almost 40 percent have at least a bachelor's degree, 10 percent have associate degrees, and more than 20 percent have some college but no degree, making office work one of the most highly educated job sectors.

The health care and education sectors continue to grow as developing and maintaining human capital become more important in the knowledge economy. Since the 1970s, education and health care jobs have increased from 10 percent to almost 20 percent of all jobs. The share of education and health care jobs with at least some college increased from fewer than half in the 1970s to more than 75 percent today, with more than 52 percent with a bachelor's or graduate degree, 11 percent with an associate degree, and 12 percent with some college but no degree.

The share of technology jobs has doubled from roughly 4 to 8 percent of all jobs. In 1973, 63 percent of technology workers had at least some college, while 86 percent now have postsecondary education. More than half have at least a bachelor's degree, 16 percent have an associate degree, and almost 20 percent have some college but no degree.

Factory jobs are shrinking both proportionally and in absolute numbers. Since 1960, the factory share has fallen from 32 to 17 percent. New technology and high-performance work processes combine to enable manufacturers to produce more goods while using fewer but more highly skilled workers. Since 1960, the United States has increased real manufacturing output by nearly 3 percent annually without increasing the number of production workers. In 1973, only 12 percent of workers on the factory floor had any college, but that percentage has now increased to more than 36 percent. Roughly 6 percent have a bachelor's degree or better, 8 percent have an associate degree, and 17 percent have some college but no degree.

Like factory jobs, natural resource jobs, including farming, fishing, forestry, and mining, are in decline both as a share of the economy and in actual jobs. Natural resource jobs accounted for about 5 percent of all jobs in 1959. These jobs had declined by more than two-thirds and now account for only about 1.5 percent of all jobs in the economy. In 1973, two-thirds of these workers were high school dropouts; now workers with at least some college hold 31 percent of these jobs.

Low-wage service jobs are a mixed bag of transitional jobs and career jobs. The share of low-wage services jobs has not grown since the 1950s, remaining at about one-fifth, or about 28 million, of the available jobs. We tend to overestimate the importance of low-wage service jobs in the dynamic that links learning and careers. Many of the people in these jobs are young, sometimes in school, in transition to something better, or are older workers in transition to retirement. This is especially true for workers below the age of twenty-five who will likely move on to better jobs when they complete their education or training.

The increase in the wage premium for employees with postsecondary education relative to high school graduates is the most significant signal that the economy is demanding more postsecondary-level workers.

During the 1960s and 1970s, the wage premium for postsecondary education fell, but throughout the 1980s and 1990s, the wage premium for workers with postsecondary education began to climb again. CPS data show that the wage advantage for postsecondary education has generally held up and even improved in spite of a huge increase in the supply of collegeeducated workers.

Between 1983 and 2007, the number of prime-age workers with some college but no degree increased by 11 million people (from 6 to 17 million workers), rising from 9 percent to 17 percent of the workforce. Their average wages increased from \$22,571 to \$29,070 in 2007 dollars. Between 1983 and 2007 the number of prime-age workers with associate degrees increased from 7.6 to 9.1 million workers. Their real wages increased from \$25,000 to \$33,000. And over the same period, the number of those with a bachelor's degree increased from 10 to 20 million, and in spite of the increased supply, their average real wages increased from \$33,000 to \$48,000. And the number of prime-age workers with a master's degree or higher increased from 4 to 10 million. Their average real wages increased from \$45,000 to \$72,000.

Since the 1970s the share of workers with at least some college tripled, while their wage advantages over workers with high school educations

almost doubled over the same period. This development is remarkable: usually when the supply of anything increases, its price goes down. Since the 1990s, employed workers with at least some college increased by 32 percent or 18.4 million new workers, divided equally among workers with a bachelor's degree or higher and subbaccalaureate college workers.

Postsecondary education and training have become the nation's workforce qualification and development system outside the workplace by both design and default.

Society has flirted with an alternative second-chance workplace education and training system dedicated to workforce development and retraining for economic adjustment, but all that has been learned from the second-chance system is that what counts is the first chance at K–16 education. For now, the second-chance system has been all but abandoned. Federal funding for workplace training, in real 2003 dollars, declined from \$27 billion in the last Carter budget to about \$3 billion in the 2007 Bush budget.

The emergence of postsecondary institutions as the primary workforce development institutions outside the labor market is evident in the gradual but relentless movement toward vocational, occupational, and professional education in postsecondary programs. For example, of the almost 1.4 million bachelor's degrees awarded in 2004, 42,106 were conferred in the liberal arts and sciences, general studies, and humanities. More than 80 percent of master's degrees and 60 percent of doctorates are awarded in nonacademic fields. The same pattern is reinforced in the expansion in applied associate degrees, certificates, certifications, and customized training. Of the 665,301 associate degrees awarded in 2004, 227,650 were conferred in the liberal arts and sciences, general studies, and humanities, and only 801 were conferred in mathematics.

If the immediate past is any guide, the future promises more of the same.

Projections that we prepared for the U.S. Senate Committee on Health, Education, Labor, and Pensions using both U.S. Census and Bureau of Labor Statistics data show that between 2002 and 2012, there will be 24 million new jobs for workers with associate, bachelor's, and graduate degrees, a 30 percent increase.

Will we be able to meet the future demand for college workers if we rely on America's own college workforce? Not easily. Baby boom retirements should create a steady stream of replacement openings for collegeeducated workers; by 2020, for example, there will be 40 million college-educated baby boomers between the ages of fifty-five and seventyfive. Census data show that the United States is not producing collegeeducated workers fast enough to replace retiring baby boomers. Between 1980 and 2000, we increased the share of workers with at least some college by a hefty 20 percent. At current rates of college enrollment, the share of workers with at least some college will increase by only 3 percent between 2000 and 2020.

To counter this projected shortage, competition for college workers could increase wages and encourage college enrollment and graduation. But rising college wages over the past thirty years have not resulted in supply catching up with demand. In the future, the increasing size of the global college workforce could hold college wages down in the United States, blunting incentive effects, as it already has in engineering and information technology. The United States could move toward a skill-based immigration strategy to import more college workers.

The United States could also delay retirement for college-educated baby boomers by squeezing access to social security and health care, but political opposition would be significant. Our estimates indicate that delaying retirements by delaying government benefits will mostly affect workers with no postsecondary education or training, who are most dependent on government retirement benefits. And although older workers are more experienced, those with postsecondary preparation and a lifetime of wage progress are also expensive relative to younger workers in America and the rest of the world.

It does seem intuitively sensible that workers will want to work longer as life expectancy rises. Baby boomers are indeed working longer, but actuaries have no evidence thus far that the change in retirement behavior will compensate for the sheer volume of retirees and the flattening of educational attainment among younger cohorts.

The wild card in the economic future role of college education as the arbiter of economic opportunity is the global economy.

In the 1970s and 1980s, low-skill, low-wage jobs went overseas, but beginning in the late 1990s, 70 percent of offshored jobs have required at least some college. With the addition of Brazil, Russia, India, and China, the size of the earth's capitalist workforce has doubled, reducing the U.S. share of the world's college-level workers from about 30 to 15 percent. And foreign college workers will be a lot cheaper than American workers for decades to come.

So far, offshoring has been a trickle: a few hundred thousand jobs a year at most. Moreover, an authoritative McKinsey study (2005) estimates that only about 3 to 5 million people in Brazil, Russia, India, and China have the appropriate postsecondary skills and English-speaking abilities necessary to substitute for American workers with postsecondary education.

Although the actual level of offshoring has been relatively low, the potential for it is much larger. Our preliminary analysis demonstrates three levels of potential offshoring risk in the current American workforce. Using our criteria, we find that there appear to be about 8 million jobs where risk is as high as 80 percent, about 22 million jobs where risk is roughly 50 percent, and as many as 40 million American jobs that are theoretically vulnerable if we include risk levels below 50 percent.

The potential for offshoring is not just about losing the postsecondary jobs in the United States; it's also about capital flows and their effect on future jobs. The balance of capital flows in and out of the United States can leverage an invisible offshoring of college jobs if America loses its magnetic pull on global capital. The ability to attract and retain financial capital and focus investments on high-value-added jobs that generally require at least some college is just as important as keeping existing college jobs.

While the risks of offshoring can be scary, static analysis of offshoring risk tends to overstate the risks and understate the opportunities, especially in the United States, the world's most dynamic labor market.

The United States creates and destroys jobs faster than any other economy in the world. Moreover, the central tendency in this process of creative destruction is to increase skill and earnings levels. According to Vollman's analysis of wage record data (personal communication, July 2008), every three months, nearly 14 million workers will be hired and 13.6 million will leave their current jobs. More than half of those actions will happen because a new job was created or a job disappeared. The rest will be because someone was moving between jobs or on or off unemployment. We offer three additional observations to demonstrate the dynamism of the American economy:

- Every year, more than a third of the entire U.S. labor force changes jobs.
- Every year, more than 30 million Americans are working in jobs that did not exist in the previous quarter.
- Many of the occupations workers have today did not exist five years ago.

We need to keep this constant churning in mind while considering the likely impact of offshoring and other disruptive forces in American labor markets.

If we want to increase the number of students who enroll and graduate from postsecondary institutions, the "low-hanging fruit" are the more than half a million college-qualified students from working families who are lost along the way in high school.

There are more than half a million students, mostly from working class and low-income families, who complete high school in the top half of their classes but never earn an associate, bachelor's, or a graduate degree within eight years of high school graduation. Among these college-qualified students who do not attend college or do not graduate within eight years of high school graduation:

Twenty-three percent, or 129,000 of the 559,000 top students, come from families in the top income quartile (\$83,001 and above in 2005, with a median of \$145,000).

- Thirty-three percent, or 185,000 of the 559,000 top students, come from families in the second income quartile from the top (\$50,280 to \$83,000 in 2005, with a median of \$65,512).
- Twenty-five percent, or 140,000 of the 559,000 top students, come from families in the third income quartile from the top (\$26,730 to \$50,279 in 2005, with a median of \$38,306).
- Nineteen percent, or 106,000 of the 559,000 top students, come from families in the bottom income quartile (\$26,729 or less in 2005, with a median of \$15,000).

As many as 11 million adults and out-of-school youth could benefit from postsecondary education and training, especially in community colleges, but they are unlikely to be served.

According to an analysis of the National Adult Literacy Survey (National Center for Education Statistics, 1992), roughly half of low-income workers and out-of-school youth have literacy levels that qualify them for college-level work. The share of qualified prisoners is roughly 30 percent, and the share of dislocated workers qualified for postsecondary education or training could be as high as 60 percent (Kirsch and Jungeblut, 1992; Kirsch, Jungeblut, Jenkins, and Kolstad, 1993). If trained, they could add more than \$120 billion to the national wealth. And in the case of prisoners, recidivism could be reduced by as much as 29 percent (Steurer, Smith, and Tracy, 2001).

While the benefits of providing postsecondary education and training are powerful and growing, so are the barriers to access, especially for nontraditional students.

The funding barriers are the most daunting, especially for community colleges whose missions keep expanding and whose revenue base keeps contracting relative to other public and private providers.

Part of the community college funding problem results from the fact that the postsecondary funding system is not nearly as flexible as the community colleges themselves. Initially founded as junior colleges, these schools became community-based teaching institutions and took on an increasingly occupational role in local labor markets for place-bound students of all ages. The community college gradually outgrew its marginalized status as a "junior" to four-year institutions. Its emergence as an alternative to the traditional fouryear college came with an implicit rebuke to the class- and race-based meritocratic elitism of the selective four-year institutions and established an emphasis on open admissions, community service, and upward mobility in the postsecondary system.

With the knowledge economy firmly in the saddle by the 1980s, the community college began expanding its mission at both ends of the curriculum in response to market demands. Community colleges became major players in course and course-cluster-based shadow education and training system. The shadow system of nondegreed courses offers three kinds of value: courses and clusters of courses that provide basic skills which allow further learning on the job and in formal courses, provide transferable credits for further education, and provide immediate earnings returns and career mobility in labor markets.

In addition to the expansion of courses and course clusters with bitesized value, community colleges have expanded formal award and degree offerings. These colleges have reacted to the constant upward ratcheting in degree requirements in every occupation that results from the upskilling dynamic ultimately tied to globalization. As degree requirements increase, community colleges have begun offering bachelor's degrees and postgraduate certificates, especially in occupations and professions with strong ties to local labor markets such as education, health care, and information technology.

As the community college adapts to meet core mission goals of market responsiveness and upward mobility, its attachment to localism and open admissions comes into conflict. The simultaneous growth of the noncredit shadow curriculum, the postsecondary system, and the bachelor's degree is dawning as "the age of and" in community colleges: they must strive to be loyal to democratic *and* meritocratic values, to be both global *and* locally responsive, to be internally coherent *and* externally responsive, to be providers of occupational liberal arts *and* professional curricula, and to be governed by community-based university *and* corporate systems. The result is an increasingly complex identity, an effect typical of globally responsive institutions. Thus, while community colleges have adapted to new realities, financing systems have not. State funding has declined as a share of community college revenue.

Federal funding is still overwhelmingly based on individual student aid, making no adjustments for the varied cost structures of the community college missions. Overall decline in the relative value of public aid and one-size-fits-all cost structures dilutes the community colleges' ability to fund every mission, especially nondegreed learning targeted to the neediest students.

Absent new public money, the funding squeeze, especially in public community colleges, will only get worse because the current funding crisis in postsecondary education reflects structural as well as cyclical changes in public postsecondary funding. As the share of state budgets going to higher education has fallen off by 13 percent since 1990, the share going to Medicaid has increased by two-thirds and the share going to prisons has increased by one-third. And since the last recession in 2000, state budgets have gone from bad to worse, forcing dramatic tuition increases in public institutions. The 2008 recession has triggered a new downward spiral in public funding at the state level. The federal higher education budget is undergoing a similar squeeze as tax cuts combine with a shift in resources toward health care, social security, and national defense.

As money gets tighter, the traditional upper-middle-class eighteen- to twenty-four-year-old student becomes the preferred client in postsecondary education. These students arrive with tuition in hand, are assembled on campus, sit in large classes scheduled during normal working hours, and are taught standardized academic curricula.

In these tough budgetary times, the least attractive student clients are the nontraditional students, especially those with work and family responsibilities.

Low-income adults and out-of-school youth need more financial aid than the traditional eighteen- to twenty-four-year-old student, and adult students are more expensive because they need to integrate their studies seamlessly with work and family needs. They require more expensive courses that mix applied and academic learning, flexible scheduling that increases personnel and facilities costs, and family services such as child care and counseling to hold it all together and plan for future transitions. The footloose and fancy-free traditional student can afford mistakes that adults with jobs and families cannot. Low-income adults also may require remedial or refresher courses that no one wants to pay for, along with customized workoriented courses that often need to be offered in bite-sized, nondegreed chunks which are not eligible for federal subsidies and are funded, and then only partly, by a minority of states.

The accountability movement continues to be bad news for nontraditional students who tend to concentrate in community colleges.

What makes matters even worse is that the increasing cost of higher education has inspired an accountability movement that may be good news for traditional students but continues to be bad news for nontraditional students. Accountability measures tend to focus on increasing degree attainment, reducing time to graduation, reducing dropouts and loan defaults, and funding only nonremedial degreed courses and higher standards for student learning outcomes. The problem for low-income adults is that the combined effect of reduced financial support and higher standards encourages colleges to cater to the most well-heeled and well-prepared young students who are least likely to be distracted by work and family.

The worst-case scenario that confronts us is that the financial strains emerging in higher education will result in a gradual and silent abandonment of working families and nontraditional students.

In an economy where good jobs require postsecondary education and training, the growing economic divide between those with and those without postsecondary education and training will continue to widen, fostering intergenerational reproduction of economic and cultural elites inimical to our democratic ethos and our worthiness for leadership in the global contest of cultures.

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Generation E

Students Leading for a Sustainable, Clean Energy Future

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35 Ways students are creating a sustainable future at U.S. colleges and universities – cutting carbon emissions, saving resources and equipping the coming generation for a green energy economy.



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Generation E

Students Leading for a Sustainable, Clean Energy Future

35 Ways students are creating a sustainable future at U.S. colleges and universities – cutting carbon emissions, saving resources and equipping the coming generation for a green energy economy.

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COVER IMAGES

TOP: Waste separating station for the Whole Earth Festival at the University of California, Davis. Photo by Derek Downey

MIDDLE: Waynesburg University student group, the Green Samaritans, helping to construct and renovate hiking trails at Mammoth Caves National Park. Photo by Janet Paladino

BOTTOM: Students at Northland College installing a 2.1 kilowatt sun-tracking photovoltaic array for the college president's home. Photo by Northland College.

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FOREWORD

By Julian Keniry, Senior Director of Campus and Community Leadership at the National Wildlife Federation, and co-founder of NWF's Campus Ecology program in 1989

he challenge in the United States and beyond to transition quickly from a fossil fuelbased society to one built on safe, clean renewable energy—as advocated by a majority of the world's scientists—is the crucible of our time. "Generation E" explores how young people in college today are responding to this challenge, stepping up to make a difference in a wide range of creative and powerful ways.

"E" stands for many things, including Ecology, Economy, Energy and Equity which are among the interconnected concerns and values of sustainability that define and unite the current generation like no other issue of our time. *New York Times* environmental writer, Andy Revkin, recently coined the concept "Generation E" in his *Dot Earth*¹ blog posts, and it resonated with our Campus Ecology team and many of the students we work with as an apt moniker for today's sustainability-minded generation. Among Americans under 30 surveyed in May 2009, for example, the only cultural position garnering majority support was that "American's should adopt a more sustainable lifestyle by conserving energy and consuming fewer goods" (Center for American Progress²), with similar levels of support for this position among conservatives and progressives. In the "College Hopes and Worries" survey reported in the May 2009 *Princeton Review*³, 68% of the 12,715 college applicants randomly surveyed indicated they value information about a college's commitment to the environment.

As someone who collaborated with my undergraduate peers to establish campus recycling and environmental audits starting in the late 1980s, and who has worked since that time to design a broader response in higher education commensurate with the scale of the global environmental challenge, this story is particularly heartening. I applaud the emerging values and practices of "Generation E" and thank them for sidestepping the fate of recent previous generations labeled by the media as apathetic and self-centered and who were largely dismissed as incapable of leading change on the order of the global democracy or civil rights movements.

As this report chronicles, "Generation E" has been visible and vocal in encouraging wider societal adoption of sustainability. These young citizens have led a series of unprecedented initiatives, such as the largest convening in U.S. history, in 2009, of 12,000 student environmental leaders for the second Power Shift Conference, which focused on a transition to clean energy and creation of green jobs. Taking their concerns to the ballot box, more people between the ages of 18 and 29 voted in fall 2008 than in any federal election since 1972, and more than one-third of a million college students aligned with Power Vote, pledging to cast their ballot for clean energy and green jobs in state and federal elections.

New models for locally based community service built around ideas of economic and environmental sustainability are also emerging courtesy of "Generation E." They range from a program at Morehouse College in Atlanta aimed at distributing one million cost-saving lightbulbs to city residents to programs that support local farmers, such as an initiative at the University of Montana at Bozeman that invests \$300,000 annually in local, sustainable agriculture. For campuses that have struggled to finance clean energy and other sustainability initiatives, "Generation E" has offered solutions ranging from allocating student fees, to creating revolving loan funds, to raising generous class gifts. Fortunately, the stakes for this and future generations are apparent to many college and university leaders, 650 of whom have signed the American College and University Presidents Climate Commitment (ACUPCC) pledging to eliminate campus global warming pollution through efficiency, clean energy and sustainable transportation initiatives.

When asked why they took this pledge, President Michael Crow of Arizona State University, explained at the June 2009 ACUPCC conference in Chicago that, "As colleges and universities, collectively we are more than 2% of the U.S. carbon footprint *and* we are 100% of the student footprint." And at the "Smart and Sustainable Campus Conference" at the University of Maryland in spring 2008, President C.J. Mote of the University of Maryland explained that he couldn't *not* make this commitment when it is the current generation of students who are urging a commitment to sustainability, knowing that their futures are at stake and that (to approximately quote President Mote), "if we figured out how to get to the moon, we can tackle this challenge as a society." In my view, there is no finer example of leadership in America today than that exemplified by the ACUPCC signatories.

At the same time, a strong case can be made that we owe "Generation E" much, much more. At a "Campus Environmental Activism Conference" at Yale University in September 2009, I asked the audience of approximately 150 participants from all across the region for a show of hands of how many felt they had been educated about the essential concepts of sustainability that education pioneer Dr. David Orr writes every graduate needs to know, such as how to power society on current sunlight or rebuild local, participatory democracies. Very few students raised their hands.

Not only have the majority of college and university presidents not yet joined the ACUPCC commitment, pledging the kind of bold leadership for energy conservation and clean energy that young people deserve, but the National Wildlife Federation's (NWF) study of environmental education in America today, *Campus Environment 2008*, suggests we are largely failing to prepare college-educated young people for the world they are inheriting.

Only a small minority of colleges and universities in the U.S., for example, report they teach a majority of their students about the basic functions of the earth's natural systems, and even fewer teach about the connection between human practices and sustainability. Students studying business, health sciences, engineering and education are particularly unlikely to be offered courses on the environment or sustainability. The small percentage of colleges and universities (8% in 2001) requiring all students to take a course covering sustainability concepts has not increased and may even have dropped over the past decades.

When it comes to leading the transition to a safe, clean, renewable energy future, every generation has an equally important role to play. Yet "Generation E" stands at the crossroads, facing both the consequences of our collective choices and an unprecedented leadership challenge. This report shows how they are rising to this challenge. We owe it to them to facilitate their efforts in every way possible.

OVERVIEW

hoosing the 35 topics for this guide was easy, though the list could easily have been much longer. Without looking very hard, projects initiated by student passion and commitment to sustainability on their campuses—and beyond—is readily apparent at hundreds of schools, and the numbers keep growing.⁴

Any initiative on campus is a team effort. It takes the right balance of administrative, staff, faculty *and* student input. Even changes made completely off the radar screen of students are typically made with them in mind, and over the past decades students have shown that they're paying attention. From protesting investments with links to abusive governments and lobbying for sweatshop-free college products to standing up for sustainability principles and climate-safe campus operations, students at schools large and small have voiced their concerns—and steered both opinion and policy in better directions.

But lately it's been different. The stakes are much higher. The call for change is both global and personal. Students have been among the first to realize that leading the way for sustainability is an investment in *their* long-term prospects too—in future work, in family and community life, and in both private and public realms. Students are picking up on the fact that a world safe for people and wildlife is one that will support not only their own lives and dreams, but those of countless others. They have long had a voice in what happened around them during their years of postsecondary schooling. But never has there been an organizing motivation like global warming and the related urgency to redirect society toward a clean energy future.

Colleges and universities exist to educate young people, and what better place to learn the concepts and skills they will need to thrive in both an economy and society that is rapidly shifting—by necessity—to a cleaner, greener way of thinking and acting? The topics and projects in this guide are indeed meant to serve as a "guide," showing the myriad ways students have responded to the call to be part of the solution, to make a difference. They inspire our imagination of the possibilities that exist on almost every campus.

Topics range from renewable energy and conservation to dorm move-out programs; from campus food systems to creative funding. Examples are drawn from more than 160 schools in 46 states, from campuses public and private, urban to rural. Most of the projects featured are relatively new, which should make it easier for readers to find campus contacts and resources that will help them learn more about topics of interest.

While the focus of this guide is on case examples of students-in-action, it is written for all members of the campus community, every one of whom can make important contributions to campus sustainability efforts, including:

STUDENTS – Thousands are already engaged in sustainability leadership, and there are literally millions more (18 million attend postsecondary schools) who could gain valuable skills and practical knowledge by working on real-world campus projects. Students of every type—full-time, part-time, working, nontraditional, minorities—have much to offer and much to learn from the experience.

STAFF – Many employees in facilities, student housing, planning, food service, landscaping and many other fields are equally engaged in sustainability, plus they have the skills and savvy to operationalize just about any kind of project. Collaboration with students is often essential to a project's success.

FACULTY – Professors and instructors can help provide the platforms (course projects, capstone courses, independent study, graduate student research) by which students can conduct projects, plus they offer expertise and guidance and have considerable clout within their institutions.

ADMINISTRATION – Top decision makers wield influence and reward innovations, recognizing that sustainability leadership—in which students often play a crucial role— conveys benefits in many areas: campus operations, educational opportunities, institutional reputation and the bottom line.

COMMUNITY COLLEGES – Two-year colleges are where close to half of the nation's postsecondary students attend class and gain technical know-how, and where the number of students and programs geared toward the green collar economy is increasing steadily. At these schools, student engagement in campus and community sustainability is especially important because it provides much-needed practical job skills training for the emerging clean energy workforce.

This guide is a starting point, a snapshot of some of the best practices on campuses around the U.S. in which students have had a major role. Increasingly, the National Wildlife Federation and other voices for the environment need to hold up these examples to show how bright minds in a nurturing educational setting can bring about real change and provide leadership for others. We hope these stories spark new action on campuses everywhere.



I. STUDENT LEADERSHIP IN CAMPUS CLIMATE ACTION

Students have long been the heart, the brains and often the muscle behind campus greening and sustainability projects. Their involvement goes way back, from recycling programs in the 1970s such as at **Western Washington University**⁵ (established in 1971 and still student-run) and the **University of Colorado-Boulder**⁶ (which began recycling in 1976), to environmental audits like the one completed at **UCLA**⁷ in 1990.

But in the past few years, there has been a groundswell of individual campus actions—plus the formation of national groups and organizations that reflect a growing student movement based, in part, on a determination not to make the same unsustainable choices that now are the legacy of earlier generations. Today's students will see and be required to deal with some of the most devastating impacts of climate change, which will arise during their lifetimes. To them "the environment" is no longer an abstraction, but a looming global calamity that has moved many to approach this issue with passion and resolve. The issues facing the campus, and indeed the world, may be daunting, but students are nevertheless taking on these challenges, initiating change and working to find solutions.

THE CLIMATE IMPERATIVE

A commitment to finding solutions to global warming has been central to the mission of the National Wildlife Federation (NWF) for many years. Wildlife (not to mention future generations of students) will need a habitable planet, which requires a stable climate. How much reduction in greenhouse gas (GHG) pollution is needed? Unfortunately, the number keeps going up because global emissions have been accelerating, not slowing down as scientists have been advising for decades.

In past reports, NWF urged a reduction in the U.S. of 2% per year, including emissions from colleges and universities. But given new understanding of the lag effect of GHGs in the atmosphere, and the likelihood of a higher-than-anticipated global temperature rise that could lead to devastating consequences, NWF is turning up the heat, so to speak, on that timeline. Our current goals:⁸



For anyone unfamiliar with the "stabilization wedges" idea, this graphic shows how multiple actions will be needed to cut emissions. It will take a lot of people working on technical and behavioral solutions to reduce GHGs fast enough to mitigate the worst effects of climate change.

(After Pacala and Socolow, Science, 2004)

In all sectors of society

• Emissions reductions of 4% per year over the next 10 years (higher reductions are needed at the start due to the delayed effect of GHGs on atmospheric temperatures)

Long term emissions reductions needed

- At least 35% by 2020
- At least 80% by 2050 or sooner

NWF urges readers to keep up with the latest science on climate change through its web portal and blogs (see http://www.nwf.org/globalwarming), as well as through widely available information on the internet and elsewhere.

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"Students are the drivers of change at the university. Real change comes from grassroots efforts, like with our student organization at UTK, Students Promoting Environmental Action in Knoxville."

-Gordie Bennett, Sustainability Manager, University of Tennessee, Knoxville

STUDENT ACTION BEYOND THE CAMPUS BORDERS

Although there have been efforts to create regional or national student organizations dedicated to campus greening—most notably the **Student Environmental Action Coalition** (SEAC), which formed in the early 1990s and hosted two national conferences drawing thousands—most have struggled to survive the inevitable turnover of leadership. A new model based on multiple partner organizations and with a focus on climate change has proven successful.

The Energy Action Coalition (EAC),⁹ an alliance of youth climate leaders (supported by 50 member organizations, including the National

Wildlife Federation), was founded in 2004 with the broad goal of seeking "clean and just" regional and national energy policies. Its first campaign, the **Campus Climate Challenge**, which launched in 2006, spurred hundreds of schools to organize around renewable energy and climate neutrality. It has recently spearheaded two large student conferences in the Washington, DC, area: **Power Shift 2007** and **Power Shift 2009**. The 2009 event was the largest of its kind in history, with 12,000 students descending on the nation's capital to network, share ideas and meet with legislators. Another campaign, **Power Vote** in 2008, involved 340,000 young people who signed the online Power Vote pledge and helped raise climate change as a key issue in the national election and in hundreds of local races. EAC also sponsors the popular blog *It's Getting Hot in Here*. These national collaborations have been successful in empowering students to take action on their home campuses—and in the halls of Congress.

POWER SHIFT 2009²¹ - REGIONAL SUMMITS ENERGIZE THOUSANDS



In fall 2009, thousands of students across the country organized and mobilized to attend one of 11 regional Power Shift summits. The goal of the gatherings was to demand bold action on climate

and energy legislation from President Obama and members of Congress. Strategically timed, these summits occurred during a time when a landmark climate bill was being debated in Washington and only weeks before the United Nations Climate Change Conference in Copenhagen. One of the summits, held Oct. 9-11, 2009 at **Michigan State University**, drew more than 300 participants for a packed schedule of workshops and keynote speakers. Local community service actions included setting up a bike co-op and helping launch an urban vegetable garden. On the final day, marchers took to the streets of

Lansing to publicly call for support from the state's two senators.

Focus the Nation¹¹ also uses the coalition model, with sponsorship by many groups and prominent individuals. Its signature event, on January 31, 2008, engaged 1,900 schools that hosted on-campus events, including a national video webcast and day-long educational offerings. An estimated 240,000 students were reached. A follow-up event, the **National Teach-In**,¹² "Solutions for the First 100 Days," followed a year later on February 5, 2009. It prompted hundreds of participating schools, faith groups and other organizations to host a day of on-campus outreach and engagement around the issue of climate change. More national and international events are scheduled for 2009 and 2010.

Closer to home, students have also been organizing multi-campus and statewide networks through which to share ideas and offer support (see box on next page for a few examples).



Power Shift in November 2007 culminated in a march on the U.S. Capitol and student meetings with congressional representatives. (Photo: Justin Schott)



"Power Shift is a way of life for any environmentally inspired student who wants to be a change agent; not settling for anything but a green and clean global economy and essentially standing up for what is right and just." -Ayodele Akinpelu ('11), Wayne State University



Power Shift regional summit rally on the steps of the Michigan state capitol building, October 2009. (Photo: Casey McKeel)

Student Statewide Sustainability Networks and Coalitions

Realizing that there is strength in numbers, students have formed regional and state coalitions to pool ideas and resources. Here are just a few:

- The California Student Sustainability Coalition,¹³ with a core group of seven campuses and more than 30 affiliated schools, is a statewide network that collaborates on campaigns including the Food Initiative, The Green Initiative Fund (TGIF), Responsible Investments, University of California Sustainability Policy, and Education for Sustainable Living.
- Students in Ohio created the **Ohio Student Environmental Coalition**,¹⁴ dedicated to "working for a clean, safe and just future for all." It held its second statewide student environmental summit in fall 2008.
- Launched in 2007, **ReEnerize Texas**¹⁵ is a coalition of students from more than 20 university and high school campuses, whose aim is "to fight *against* climate change and *for* the promise of a green economy." In 2009, their efforts led to the passage of a Texas "Green Fee Bill" giving student governments the option to hold votes on self-assessed environmental green fees.
- With the goal of bringing schools in western New York together, students at **Medaille College**¹⁶ (NY) held the First Annual Leadership & Recycling Symposium in 2008 in New York to launch a collaborative network for students and others interested in campus sustainability projects.

BENEFITS FOR STUDENTS AND THE CAMPUS

Not surprisingly, the benefits to students due to their involvement in campus sustainability are many. Not only do campuses (and the biosphere) benefit by having a healthier, higher quality of life, but students hone professional skills such as teamwork, communication, project planning, statistical analysis and navigating complex systems. In addition, they may acquire technical skills like processing biodiesel fuel and measuring electrical consumption.

And while students gain a variety of personal benefits, campuses profit as well from the work they accomplish. The case examples in the 35 campus actions below illustrate the huge potential for important contributions toward improving campus operations and public relations, as well as saving significant amounts of money. And because students rarely work in isolation on campus projects, they bring a greater sense of community to their institution as they work alongside staff, faculty and administrators. Perhaps more than with any other issue, sustainability and the quest for solutions to global warming are becoming a unifying force on campuses nationwide.

"College students are flocking to sustainability degrees and careers"

That's the title of a 2009 USA TODAY article by Jillian Berman,¹⁷ in which she explores how green career options and training programs are become major selling points for schools across the U.S. She notes, "With an increased interest in the environment and growth in the 'green collar' job sector, colleges and universities are beginning to incorporate sustainability into their programs. From MBAs in sustainable-business practices to programs that give students the technical training necessary to operate wind turbines, students have an increasing array of options to choose from."

Commitment to sustainability is good for campus business in another way, too. It is becoming one of the key criteria students use when choosing a college. According to a 2009 survey on "College Hopes and Worries" by *The Princeton Review*, 66% of the respondents said that commitment to environmental issues is an important factor in determining the schools they sought admission to, with students ranking it higher than parents.¹⁸ **Colorado College**,¹⁹ for example, markets its beautiful natural environment, strong "sense of place" and impressive record of sustainability action right along with its challenging academic requirements. At the **University of South Carolina**,²⁰ a website about one of its residence halls leads off with this line: "The West (Green) Quad is the place to live if you want to be at the cutting edge of sustainability on campus!" It offers the option of becoming part of the Green Learning Community, a special sustainability-oriented group of 25 students within West Quad. Growing numbers of students who care about this issue are investigating a school's sustainability status as they consider where to invest their tuition dollars.

Why Higher Education Matters²¹

By the numbers in 2008

- 18 million Number of students (with 44% of undergraduates attending two-year schools)
- 4,300 Number of U.S. colleges & universities
- \$386 billion Annual expenditures of postsecondary institutions

The numbers alone are impressive, but perhaps more important is the fact that today's college and university students will be the leaders in most areas of the U.S. economy in years to come. They will strongly influence the values and priorities in the country's future use of energy, resources and political power. Although the years spent in college are just one of many forces shaping a young person, they can have a big impact not only on a student's understanding of issues like sustainability and climate change, but also on development of the skills and habits of mind needed to successfully tackle them.

ABOUT THIS GUIDE

Over the years, the staff at Campus Ecology have visited hundreds of schools and collected a wealth of campus case studies and project examples. Yet when the field team travels the country putting on workshops and giving talks, they often hear from students who ask, "What else can students do?" or "What can I do that would be most effective?" Because students are key to many parts of the NWF's Campus Ecology program—from fellowships to campus climate action networks to the Chill Out competition—it became clear that we needed to pull together some of the best and brightest stories we've come across showing how students are making a difference. These real-life experiences are the best teachers for other students and schools that might be considering similar projects and ideas.

Thus, the aim of this guide is to show a broad range of examples of students creating real change on campus in the areas of sustainability, climate change solutions, reducing greenhouse gas emissions and working toward a clean energy future. Campus examples were chosen to 1) feature a diversity of campuses in terms of size, type and geographical location and 2) highlight schools that have shown tangible outcomes or measurable results in terms of potential impact on the
campus climate footprint and advances in clean energy. We realize that readers might say, "Hey, we do that too. Why aren't we in this guide?" The truth is that there are so many excellent examples we cannot include them all. This guide is meant to be a sampling of some of the best work that students are involved in across the county on campuses of every kind. We hope that all readers will "find themselves" in one or more of the examples, and also will discover new ideas worth trying. For more stories about projects at hundreds of other schools, check out the Campus Ecology annual yearbooks, Chill-Out competition entries, weekly bulletins of the Association for the Advancement of Sustainability in Higher Education (AASHE), or links from the many coalition organizations such as the Energy Action Coalition, Environmental Justice & Climate Change Initiative and others listed in Appendix A, Campus Sustainability Resources.

Lessons from the Sustainability Movement

-From Lisa Madry, long-time campus field director for NWF's Campus Ecology program. "There is a massive movement of student action on climate-you can point to hundreds of campuses that participated in the Campus Climate Challenge, Focus the Nation, Chill Out and Power Shift. We know that students are diving head first into action, but sometimes student action has a "leap before you look" quality that doesn't always lead to the more effective initiatives. In an effort to help students and those who work with them channel their efforts into projects that will have the greatest impact, we are attempting in this guide to highlight some of the most compelling examples of student action we have seen over the past several years as well as some of the lessons learned from those efforts."

Campus Ecology Case Study Database - A gold mine of ideas ...

There are more than 500 entries in the Campus Sustainability Case Studies online searchable database, spanning the years 1997–2009 with new examples added each year. The database is free and available to all, and is searchable by topic, school, state and year. Categories include building design, energy, campus habitat, composting, greenhouse gas inventories, waste reduction and transportation.

See: http://www.nwf.org/campusecology/resources/yearbook



II. STUDENTS IN ACTION ON CAMPUS

Students have been engaged in sustainability in a wide variety of ways on campus. From campus planning and behavior-change campaigns to energy conservation and waste reduction strategies, students at hundreds of schools across the country have initiated or led projects that have brought about real change—both on campus and in the surrounding community. This important work has occurred through many venues in the campus organizational structure, including courses, independent study, student environmental clubs, student-staff task forces, residence hall associations and student government.

Because the climate crisis affects everyone and in multiple ways, the methods and strategies used to address it must also be plentiful and diverse. There is no single source for good ideas; they can come from anywhere. Increasingly, students are recognizing the power in their voices and passions, and also their role in expanding the wider campus sustainability movement. We have much to learn from their ideas and experiences.

Campus Ecology Fellowships: Seed Money to Grow Successful Student Leaders²²

Committed to cutting carbon emissions or putting green energy strategies to work? How about a little money to help get started?

The National Wildlife Federation's **Campus Ecology Fellowships** are awarded each year to a select group of students (called Fellows) whose projects address important climate and energy issues and also show an understanding of the strategies and campus partnerships needed to carry out their ideas.

Since the program began in 2000, NWF has supported 131 Fellows in schools across the country. Training is held in the spring at NWF headquarters in Reston, Virginia, and Fellows collaborate as a team with Campus Ecology staff and other Fellows during their project year. Biographies of past Fellows and descriptions of their diverse projects are available online.

For information, see Endnotes or visit http://www.nwf.org/CampusEcology



The 35 campus action topics below are organized into 15 categories, but many sustainability projects could easily fall into multiple categories. For example, outreach events like lightbulb swaps in residence halls could also be classified as energy conservation projects. And most examples deal with on-campus actions. Sources for each campus case example are provided in the endnotes; we invite readers to follow those links to learn more.

Renewable Energy Behavior Change Climate Planning And Personnel Education And Outreach Energy Conservation And Efficiency Food And Dining Funding Green Building Green Purchasing Habitat Management And Restoration Mixed Media Recycling And Waste Reduction Residence Halls Transportation Water Conservation

RENEWABLE ENERGY

Campuses everywhere are making significant contributions to the renewable energy field, with students often providing much of the research in areas of policy, promotion and demonstration of real-time projects. The emissions-reduction payoff for installing renewables makes them especially valuable. By definition, technologies such as wind, solar, geothermal and biomass are carbon neutral, and thus they hold the promise of making real cuts in the campus carbon footprint. Examples of student action include influencing campus and statewide policy and participating in on-campus demonstration projects, as well as reaching out into the broader community to show others the range of possibilities with renewable energy.

Cutting the Carbon Footprint: A National Trend

NWF's recent national survey and report of campus sustainability efforts, **Campus Environment 2008**,²³ found that nearly half (45%) of the 1,068 responding schools had implemented "significant new programs to curb CO₂ and other greenhouse gas emissions"

since 2001, the year of the last survey. Many of those programs, and emissions cuts, are due to renewables. One respondent, the **University of Minnesota, Morris**,²⁴ has a 1.65 MW wind turbine on campus and will soon generate 80% of its heating and cooling needs from biomass. Students are involved in many renewable energy projects on campus, including research on biomass, which is a byproduct of local agriculture.



Download the report free at www.nwf.org/CampusReportCard

1. Energy Policy

Students are weighing in on energy policy initiatives at many levels, from the individual campus to the local community, even state and nation, sometimes with impressive results. **University of New Hampshire**²⁵ students saw their research lead to an important new state policy. As part of



Rising to the challenge: Michigan youth call for a clean energy economy at the state capital in Lansing, April 2008 (Photo: ReNew Michigan)

an undergraduate research project on local ordinances regulating residential wind systems, student Laura Carpenter ('07) called upon State Representative William Chase to sponsor a bill supporting residential wind energy in New Hampshire. After the law passed, Chase was quoted in a news story: "We need to celebrate and encourage what students can do. Here is a student who took the bull by the horns and actually created change."

The statewide **Michigan Student Sustainability Coalition**²⁶ looked at problems with current energy policies and determined that their state legislators needed some influencing. They planned and launched a statewide campaign called "ReNew Michigan." As part of this campaign, legislators received online Valentine's Day cards calling for a renewable energy utility standard of at least

25% by 2025. The campaign also urged an energy efficiency standard that would require 2% annual efficiency increases in the state from 2008 to 2015, with a commitment to renegotiate a stronger standard after 2015. And to cut carbon emissions, the student strategy urged a moratorium on new coal-fired power plants. According to campus organizer Brandon Knight, the Michigan Student Sustainability Coalition was an important voice in final passage of the 2008 Renewable Portfolio Standard (which requires that 10% of the state's energy come from renewables and 5.5% from efficiency improvements by 2015). Students from more than ten universities were involved, with strong efforts coming from Michigan State University, University of Michigan and Albion College.



"The cross-campus collaboration allowed for a unified, decentralized and loud call for a renewable energy future in Michigan." -Brandon Knight, Global Exchange campus organizer



One story from a few years ago still has many lessons to offer. In 2003, the University of California²⁷ Board of Regents passed a comprehensive green building and clean energy policy for the statewide university system, largely due to student-initiated campaigns calling for such a policy. Their success inspired advocacy organizations such as Greenpeace and the Student Environmental Action Coalition (SEAC) to carry on similar campaigns at more than eighty other U.S. schools. Student motivation in this project came from a desire to respond to environmental issues like the California electricity crisis of 2001 and President Bush's attempt to drill oil in the Alaska National Wildfire Refuge, as well as international events including the Kyoto Protocol negotiations and the Iraq War. Students saw campus buildings and energy consumption as two tangible targets, and recognized that the ten UC campuses had differing levels of environmental performance. Students sought comprehensive policy solutions rather than piecemeal, studentinitiated campaigns at individual campuses. Finding key allies within the administration was critical to the students' success. Using the banner message of "UC Go Solar" and waging an aggressive grassroots campaign, students helped create a system-wide policy that called for new buildings to be Leadership in Energy and Environmental Design (LEED) certified and to increase the amount of renewable energy used on campuses.

Key Lessons from the UC System campaign

- 1. Bottom-up and top-down support are essential for such a comprehensive policy.
- 2. Connecting student research with the needs of campus staff leads to a win-win situation for all.
- **3.** Setting firm deadlines helps projects move along, and informs all parties of the steps to be taken along the way.
- **4.** Harnessing the extraordinary energy of students can help campuses overcome institutional aversion to risk and reluctance to change.

2. On-Campus Demonstration Projects

Students have been active participants in bringing renewable energy applications to their campuses, with dozens of wind, solar, geothermal and biomass projects launched in the past few years.

At Northland College²⁸ (WI) in May 2008, students in a Photovoltaic (PV) Installation class helped research and erect a 2.1 kilowatt sun-tracking photovoltaic array for the college president's home. The PV array generates enough electricity to offset the annual consumption of the president's house and prevents about 3.1 tons of carbon dioxide annually from entering the atmosphere. Savings in electricity will pay for the cost of the panels in about 16 years, assuming a 10% annual inflation rate. The panels are expected to last, with very little maintenance, for more than 50 years. During the course, students learned about electrical generation from photovoltaic cells, national electric codes, locally available incentives, load analysis, site assessment and pay-back time calculations. Funding for the array came from President Karen Halbersleben's personal finances, supplemented by state energy grants. "The productive collaborative relationships between students and UC's administrators that developed during this campaign led to the expansion of the original policy into a more complete sustainability policy. As a result, numerous 'green campus' ratings have listed UC as one of the top universities in the nation."

-Matt St.Clair, Sustainability Manager, University of California Office of the President

Northland College students installing solar PV panels on campus. (Photo: Northland College)



For an excellent resource to help students and others understand the economic and technical details of renewables, see *The Business Case for Renewable Energy: A Guide for Colleges and Universities*, by Andrea Putman and Michael Philips, 2006, published by Leadership in Educational Facilities (APPA), National Association of College and University Business Officers (NACUBO) and Society for College and University Planning (SCUP), and sponsored in part by NWF.²⁹



"As an elective outside of any official major, the course attracted students who were motivated and eager to learn about solar electricity. Some were interested in what the technology meant for their future, others wanted to acquire the skills and perhaps seek future employment in the solar industry."

-Scott Grinnell, Professor of Physics & Meteorology, Northland College

B

"What makes student-led projects so valuable? They often lead to immediate positive impacts within campus communities. But such initiatives also blaze a trail for tomorrow's institutions by illuminating innovative ideas, breakthrough opportunities and future successes." -Nicko Fusso, Director of Sustainability is Sexy (UW class of '07)

BEHAVIOR CHANGE

While changes to campus infrastructure are needed to conserve energy and other resources, human behavior is a potentially large contributor to a smaller campus footprint. Students across the country are actively engaged in teaching and influencing members of the campus community about how individual behaviors contribute to climate change—and about the opportunity for making a positive difference collectively. Through various outreach campaigns and pledges, students are targeting behaviors ranging from waste reduction to energy conservation.

3. Resource-Saving and Efficiency Campaigns

In addition to the many ways changed behaviors can cut waste and resource use in residence halls (see Actions 28–31), there are plenty of opportunities in other campus arenas. The use of creative, fun campaigns is an effective way to draw attention to certain behaviors.

In 2007, a student club at the **University of Washington**³⁰ dreamed up "Sustainability is Sexy," a creative outreach campaign to encourage coffee drinkers to opt for reusable coffee cups over disposable paper cups. Mugs, T-shirts, stickers and buttons adorned with a lipstick-kissed logo served as visual reminders, plus UW's discount for refillable cups added a financial incentive.

The program's intent was to reduce the estimated 5,000 disposable cups used daily on campus. Results were impressive. Over the first year of the campaign, refillable mugs were used 153,000 times, saving UW's Housing and Food Services division an estimated \$23,000 in cup costs—and avoiding a couple tons of landfill waste.

Buoyed by the success of its eye-catching title and "lips" logo, **Sustainability is Sexy** (**SIS**)³¹ has since evolved into a small nonprofit organization based in Seattle and run by its original creators after they graduated from the University of Washington. Over the past two years, the



University of Washington students help spread the word that "Sustainability is Sexy" (Photo: Sustainability is Sexy)

group has worked with several businesses to design reusable cup campaigns similar to the UW program. In the future, SIS hopes to find opportunities to partner with more businesses and college campuses.

"Shut the Sash" is a campaign spearheaded by students at the **University of California, Irvine**³² to close or lower laboratory fume hood sashes when not in use—but without compromising safety, of course. The campaign has a three-part strategy to influence the way lab users manage the hoods. First, students are instructed by teaching assistants to lower or close sashes when they are finished with experiments. Second, reminder stickers were placed on the hoods with facts about how much carbon can be saved by closing sashes (over one year's time the heat lost through a single wide-open hood can account for 22 metric tons of CO₂). Third, an incentive-based

competition is held between three lab buildings. The prize is a catered lunch for staff and students of the winning lab, plus an energy efficiency certificate from the Green Campus Program. Since the campaign's start in 2005, the campus has saved around 36 metric tons of CO_2 and \$13,000 in energy costs each academic quarter. Green Campus intern Courtney Gill said of the program, "Most students don't know that something as simple as closing the sash of a fume hood can save a lot of energy. We've had positive experiences with graduate teaching assistants, undergraduate students and professors."

But how to make outreach campaigns as effective as possible? A couple campuses have attempted to answer this by studying the impact of particular projects. Community-based social marketing³³ is a strategy increasingly used by campuses to help design and assess behavior change programs. The **University of Southern Maine**,³⁴ for example, achieved a 90% drop in computers left running during 2006 as a result of flyers, prompts and asking students and staff to sign a pledge to do so. Overall, behavior changes occurred in 40–90% of areas targeted, and an estimated 2,000 kWh were saved over three weeks.

Graduate student Amanda Zulas, at **Western Illinois University**,³⁵ began a study in fall 2008 to test the effects of different approaches, drawn from the field of psychology, on improving recycling rates on campus. She found that applied behavior analysis theory, which uses prompts and rewards (in this case, a lottery for prizes) led to the highest recycling percentages. Social capital theory, based on perception that other students around them were recycling, resulted in the greatest improvement from the baseline recycling rate. Her findings, she noted, have implications beyond recycling to energy use, fuel consumption and other behaviors.

4. Pledges

Student activists employ another social marketing technique to encourage behavior change: written and oral pledges. According to research cited in the book *Fostering Sustainable Behavior*,³⁶ individuals are more likely to follow through on a behavior when they have made a written or verbal commitment.

The "Lights Out Accountability" pledge at **Allegheny College**³⁷ (PA) was preceded by a student initiative in fall 2008 to pressure the campus to install automatic sensors to turn off lights in unoccupied areas. According to Kelly Boulton, Allegheny's sustainability coordinator, "the students acknowledged that sensors are a great tool—and the campus has installed them in certain areas—but they eliminate awareness and accountability from the users of spaces." So the Lights Out pledge was born as a cost-free way to cut consumption, and students were urged to sign cards stating the pledge (see box). One of its innovations was for students to "adopt a room" on campus where they would try to switch lights off as often as possible. As reported by Shane Downing ('11), one of the student organizers, as a result of signing the pledge several students began shutting off lights on their way through buildings if they saw that nobody was using them.



At **UC Irvine**, Green Campus intern Courtney Gill places a carbon footprint sticker on a fume hood to remind lab users to "Shut the Sash" to save energy and CO₂. (Photo: UC Irvine Green Campus Program)



"In order to get average people to change their normal behaviors, you have to first find out what works best, and then apply that to situations where you can

help them to change."

–Amanda Zulas, Graduate student, Western Illinois University

Lights Out Accountability Pledge, Allegheny College

"I promise to always shut the lights off in my room when I am not there. I will make an effort to shut off other lights around my dorm and around campus if they are not in use. I will make an attempt to unplug appliances and make others aware of energy saving on campus. I will personally make sure, whenever possible, that the light is always shut off in Room_____."



University of Washington student Chris Bruno ('09) with inefficient shower heads and light bulbs swapped out at campus sororities and fraternities (Photo: Courtesy University of Washington) Other pledges are broader, such as the sustainability pledge at **West Virginia University**,³⁸ which encourages behavior change across a variety of topics. The sustainability pledge at **Yale University**³⁹ (CT) allows students, faculty and staff to self-select certain actions they want to commit to, and its website posts the hundreds of names of those who have made the pledge. On that site, student Jacquelyn Maitram Truong ('10) explains her support of the pledge. "Sustainability isn't a distant, unattainable concept to be discussed in the abstract," she said. "It is a very real way of making decisions that can be integrated into every single person's daily actions. This pledge is not merely food for thought—it's a call for action."

This strategy of asking people to commit to an action was the approach of the hugely successful **PowerVote**⁴⁰ campaign in fall 2008, which asked young people to pledge their vote "for clean and just energy" in both state and national elections—and to encourage friends and also their representatives in Congress to push for a clean energy economy. The campaign received pledges from more than 340,000 young people nationwide and is believed to have had a strong effect in the outcomes of many races. Two schools each had over 4,000 pledges: the **University of New Hampshire** and **Ohio University**. Schools having the largest percentage of participation based on school size included **Lewis and Clark College** (OR) with 53% of students signing the pledge, **St. Mary's College of Maryland** with 52%, and **Keene State College** (NH) with 51%.

Greening of the Greeks

Greeks Going Green⁴¹ is a nonprofit launched in 2008 to promote on-campus campaigns for sustainable living solutions among members of sororities and fraternities. By 2009, the national organization had 11 chapters, including **Kansas State University, Michigan State University, Mississippi State University,** and the **University of Texas-Arlington**. The **University of Florida**⁴² chapter urges its Greek houses to implement one sustainable change a year such as participating in the sorority row recycling program, switching to compact fluorescent lightbulbs, or planting more trees on the property or in the community. At the **University of Washington**,⁴³ Greek houses have replaced 3,000 incandescent lightbulbs with compact fluorescent bulbs (CFLs) and promoted water conservation by installing 300 five-minute shower timers, 300 low-flow (2 gpm) shower heads, and 500 bathroom sink low-flow aerators (1 gpm). Lead organizer Chris Bruno ('09) explained his motivation to get involved: "I started the project because I wanted to do as much as I could for the environment, as much as my abilities and available resources would allow. I decided to start with lightbulbs in the Greek Houses because CFLs are relatively easy to work with, and I knew my fellow UW students would be very appreciative."

STUDENT-TO-STUDENT ADVICE

How to Conduct a Successful Campus Sustainability Project Chris Bruno, Class of 2009, University of Washington⁴⁴ Project: Greeks Going Green

- 1. Before starting anything, make sure you have a solid plan. Write everything down and get things organized and spelled out. Have a document that is concise yet detailed enough so that anybody who reads it can gain a solid understanding of what the project is about.
- **2.** Identify roles and duties. All participants need to clearly know their roles and responsibilities so they will have greater confidence in their actions, and hence the project will experience fewer setbacks and slowdowns.
- **3.** Don't forget publicity. This is always a good idea, since high visibility will inspire others to help or lead their own projects. Also, good publicity encourages participants to work at their best, since they know they are being watched.
- **4.** You may get frustrated and stressed, and your skills and patience may be put to the test, but don't forget that all the trials and tribulations are worth the reward at the end. Stress and pain are short, but success lasts forever.

CLIMATE PLANNING AND PERSONNEL

Strategic planning and resulting policies are a guiding force behind a campus's mission and operations. In recent years, students have applied pressure on administrators to live up to higher standards, especially in the realms of social justice and climate action. Participation in the American College and University Presidents' Climate Commitment with its required greenhouse gas inventories and climate action plans is just one area where students have been working closely with staff and administrators. To move institutions further on sustainability action, students have also petitioned for related staff positions on campus that are dedicated to such work.

5. Greenhouse Gas Inventories & Climate Action Plans

As of summer 2009, 650 presidents had signed the American College and University Presidents' Climate Commitment (ACUPCC),⁴⁵ several of whom were lobbied by students to do so, such as at the **University of Oklahoma**⁴⁶ and **Birmingham Southern College**⁴⁷ (AL). As signatories to this commitment, campus leaders are dedicating time and resources to calculating greenhouse gas inventories and developing climate action plans to eventually bring their institutions to carbon

Primary researchers for publicly accessible greenhouse gas inventories, based on 391 reports (compiled by Jon Hehir, AASHE, in January 2009)⁴⁸

neutrality. Of the public greenhouse gas inventories received by the ACUPCC, 17% were primarily researched by students or by classes, as shown in the pie chart below.

As deadlines draw nearer for campuses to submit their climate action plans (within two years of signing the ACUPCC), we may see similar participation rates from students in the climate action plan research and writing process.



For a comprehensive overview of climate action planning process, see Campus Ecology's 2008 *Guide to Climate Action Planning-Pathways to a Low-Carbon Campus*. Available as a free download at **www.nwf.org/CampusCAPGuide**, this popular 45-page guide profiles in detail the plans and planning experiences of seven schools.

One of the earliest plans for carbon neutrality was originally proposed by a student organization, MiddShift, at **Middlebury College**⁴⁹ (VT) during the 2006–2007 school year. After completing a greenhouse gas inventory, students developed a carbon neutrality toolkit that integrated several years' worth of student research and helped guide the process of choosing a set of projects that would fully eliminate the college's carbon footprint. MiddShift students proposed their scheme in a meeting with the Middlebury Board of Trustees in 2007 and won approval for a goal of carbon neutrality by 2016. Upon trustee approval, President Ronald Liebowitz appointed a MiddShift Implementation Working Group of students, faculty, staff and administrators, who are charged with developing a neutrality roadmap that is "feasible, cost-effective, accessible and flexible."



Sustainability Action Fellows on Pomona College's Education and Communication Team discuss project and program ideas. (Photo: Courtesy Pomona College, 2009) A popular approach for student involvement in greenhouse gas inventories is to do them as class projects, taking advantage of the team effort. At **Stetson University**⁵⁰ (FL), an environmental science class took on the charge of researching and tabulating the inventory. Among many other topics, students did the legwork to get the numbers on fuel consumption and commuter patterns, visiting over 200 departments to look at mileage reimbursement forms.

At **Pomona College**⁵¹ (CA), students are deeply integrated into planning and research for the campus sustainability audit, greenhouse gas inventory and climate action plan. By design, many of Pomona's sustainability initiatives and outreach projects through the years have been student-initiated and student-centered. By taking the lead,

students are provided valuable training and gain real-world work experience, while the campus benefits greatly from the work. As an example, Pomona College hired a consultant to conduct a thorough sustainability audit, and a team of students were paid and trained to work alongside the consultant, completing a variety of tasks needed for the audit.

Another way students at Pomona are involved is through Sustainability Action Fellowships developed by the sustainability coordinator, a recent Pomona alumnus. This program brings together approximately 30 students who work in teams on topics like energy, outreach and environmental justice. They generate, vet and prioritize recommendations for the college to move forward with its sustainability goals. These groups meet monthly for a workshop that includes leadership training and campus updates, and allows plenty of time for sharing ideas on how to implement strategies. While currently voluntary, there is the hope that the fellowships can become paid work-study positions.

6. Sustainability Positions

The number of dedicated sustainability positions has grown rapidly in the past decade, with students often being strong champions behind the creation of these positions. This continues to be the case today, with more positions being announced on a regular basis. By having a dedicated position for sustainability-related work on campus, institutions show a commitment to having a consistent and proactive approach to tackling these issues. Both NWF's Campus Ecology and the Campus Consortium for Environmental Excellence (C2E2) have resources online⁵² on how to create sustainability positions on campus.

Humboldt State University⁵³ (CA) students developed and presented a proposal for a sustainability coordinator position to the university president, who approved it the same day. Duke University⁵⁴ (NC) recently created a new staff position, the Coordinator of Student Environmental Initiatives, whose task is to "develop a strategic, university-wide plan to boost environmental awareness and encourage greater participation in environmental initiatives," primarily by gathering input from students and other campus members.

Students not only advocate for the institution to host such positions, but they are even hosting positions within their own organizations. At the University of Arizona,⁵⁵ the Associated Students of UA recently created the position of Sustainability Director within the student government to focus primarily on projects within student unions and to work with student clubs and organizations. Similarly, there is an Environmental Senator position within the student government structure at California State University, Monterey Bay,⁵⁶ typically held by the chief student activist on campus.

EDUCATION AND OUTREACH

Student-led educational initiatives focusing on the environment go back at least as far as the first Earth Day on April 22, 1970. On many campuses Earth Day has expanded into Earth Week, an annual celebration featuring speakers, information fairs, rallies and other events. More recently, Focus the Nation, the National Teach-In for Global Warming Solutions, Campus Sustainability Day and NWF's Chill Out: Campus Solutions to Global Warming awards webcast and other sponsored events have added new educational opportunities to the campus calendar. These organizations often provide promotional toolkits to help campuses stage successful programs. Students are also taking the sustainability message off-campus into surrounding communities and beyond, expanding their reach to the wider public. Some of these are service-learning projects that involve aspects of equity and social justice for communities of color and other groups.

7. On-Campus Awareness and Education

Student-led peer-to-peer education efforts benefit from the fact that students typically know what approaches will catch other students' attention. The longest-running and most widespread environmental awareness-raising campus event is Earth Week, typically held the week nearest to April 22 and coordinated primarily by students. At Bergen Community College⁵⁷ (NJ) in 2009, students hosted many Earth Week activities, including a thrift goods sale, tree-planting event and a "pledge wall" on which they wrote behavior-change promises. The week culminated in a statewide capstone conference, "Go Green NJ," with participation from many New Jersey colleges and universities for a day of workshops, speakers and sustainability activities. Earth Week 2009 at Boise State University⁵⁸ (ID) had a packed schedule with service projects, live bands, movie showings, panel discussions on alternative energy and transportation—to mention just a few of the offerings.

Green Curriculum for a Green Future⁵⁹

As the college curriculum changes to meet the needs of a clean energy workforce, sustainability-related courses and degree programs become awareness tools in themselves. At community

colleges,* in particular, the greening of the curriculum is on the fast track. New programs in wind, solar, geothermal and other renewable energy technologies are opening at a rapid pace, but demand often outstrips supply-suggesting promising growth in these fields for years to come.

*For more, see Campus Ecology's ClimateEdu for May 12, 2009: "Community Colleges Step Up to Train Clean Energy Workers."



Students wrote pledges for greener behaviors on the Pledge Wall banner during Earth Week at Bergen Community College. (Photo: Bergen Community College)



"Students and their passion

always been a driving force

in Pomona's sustainability

Action Fellowships, they have

become more fully integrated

decision-making processes and

get to see and participate in

-Bowen Patterson, Sustainability Coordinator, Pomona College

into the administration's

'the other side' of how decisions are made."

projects and programs. Through our Sustainability

for the environment have

Climate**Edu**

Sustainability-related educational programs also occur on campuses at other times during the school year, either as one-time or annual events. Students and staff at the **College of the Menominee Nation**⁶⁰ (WI) hosted a Sustainability Fair in spring 2009, whose aim was to showcase the college's efforts and achievements (including its sustainably managed tribal forest) and "to inspire a sustainable culture" through exhibits, demonstrations, speakers and workshops. At the **University of Colorado at Boulder**,⁶¹ the annual Rocky Mountain Sustainability Summit has expanded from a campus-only event to a multi-state gathering of western colleges and universities. The February 2009 summit, coordinated by students and staff, drew participants from nine states and offered workshops in areas such as creating a campus culture of sustainability, social and environmental justice, and carbon mitigation planning. To encourage more CU Boulder students to attend, admission is free.

Organization-sponsored programs have recently widened the pool of options for campus-based sustainability events. Starting in 2006, the National Wildlife Federation has sponsored **Chill Out: Campus Solutions to Global Warming**,⁶² which is a competition open to all colleges and universities. Students and staff submit descriptions of innovative projects that have an emphasis on saving energy and cutting carbon. In 2009, eight campuses won awards in different categories and more than 240 schools and other organizations, including some from overseas, logged on to see the national webcast featuring the winning entries. In many settings, students organized the viewing and showed it during group meetings, classes and other events. One of the Chill Out categories, campus-based videos, drew many entries in 2009. Students at the **University of California, San Diego**⁶³ created one of the winning entries, which featured many of the school's innovative renewable energy projects and other green programs. Another video, from the **University of Arkansas**,⁶⁴ showcases the school's sustainability initiatives and student involvement. The awards webcasts and videos from past Chill Out competitions are available online.

Other nationally available programs include the **National Teach-In on Climate Change Solutions**, which was held February 5, 2009, at hundreds of schools nationwide. **Northern Arizona University**⁶⁵ was one of the Teach-In participants, sponsoring a day of activities and educational offerings for students and including a speech by NAU President John Haeger. The university hosted the event in collaboration with nearby **Coconino Community College**,⁶⁶ (AZ) composed of six campuses, which provided live video streaming of the entire day's happenings. The national **Campus Sustainability Day**,⁶⁷ held every October since 2003, is sponsored primarily by the Society for College and University Planning. In its first six years, more than 280 campuses participated from all over North America. **Madison Area Technical College**⁶⁸ (WI) held a Sustainability Day in 2008, which was planned by students, faculty and staff and included presentations on the National Renewable Energy Laboratory, winter biking in Madison, and a showing of the webcast "Climate Realities, Challenges and Progress in Higher Education."

8. Community Outreach

With the aim of teaching about sustainability and reducing carbon emissions in their surrounding communities (and thereby helping create a higher quality of life for all), students are engaging in various service projects such as offering home weatherization services and compact fluorescent bulb distribution. Greenhouse gas emissions saved through such projects can be counted as carbon credits toward a school's overall reduction.

The Community Carbon Use Reduction at Brown program (CCURB) at **Brown University**⁶⁹ (RI) solicits community-based project ideas from students that are meant to address community needs—and also save carbon that can be used as a measurable offset for campus emissions. One of the projects, HeatSave, involves the installation of

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"The beauty of CCURB is that it aligns people's interests in a meaningful way. A lot of the residents we work with are really struggling to make ends meet. Even if we cannot drive home all the environmental benefits of programmable thermostats, we can still save them money and they can save us carbon."

-Adam Yarnell ('10), Community Carbon Use Reduction at Brown program, Brown University

Brown University student Adam Yarnell showing Providence resident how to operate a new thermostat. (Photo: Project HeatSave)



programmable thermostats in low-income homes in Providence. A HeatSave student volunteer, Adam Yarnell ('10), was amazed to find that "even folks with limited resources, who have other very pressing needs, care so deeply about the environment." And at **Warren Wilson College**⁷⁰ (NC), a spring break service program called INSULATE! involved ten students who collectively worked 440 hours in weatherizing the homes of five families.

Morehouse College⁷¹ (GA) students created the Let's Raise a Million initiative, with a goal of raising funds to obtain and install one million energy saving CFL bulbs in low-income households in the Atlanta area over a period of four years. By September 2008, they had installed 6,000 bulbs and one year later were up to 20,000. At **Oberlin College**⁷² (OH), student organizers secured a contribution of 10,000 CFL bulbs from an anonymous donor, and in 2007 and 2008 swapped them for incandescents both on and off campus. Members of Oberlin's Light Bulb Brigade estimate that 6,500 tons of CO₂ will be avoided over the life of the bulbs (see Student-to-Student Advice box below).

"Service for sustainability" can take many forms. Starting in spring 2009, **Drury University**⁷³ (MO) students served as interns for the new Ozarks Center for Sustainable Solutions, an organization that primarily assists regional businesses and organizations with pollution prevention and sustainability awareness. **University of North Dakota**⁷⁴ student Robert Deringer ('08) saw the need for a recycling system in downtown Grand Forks and started a program on his own. "The city challenges its citizens to recycle 80 percent of their waste," Deringer said, "But that's not an option for people living and conducting business downtown." The recycling station he set up now provides the opportunity for residents and businesses to do so.

STUDENT-TO-STUDENT ADVICE

How to Conduct a Successful Campus Sustainability Project Kristin Braziunas, Class of 2008, Oberlin College⁷⁵ (OH) Project: The LightBulb Brigade

- 1. Find a source of funding by asking local businesses or environmental organizations, or encourage your college or university to finance your project in return for claiming the carbon reductions, which can be very significant (our 10,000 CFLs offset 13% of Oberlin's annual carbon emissions!). Or, create a voluntary carbon offset fund and encourage students, faculty and staff to pay into it.
- 2. Appoint one or two experienced (junior- or senior-year) students to coordinate the program, keep good records and provide accountability.
- **3.** Anyone can change a lightbulb or organize a lightbulb-exchange event. Encourage students, faculty, staff and community members to volunteer their time, even if only for a few hours.
- 4. Build ties with community leaders such as church pastors, business owners, tenant council members and neighborhood-event organizers. They are your access points and allies, and will lend you credibility as well as help you set up the exchanges.
- **5.** Don't forget education! Distribute information on mercury content, steps for cleanup of broken CFLs and proper disposal of CFLs with every exchange. When you are giving away bulbs for free, you are responsible for ensuring that participants are well informed.
- 6. Put in extra effort to change lightbulbs in many different communities. While setting up an exchange with students and staff at your college may be the easiest means of distribution, working with community leaders to set up exchanges in churches, businesses, and neighborhoods ensures that the bulbs are distributed to those who may be least likely to purchase them due to their cost and who will benefit the most from the energy and monetary savings.
- 7. Finally, don't forget sustainability. Encourage the development of additional local carbon offset programs that enable continued student involvement. Thank your college for supporting a community carbon reduction program and encourage them to begin budgeting an annual amount for carbon emissions offset projects.

Bulb distribution day in Atlanta for Morehouse College's "Let's Raise a Million" project. (Photo: Let's Raise a Million)



Dartmouth College's Big Green Bus at its University of Wisconsin-Madison stopover, August 2009.

(Photo: David J. Eagan)

Taking the message of sustainability to a national audience, a group of 15 students from **Dartmouth College**⁷⁶ (NH) have been steering their "Big Green Bus" each summer to dozens of cities from coast to coast, starting in 2007. As a rolling science lab and energy efficiency exhibit, their mission is to show everything from basic sustainable living practices such as energy efficient appliances to do-it-yourself biofuels. Painted bright green to catch the eye, the 2009 bus is a converted 1989 MCI motor coach, a major upgrade from the old school buses of the past. It is fueled primarily by filtered vegetable oil harvested from restaurants en route, and powered by four high-efficiency solar-electric panels mounted on the roof that operate its computers, display lights and air conditioning.

ENERGY CONSERVATION AND EFFICIENCY

With rising fuel and electricity costs, schools are increasingly turning to conservation and efficiency measures to save energy and much-needed money. While many campus energy managers have made huge strides in this realm, students often have played a part in helping identify new places to save energy. Many have assisted facilities staff with energy audits and greenhouse gas inventories and have helped investigate the availability and costs of alternative practices and technologies. Examples of the many possible actions in this area include lightbulb swaps, heat recovery projects and energy metering and feedback systems.

National Trend toward Energy Efficient Campuses

NWF's recent national survey of campus sustainability efforts (Campus Environment 2008⁷⁷) revealed that upgrades in lighting, HVAC systems (heating, ventilation, air conditioning) and computing networks have all increased since the first survey in 2001. Notably, of the 1,068 schools that responded to the 2008 survey, 67–74% reported that they had "plans to do more" in the area of energy efficiency, a significant rise since the last survey. Download the report free at **www.nwf.org/CampusReportCard**



9. Compact Fluorescent Lightbulb Distribution

Several stories about bulb-swapping have already been given, but they focused on Greek houses and off-campus community outreach projects. Student-run CFL distribution programs have been popular—and successful—on campus, too. Finding funding to pay for the bulbs, from government energy offices, local power companies or private donors is often a first and sometimes challenging step toward action on sustainability. But giving the bulbs away is relatively easy since most students now recognize the "swirly" bulbs as energy-conserving devices that save on greenhouse gas emissions as well as electricity.

In Connecticut, student-based organization ConnPIRG distributed donated bulbs to students at **Trinity College**⁷⁸ (CT) while educating them about other simple ways to conserve energy as part of their Campus Climate Challenge. Some students have used the bulbs as incentives to participate in sustainability events, such as Focus the Nation or Earth Week. Students at **Sarah Lawrence College**⁷⁹ (NY) exchanged incandescent bulbs for CFLs during one of the campus events scheduled for Focus the Nation in 2008.

Bulb swaps offer the opportunity to go door to door in campus residence halls where students literally can "get a foot in the door" to talk with other students about conservation measures. **Bowdoin College**⁸⁰ (ME) student Eco-Reps created a "Kaptain Kilowatt"

Bowdoin College's "Kaptain Kilowatt" battles with Phantom Energy to help cut wasted energy. (Photo: Keisha Payson, Bowdoin College)



character who joins in on the bulb-swapping fun (see photo). The **University of Vermont**⁸¹ Eco-Rep program has held an annual lightbulb swap since 2004, resulting in significant savings (see table). First-year students are the primary target in the residence halls, and each year Eco-Reps distribute around 550 free bulbs (costing UVM \$1 after rebates from Efficiency Vermont, a state energy program). Savings estimates are based on a calculation that includes the wattage of the incandescent bulb, hours of use per day, utility grid costs for electricity and other factors.

Estimated savings from University of Vermont residence hall lightbulb swaps

	Kwh saved/day	Kwh saved/year	\$ saved/yearª	lbs. CO ₂ saved/year ^b	lbs. NOx saved/year ^c	lbs. SOx saved∕year₫	number of bulbs
2008-2009	25.46	9,291.27	\$1,114.95	833.43	13.94	35.31	400
2007-2008	65.82	24,017.57	\$2,882.11	2,154.35	35.99	91.20	489
2006-2007	145.31	53,041.88	\$6,365.03	4,757.86	79.56	201.56	916
2005-2006	81.54	29,762.08	\$2,976.21	1,590.92	47.15	64.84	531
2004-2005	72.87	26,599.46	\$2,659.95	14,229.11	42.14	57.95	444
TOTALS	391	142,712.26	\$15,998.25	23,565.67	218.78	450.86	2,780

^a based on \$.10/kWh

^{b, c, d} based on VT's grid emissions outputs (2000) from http://www.epa.gov/cleanenergy/index.html

(Note: Totals do not represent cumulative campus savings because students usually take the bulbs with them at the end of the school year.)

10. Heat Recovery and Thermostat Control

Considerable savings can result from reducing the amount of energy needed to heat and cool buildings—either by conserving the heated/cooled air already in the building or cutting the overall amount of energy needed. Student research at the **Massachusetts Institute of Technology** (**MIT**)⁸² found that using revolving doors (instead of typical hinged doors) kept more heat inside buildings and saved energy, so they wrote a successful proposal to pay for signs that read "Help Conserve Energy, Please Use the Revolving Door." Tests in 2007 showed that the signs helped increase the use-rate of the revolving doors to 65%, up from 23%. Mechanical engineering seniors at the **University of Maine**⁸³ conducted a study for a capstone course in 2007, designing a heat recovery mechanism for the air-handling system of the Engineering and Science Research Building. The lab building requires huge volumes of ventilation air, but by using heat pumps to recover heat from outflow air in winter, incoming outside air can be pre-heated as it enters the building. The design could potentially recover the energy equivalent of 27,000 gallons of fuel oil per year, saving the campus an estimated \$100,000 annually. Students in a fall 2009 course are still developing the innovative design, and the University of Maine Foundation's Green Loan Fund has approved \$200,000 to pay for the system.

At **California State University, Chico**,⁸⁴ students recognized the savings potential in lowering and raising the standard heating and cooling thermostat settings on campus. Eighty-four percent of students voting in spring 2007 approved an advisory measure to adjust temperature standards by three degrees, so that buildings would not be heated above 65 degrees in winter or cooled below 81 degrees in summer. Student organizers estimated annual savings of \$151,000 in costs and 1,100 tons of CO₂. In a news release about the victory, organizer Julianne Riddle ('07) said of the project, "It was the greatest feeling in the world to know we worked hard, raised awareness and most importantly, that students really care about this stuff. I'm just happy we're making the change we want to see on campus."

11. Metering and Feedback Systems

Research in social marketing has demonstrated clearly that providing feedback results in higher rates of behavior change.⁸⁵ That is the premise behind the real-time displays of residential hall resource use, a concept first developed by students and faculty at **Oberlin College**⁸⁶ (OH). Their Campus Resource Monitoring System (CRMS) allows anyone to see, for example, how much electricity is being used per person in one residence hall and compare that to energy use in another building. This tool, first developed by undergraduates, has expanded into a commercial enterprise, the Lucid Design Group⁸⁷ (founded by Oberlin graduates), which develops similar "dashboard" display systems for other campuses and institutions. Oberlin faculty recently won an

\$800,000 grant to develop a community-based resource monitoring system that will not only track energy use, but also a variety of other environmental parameters such as the water quality in a nearby creek. Student researchers will work directly on this project.

In April 2007, Oberlin added an eye-catching component to show dorm residents their building's overall energy use. Known as "Energy Orbs," these glowing spheres are mounted by the entrances of six halls and vary in color (green, yellow, red) depending on how much energy is being used. Students can see, as they walk in or out, how their dorm is doing without having to visit the CRMS display panel. Another variation on visual

feedback is at **Dartmouth College**⁸⁸ (NH). Along with graphs and numerical data showing energy use in residence halls, their GreenLite Dartmouth program also shows an animated cartoon polar bear whose mood and fate reflect current energy use. In times of low energy use, a happy, playful bear appears in displays mounted in dorm hallways or on the internet, desktop widgets and cell phones. As energy use increases, the bear becomes more distressed as its well-being is threatened. When energy use is too high, it sinks through disappearing ice and struggles to swim. The program's goal is a 15% reduction in energy use as a result of implementing this innovative tool.



The Energy Orbs in Oberlin College's residence halls glow green, yellow or red depending on the current level of electricity use. (Photo: Oberlin College) Resource use feedback does not have to depend on high-tech dashboards or other display systems. A student at the **State University of New York at Albany**⁸⁹ developed a website where the 7,000 resident students could check their building's monthly electrical consumption and compare it with others. Results from two semesters of the Albany Energy Campaign showed that students reduced their electricity use by 192,500 kWh and approximately 41 metric tons of emissions. For students living in apartments who pay a fixed electricity charge, campaign organizers developed a simulated billing system to show students their actual monthly usage, and volunteers conducted room audits with Kill-A-Watt meters to help high consumers figure out ways to reduce.

FOOD AND DINING

The sustainable foods movement resonates deeply in many student communities. From urging campus dining services to serve more local and organic foods to actually growing it themselves, students are helping change the way campuses eat, and ultimately reducing greenhouse gas emissions resulting from the many steps required to bring food from field to plate.

12. Student-Grown Food

On campuses nationwide, students have launched garden projects, which often start small but then expand as demand grows on campus and in the community for their fresh produce. For a few schools, student-grown food is part of the curriculum. At **Dickenson College**⁹⁰ (PA), a small garden was started as a class project in 1999 and grew in size to three-quarters of an acre with its vegetables supplying a local food bank. In 2007, the program expanded into the "College Farm," moving to a 20-acre property near campus. In 2008, it had six acres are in cultivation with five acres in pasture. The farm's manager, former student Jennifer Halpin, coordinates a crew of

cracking ice – which means energy use is high in the building being monitored at Dartmouth College. For a YouTube video about the GreenLite program, see http://www.youtube.com/ watch?v=gRnOVzetQmc (Photo: GreenLite Dartmouth)

A worried polar bear sits on

paid and volunteer student workers each summer and during the school year. Produce raised at the farm goes to members of a CSA (community supported agriculture), as well as the campus food service, and gross sales in 2008 were around \$28,000. Students and faculty at the **Maharishi University of Management**⁹¹ (IA) enjoy an organic vegetarian diet of locally grown food harvested daily from the student-run solar and wind-powered greenhouses. Their irrigation system uses captured rainwater, and a vermiculture (worm composting) system converts organic food wastes into fertilizer.

FROM CLIMATE EDU: Student-grown organic produce helps low-income residents of Missoula, Montana

The PEAS farm (Program in Ecological Agriculture and Society) is an urban agricultural "field station" for students at the **University**

of Montana. (PEAS is co-sponsored by Garden City Harvest, a nonprofit organization.) Through supervised internships under UM's Environmental Studies Program, 75–80 students a year are engaged in all necessary farm chores, from planting to harvest, on the 10-arce farm located two miles from campus. In 2008, the results of their labor—more than 20,000 pounds of organic produce—was given to the Missoula Food Bank, which had 11,000 client visits that year. Farm director Josh Slotnick works closely with the students and emphasizes their essential role. "The work is very real," he said. "If they don't weed the carrots, the carrots don't grow and others go without. The students feel they are contributing to the greater community. It's a transformative experience."

The organic farm at the **University of Nevada, Reno**⁹³ started in summer 2008 as an idea of two students in an environmental citizenship class. The university's Academy for the Environment contributed \$3,500 for student wages and equipment to help launch the project. At **Boston College**⁹⁴ (MA), organic produce grown by the Real Food BC group on the Brighton campus is shared through the college dining services. Student volunteers put together a 2008 report summarizing their progress and experiences, noting that in their first year more than 50 undergraduate and graduate students helped tend the garden, collectively spending more than 600 hours and harvesting more than 500 pounds of vegetables. And at **Michigan State University**,⁹⁵ students in the Institute of Agricultural Technology organic farming program manage a 10-acre student organic farm that produces more than 70 crops, including vegetables, fruits and cut flowers. As part of the program, they also run a farm stand in summer to sell their produce.

13. Local Foods in Dining Halls

To avoid the environmental and social costs of buying food shipped from thousands of miles away, students and staff have long advocated supporting local agriculture to supply vegetables and other foods to campus. Two important coalition organizations have grown out of the campus food movement: the **Community Food Security Coalition**⁹⁶ (also known as Farm to College) and the **Real Food Challenge**,⁹⁷ an organization founded and run by current students and professionals. Both organizations work extensively with student activists who are engaged in growing and serving local and organic foods on campus. CFSC conducts annual surveys of individual farm-to-college programs, and links to the data from over 130 colleges and universities is at *http://www.farmtocollege.org/list.php*. The **University of Montana-Bozeman**,⁹⁸ for example, reports spending \$300,000 annually on local farm products.

University of Montana student preparing the fields of the PEAS farm. (Photo: Garden City Harvest)





Growing a Career in Sustainable Market Farming

Farmers markets and community supported agriculture are booming in the United States, but it can take more than soil, sunshine and hard work to make real money. At **Johnson County Community College**⁹⁹ (KS), students learn from the experts in a new certificate program in Sustainable Agriculture Entrepreneurship (market farming). Over three semesters, students cover business skills, food safety, marketing strategies and more. They spend part of the program at partner institution **Kansas State University's** Horticulture Research and Extension Center for hands-on training.

At **Berea College**¹⁰⁰ (KY) students are engaged in all levels of the food system, including coordinating the purchase and delivery of products, researching the availability of local products, working on the 400-acre campus farm (crops and livestock) and conducting promotional and educational outreach. Students at **Augustana College**¹⁰¹ (IL) are a key part of the school's "Farm to Fork" initiative. They visit and work at nearby family farms for hands-on learning about sustainable food production. (For a student-produced video about the experience, see http://www.youtube.com/watch?v=XSKSZiYwQqc). Currently, four of these local growers help supply campus dining halls with fresh strawberries, lettuce, squash, apples, onions and other vegetables, and a collective of livestock producers provides beef products. According to Director of Dining Garry Griffith, during the fall 2009 harvest period around 80% of the produce needed by dining services was locally sourced, a testament to the success of the program. During the 2008–09 school year, his operation spent over \$100,000 on locally grown foods.

In the Midwest at **Iowa State University**,¹⁰² students held a "Real Food Picnic" in fall 2008 to develop support and awareness around local food issues. They are also working with campus dining services, which plan to increase local food purchases. By 2012, 35% of food served on campus will come from Iowa farms and be sustainably grown and/or certified organic. At **Linfield College**¹⁰³ (OR), to gain support for asking their dining services provider to serve more local foods, students in the Veggie Club held a "Real Food Taste Test" on campus, comparing processed commercial foods to local, organic, healthier options. The preferred items, not surprisingly, came from local producers.

FUNDING

Students who understand the fiscal limitations facing most campuses today have created new strategies to support campus sustainability projects that they think are important. Student fees, revolving loan funds and class gifts are three innovative ways that students have strengthened the support of sustainability and climate action projects on campus.

14. Student Fees

At many schools, students have voted to increase their own annual or per-semester fees, with revenues typically going to three types of projects: 1) purchasing renewable energy produced off-campus, 2) funding renewable energy and efficiency projects on campus, or 3) a hybrid of the two. Supplementing the examples featured below, a list of schools with such mandatory student fees has been compiled by AASHE¹⁰⁴ and includes over 30 examples from across the country along with supporting documentation.

In spring 2008, 82% of students at **Centre College**¹⁰⁵ (KY) voted to approve a \$20 annual green fee that supports buying renewable energy credits (RECs) from a local hydro-electric provider, and the college's board of trustees approved the fee shortly thereafter.



Ripe apples, picked by Augustana College student Tara Rogers on a nearby farm, are destined for the college dining hall.

(Photo: Jason Peters)

University of Colorado-Colorado Springs¹⁰⁶ students voted in 2008 (with 76% in favor) for a \$5 per semester fee to fund the installation of solar panels on university buildings. Over the five-year duration of the program, more than \$300,000 will be raised. As noted on a campus website, the fee will help UCCS "fight dependence on fossil fuels at a rapidly developing institution located in one of the sunniest states in the nation." And at the **University of Oregon**,¹⁰⁷ self-assessed student fees that generate approximately \$36,000 a year go toward the purchase of wind power and also fund energy conservation projects on campus. Known as the Energy Conservation and Alternative Futures Fund, students make recommendations on where the money is spent, with final approval from the university's vice president and provost.

Student fees are not always energy-related, but also address other needs on campus such as for recycling at **Montana State University**¹⁰⁸ and to support a sustainability coordinator position at **Bemidji State University**¹⁰⁹ (MN). At **Johnson County Community College**¹¹⁰ (KS) the student fee, which went into effect in fall 2009, will generate about \$300,000 a year based on a \$1.00 per credit assessment. As a student-initiated idea, more 700 signed a petition in support of the fee. Center for Sustainability Director Jay Antle notes the significance of that number: "Particularly at a commuter campus like JCCC, it's difficult to get students in large numbers to get involved in any sort of activity. So to have 700 actively show their support for this green fee is really a testament to their committee, and suggestions have already been made about the need for small wind turbines and composting on campus. Starting in fall 2008, **Prescott College**¹¹¹ (AZ) students assessed a fee on themselves of \$100 per year (for a total of \$100,000 annually) to support the salary of a sustainability coordinator and to fund a small grants program. The money has been used to pay for student-proposed campus projects, with the Sustainability Exploration and Education Development (SEED) committee deciding which ones to support.

The Tennessee Story: Bringing All Stakeholders to the Table

At the **University of Tennessee Knoxville**¹¹² (UTK), the group Students Promoting Environmental Action in Knoxville, or SPEAK, was eventually successful in establishing a student fee for clean energy at UTK, as well as several other universities in Tennessee. In its first three years, the Student Environmental Initiatives Fee generated about \$1.4 million for green power purchasing and energy efficiency upgrades at UT Knoxville. But the road to success had a few stumbling blocks.

Former student Jon Paul "J.P." Plumlee ('05), one of the student organizers at the time, explained that for students who attended, the first annual Southeast Student Renewable Energy Conference in 2004 was a pivotal point for building enthusiasm around renewable energy projects. After attending the conference, they came back to UTK to survey their peers on their interest in a green fee, then got over 1,500 signatures on a campus-wide petition supporting a measure that went to a campus vote. Marked by the largest student turnout ever, the measure passed with 60% of students supporting it.

The following summer, however, key administrators expressed their concern and said they would not support the fee. "This is when we learned the importance of communicating with all players on campus," said Plumlee. "So, with three student activists working with the chancellor over the summer, we settled on a pilot fund of \$100,000 for campus projects that students could submit proposals for." This allowed several lighting retrofit projects to start and for the chancellor to see that students were serious about their proposals—and the green fee.



Students spell out their support for renewables at the University of Tennessee. (Photo: Tabatha Freeman)

continued on next page

In 2005, UTK hosted the second annual Southeast Student Renewable Energy Conference. "From there, the ball just kept rolling, including getting our green fee formally passed," said Plumlee. This gathering of students from across Tennessee and the Southeast generated collaborative projects such as a Call-In day to support establishing similar green fees at **Middle Tennessee State University** and **Tennessee Tech University**. Plumlee said of these events, "This was a great demonstration of the power that students have." Students in Tennessee have since created the group **Tennessee Alumni and Students for Sustainable Campuses** (TASSC), which has a goal of seeing 100% green power on all 26 campuses in Tennessee and for all to have a green fee. So far, they have succeeded with getting green fees on five of the six first targeted campuses, which collectively generate \$2 million dollars annually across the state.

STUDENT-TO-STUDENT ADVICE

How to Conduct a Successful Campus Sustainability Project Jon Paul "J.P." Plumlee, Class of 2005, University of Tennessee Knoxville¹¹³ Project: Green Student Fee

- **1.** Be sure to communicate with all of the players, especially anyone in the administration who may have the final say.
- **2.** Gather people together! Our annual student conferences get everyone in the same room to talk. This can lead to some amazing projects.
- **3.** Your main opponents may become your allies. For example, our chancellor first opposed our green fee, but later put \$100,000 towards a pilot project and then went on to sign the American College and University Presidents' Climate Commitment (ACUPCC).

15. Revolving Loan Funds

A growing number of schools are creating bank-like funds that extend a line of credit to individuals and departments to cover the costs of a project, with payback calculated to both restore and grow the fund. One of the earliest funds—and the nation's largest—is **Harvard University's**¹¹⁴ (MA) Green Campus Loan Fund with \$12 million in capital. It has funded over 150 projects with a return on investment averaging 27%. Seeing the potential for students to be involved in creating such funds, two students from **Macalester College** (MN) wrote a how-to manual called *Creating a Campus Sustainability Revolving Loan Fund: A Guide for Students*,¹¹⁵ which was published in 2007. One of the student authors, Timothy Den Herder-Thomas, explained in a press release the central aim of his publication: "Our guide is specifically targeted to help students at other campuses establish revolving loan funds that include substantial student involvement."

Students at **California State University, Monterey Bay**¹¹⁶ created a loan fund in 2006 called the Energy Innovations Fund (EIF), which was set up to provide support on a competitive basis for campus energy efficiency projects. Their first project in 2006 helped pay for efficient overhead lights on the basketball court in CSUMB's sports center. The EIF was able to pay for four fixtures at 5% interest, recouping their investment plus interest in 18 months. By fall 2009, the fund was up to around \$10,000, with some campus staff contributing regularly through payroll deduction. The Sustainability Revolving Fund at **Carleton College**¹¹⁷ (MN) gives students access to resources to use toward campus projects that reduce greenhouse gas emissions. Launched in 2007, its initial



"There was a real strong group of students here when the fund was established. They pushed all the right buttons, got in front of all the right people."

-Mike Lerch, Manager of Energy and Utilities, California State University, Monterey Bay funds of \$35,000 came from the Carleton Students Association, whose loan was matched by the college. In 2008, former student Jim Haughn, class of 1983, raised \$14,000 to add to the fund by riding his bike from Ohio to Northfield for his 25th class reunion. As of November 2008, the SRF was up to \$70,000. Proposed projects require a detailed application showing a payback of preferably less than six years to maximize the amount returned to grow the fund.

16. Class Gifts

As students prepare to graduate, their class often chooses to leave a gift for the institution as part of their class legacy. More frequently, students are deciding on gifts that have a sustainability message. And in at least one instance, an individual student made such a gift.

The class of 2008 at the **University of Delaware**¹¹⁸ provided a gift that went to support the completion of a greenhouse gas inventory and a campus sustainability website. The class of 2009 continued this theme, raising a record \$100,000 for solar panels to be installed on campus. As noted in the gift announcement, Heather Barron, senior associate director of annual giving, called the class "pioneers in the university's efforts toward sustainability" who offer a positive role model for others. In 2008, seniors at **Williams College**¹¹⁹ (MA) broke tradition with their class gift (typically such gifts are unrestricted) by requiring that the money be used to create a new fund to support sustainability projects at their alma mater. At **Cornell University**¹²⁰ (NY) in 2006, a graduating senior who had been involved in campus renewable energy projects personally contributed \$10,000 to help fund a 15-kilowatt solar installation on Day Hall. The panels, the first to be installed at Cornell, have been used by many classes as an educational resource.

GREEN BUILDING

"Green" is one of the most widely used terms associated with campus sustainability projects. Generally meaning environmentally responsible or environmentally preferred, green building is an area where campuses have the opportunity to put the other type of "green"— meaning dollars—to work in ways that help promote a clean, sustainable economy. At schools nationwide, students are urging their administrations to put their "green" to good use by implementing policies for healthy, energy efficient, high-performing buildings.

17. Building Design and Construction

Campuses across the country are touting the many benefits of their latest green buildings¹²¹ including structures that are LEED certified (Leadership in Energy and Environmental Design)—especially their significant life-cycle savings. In some cases, students have been involved in different stages of the building process, from design planning to curricular connections. This is a huge and important arena for campus sustainability, of course, with buildings directly or indirectly responsible for 70–90% of a school's carbon emissions. If more students can get involved in campus retrofit or new construction initiatives, they will become much better equipped to take action in future decades to help transform the nation's stock of domestic, institutional and commercial buildings to energy efficient, healthy places to live and work.



Contractor installs PV panels atop Day Hall at Cornell University, 2006. (Cornell University Photography, photo by Lindsay France)

Campus Buildings & Grounds Blog-Chronicle of Higher Education

For an entertaining "daily coverage of campus architecture, facilities and sustainability news"including an extensive archives of past posts-see this popular blog by veteran Chronicle reporters Lawrence Biemiller and Scott Carlson. Stories cover new buildings, campus development plans, student initiatives and much more. See http://chronicle.com/blog/Buildings-Grounds/4 Northland College¹²² (WI) students co-designed a 114-student residence hall that opened in 1998, and which also serves as a teaching tool, providing everyday opportunities to learn about such things as energy efficient construction, renewable energy systems and composting toilets. St. Lawrence University's¹²³ (NY) Johnson Hall of Science earned a LEED-Gold certification in 2007. It was the first certification at that level for a college campus in New York. The resource-saving features of this 115,000-square-foot lab building were developed in a planning process that involved students and faculty throughout the design phase.

The **Georgia Institute of Technology**¹²⁴ took sixth place in the 2007 Solar Decathlon with its student-designed-and-built experimental house. The 800-square-foot structure was moved onto the campus in 2008 and is being used as a classroom and learning lab for sustainable power. Its 39 photovoltaic panels produce 3,600 watts of electricity, with panels on the roof tilting to catch the



Studio 804 architecture students at the University of Kansas designed and built this modular building, which became the new arts center in Greenburg.

(Photo: David McKinney / KU University Relations) sun in any season. A diverse group of more than 125 students were involved in the project from Georgia Tech's colleges of architecture, engineering, sciences and management. (The Solar Decathlon, sponsored by the U.S. Dept. of Energy, is held every two years with 20 teams competing. Most come from a single institution, but some are multi-school teams.)

Student involvement in green buildings can also extend beyond the campus. A cohort of 22 **University of Kansas**¹²⁶ architecture graduate students saw an opportunity to help fellow Kansas residents affected by a spring 2007 tornado by designing and building prefabricated housing modules with green-design features such as wind turbines and solar-electric panels, thermal massing and geothermal heating. The seven modules were

constructed in Lawrence, Kansas, and delivered to Greensburg, located 400 miles away, on the one-year anniversary of the tornado that devastated the town. The 1,600-square-foot "Sustainable Prototype" building, which now serves as an arts center, is a model for the people of the community of how building green might be achieved in homes and other structures. Upon its completion, the Arts Center became the first LEED-Platinum building in Kansas, as well as the first designed and built by students.

Although not directly tied to greening a particular campus, there are new outlets for student creativity in applying green building ideas elsewhere. The national Lifecycle Building Challenge, whose aim is to promote innovative ideas for buildings that can readily be deconstructed and their components reused, runs an annual contest for students and professional firms. Student winners in 2008 came from **Carnegie Mellon University** (PA), **Illinois Institute of Technology** and **Washington University in Saint Louis** (MO),¹²⁷ with Carnegie Mellon's Plug and Play design entry also winning the Best Greenhouse Gas Reduction Design award. Students at **Lafayette College**¹²⁸ (PA) received top honors among undergraduate students in the United States Green Building Council's Natural Talent Design contest, which challenges students and professionals to create a sustainable learning environment and revitalize park space in New York City.

GREEN PURCHASING

Colleges and universities are major purchasers of goods and services, which include custodial chemicals, food service supplies, office products and furnishings, bookstore merchandise, laboratory and research equipment, fleet vehicles, maintenance supplies and much more. In all of these areas, greener options are becoming more widely available as well as more cost-competitive. Copy paper with 100% post-consumer recycled content, for example, is now on par with virgin paper in both quality and cost. While individual purchases can be made with sustainability in mind, the preferred approach is for green products and purchasing to be required across the board in campus policies and contracts.

18. Purchasing Policies

For just about every item purchased by a college or university, a formal policy spells out the expectations of the exchange. At the **University of Vermont**,¹²⁹ students organized under the group Forest Crimes Unit, led by Basil Tsimoyanis ('09), successfully lobbied the university to change a purchasing policy for custodial paper products. Working with the purchasing unit for Residential Life, students conducted research and product trials and finally succeeded in getting the university to agree to buy only "green certified" toilet paper and paper towels made from 100% post-consumer recycled paper, bleached without chlorine, and that meet other stringent environmental standards. In a press release about the initiative, Leslye Kornegay, Director of Custodial Services, noted the importance of the student voice. "We have a paradigm shift here, where the students are really our partners," she said. "These students had legitimate concerns, and we take that into account in our business decisions." This project was part of a nationwide effort in 2008, organized by Greenpeace, for schools and businesses to avoid tissue paper products containing paper fiber harvested unsustainably from North American boreal forests.



The Forest Crimes Unit banner at the University of Vermont calls for student action during pilot testing of paper products in April 2008. (Photo: Forest Crimes

Unit, UVM)

HABITAT MANAGEMENT AND RESTORATION

Students can play an important role by helping protect, restore and manage both the landscaped and natural environments on and near their campuses—places that, among many other benefits, offer homes and shelter for wildlife. A Campus Ecology guidebook devoted to this topic is scheduled to be published in 2010. It will cover sustainable landscaping, natural areas management and restoration, green roofs, stormwater management, campus farms and local foods, and carbon sequestration.

19. Landscape Management and Restoration

Natural areas on campuses—ranging from pristine ecosystems to renaturalized habitats—can provide breeding sites, food and corridors for wildlife migration, all of which will help native species survive the ecological disruptions predicted by global warming. At **Sweet Briar College's**¹³⁰ (VA) 3,200-acre rural campus, 400 acres have been formally designated as nature sanctuaries. Comprised of ten diverse areas, the first sanctuary dates back to 1958. These sites are used extensively for class projects and student research, including a study of spotted salamanders (*Ambystoma maculatum*), which in a single night in March 2007 tallied over 500 individuals making their way to a breeding pond on campus.

In the Pacific Northwest, a 58-acre wetland restoration along North Creek, jointly managed by the **University of Washington Bothell** and **Cascadia Community College**¹³¹ (WA), was one of the biggest such projects in the region. Construction began in 1998 that involved removing drainage ditches and levees, re-channeling the creek and reintroducing native species. According toUW Director of Facilities Services Tony Guerrero, the area is a living lab that is rapidly returning to a fully functioning wetland. After only a short time, beavers moved into the area and many bird species now breed there. The site is widely used for classes and nature walks, and the U.S. Army Corps of Engineers uses it as a model to show how similar restorations should be done. The project was featured on an NWF Campus Ecology webinar in 2008; the archived show is available online.



A successful wetland restoration fills a bend in the highway at the University of Washington Bothell. A boardwalk (white line) leads to the heart of the reserve. (Photo: © 2006 George White Location Photography)



Students from the University of St. Thomas planted hundreds of trees on Goat Island in Houston.

(Photo: Environmental Science and Studies Department, University of St. Thomas) Students and faculty at the **University of St. Thomas**¹³² (TX) connect to the land every time they plant trees on campus and in Houston as part of a scheme to grow their way to carbon neutrality. Starting with 700 trees planted in 2007–08 and 3,700 more in 2008–09, this long-term effort led by the Environmentally Concerned Organization of Students (ECOS) aims eventually to plant 25,000 trees—the number they calculate will offset the university's energy use (electricity plus natural gas for heating and cooling). Approximately 275 students have been involved in the planting parties in the first two years. And the city appreciates the effort, according to a news release about the project. "These trees add to the beauty of our city, and they also clean and cool our air, manage rainwater, prevent erosion, shelter wildlife and dress our views in green," noted John Cutler, President of Trees for Houston.

The Sequestration Question

Can trees or campus natural areas count toward reducing a school's carbon footprint? Offsetting carbon emissions by tree planting and similar activities is complicated by such issues as additionality, age of the trees, permanence of carbon storage and the imprecise science of sequestration. Protecting and restoring habitat on campus or on campus-owned lands is vitally important, of course—for wildlife survival, water quality protection, and recreational and educational opportunities—but the calculation of carbon offsets and sequestration is still being debated. An article by Jennifer Andrews, Campus Program Manager at Clean Air-Cool Planet, offers helpful perspectives. See "A Recommendation on How to Account for Carbon Sinks in Campus Forests or Lands."¹³³

MIXED MEDIA

Students often have a natural flair for bringing enthusiasm and creativity to campus sustainability projects. From guerrilla theater to video contests, students are spreading the message about their work and the issues they care about.

20. Sustainability Resources and Tools

Creating sustainable living guides for life on campus and beyond is a popular project on many campuses,¹³⁴ because it simplifies the task of getting a consistent and complete set of information to incoming students. A guide recently produced by students at **Indiana University**, **Bloomington**¹³⁵ features topics ranging from energy and water conservation to sustainable food and alternative transportation practices. In a news release about the guide, IU student organizer Kevin Pozzi ('09) explains, "Since the concept of sustainability covers such a wide range of issues, it can be difficult to know where to turn when choosing to live a more sustainable lifestyle—

especially when leaving home for the first time. My goal was to make it as easy as possible for students to live more sustainably on campus, and just as importantly, to take this knowledge with them when they graduate from IU."

To get a handle on the amount of greenhouse gases produced by lifestyle and other choices, carbon calculators have been developed for individuals, homes and offices. Creating a calculator for residence hall rooms was the goal of a 2007 student project at **Rice University**¹³⁶ (TX). Initially a class project, this tool was made available to Eco-Reps in the residence halls at Rice to help students understand their individual campus carbon footprint.





21. Films, Games and Art

Students have access to more forms of media than ever before, with many avenues available for sharing them—especially on the internet. With the goal of raising awareness about wind energy in their state and exploring the ongoing controversy over wind energy in the Blue Ridge Mountains, a trio of **Appalachian State University**¹³⁷ (NC) students created a documentary in 2008 called "Harvesting Wind: North Carolina's Alternative Progress." (To view the 18-minute video, see http://www.youtube.com/watch?v=jfgmChnMilo) Focusing their lens on the campus, **Furman University**¹³⁸ (SC) freshmen created a film called "The Lifestyle Project," which documents first-year students who sought to reduce their ecological impact by making changes in their daily lives, including eating a vegetarian diet, reducing water and energy consumption, and not driving. The film won the top prize in a contest sponsored by the Student Conservation Association and Mazda.

Recognizing the popularity of video games, 12 students at **Ball State University**¹³⁹ (IN) collaborated in a Nature at Play seminar in 2007 to create a game called "Navigating Nature." Its aim was to teach children about ecosystems and how to care for them. According to an online description, the game "follows an eight-year-old boy as he steps into the dying Forbidden Forest. While there, he must bring the once-thriving ecosystem back to life." A video about the process of making the game describes Ball State's open-ended immersive learning approach used for the seminar.

Focusing on a more traditional medium, a dozen art students from the **University of Maine at Augusta**¹⁴⁰ contributed works for a gallery exhibit called "Informed Choices: Global Warming." It opened in January 2008, at the Harlow Gallery in nearby Hallowell. Exhibit visitors were encouraged to give a monetary donation that went to purchase offsets for fuels and other materials used by the gallery.

RECYCLING AND WASTE REDUCTION

As detailed by the U.S. Environmental Protection Agency,¹⁴¹ the manufacture, distribution, use and disposal of products all result in greenhouse gas emissions. Although solid waste contributes only a minor part of a campus carbon footprint (only a few percent of the total), waste reduction and recycling can help reduce those emissions, plus they save energy and can even increase carbon sequestration by leaving forest resources intact. Students have been key players in launching recycling and composting programs across the country for the past three decades; and they continue to help waste management staff find ways to improve, such as hosting zero waste events, move-out collections, and by going "trayless" in dining halls. Students are also asking campuses to remember the first of the three Rs (*Reduce*, Reuse, Recycle) by reducing waste at the source, as in the case of water bottles, coffee cups and other disposable items.

22. Recycling Programs

While many campuses have had comprehensive recycling programs in place for years, other schools are just now getting on board. Some programs mark their origins to a student-led effort, often with students performing all the steps of the recycling process. Warren Wilson College¹⁴² (NC) is an example of a comprehensive, student-driven recycling program that began back in 1981. Evolving from a one-student operation to its current crew of 20 students, the program collects and sorts a wide array of recyclables and also composts campus food waste, distributes reused materials through a campus Free Store and surplus program, and markets hand-crafted notebooks created from waste paper. This award-winning program also offers educational workshops for area schools and organizations.





"I joined the seminar to gain experience programming and designing software. I've learned that biology and ecosystems are much more complex than they appear, as well as more interesting than I previously thought."

-Alex Corn, Sophomore in Computer Science at Ball State (quoted on a website featuring students who worked on the "Navigating Nature" team)



Students at Tennessee State University launched a paper recycling initiative, along with an outreach campaign to the campus and surrounding community.

(Photo: Christopher Norwood)



Student at Texas State University adding cafeteria organics to be mixed into the composting windrow. (Photo: Tommy Bachelor)

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"As a student, I feel very fortunate to be a part of this program. One of the best parts is that we get to educate 30,000 students on recycling their organic matter. We do this by having two student coordinators and many student volunteers. We actually wear referee jerseys in the cafeteria and demonstrate to the students how to source-separate their wastes. It is very important that students learn about this, so they take it home with them and in their lives beyond school." -Jason Sanders, Graduate

Student in Agricultural Education, Texas State University Students at **Tennessee State University**¹⁴³ implemented a pilot paper recycling program in 2005–06, starting out with ten bins located throughout campus. Some of those students later helped bring a campus/community recycling center to TSU, which processes paper, plastics, cans, bottles and cardboard. When a Green Committee consisting of 60 students, faculty and staff was created at **National-Louis University**¹⁴⁴ (IL) in 2007, there was no recycling on any of NLU's campuses in the Chicago area. Over the following year, extensive recycling programs were put in place at all five schools.

In 2009, 510 campuses representing all 50 states participated in **RecycleMania**,¹⁴⁵ a contest promoting campus waste reduction activities. Schools are evaluated over a 10-week period across several categories to find those that produce the least quantity of trash per person, collect the largest amount of recyclables per capita, collect the largest amount of total recyclables, and that have the highest recycling rate. Contest organizers claim that 69.4 million pounds of waste were diverted or composted in 2009 (up from 58.6 million pounds in 2008). While on some campuses students are involved with collection of materials, more commonly the role of students is promotion and peer education around recycling issues—and there's nothing like an entertaining contest to get students to pitch in.

23. Composting Programs

Because they witness it every day during meals on campus, food waste is often a target of student concern and action. At the **University of Missouri**¹⁴⁶ in 2008, graduate student Adam Saunders started a pilot composting program that captured 2,000 pounds of food waste per week from a campus dining hall. The scraps were hauled via bicycle by a small crew of students to a nearby community garden where the end-product was used to enrich the soil. In a press release about the project, Saunders notes, "We have a chance to affect the way the university runs. We push the envelope."

The Bobcat Blend composting project at **Texas State University**,¹⁴⁷ created by graduate student Jason Sanders, is both a research and education initiative. A large-scale windrow composting facility (receiving a mix of campus food, cardboard and paper waste, poultry litter from a nearby farm and water hyacinth plants) includes a study on whether the composting process can destroy the seeds of water hyacinth, an invasive aquatic plant, while producing mature compost. The education component is directed toward diners in the student center where signage and student volunteers help inform students of the composting initiative at the start of each semester. Campus recycling and waste management staff predicted that with just two of the seven dining halls involved, the composting program could cut waste hauling in half, saving as much as \$17,000 per year. Finished compost will be added to flower beds and landscaped areas on campus.

Researching Alternatives for Composting on Campus

Sarah Campbell, a student at **Western Michigan University**,¹⁴⁸ in a spring 2007 course on Appropriate Technology and Sustainability, compiled data and case study information about different composting methods used by other campuses. The aim of her research was to provide background for a pilot project on composting at WMU. According to her report, approximately one pound per student per day of organic kitchen waste was produced at the university which, at the time, was using in-sink grinders to send it down the drain. She analyzed the pros and cons of windrow, in-vessel, vermicomposting and campuscommunity partnership systems and produced a 20-page report that is available online (see endnote). Exploring a composting method that can work on a smaller scale indoors, Campus Ecology Fellowship awardee Phil Aroneanu and another student spent spring semester 2004 testing a worm composting system for **Middlebury College**¹⁴⁹ (VT). Hungry worms, kept warm in a greenhouse during the school year, turned many bags of dining hall scraps into rich compost that was later applied to Middlebury's organic campus garden in summer. That fall the students invited and hosted internationally known "worm woman" Mary Appelhof to give vermicomposting workshops. As a class project, students at **SUNY Brockport**¹⁵⁰ (NY) explored the possibility of composting another waste stream on campus: discarded paper towels from residence hall bathrooms. Based on a 2008 pilot project in one residence hall, the two students determined that there is potential for the project to expand if staff are willing to do the collecting and transporting to the on-campus composting site.

24. Zero Waste Events

The practice of "zero waste" aims for a level of recycling and composting—and avoiding as much waste as possible—so that nothing needs to be sent to the landfill or incinerator. From campus concerts and festivals to major sporting events, students are critically examining the amount of waste generated by these events and developing strategies to eliminate it. The student-run Whole Earth Festival at the **University of California, Davis**,¹⁵¹ has achieved near–zero waste status, with a 97% collection/recycling rate. Over the years, students have increased the amount captured at the festival through composting and the use of washable dishes.

STUDENT-TO-STUDENT ADVICE

How to Conduct a Successful Campus Sustainability Project Derek Downey, Class of 2009, University of California, Davis¹⁵² Project: Whole Earth Festival Zero Waste Program

- 1. If you've never been at an event doing zero waste, go and to see how they do things. Lots of people come to the Whole Earth Festival to learn how we do our zero waste program and take lessons back to their own schools. If you can't attend such an event, call the festival or others who have done it before and we can walk you through it.
- 2. Before composting can even be considered, you must find a place willing to take it. We do most of it ourselves on campus year-round through the student-funded and student-directed Project Compost unit.
- **3.** It is crucial to recognize that it takes a lot of work to pull off what we did and it also requires many volunteers or paid staff to make it happen. We rely solely on volunteers and make it fun for them and worthwhile (they get free food and T-shirts and become part of the family).

Tailgate parties are a fact of life at many campus sporting events and generally result in mountains of trash. Students on several campuses have taken up this cause, creating teams to collect recyclables and encourage tailgaters to reduce waste. Student Sustainability Alliance members at the **University of Central Florida**¹⁵³ started the "Knights Pick Up" roving recycling service on football game days, when 45,000 fans descend on their campus. By interacting with fans and urging them to recycle, the enthusiastic students played a critical role in increasing the recycling rate on game days by more than 70 percent from 2007 to 2008. At the **University of Notre Dame**¹⁵⁴ (IN), students kicked off the first-ever football game day recycling initiative in 2007. After this successful pilot program—which collected 3,400 pounds of recyclables from tailgaters during six games—the university greatly expanded the program. During the 2008 football season, special Game Day Recycling bins were placed not just around the stadium but throughout the campus, and students handed out blue recycling bags in the tailgate areas.



Student Phil Aroneanu and his worm composting bins at Middlebury College. (Photo: Phil Aroneanu)



Waste separating station at the UC Davis Whole Earth Festival. (Photo: Derek Downey)



On football Saturdays in 2009, Notre Dame students hand out blue bags to tailgaters for Game Day Recycling. (Photo: Erin Hafner, University of Notre Dame Office of Sustainability)



"Before I was active with GreeND [student group], I saw the world as impenetrable. I thought that the forces that ran Notre Dame ran Indiana and the country, and were too big and highly structured for anyone to change the way things were done. Getting Game Day Recycling started revealed to me that the power of a group of motivated students can be an incredible force for change. At Notre Dame I have found that the "powers that be" are simply people just like me." -Connor Kobeski, Class of 2010, University of Notre Dame



Kendall Singleton ('07) and Suzanne Pinckney ('06) organized a food waste study at a University of Virginia dining hall.

(Photo: Kendall Singleton)

Notre Dame's Office of Sustainability reports that 73 tons of recyclables were collected in 2008 a vast increase over the previous year. Game day recycling not only engages many student volunteers, but its waste reduction message reaches of thousands of visiting fans.

25. Trayless Dining

Removing trays from dining halls to reduce waste and conserve water and energy is a relatively new idea that is gaining traction at schools around the country. At the **University of Virginia**,¹⁵⁵ student Kendall Singleton ('07) was dismayed by the amount of waste she saw in campus dining halls. With Dining Services support, she organized a series of food waste audits in 2006, which proved that the use of trays contributes to greater amounts of waste food. The reason: Students tend to load trays with more than they can eat. The study convinced Dining Services to remove trays from the halls, requiring students to hand carry the food items they select. Although not everyone was happy with the idea, a survey showed that 86% of diners were willing to go trayless.

Hold the Tray, Please...

A 2008 <u>ClimateEdu</u> story¹⁵⁶ explored the benefits and challenges to trayless dining. One of the advantages is reducing wasted food, of course, measured at about 25% on average across many schools.



Another is cost saving, which at **University of Maine at Farmington** was estimated at \$57,000 a year and at **Grand Valley State University** (MI), \$79,000 annually. A few students complained about the extra effort from going trayless, and others thought their housing costs should be lowered due to the savings, but overall most students have been sold on the idea.

One of the benefits at UVA is significant water savings (estimated at around 33%) and less detergent needed due to fewer dishes overall. Kendall added, "Not quite as tangible but just as important is the fact that tray removal officially came into effect after a majority of students were shown to support such an effort; environmental conservation is truly starting to resonate with the larger student body." Results from this trayless dining initiative were published in 2009 in the *Journal of Hunger & Environmental Nutrition*. Two major campus dining services providers, Sodexho and Aramark, are encouraging going trayless.¹⁵⁷ The blog **Wasted Food**¹⁵⁸ lists over 30 schools that have made the switch or have experimented with trayless dining, including **St. Joseph's College** (ME) and **Palm Beach University** (FL).

STUDENT-TO-STUDENT ADVICE

How to Conduct a Successful Campus Sustainability Project Kendall Singleton, Class of 2007, University of Virginia¹⁵⁹ Project: Greening the Dining Services

- 1. Get others to help! I initially approached Dining Services as a lone student wanting to make improvements, but had a lot more success when I gathered together a group of like-minded students and then met with dining staff again.
- 2. Propose a specific project. I had the most success when proposing a limited project. Tray scraping, for example, was tangible and awareness-building in its focus.

STUDENT-TO-STUDENT ADVICE continued

3. Build momentum. Our ideas were jump-started by a sustainable dining web conference I organized. Having an event like that and seeing success stories from other universities really gave our group renewed momentum.

4. Stay grounded in the practical, rather than getting too lost in the theoretical.

5. I can't overstress the importance of getting on the same side as the administration you are trying to change. Dining administrators have become some of my biggest allies; implementation and follow-through of UVA's Green Dining projects have ultimately depended upon their support.

26. Move-Out Programs

At schools across the country with on-campus housing, there are growing amounts of usable "stuff" left behind when students vacate at the end of the year. While savvy scavengers have long known about the free pickings, many campuses have been rethinking the move-out period with the aim of reducing waste and making sure that perfectly good clothing, household items and food end up in a better place than the landfill. Some campuses collect unwanted items in the spring and sell them back to incoming students in the fall, often with proceeds going to local charities. **Ohio State University's**¹⁶⁰ Dump and Run program, organized by Students for Recycling, has been operating this type of recycling strategy since 2004. Usable items it retrieves in spring are sold during fall semester's Welcome Week at a big yard sale.

Suffolk University¹⁶¹ (MA) also has a Dump and Run program. In 2008, students donated over 5,500 pounds of usable items which were given to two local charities that provide food, clothing and household supplies to needy families. At **Purdue University**¹⁶² (IN), Project Move Out has been harvesting unwanted student cast-offs since 2000, at first collecting only from on-campus housing. Student volunteers now gather personal and household items from off-campus student neighborhoods as well as residence halls. The goods are then sorted and made available to community members in need who "shop" at no cost at the local armory.



Items donated to Chuck it for Charity at the University of Virginia. (Photo: Betty Wooding, University of Virginia Facilities Management)

Chuck it for Charity at the University of Virginia¹⁶³

(The following summary from UVA's website shows the success and broad reach of their program.) "Through **Chuck it for Charity 2009**, we diverted approximately 28,500 pounds of waste from landfills in Virginia. UVA students donated 3,360 pounds of clothing and 345 pounds of bedding and linens, along with dozens of refrigerators, bicycles, microwaves, vacuums, desks, computer printers, couches and futons, tables, appliances and other items. 485 pounds of nonperishable foods were donated along with over 3,600 pounds of carpeting. Fourteen organizations participated in the event this year, the highest number of participants we've ever had! The materials donated will be used by the charitable organizations in the Charlottesville community and across the world, as some groups send items overseas to areas in Africa."

27. Source Reduction

Avoiding or reducing waste at the source—and thus not having to deal with it later—is the simplest approach to reducing its impact. Students have devised ways to make actual reductions as well as encourage waste-free behaviors through education campaigns. At **St. Norbert College**¹⁶⁴ (WI), students in the Environmental Club lobbied successfully to get the dining halls to offer reusable "To-Go" containers as an alternative to disposable foam clamshells, beginning in fall 2008. The containers cost \$5 and students can exchange them for a clean container whenever they go through the food line. Students in the Penn Environmental Group at the **University of Pennsylvania**¹⁶⁵ staged a public demonstration in fall 2008 to call attention to the negative environmental impacts of bottled water. They placed 1,000 empty plastic bottles (borrowed from campus recycling bins) upside down on bamboo skewers stuck into the ground, arranging them in a cemetery-like grid pattern on the high-traffic College Green. The display was accompanied by eye-catching signs to educate students about the downsides of the bottled water industry—with the aim of inspiring them to choose refillable water bottles over disposables. An opinion editor of the *Daily Pennsylvanian*, a student newspaper, later wrote about how the display prompted his conversion from skeptic to believer.

Students on many campuses are encouraging students, faculty and staff alike to "Bring their Own" mugs, water bottles, bags and more. Student Eco-Reps at **Mount Holyoke College**¹⁶⁶ (MA) organized a "No Cups Week" in 2008, when all disposable cups were removed from dining areas for seven days to encourage use of reusable mugs. According to the organizers, in one semester more than 126,000 disposable cups are used in dining halls and the amount of energy and resources needed to produce 24 one-time-use cups is equivalent to one stainless steel reusable mug. At the **Maryland Institute College of Art**,¹⁶⁷ senior graphic design major Lindsay Orlowski designed a poster advertising the college bookstore's new "Bring Your Own Bag" campaign, launched in February 2008. The bookstore stopped providing disposable bags for customers, though it does offer a bin of reused plastic bags for shoppers who forget to bring their own.

In another education initiative, students in several classes at **Michigan State University**¹⁶⁸ collaborated with the campus Office of Sustainability on a series of six posters promoting sustainable practices, all of which encourage reducing waste and pollution. They used puns based on familiar political phrases—with release timed for the fall 2008 national election—such as "I Like Bike," "Read My Lips: No New Bottled Water" and "Wind Power to the People." Although timed for the fall campaign, the posters were intended to have a more enduring impact. On the website where the posters are available for free download, Land Policy Institute Communications Manager John Kinch, who helped students develop the posters, expresses this aim: "Sustainability . . . is a global, bipartisan issue that we hope people stay engaged with long after this election season is over."

RESIDENCE HALLS

While students attend college and university primarily for the coursework, those who live on campus spend more time in their living quarters than they do in classrooms. These residence halls, not surprisingly, have become learning laboratories for many campus sustainability actions; often all it takes is one or two motivated students with a bright idea to get something started. From peer outreach programs to inter-hall energy competitions to model dorm rooms, students have been engaging with one another and with campus faculty and staff to reduce waste, conserve resources and spread the word about sustainability. And beyond improving the performance of traditional dorm buildings, students have also been active in creating and experimenting with sustainable living situations and "eco-houses" at many schools.

28. Student Eco-Reps

Outreach to students is a central goal of many campus sustainability programs. One strategy uses a highly effective peer-to-peer education approach to bring the sustainability message to students living on campus. Often known as "Eco-Reps,"¹⁶⁹ these programs enlist students to be educators and leaders in their residence halls, encouraging behaviors such as waste reduction and energy



One of six poster designs created by students to promote sustainability and source reduction at Michigan State University. (Photo: Course Project, Michigan State University) conservation. The peer-to-peer sustainability outreach idea was developed at several schools, with one of the earliest programs at Dartmouth College¹⁷⁰ (NH), which in 1998 began placing Eco-Reps in many campus departments, as well as residence halls. The University of Virginia¹⁷¹ initiated a program in 2000 focused on recycling, and in 2008–09 had 18 student "Conservation Advocates" working in the dorms. Tufts University¹⁷² (MA) started its Eco-Rep program in 2001 and created a how-to manual in 2006 for other schools interested in developing one. There are now over 40 such programs across the country listed in an AASHE directory.¹⁷³ An active email listserve, conference workshops and the first national student Eco-Rep symposium in fall 2009 are ways that these programs network and share ideas.

Skidmore College¹⁷⁴ (NY) began an Eco-Reps program in the 2008–09 school year. Its ten paid Eco-Reps worked four hours a week raising environmental awareness among students. Five of the Eco-Reps also served as mentors for students in the First-Year Experience seminar, helping them learn about sustainability initiatives on campus, as well as how to plan and implement projects. In a news release about the program, student Laura Gruberg voiced her enthusiasm, "When I first heard about the Eco-Rep program, I was excited because it showed not only that the school was ready to commit to a more sustainable, efficient residential life and overall campus, but that the administration had enough faith in the students to let us lead the initiative."

At Rice University¹⁷⁵ (TX), an EcoReps program was launched in 2008, due in part to students successfully submitting an internal grant proposal for seed money to help pay for nine EcoReps, one for each residential college. EcoReps have six primary duties: facilitating recycling, reducing food waste, conserving energy, promoting environmental issues, maintaining contacts with key staff members and administering the Green Dorm Initiative (which certifies that rooms meet certain requirements, including thermostat limits). The goal of the program is to support itself financially in the future through cost savings from lightbulb swaps and reduced energy loads. Among the program's first initiatives were the distribution of thousands of CFLs and hundreds of recycling bins to fellow students. Taking the sustainability message to the broader campus, Rice EcoReps also led the 2008 RecycleMania effort. Sustainability Director Richard Johnson described one of their projects: "As an awareness activity they strung dozens of plastic bottles from an oak tree, representing just two hours of plastic bottle consumption on campus."

The University of Vermont¹⁷⁶ Eco-Rep program, established in 2004, had a crew of 35 (fall semester) and 24 (in spring) student reps in 2008–09. Each year an extensive evaluation is conducted to explore ways to improve the program and to help students get the most out of the experience. The UVM program is the primary subject of research for Christina Erickson (coauthor of this publication), a doctoral student at the school. While student Eco-Reps programs are gaining popularity on campuses across the country, no one has yet thoroughly examined



the effectiveness of these programs, to see if they truly meet their proposed outcomes. Focusing on the University of Vermont program and drawing on the experiences of campuses elsewhere, Erickson is conducting an examination of the organizational structure plus internal and external evaluation methods for student Eco-Rep programs.

In 2008, UVM Eco-Reps sort through student center trash to

find out how much could have been recycled or composted. (Photo: UVM Eco-Reps Program)



(Photo: Rice University Office of Sustainability)







29. Inter-Residence Hall Competitions

A popular student-centered activity that often shows measurable savings are inter–residence hall competitions for which calculating changes in water consumption, kilowatt-hour usage, fuel costs, carbon emissions and other metrics determine the winner. At the **University of New Hampshire**,¹⁷⁷ student Ecological Advocates and Energy Captains are the organizing force behind the school's Energy Waste Watch Challenge. This competition challenges residence



At the University of New Hampshire, students compete in the annual Energy Waste Watch Challenge to see which residence hall or campus apartment building can save the most energy.

(Photo: UNH Photographic Services) halls to see which building can show the greatest reduction in energy and water consumption compared to established building averages. Student educators raise awareness in the residence halls by holding parties and electricity-free activities, posting fliers and attending hall council meetings. The winning building earns cash prizes plus the honor of hosting a student-made trophy. In 2008, students saved more than \$16,000 in energy costs and greenhouse gas emissions—the equivalent of 112 barrels of oil or not driving nine passenger cars for one year. The annual challenge attracts local and national media attention, and the project continues to grow, with longer challenges and more students involved. Off-campus apartment residents have asked how they can be involved, and this is a goal for future contests.

The George Washington University (DC)¹⁷⁸ achieved so much success with a two-month pilot that it extended its inter-residence hall competition, known as the GW Eco-Challenge, to the full 2008–09 academic year. This required collaboration between several departments, including Planning and Environmental Management, Residential Property Management and GW Housing Programs. Within the first period (September 2–October 15, 2008), GW's 38 large and small residence halls conserved 288,708 kilowatt hours of electricity (200 metric tons of CO₂), saving an estimated \$36,000. Over the full year, they saved 1,284,890 kWh and 1,691,864 gallons of water. Students learned about their contest standings via data posted on a website. Charts were also posted in each building to show building-specific breakdowns of utility usage such as gallons of water and kWh per person. The winning hall, Building JJ, received an eco-friendly student lounge renovation, reusable water bottles, a pizza party and the Eco-Challenge Champion Flag to hang outside for all to see.



Energy saving clothes-drying racks were loaned free to students for the school year at Furman University. (Photo: Jeremy Fleming, Furman University)

Beyond the typical energy conservation measures encouraged by these inter-dorm challenges, campuses are adding other creative components to the competitions. Students at **Furman University**¹⁷⁹ (SC) added a Sustainability Fair in fall 2008 to their residence-based Kill-A-Watt Challenge (an annual competition among Furman's 11 North Village buildings), which included the distribution of 144 clothes-drying racks for students to use instead of energy-intensive dryers. Student organizers talked to their fellow students and created posters displaying the energy and emissions reductions possible by using the racks. Drying racks were to be returned in good condition in spring so they could be redistributed the following year. Students in the Renewable Energy Club at **Connecticut College**,¹⁸⁰ seeking an everybody-wins approach, launched a "Concert from Conservation"

campaign for the residence halls in winter 2007. The idea was for a percentage (25%) of the electricity and heating fuel savings to cover the cost of a concert on campus—to be enjoyed by all. By successfully implementing many conservation measures, the first concert was hosted in spring. The campaign was held again in 2007–08 with similar savings achieved. Student efforts cut energy use by 12% (based on a five-year average), saving an equivalent of 108,000 kWh and around \$9,600—which netted the students \$2,400 for their concert. The "Concert from Conservation" campaign also included lightbulb swaps and a pledge to conserve energy.

Students in Minnesota took the idea of inter–residence hall competitions and bumped it up a notch. In February 2007, going beyond their campus borders, 16 private and public colleges and universities in the state held a month long inter-school competition called "Campus Energy Wars."¹⁸¹ By unplugging appliances, turning out lights and cutting wherever possible, **Carleton College**¹⁸² students reduced energy usage by 21% in residence halls, and the college cut overall consumption by 10%, putting them at or near the top of the competition. Minnesota's efforts inspired a larger audience—a national one—the following year. The National Campus Energy Challenge,¹⁸³ held in February 2008, was a one-month competition organized entirely by students at many schools around the country and promoted through the Campus Climate Challenge organization. Perhaps due to their prior experience with inter-campus competitions, two of the three top

schools were from Minnesota. **St. John's University** (MN) was determined the winner with **Winona State University**¹⁸⁴ (MN) and **Swarthmore College** (PA) tying for second place.

With the popularity of inter-residence hall competitions—which go by a variety of names including "Ecolympics" at **Oberlin College**¹⁸⁵ (OH), "Green Cup" at **Harvard University**¹⁸⁶ (MA) and "Do It in the Dark" at **Tufts University**¹⁸⁷ (MA)—student organizers at **Duke University**¹⁸⁸ (NC) created a detailed how-to tool kit and instructional video to help fellow students launch new programs. The project started as a way to document their annual Eco-Olympics competition, but soon became a training tool for the following year's event organizers and now is available to any school to guide them through the steps (see box).

"Dorm vs. Dorm Sustainability Competitions"¹⁸⁹ – by Duke University

Creating a campus inter-residence hall competition can take many forms, from a one-month affair to an all-year extravaganza. But it helps to see what other schools have done, and then to choose what might be best suited for your campus, as well as to create entirely new ways to have fun with the dorm competition idea. The Dorm vs. Dorm resource contains "how-to" video segments that explain everything from scheduling to fundraising to details on specific events such as bulb swaps and eco-trivia events. Duke University alumnus Sam Hummel developed the site after being involved with Duke's successful program. Its Eco-Olympics produced energy reductions up to 15%, increased recycling rates, garnered participation from 65% of the dorm residents and saved the school thousands of dollars monthly.

30. Model Residence Hall Rooms

Whether students move into one of the growing number of LEED-certified residence halls that showcase the latest green features or, more likely, into residences of an older vintage, what they bring to their rooms and plug into the walls has a big impact on energy consumption. To model how to live on campus with a lighter footprint and show how energy efficiency can be a way of life, students at **Tulane University**¹⁹⁰ (LA) envisioned and created an "Energy Star Showcase Dorm Room" in 2001. Students who have lived in the room found that by using Energy Star rated electronics and appliances, they used half of the electricity of a room equipped with average appliances and lighting. This translates into 50% less greenhouse gas pollution and 50% less in utility costs. Each year the room is competitively assigned to a first-year student selected through an essay contest. To help all students in the dorms choose the best items to purchase for their rooms, a campus website explains how to find the most efficient computers, refrigerators, lamps and entertainment equipment (see table).



The National Campus Energy Challenge and Campus Climate Challenge are programs of the Energy Action Coalition.

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"Getting people to participate in big numbers is easy when you understand how to identify and empower the 'eco-enthusiasts' that can be found in every dorm, in every classroom and on every campus. They are waiting there for you to give them an excuse, an opportunity and a context within which to go wild advocating environmental responsibility to everyone around them. It's what they want to do, but peer pressure or social norms hold them back. At Duke, we figured out how to find and enable those eco-enthusiasts. It made all the difference." -Sam Hummel, Duke University alumnus and AASHE staff member

Tulane University ENERGY STAR Showcase Dorm Room, 2008

		ENERGY STAR APPLIANCES		NON ENERGY STAR APPLIANCES			
Appliance	Estimated Time Running	Energy Used*	Cost to Run**	Energy Used*	Cost to Run**	Savir	igs
	Hours (Active/On/Standby	kWh (Nine Months)	\$ (Nine Months)	kWh (Nine Months)	\$ (Nine Months)	Dollars	Lbs of $\rm CO_2^{***}$
MicroFridge MF-3TP	24 Hours	217.50	21.29	274.50	26.87	5.58	87
Lenovo ThinkPad X61 Tablet computer	1 Hour/2 Hours/6 Hours	20.79	2.03	24.84	2.43	0.40	6
Lenovo ThinkPad X61 Tablet computer	1 Hour/2 Hours/6 Hours	20.79	2.03	24.84	2.43	0.40	6
Canon PIXMA MP530 All in one printer	.5 Hour/1 Hour/4.5 Hours	21.14	2.07	45.75	4.48	2.41	38
GE-Jasco Floor Lamp	5	31.05	3.04	135.00	13.21	10.17	160
GE Soft White 60 CFL Light Bulb (2)	5	40.50	3.96	162.00	15.86	11.89	187
GE-Jasco Desk Lamp	2	37.26	3.65	54.00	5.29	1.64	26
Panasonic SC-PM23 Executive Micro Audio	2 Hours/2 Hours/20 Hours	18.90	1.85	48.06	4.70	2.85	45
Sharp DKA1 i-Elegance Music System	24	9.07	0.89	25.92	2.54	1.65	26
Panasonic 5.8 GHZ Cordless Phone	24 Hours	16.43	1.61	25.79	2.52	0.92	14
Tota	433.43	\$42.42	820.70	\$80.33	\$37.91	594	
Tota	216.71	\$21.21	410.35	\$40.16	\$18.95	297	
Est	\$130,814.36	\$61,728.40	968,073				

*Average for one school year (nine months) = (w/1000)x(hours on)x(30 days)x(9 months)

Estimates for Non Energy Star Appliances based on averages obtained from Energy Star. For Energy Star appliances, both ES averages and model-specific figures are used. **Energy Used times Tulane's May 2008 electricity price (\$.097878/kWh)

****Uses a national average of 1.535lbs. of CO_2/kWh

SOURCE: http://green.tulane.edu./energysmart/images-EnergySmart/ApplianceChart.pdf



Green Room resident at UC Berkeley gives a tour, showcasing the organic personal products, CFL bulbs and energy efficient appliances.

(Photo: UC Berkeley)



Humboldt State University students digging into a new project for CCAT. (Photo: Humboldt State)

The **University of California, Berkeley**¹⁹¹ expanded on this idea beginning in 2006 with the "Green Room Series," a trio of student rooms that included a Green Room, Green Apartment and Green Suite. Each room featured different ways that students could lower their environmental impact, ranging from efficient technologies to green personal care products. Green Room residents gave tours of their unique living spaces, teaching fellow students about sustainable choices and lower-impact living.

31. Eco-Houses and Sustainability-Themed Residences

On residential campuses, students often are living away from home for the first time—which opens an opportunity for them to live in a way consistent with their beliefs, including living in an environmentally sustainable manner. Individual students, student organizations and student affairs professionals have pushed for higher performance housing choices on many campuses, with inspiring results. Eco-houses, off-the-grid residences and sustainability-themed housing communities now offer healthier alternatives to traditional dorm life. By choosing "green," students show by example that living sustainably doesn't mean living in a cold, dark cave but instead can be a fun, rewarding and high quality lifestyle.

At **Westminster College** (MO)¹⁹², six years of planning led by students came to fruition with the creation of the Eco-House in 2007, a three-bedroom residence owned by the college that went through energy retrofits as a result of an audit completed by students and advisors. Beyond serving as a model of sustainable living for other students and community members, the house serves as a meeting place for ECOS, the Westminster student environmental organization.

The eco-house type of living arrangement has existed for many years on some campuses, with one of the oldest being the Campus Center for Appropriate Technology (CCAT) at **Humboldt State University**¹⁹³ (CA)—founded in 1978, more than 30 years ago. It began as a renovation of the dilapidated Buck House, which has since been moved to a larger site on campus where extensive gardens and other green features have been developed. This living-learning laboratory

has allowed students to design, develop and test theories around technologies that reduce the use of energy, water, materials and toxins in a residential setting. CCAT is open for tours for school children and also hosts workshops and classes for HSU and the broader community. Weekly work days allow student co-directors, volunteers and 15 employees to work together on projects, such as a solar thermal system and alternative building construction.

At Babson College¹⁹⁴ (MA)—a school renowned for entrepreneurship education students recently combined their interest in sustainability and business to create a special-interest housing community of 20 students called the Green Tower, based in the existing Van Winkle Hall. As explained by Green Tower co-President Ben Cox ('10), "Green Tower members hold themselves to a higher standard of living by signing a sustainability pledge, a vow to follow certain guidelines to minimize their personal carbon footprints." Members also lead campus initiatives; they introduced Fair Trade coffee and established a bicycle coop in 2008-09, the organization's first year. The group's founding president, Jamie Kent ('09), explained their mission: "As business students at Babson, we in the Green Tower focus our skills and education to create sustainable entrepreneurial endeavors that aim to fight environmental issues. As an organization, we work to further sustainability initiatives on our own campus." And at Dartmouth College¹⁹⁵ (NH) an "affinity house" for a community of 18 sustainability-minded students opened its doors as the Sustainable Living Center in fall 2008, in the former North Hall. In the future, the building will be retrofit with efficient energy systems; but even without these major changes, the SLC occupants used 58% less energy compared with occupants from the previous five years. Long-range plans call for it to become a waste-free, energy-neutral student residence.

TRANSPORTATION

Single-occupant vehicles are a notoriously wasteful means of transportation in terms of pollution per passenger mile. Especially at commuter schools, the daily drive of students and staff can be among the largest sources of campus greenhouse gas emissions, which also has significant implications for community health and safety. In response, students have initiated many actions to help lessen the impact of transportation, including mass transit, alternative fuels and bicycle programs. In addition to reducing CO_2 emissions, these alternatives also cut campus transportation management costs. A recent article¹⁹⁶ by campus transportation sage Will Toor outlines these and other benefits. And NWF's national survey of campus sustainability efforts (**Campus Environment 2008**¹⁹⁷) showed that transportation is clearly targeted for improvement. Significant numbers of schools have plans to increase carpooling and access to mass transit, reduce single-occupant vehicles and make campuses more bike-friendly.



Green Tower residents from Babson College at a group retreat, fall 2009. (Photo: Babson College Green Tower)



"Travel patterns that students learn while in college are likely to influence their future travel choices."

> -From Transportation and Sustainable Campus Communities, by Will Toor and Spenser Havlik, 2004.

Alternative Transportation is Headed for the Mainstream¹⁹⁸

For promising news about the direction of transportation in higher education, see the 2008 report: *Transit Systems in College and University Communities: A Synthesis of Transit Practice*. This report, sponsored by the Federal Transit Administration, is based on a review of existing campus transportation literature and original surveys completed by 94 schools. A July 2009 article in **ClimateEdu** reviews some of the survey's findings:

"The report finds that ridership is up and commuters are increasingly finding alternatives to driving alone to campus, especially at schools that do the best job of providing alternatives and cultivating informed riders. Through such strategies, in recent years, the **University of North Texas** has experienced a 10-fold increase in transit ridership, and business has increased by over 50% at **Iowa State University of Connecticut** and **University of Chicago**. With more than 11 million annual passenger trips, **Arizona State University** and other schools listed experienced a considerable total overall increase in the number of annual passengers."



"The fact that it's all student-run is one of the biggest assets of UM's transportation system. Both rider and driver have a common goal. We drivers understand the need to get to class; we all know what it's like to be a commuter on campus. It's been an enlightening experience watching the program grow in popularity and ridership. Plus, the people I work with at ASUM have become some of my closest friends. Driving in circles can have its benefits!"

-Joel Beatty, Class of 2010, shuttle bus driver at the University of Montana



Students ride the bus anytime using their Jack Pass at Humboldt State University.

(Photo: Humboldt State University)

32. Mass transit

Whether using existing public bus or other transit systems or running their own fleet, campuses can reduce emissions, traffic congestion and costs by promoting methods of mass transportation. The Associated Students of the **University of Montana**¹⁹⁹ Office of Transportation (ASUMOT) has one of the only student-run transit systems in the country, and it has significantly increased student ridership since its launch ten years ago. In 1999, with funding from a self-assessed fee, students took over a fledgling van service that ran sporadically to and from a parking lot south of campus. This service gave 3,860 rides in 1999–2000, but by 2008 expanded dramatically to a six-bus system that gave 343,518 free rides to UM students, staff and the public; and it now is serving three Park-N-Ride locations and runs a shuttle between the University of Montana and the College of Technology. The program, which employs only students, including 28 student drivers, four student bike ambassadors and two outreach specialists, saved an estimated 170 tons of carbon emissions in 2006–2007. Over the years, students have increased their self-assessed fee from \$4 a semester to \$26 a semester to cover the expanded service and transport options. Of all of UM's student fees, the ASUMOT fee receives the most student votes. The program was a 2008 winner of NWF's Chill Out competition in the transportation category.

A bus-pass program based on a \$15 a semester student fee at **Humboldt State University**²⁰⁰ (CA) was launched after a campuswide vote in 2007. Prior to the vote, students worked with campus commuter services staff as well as HSU President Rollin Richmond to work out the details. After implementing the Jack Pass program, the local bus service saw a 30% increase in ridership, and the campus experienced a drop in demand for its limited parking permits—there were over 500 fewer applications—despite an increase in enrollment. Humboldt State was one of the winning campuses in the 2009 NWF Chill Out competition. Students at the **University of California**, **Irvine**,²⁰¹ looking for ways to improve an existing campus shuttle service, lobbied for and passed a measure in 2007 to pay for conversion to biodiesel, requiring vehicle upgrades and new fueling equipment. UC Irvine's extensive student shuttle system, which is now fueled with B100 (100% biodiesel), provides free rides for more than 1.3 million passenger trips a year. Conversion of the 20 existing diesel buses to biodiesel cuts campus CO₂ emissions by an estimated 480 tons per year.

33. BioFuels

Biofuels, especially biodiesel, can either be purchased or made on campus and used to run fleet vehicles. By definition, biofuels are carbon neutral because when burned they release the carbon captured during photosynthesis. Net emissions savings, however, must take into account the fossil fuels, fertilizers, land tillage and other inputs needed to grow the food plants used to make vegetable oil. Colleges and universities are excellent settings to experiment with biodiesel, in particular, because their dining halls and local restaurants can provide a steady supply of used cooking oil.

At the Massachusetts Institute of Technology,²⁰² a team of students developed a plan to turn waste vegetable oil into fuel for campus shuttle buses and other vehicles, which will eventually save Dining Services the \$1.10 per gallon charge to dispose of the oil. It will also cut fuel costs for the MIT fleet. Their design and proposal to implement an on-campus processor earned the team the \$25,000 top prize in the 2007 GE/MtvU's Ecomagination challenge. Matt Zedler ('07), one of the group leaders at the time, noted in a news release that there were high levels of support for the project among MIT students and the administration. But difficulty in finding space for the processing equipment, along with rising costs, almost killed the project. It wasn't until spring 2009 that the equipment was finally purchased. A student-made video from July 2009 presents the financial and policy-related challenges the project has faced, as well as its tenacious student support (see http://techtv.mit.edu/videos/3309).

A joint biodiesel project at Syracuse University²⁰³ (NY) and the College of Environmental Science and Forestry at State University of New York was funded in 2008 by a grant from the Syracuse Campus-Community Entrepreneurship Initiative. Business students from Syracuse and science students from ESF will collaborate on a two-year project to create a business plan, conduct the research and implement a green energy cooperative through which the two schools will share the biodiesel made from waste cooking oil from both campuses. Profits will be used to fund other campus sustainability projects. At the University of Central Florida,²⁰⁴ a group of four seniors in a 2008 engineering class designed and constructed a biofuel reactor system that can produce 60 gallons of biodiesel every two days, using waste vegetable oil from nearby restaurants. UCF, which paid for the project, will use the apparatus to make fuel for campus vehicles, saving about two-thirds on their previous costs for biodiesel. The graduating seniors went on to start a company that uses the processing design they created.

Exploring a promising alternative source for plant oil, Brunswick Community College²⁰⁵ (NC) students in the Aquaculture and Biotechnology programs are researching the possibilities of harvesting biofuel from special high-oil strains of algae. According to a 2008 press release, they will be experimenting with ways to extract the oil and convert it to biodiesel, which in some strains can be as high as 50% by weight. Students at James Madison University²⁰⁶ (VA) worked on similar research in 2006 for their senior thesis project and presented findings at the JMU annual College of Integrated Science and Technology Senior Symposium. They tested 15 species of algae that they grew in a bioreactor, and even worked on methods to raise algae in sea water, a potentially significant way to remove more CO₂ from the air.



On-board system to process waste cooking oil (acquired free at restaurants) into biofuel for Dartmouth College's Big Green Bus on its cross-country educational journey in 2009. (Photo: David J. Eagan)

The Quest for Non-Food Fuels²⁰⁷

Creating fuel from food plants such as corn, sugarcane or soybeans is relatively easy, but comes with serious costs to the environment and society. Deriving fuels from non-food plant sources, while technically feasible, could avoid many of those costs,

but has not yet been achieved in industrial-scale quantities. Researchers at schools across the country are working

hard to figure out how to ramp up production, and many students are involved in those projects-which someday will be an essential component of our future clean-energy economy.

A recent ClimateEdu article offers an update on the state of biofuels science and where some of the important research is occurring. Here's a sample:

Oil production to make biodiesel

• Algae - at San Diego State University (CA)

Converting cellulose to ethanol

- Waste sugarcane stalks at the University of Hawaii
- Switchgrass at South Dakota State University
- Waste paper (to make "Trash-ahol") at the University of Maryland

The National Wildlife Federation, while in favor of such research, agrees with many scientists that we should proceed with caution. A rush to biofuels could increase pressure on land, water and biodiversity—so it is important to strive to minimize such impacts.

For more, see "Plant Power: A Special Report on Biofuels," in ClimateEdu, June 30, 2009.



Climate**Edu**
34. Bicycle Share Programs

Bike sharing programs are popular on campuses²⁰⁸ for a variety of reasons. Bicycles are a lowcost, hands-on technology that students know a lot about, plus they provide a carbon-free, healthy alternative for campus-related transportation. **Juniata College**²⁰⁹ (PA) has a fleet of bicycles that is available for students to use for errands and trips about campus or around town.



Juniata College's service-oriented students helped launch the college's bike share program. The Cycling Club currently handles maintenance and the Juniata Activities Board oversees management of the bikes.

(Photo: Juniata College / lan Bradshaw) The program, which began in spring 2007, is coordinated and maintained entirely by students. Juniata recently revamped its bike share program to increase student responsibility for the bicycles and reduce the cost of maintenance. Students are now asked to fill out a no-cost "rental' agreement to check out a bike for up to one week; in addition, the fleet will be converted to one-gear, balloon-tire cruiser bikes rather than multi-gear bikes.

At **Southwestern University**²¹⁰ (TX), a "bike collective" program was established, whose idea originated as a 2008 class project. The collective involves a group of students who teach bike repair and provide refurbished bikes—for work-trade instead of cash—to people who need them. The project got a boost from \$2,500 in start-up funds from a foundation, as well as donations from local businesses and bike shops. **Cabrillo**

College²¹¹ (CA) operates a similar venture on campus, though it is run as a cooperative with memberships costing \$20 for six months. Students staff the cooperative's bike maintenance shop during the week and also offer repair workshops and a tool-share. The program started in fall 2008, aided by a \$2,500 grant from the Student Senate and assistance from the Bike Church (a commercial bike shop in nearby Santa Cruz). Their mission: "to provide students and the surrounding community with the tools, space and education to use bicycles as a means of sustainable, low-cost transportation. Our intent is to create a hub for sustainability and petroleum-free transportation at Cabrillo College."

STUDENT-TO-STUDENT ADVICE

How to Conduct a Successful Campus Sustainability Project Ryan Kaplan, Class of 2009, Cabrillo College²¹² (CA) Project: Bike Cooperative

- 1. If you build it (an on-campus bike shop), they will come.
- 2. DIY (Do It Yourself) still works better than governance, but it can benefit from some structure and money.
- 3. Most people are generous for a good cause and positive community.
- 4. Weekly meetings of the co-op can be fun with the right attitude, food and bike rides!
- 5. Be careful not to make any one person indispensable.
- **6.** Promote your project as broadly as possible to gain support from a diversity of campus constituents and stakeholders.
- 7. Build bridges to the greater community. This is true civic engagement.

WATER CONSERVATION

As the daily news brings more frequent stories of droughts and water shortages from around the world, the wise management of potable water is likely to become a growing issue for campuses too—especially in the more arid parts of the country. Recognizing this inevitable future, students are taking action on water conservation initiatives in a wide range of areas, including some of the ways described above such as in Eco-Reps programs, residence hall competitions and behavior-change outreach. Perhaps most important, students are helping to influence and create sustainability-minded campus water policies and studies—and doing the legwork to collect data and identify key places where water can be conserved.

35. Water Policy and Research

Knowing how much water flows into and out of a campus, and where water use is highest, are some of the essential pieces of information needed before conservation plans can be made. In drought-prone California, students at the **University of California, Santa Cruz**,²¹³ working in conjunction with a consulting firm, conducted a detailed survey of water use on campus in 2007 to identify improvements that could save water and money. The survey included measuring faucet and shower flow rate, checking for missing faucet aerators and looking for leaks in campus irrigation systems. Based on the study, recommended changes could save 10–15% in annual water use, which translates to 20–30 million gallons or \$330,000 to \$500,000 in savings.

At **Carnegie Mellon University**²¹⁴ (PA), Campus Ecology Fellow Joe Wong conducted a comprehensive assessment of campus water use in 2004. His research was incorporated into a larger baseline report on environmental indicators at CMU. In addition to a detailed analysis of potable water and wastewater, Wong also calculated stormwater runoff from 22 different sub-basins on campus. His methods for tracking water use enabled facilities staff to more effectively monitor progress in water management in subsequent years. Taking an active position on water conservation, the Student Government Association at **Appalachian State University**²¹⁵ (NC) passed a recommendation in fall 2008 for the urinals in all new and renovated campus buildings to be low-flow, using only one-eighth of a gallon of water per flush. Not only will this save water, it will cost significantly less in utility bills.



A Campus Ecology Fellowship was awarded to student Joe Wong at Carnegie Mellon University to assess campus water use and stormwater flows.

(Photo: Joe Wong)

III. OPPORTUNITIES TO ENGAGE THE CAMPUS COMMUNITY

More than 160 schools from 46 states are mentioned in the 35 campus action topics featured above. They represent the engagement in sustainability of literally thousands of students—but that's just a splash in the pool of 18 million students who attend postsecondary education. So much more is possible. Notably, every one of those projects was an opportunity that students turned into reality, often by overcoming significant obstacles in terms of money, technology, bureaucracy, time and human nature. (For example, as noted above, students at the **University of Tennessee Knoxville** and schools across **Texas** first had to overcome administrative and legal resistance to implementing self-assessed green fees.) And while the students, staff and faculty involved in these diverse campus projects are all to be applauded, the bulk of the work needed to significantly slash the carbon footprint of higher education still lies ahead.

Each campus project has its own list of lessons learned, some of which were noted in the text or the student-to-student advice boxes. Some lessons and advice bear repeating, along with others not yet articulated, and that is the aim of this final section. As with other life experiences, much more can be gained from a campus sustainability exercise if it is followed with reflection or some sort of evaluation process. Said another way, opportunity will lead to insight and more opportunity, but usually only if the inevitable challenges are adequately considered and addressed.

Much has been gleaned from the experiences of students and others on campuses nationwide who have helped lead the way for sustainability. They have been pioneers in what will truly be a decades-long experiment to see if we can get this climate and clean energy revolution right. It is humbling to realize that it will take the children of today's students—and perhaps the children of those children—to make enough progress so that global warming is no longer one of the defining challenges of this century.

Five Lessons from Student Leaders

- More Venues for Student Engagement
- Learning From Others, Teaching What You Have Learned
- Growing the Campus Leadership Network
- Greater Connections with Staff, Faculty and Administrators
- Acknowledging and Celebrating Success

These five lessons are explored below as opportunities available to students everywhere. They synthesize some of the best advice and ideas that have been passed along from students, faculty and staff, and are based on a multitude of campus projects over the years. Although presented as opportunities, each also embodies the ever-present challenges—whether stated or implied—that attend every campus initiative.

MORE VENUES FOR STUDENT ENGAGEMENT

As sustainability becomes integrated into more aspects of college and university life, the ways for students to become involved have multiplied. Getting started early is one key to engaging more students and for longer periods. A promising indicator that greater numbers of students and staff are finding out about sustainability efforts when they first arrive on campus was revealed in NWF's recent national survey, **Campus Environment 2008**.²¹⁶ The data showed a doubling—since the 2001 survey—of the number of schools that offered new students and staff orientation on sustainability.

Certain activities, such as recycling, have long been student favorites. Initiatives like RecycleMania and residence hall competitions prove that recycling is still an easy and increasingly popular activity. Lauren Olson of the **Michigan State University**²¹⁷ Office of



"The greatest learning opportunity of the class was the hands-on installation. We all split up the chores, switching tasks each day so that everyone could learn each step of the process: mounting the panels, wiring them together, hooking up the properly sized wires to carry the current and much more. Though I may not use my new PV skills in a career, I know that I will use what I learned for my own personal photovoltaic system as I push for a life of sustainability and

energy independence."

-Benjamin Hughey ('11), Northland College (WI), reflecting on a Photovoltaic Installation course he took in spring 2008 Campus Sustainability thinks of recycling as the "gateway drug" to sustainability. Once hooked, students are likely to participate in more events and bring their friends along too.

Work-Study, Internships, Volunteer positions

On most campuses, there are multiple venues available for students to connect with climate action projects. Campus jobs and internships may be offered through sustainability offices, such as Sarah Brylinsky's ('09) sustainability intern position at **Ithaca College**²¹⁸ (NY), or as work-study opportunities like the 11 paying jobs available at **Northland College**²¹⁹ (WI), or as an Eco-Rep at **The Johns Hopkins University**²²⁰ (MD), among many other examples. At **Indiana University**,²²¹ the Sustainability Task Force sponsored more than a dozen undergraduate intern and graduate fellow positions for a Summer Program in Sustainability in 2008. And at **Southwestern College**²²² (KS), students can apply to the Green Team, a program that offers scholarship funds for students in exchange for their work on developing innovative ideas to bring renewable energy to campus and help reduce the campus carbon footprint.

Research Projects

Many students use campus sustainability and climate action as the topic for their capstone project or senior thesis, as did Alyssa Borowske ('07) at **Cornell College**²²³ (IA) with a paper titled "Cornell College: A Blueprint for Sustainability." Campus sustainability topics have been used as the topics for many Master's and Ph.D. theses. As noted above, Christina Erickson of the University of Vermont, a coauthor of this report, is focusing her doctoral research on the Eco-Reps experience at UVM and elsewhere. Faculty also often use campus climate action work as the theme for class and research projects, as they have at **Emory College**²²⁴ (GA) since 2001.

Community Service

Sustainability and climate action work can also take place in service-learning situations like those offered through the Office of Service Learning and Sustainability at **Green Mountain College**²²⁵ (VT). In the 2006–07 school year, more than 500 students participated in service-learning projects totaling nearly 7,000 hours. At **Grand Rapids Community College**²²⁶ (MI), students adopted a community rain garden, working with two local youth groups as partners.

LEARNING FROM OTHERS, TEACHING WHAT YOU HAVE LEARNED

For any particular campus project, the how-to specifics are known best by the people who currently are or once were involved. It is important not only to write up and publish a project's methods and findings—making sure they are easily accessible online, if possible—but also to make it easy for others to contact those who worked on the project. Leaving a permanent record is a terrific way to make a lasting contribution to the institution.

Websites

It's hard to find a campus anymore where typing "sustainability" in the search box comes up empty. And growing numbers of schools have dedicated websites featuring campus initiatives and sustainability-related links and resources.²²⁷ Such sites can be found for schools in every state and offer models and features for other schools wishing to create their own. The **University of Utah**²²⁸ has a typical comprehensive website, with buttons for campus projects on topics such as energy, recycling and transportation, plus a "Leadership" page with 12 links to campus student organizations and opportunities for student involvement. On the site of the **University of Minnesota, Morris**,²²⁹ links are provided to current student research projects focused on biomass. In today's connected world, the internet offers the most effective way to share with others offcampus and also to keep a record of both current and past activities and achievements accessible to members of the campus community.

"I've been attracted to and remain committed to working on Project 20/20 and other CCURB projects because of the social impact. Most Brown students do have an interest in getting off of College Hill and relating to the Providence community in a meaningful way. If not for my work here and all that I've learned, it's unlikely I would seriously consider staying in Rhode Island to work on energy issues, but now I am."

> –Libby Kimzey ('10), Community Carbon Use Reduction at Brown program, **Brown University**. See www.proj2020.org



Networks, Meetings, Presentations

With growing numbers of local, state and national meetings focused on sustainability, plus state and regional campus networks, getting the word out about success stories is becoming easier. These gatherings and organizations have become essential networking and sharing opportunities for students, sustainability staff and others in this fast-growing field.



The **Upper Midwest Association for Campus Sustainability**²³⁰ (UMACS), for example, is a hub for schools in Iowa, Illinois, Indiana, Minnesota and Wisconsin. According to its website, UMACS is "a nonprofit organization focusing on sustainability in higher education institutions throughout the region that serves as a networking tool, information resource, and conference organizer for faculty, staff, campus administrators, students and others seeking to place their campuses on a more sustainable footing." At a more local level, **Estrella Mountain Community College**²³¹ (AZ) hosted the annual Maricopa Community College District Student Conference in April 2009. Its theme, "The Green Revolution," featured 30 presentations by students on topics like water conservation, sustainability in Arizona, global warming and the politics of energy.

Evaluation

Examining what worked, what didn't, and applying those lessons to future projects is essential for improving sustainability's success rate. A model for evaluation is the **University of Vermont's**²³² Eco-Reps program. Each year, student Eco-Reps provide extensive feedback that is posted on the program website and used to make the next year's program even better. The series of annual reports highlights an evolving, maturing program with strong student investment.

GROWING THE CAMPUS LEADERSHIP NETWORK

There is strength in numbers, of course, and increasing numbers of schools are achieving critical mass in terms of student involvement that keeps campus sustainability vibrant. Some of the schools mentioned above in the campus actions are especially good examples: Middlebury College, University of Colorado at Boulder and Warren Wilson College. But at most schools, sustainability is up against a lot of competition for student attention and time.

Recruiting More Student Leaders

Although there are many ways students can take the lead on campus projects, the issue of leadership turnover is a widely recognized challenge—and also an opportunity to bring in new blood. Students graduate, pursue other interests, take a semester abroad or otherwise drift away. A key part of the student leadership role is a conscious effort toward bringing in new students and thus avoiding significant gaps in momentum. This is an important opportunity for existing student leaders to practice good recruitment skills, as well as for recruits to benefit from the mentorship of experienced leaders. The **University of Texas at Austin**²³³ holds an annual leadership skills. The course includes topics like recruitment, running meetings, event planning, volunteer management, publicity and working with decision makers.

Many schools have had a charismatic or at least deeply committed student who is an "environmental instigator" for projects and ideas. A good example is Tyler Dunham ('09) at **Connecticut College**,²³⁴ who was featured in campus press releases from his sophomore year through to graduation. He was long-term co-chair of the Renewable Energy Club and helped recruit a contingent of more than 130 students to attend Power Shift in 2009. Sparking and

Student "referees" help fellow students put dining hall waste in the right bins at the LBJ Lair Food Court, Texas State University. (Photo: Jenny Jenkins)

nurturing this kind of motivated leadership will happen more often as opportunities for student engagement expand on campus.

Students who are awarded NWF Campus Ecology Fellowships often mention, in project reports, their efforts to keep an initiative going after they graduate. Fellow Alex Pocock at the **College of Wooster**²³⁵ (OH) used his fellowship support in 2002 to improve and institutionalize the Wooster Community Bike Program, which provides and maintains a small fleet of free bicycles for use on campus. One of his key accomplishments was establishment of the bike program as a chartered campus organization, making it eligible for college funding for two paid positions. The program, known today as the Community Bike Club, still provides bicycles for free rental on campus.

If student leadership is not perpetuated, momentum can be lost. An interesting case occurred at **California State University, Monterey Bay**,²³⁶ where a group of enthusiastic students created a sustainability loan fund in 2006 and used its first \$500 to pay for a lighting project in an athletic facility. Those initial students moved on to other interests, and the fund has since grown to over \$10,000, but as of summer 2009 no new students had stepped forward to manage the funds for new projects.

Sustainability Offices and Careers

The growth of the campus sustainability movement has been marked by a parallel growth in sustainability offices and paid positions.²³⁷ Since the mission of these offices usually involves working with students, they have become a hub of student activity and often serve as the broker and connecting point between students and campus faculty and staff. These offices also have filled a long-term need for institutional memory, giving students a place where their project contributions are valued, encouraged and preserved for future students to learn from.

Thanks to these offices, sustainability is being given the recognition it deserves and is being seen increasingly by students and others as a viable career option. At **Tulane University**,²³⁸ one of the students who founded the Energy Star Showcase Dorm Room now works for the Office of Environmental Affairs and helps with the dorm-room contest and website updates. In fact, the office itself gives credit for its origin to a charismatic and influential undergraduate, Aaron Allen, whose 1999 honors thesis in Environmental Studies examined the history of environmental action and programs at Tulane and proposed a structure (now the OEA) to ensure further progress in greening the university.

GREATER CONNECTIONS WITH STAFF, FACULTY AND ADMINISTRATORS

Concern over climate change and commitment to taking action on a clean energy future has united students, staff, professors and administrators in common cause as never before. It has brought them together as partners in a quest for solutions, because the potentially disastrous consequences of inaction will affect everyone.

Mentorship

An important role for faculty, staff and administrators is to provide guidance to students and their projects. Because sustainability initiatives touch most aspects of campus operations, management and curriculum, every employee, regardless of status, plays a part in the educational mission of the school. Operations personnel increasingly are called upon to work directly with students. As noted in a recent article in *Facilities Manager*,²³⁹ "facilities staff have often done their part to set a good example . . . serving as guest lecturers in the classroom, teaching capstone courses or serving as project advisors to students." Staff and faculty can also help bridge the gap



"As a freshman at Babson, I didn't know where to go to meet others who shared my passion for business and the environment and also recognized the importance of connecting the two. Now students can apply to live in the Green Tower and immediately immerse themselves in an energetic and cooperative environment with some of the college's most dedicated individuals. With the Green Tower we have a face, we have a voice, and we have a growing presence on campus and in

the business world."

-Benjamin Cox ('10), Co-President of the Green Tower environmental residence founded in fall 2008 at Babson College



Students at the College of Wooster maintain a fleet of bikes for loan to the campus community. (Photo: Alex Pocock)



"Student involvement has been critical to the success of UM's transportation system. A student board directs all the activities of this office. Many board members have gone on to transportation fields—some have gone on to graduate studies in transportation planning, become transportation planners, are working in the transit field and have become politicians or are working for politicians. All of the members get an inside view of the political realities of the transportation world."

-Nancy Wilson, Director, Office of Transportation, Associated Students of the **University of Montana** that students often create when going abroad or graduating. And student organization advisors assist with bringing in the next generation of leadership and help make connections to those who have the information students may need.

Mentorship for students by faculty and researchers in ecology is especially important for fostering the knowledge and skills needed to help wildlife survive global warming. A program of the Ecological Society of America called SEEDS (Strategies for Ecology Education, Diversity and Sustainability: Diverse People for a Diverse Science) has a chapter at **United Tribes Technical College**²⁴⁰ (ND), whose mission is to "provide opportunities for underrepresented minority undergraduates of UTTC to experience active, solution-based research in ecology while interacting with positive role models and mentors." In 2008–09, students in the group worked with staff, faculty and other groups on projects related to renewable energy and waste monitoring, as well as on ways to improve the campus landscape "to provide a living laboratory as well as more natural habitat for wildlife."

ACKNOWLEDGING AND CELEBRATING SUCCESS

Finally, every project is an opportunity to recognize and praise student sustainability achievements. Jolea Bryant,²⁴¹ former Southeast Field Coordinator for NWF's Campus Ecology Program, stressed the importance of student recognition and acknowledgment of their work. Drawing from the many campuses she worked with, it was a central theme in the talk she presented at the AASHE national conference in 2008. For many, timely—and especially, public—recognition is worth more than monetary compensation. Simply being named in press coverage or on websites or group reports goes a long way toward solidifying a student's commitment to sustainability. There is a deep need in most people to be recognized and honored in some way by others.

Campus Award Programs

A number of individual schools as well as higher education systems have created award programs to spotlight the work being done on their campuses. The **University of Kansas**,²⁴² for example, gives annual sustainability awards in four categories: project, faculty, staff and student. In 2008, the student honor went to the Student Rain Garden, which was planned, designed and installed by students with assistance from campus staff. At the **University of Colorado at Boulder**,²⁴³ Campus Environmental Awards have been bestowed on deserving students, staff and faculty at an annual ceremony since 2001. In California, best practice awards are given at the annual Sustainability Conference, which is jointly sponsored by campuses of the **University of California State University** and **California Community College** systems.²⁴⁴ Two of the awards are reserved for the year's best Student Energy Efficiency Projects and Student Sustainability Projects.

National Awards

Nationwide competitions offer another opportunity for recognition of student work. The annual Chill Out²⁴⁵ competition of the National Wildlife Federation promotes sustainability and honors U.S. schools that are advancing creative solutions to global warming on their campuses. In 2009, eight schools were chosen for their exemplary programs with the grand prize going to the **Massachusetts Maritime Academy**²⁴⁶ for providing sustainability education across the curriculum and hands-on learning about clean energy technologies. The Association for the Advancement of Sustainability in Higher Education²⁴⁷ has an annual awards program with honors given for sustainability leadership and research on campus. One of four awards given to students in 2009 includes a research project at **Stanford University**²⁴⁸ on integrating electric vehicles with solar panels on campus.

IV. A VISION OF THE CAMPUS OF THE FUTURE

During the research and interviews conducted for this guide, a different sort of student college experience and campus worldview became apparent. Increasing numbers of students are paying attention to the social and environmental impacts of their campus, and many acknowledge a more integral role for themselves and responsibility to take action. Granted, it seems to affect only a modest percentage of the national student body at present, but there is a sense of growing momentum and commitment. One doesn't have to look far to see that sustainability is going mainstream, and the shift in thinking toward a green economy and green jobs looks extraordinarily strong and enduring.

Where might all of this lead? What sort of campuses will we have in the not-too-distant future if current trends replace the old? For one thing, we might not even need sustainability offices or courses if the core values of social, environmental and economic sustainability become the everyday business of all departments within the institution, and of society at large. Students won't need a guide like this one because their work and learning will be integrated into the fabric of a sustainably run campus—tending gardens, tracking energy-use data, taking classes in which sustainability is seamlessly integrated and which prepare them intellectually and practically for a green-minded economy and workforce.

The sooner, of course, that all students begin to share this sort of vision of the future, the better. It is going to take their leadership now and for many decades to come to steer campuses and indeed human civilization toward the only future that has a chance of working. They may not be the first to envision an alternative campus and world. But they may be the first generation to fully appreciate that, this time, working toward a green-energy century is not just an abstract exercise—but a necessity.

"I was asked to present on the topic 'Grand Challenges on Climate Change.' I said, 'I can't think of any.' From my perspective, they're all opportunities. And the leadership act for the movement is in projecting a positive future. It is about getting out of our silos and talking about the world we want to live in."

–Michel Gelobter, Changing the Social Climate, 2006



APPENDIX A: Campus Sustainability Resources

Books, Reports and Articles

NWF's Campus Ecology Program

Campus Environment 2008: A national report card on sustainability in higher education (2008) (www.nwf.org/CampusReportCard)

Guide to Climate Action Planning: Pathways to a low-carbon campus (2008) (www.nwf.org/CampusCAPGuide)

Higher Education in a Warming World: The business case for climate leadership on campus (2008) (www.nwf.org/CampusEcology/BusinessCase)

Ecodemia: Campus environmental stewardship at the turn of the 21st century: Lessons in smart management from administrators, staff, and students. By Julian Keniry (1995), Washington, DC: National Wildlife Federation.

Green Investment, Green Return: How practical conservation projects save millions on America's campuses. By David J. Eagan and Julian Keniry (1998), Washington, DC: National Wildlife Federation.

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Creighton, Sarah Hammond (1998). *Greening the Ivory Tower: Improving the environmental track record of universities, colleges, and other institutions.* Cambridge, MA: MIT Press

Isham, Jonathan and Sissel Waage, Eds. (2007). *Ignition: What you can do to fight global warming and spark a movement*. Washington, DC: Island Press.

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M'Gonigle, Michael and Justine Starke (2006). *Planet U: Sustaining the world, reinventing the university*. Gabriola Island, BC,: New Society Publishers.

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Schweiger, Larry (2009). Last Chance: Preserving life on earth. Golden, CO: Fulcrum Publishing.

Simpson, Walter (editor) (2008). *The Green Campus: Meeting the challenge of environmental sustainability*. Alexandria, VA: APPA

Smith, April (1993). Campus Ecology: A guide to assessing environmental quality and creating strategies for change. Los Angeles: Living Planet Press.

Toor, Will and Spencer W. Havlick (2004). *Transportation and Sustainable Campus Communities: Issues, examples, solutions.* Washington, DC: Island Press.

Online Resources

NWF's Campus Ecology Program

Resources page http://www.nwf.org/campusecology/resources/index.cfm

ClimateEdu (biweekly e-newsletter) http://www.nwf.org/campusecology/climateedu

Campus Sustainability Case Studies http://www.nwf.org/campusecology/resources/yearbook

Web Conference Series http://www.nwf.org/campusecology/resources/teleconferences.cfm

Association for the Advancement of Sustainability in Higher Education Resource Center http://www.aashe.org/resources/resource_center.php

Clean Air-Cool Planet, Climate Action Toolkit http://www.cleanair-coolplanet.org/toolkit

Creating a Campus Sustainability Revolving Loan Fund: A Guide for Students http://www.ssc.org/pdf/AASHE_Revolving_Loan_Fund_Guide.pdf

Green Student U, blog posts http://www.greenstudentu.com

Organizations and Coalitions with Student Involvement

Association for the Advancement of Sustainability in Higher Education http://www.aashe.org Campus Ecology, National Wildlife Federation http://www.nwf.org/campusecology **Energy Action Coalition** http://www.energyactioncoalition.org Environmental Justice and Climate Change Initiative http://ejcc.org Indigenous Environmental Network http://www.ienearth.org Sierra Student Coalition http://ssc.sierraclub.org Student Public Interest Research Groups (PIRGs) http://www.studentpirgs.org Student Environmental Action Coalition (SEAC) http://www.seac.org SustainUS (U.S. Youth for Sustainable Development) http://sustainus.org

APPENDIX B: Schools in Guide Listed by State

NOTE: Coverage of programs or initiatives at schools named in this publication ranges from a brief mention to detailed case examples. Page numbers in the Generation E report follow the school name.

TOTAL: 165 Schools, 46 States + DC

AL

Birmingham Southern College - 19

AR

University of Arkansas - 22

ΑZ

Arizona State University - 5, 45 Coconino Community College - 22 Estrella Mountain Community College - 52 Northern Arizona University - 22 Prescott College - 29 University of Arizona - 21

CA

Cabrillo College - 48 California State University, Chico - 25 California State University, Monterey Bay -21, 30, 53 Humboldt State University - 21, 44, 46 Pomona College - 20, 21 San Diego State University - 47 Stanford University - 54 University of California, Davis - 37 University of California, Berkeley - 44 University of California, Irvine - 16, 46 University of California, Los Angeles (UCLA) - 8 University of California, San Diego - 22 University of California, Santa Cruz - 49 University of California System - 15, 54

CO

Colorado College - 11 University of Colorado-Boulder - 8, 22, 52, 54 University of Colorado-Colorado Springs - 29

СТ

Connecticut College - 42, 52 Trinity College - 24 University of Connecticut - 45 Yale University - 5, 18

DC

George Washington University - 42

DE

University of Delaware - 31

FL

Palm Beach University - 38 Stetson University - 20 University of Central Florida - 37, 47 University of Florida - 18

GA

Georgia Institute of Technology - 32 Emory College - 51 Morehouse College - 4, 23

HI University of Hawaii - 47

IA

Cornell College - 51 Iowa State University - 28, 45 Maharishi University of Management - 27

ID

Boise State University - 21

IL

Augustana College - 28 Illinois Institute of Technology - 32 National-Louis University - 36 University of Chicago - 45 Western Illinois University - 17

IN

Ball State University - 35 Indiana University - 34, 51 Purdue University - 39 University of Notre Dame - 37, 38

KS

Johnson County Community College - 28, 29 Kansas State University - 18, 28 Southwestern College - 51 University of Kansas - 32, 54

KΥ

Berea College - 28 Centre College - 28

LA

Tulane University - 43, 44, 53

MA

Babson College - 45, 53 Boston College - 27 Harvard University - 30, 43 Massachusetts Institute of Technology - 25, 46 Massachusetts Maritime Academy - 54 Mount Holyoke College - 40 Suffolk University - 39 Tufts University - 41, 43 Williams College - 31

MD

Maryland Institute College of Art - 40 St. Mary's College of Maryland - 18 The Johns Hopkins University - 51 University of Maryland - 5, 47

ME

Bowdoin College - 24 St. Joseph's College - 38 University of Maine - 25 University of Maine at Augusta - 35 University of Maine at Farmington - 38 University of Southern Maine - 17

MI

Albion College - 14 Grand Rapids Community College - 51 Grand Valley State University - 38 Michigan State University - 9, 14, 18, 27, 40, 50 University of Michigan - 14 Wayne State University - 9 Western Michigan University - 36

MN

Bemidji State University - 29 Carleton College - 30, 43 Macalester College - 30 St. John's University - 43 University of Minnesota, Morris - 14, 51 Winona State University - 43

MO

Drury University - 23 Washington University in Saint Louis - 32 Westminster College - 44 University of Missouri - 36

MS

Mississippi State University - 18

МТ

Montana State University - 29 University of Montana - 4, 27, 46, 54

NC

Appalachian State University - 35, 49 Brunswick Community College - 47 Duke University - 21, 43 Warren Wilson College - 23, 35, 52

ND

United Tribes Technical College - 54 University of North Dakota - 23

NH

Dartmouth College - 24, 26, 41, 45, 47 Keene State College - 18 University of New Hampshire - 14, 18, 42

NJ

Bergen Community College - 21

NV

University of Nevada, Reno - 27

NY

Cornell University - 31 Ithaca College - 51 Medaille College - 10 Sarah Lawrence College - 24 Skidmore College - 41 St. Lawrence University - 32 State University of New York at Albany - 26 State University of New York at Brockport - 37 State University of New York College of Environmental Science and Forestry - 47 Syracuse University - 47

он

College of Wooster - 53 Oberlin College - 23, 26, 43 Ohio State University - 39 Ohio University - 18

ОК

University of Oklahoma - 19

OR

Lewis & Clark College - 18 Linfield College - 28 University of Oregon - 29

PA

Allegheny College - 17 Carnegie Mellon University - 32, 49 Dickenson College - 26 Juniata College - 48 Lafayette College - 32 Swarthmore College - 43 University of Pennsylvania - 40

RI

Brown University - 22, 50 SC Furman University - 35, 42

University of South Carolina - 11

SD

South Dakota State University - 47

ΤN

Middle Tennessee State University - 30 Tennessee State University - 35, 36 Tennessee Tech University - 30 University of Tennessee Knoxville -29, 30, 50

ТΧ

Rice University - 34, 41 Southwestern University - 48 Texas State University - 36, University of North Texas - 45 University of St. Thomas - 34 University of Texas-Arlington - 18 University of Texas at Austin - 52

UT

University of Utah - 51

VA

James Madison University - 47 Sweet Briar College - 33 University of Virginia - 38, 39, 41

VT

Green Mountain College - 51 Middlebury College - 20, 37, 52 University of Vermont - 25, 33, 41, 52

WA

Cascadia Community College - 33 Western Washington University - 8 University of Washington - 16, 18, 19 University of Washington Bothell - 33

WI

College of the Menominee Nation - 22 Madison Area Technical College - 22 Northland College - 15, 16, 32, 50, 51 St. Norbert College - 39

wv

West Virginia University - 18

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The Plus 50 Initiative:

Executive Summary of the Year One Evaluation Report

October 2009

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Year One Accomplishments of the Plus 50 Initiative

The American Association of Community Colleges' (AACC) Plus 50 Initiative is a three-year initiative launched in June 2008, and funded by The Atlantic Philanthropies. It was created to support a pilot group of two-year institutions to develop or expand campus programs that engage plus 50 learners. The initiative focuses on three types of programmatic implementation: workforce training and career development; learning and enrichment; and volunteering. Programs also include the services and supports that allow plus 50 learners better access to community college offerings.

Initiative Overview

With the baby boom generation (the 78 million Americans born between 1946 and 1964) now approaching typical retirement age, there is an increased focus on what this age cohort will do in its later years. This group represents a tremendous resource to the nation in terms of experience, skills, and leadership capacity. With Americans healthier and living longer, they are less interested in traditional retirement. Many of those who do not need to work for income will seek work to stay active and engaged, and others without the resources to carry them through their retirement years will work because they need to.¹ And baby boomers often want to stay connected by giving back to their communities through volunteering.

The Vision for How Community Colleges Can Meet the Needs Of Plus 50 Learners

Community colleges are uniquely positioned to respond to the growing needs of the plus 50 population. Community colleges have a long tradition of welcoming the non-traditional student

and are known for providing creative programming that meets evolving community needs.² The diversity of community college offerings from one college to the next indicates the innovation and flexibility that community colleges offer their diverse student body including plus 50 learners. Additionally, community colleges' strong partnerships with other local organizations allow them to connect plus 50 students to a large variety of work and volunteer opportunities.

Initiative Goals

The overarching goal of the Plus 50 Initiative is to build the capacity of community colleges to substantively and continuously engage in helping plus 50 learners lead purposeful lives through education, work, and service. To reach this goal, the initiative focuses on: supporting the grantee colleges to develop and expand their program offerings; building stakeholder support among community college leaders to ensure the feasibility and sustainability of Plus 50 programming; and producing and disseminating knowledge that community colleges nationwide can use to develop their own Plus 50 programs. The specific goal areas listed below include short and long term goals, not all of which are expected to be realized by the end of the three-year initiative. To reach the desired impact, many goals will be achieved years after the Plus 50 Initiative is complete – leaving a compelling legacy of the initiative.

Community colleges can turn on a dime.

AACC Staff

¹ MetLife Mature Market Institute (2006). Living Longer, Working Longer: The Changing Landscape of the Aging Workforce – A MetLife Study. Westport, CT: Metropolitan Life Insurance Company.

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Support Community Colleges' Development and Expansion of Plus 50 Programs

AACC supports the pilot group of grantee colleges in their efforts to increase offerings to the plus 50 population in three areas: (1) workforce training and career development; (2) learning and enrichment; and (3) volunteering. The initiative focuses not only on a simple expansion in the number of offerings, but also fosters innovation in how the colleges meet the particular needs and interests of this age cohort. This means developing new courses and redesigning existing ones; and it also means the development and expansion of support services that enable access to community college programming.

Another aspect of the initiative's goal to support the expansion of plus 50 programs is to grow the number of community colleges offering this programming beyond the initial grantee cohort. A long-term goal of the initiative is that 300 community colleges will implement and sustain plus 50 programs.

Advocate for Plus 50 Students' Needs through Dedicated Leadership

To foster the growth and sustainability of Plus 50 programming, key advocates and partners need to bolster support at community colleges. For the Plus 50 Initiative, this advocacy includes engaging an advisory committee composed of key stakeholders who can provide their insight, influence, and partnership-building to provide supports and opportunities. The initiative is also working to secure policies at local and national levels that are friendly to plus 50 learners.

Create a Roadmap to Support Future Plus 50 Offerings

A third overarching goal of the initiative is to disseminate information that will enable community colleges to implement, promote, and sustain high-quality plus 50 programming. Specific goals include: (1) building a business case that supports plus 50 programming; (2) capturing lessons learned from the pilot colleges to identify the "standards of excellence" that define high-quality programming; and (3) developing knowledge and tools that community colleges can use to develop and implement their own plus 50 programs.

Initiative design

The initiative is designed to create an active learning community environment that supports the grantee colleges in their implementation of high-quality programs. The section below describes the focus areas of the grantees' programs, as well as the wide variety of supports for the grantees that are included in the initiative design.

Programmatic Focus Areas

The initiative focuses on three programmatic tracks: workforce training and career development, learning and enrichment, and volunteering. Plus 50 programming also includes support services that increase access of the plus 50 learner to community colleges.

 Workforce Training and Career Development. Workforce training and career development are courses and services that help people upgrade their skills for the purposes of re-entering the workforce or advancing their careers. Colleges offer a wide range of training programs and career services, including workshops in resume writing and job interviewing, computer refresher courses, and certificate programs that help students train for new careers, as well as job placement services and community partnerships with employers.

- **Learning and Enrichment.** Learning and enrichment courses are general studies (such as math and foreign language) or personal interests (such as cooking and yoga) that students enroll in for academic development, to relieve stress from their busy lives, and for personal enrichment.
- **Volunteering.** This focus area includes programs and services that support plus 50 learners in finding opportunities to volunteer their skills and talents in their communities. Services can include issuing a directory of volunteer opportunities and matching skilled volunteers with nonprofits.
- **Support Services.** As part of their Plus 50 programs, grantees are implementing services and supports to increase access of plus 50 students to the community colleges. The plus 50 population faces a variety of barriers to attending community colleges that younger adult learners in their 20s, 30s, and 40s may not experience. Some of these barriers include lack of awareness of the courses and activities geared to the plus 50 population, difficulties integrating into campus life, physical challenges (e.g. needing large print on handouts), and financial barriers. To address these barriers and to help attract and retain plus 50 students, Plus 50 colleges are investing in support services, including: (1) services that facilitate the integration of plus 50 students into the college; (2) supports that facilitate physical access; and (3) supports to increase the financial feasibility of college courses.

Supports for Grantee Program Implementation

AACC is a "high engagement funder" that provides a wide range of supports and resources that help the grantee colleges to develop and implement high-quality programming.

Colleges work within three-college teams: one mentor college matched with two demonstration colleges.³ These teams share resources and support. Mentor colleges have more experience serving plus 50 students' needs, and lend their experience to benefit demonstration colleges.

The relationship with [our mentor college] has been very beneficial. The expertise and experience that they offer is invaluable. The guidance and monthly conference calls [have] been an excellent resource for us.

Demonstration College

- Each college forms a Plus 50 advisory **committee.** As a requirement of the grant, these committees include college stakeholders and community partners. Plus 50 program staff leverage local expertise to help design and implement their programming.
- AACC's staff work actively with the colleges to help them meet their own program goals. AACC staff provide a great deal of technical assistance and resources to the colleges. They consult on program design; conduct site visits to the colleges; and take the lead on aggregating and disseminating knowledge and tools that the colleges can use to support their programming.
- As part of its active work on behalf of the colleges, AACC engages firms to support the colleges in their marketing and public relations. Reingold, the marketing firm, creates Plus 50 branding templates that the colleges can use and adapt to their own marketing materials. They have also created the capacity for AACC to host Plus 50 "micro-sites" for each college that seamlessly integrate with their own college Websites. Steppingstone, the public relations firm, works to increase public awareness and maximize media exposure for the Plus 50 Initiative. Steppingstone's work includes providing the colleges with talking points, speech templates, and press release templates.

³ The initiative began with five three-college teams: fifteen colleges. Two demonstration colleges are no longer participating in the Plus 50 Initiative, so two of the five teams now consist of a Mentor-Demonstration pair.

- As part of its work to aggregate and disseminate knowledge that can support Plus 50 programming, AACC sends a newsletter out every two weeks, and posts on its Website a large variety of resources and information. The newsletter contains updates on the community colleges, the latest Plus 50 news stories, and resources to support Plus 50 programming in each of the three programmatic areas. The AACC Plus 50 Website is designed to provide the field with the knowledge and tools that it needs to implement and promote community college programming for plus 50 students. Those visiting the Website will find: all the past newsletters; practical tips for implementing the programs; examples of promising practices from the grantees' programs; links to Plus 50 news stories; AACC Plus 50 publications; past presentations given by AACC staff and Plus 50 grantees; and links to literature relevant to programming to plus 50 students.
- The initiative leverages the expertise of a National Advisory Committee. The National Plus 50 Advisory Committee members include representatives from Civic Ventures, AARP, Senior Corps, American Council of Education, the Institute for Competitive Workforce at the U.S. Chamber of Commerce, as well as four former community college presidents. The Advisory Committee convenes to offer their expertise to AACC staff and to the grantee colleges.
- **Grantee colleges participate in an annual convening.** Starting at the initiative launch, AACC hosts a grantee convening each year. At this convening, colleges learn from one another, and AACC hosts sessions and working groups that bring additional resources to the colleges. The marketing and public relations firm present the latest tools and templates to the grantees. The national Advisory Committee members also attend this convening.

Methods

AACC engaged LFA Group⁴ to conduct the Plus 50 evaluation. LFA developed a mixed-method evaluation designed to collect both quantitative and qualitative data to assess the initiative and support continuous improvements over the course of the three-year initiative. The primary elements measured include grantees' implementation progress, participant satisfaction, and capturing lessons learned and promising practices from the first year of the initiative. To measure the many components of the initiative, LFA collected data using several methods: conducting interviews with program staff at each of the grantee colleges and with AACC staff; asking grantees to complete program implementation data collection worksheets; and partnering with grantees to administer participant surveys for the students taking part in Plus 50 programming.

Progress in Program Implementation at Grantee Colleges

This section describes the progress that the grantee colleges are making in program implementation. A critical measure of program effectiveness is the extent to which programs are meeting the needs of their customers: the plus 50 students. Thus, this section includes the results of customer satisfaction surveys distributed to students at the grantee colleges.

Overview of Grantee Programs

The table below provides an overview of the Plus 50 program tracks that each grantee implemented in year one. All of the grantees are implementing workforce training and/or career development services for plus 50 students, most are offering learning and enrichment courses, and about half of the grantees are offering volunteering opportunities and support.

⁴ Formerly LaFrance Associates, LLC.

Plus 50 Grantee Programs				
		Plus 50 Program Tracks		
College	Mentor or Demonstration	Workforce Training and/or Career Development Services	Learning and Enrichment	Volunteering
Cape Cod Community College	Mentor	\checkmark		\checkmark
Central Florida Community College	Mentor	\checkmark	\checkmark	\checkmark
Century College	Mentor	\checkmark	\checkmark	\checkmark
Clark College	Mentor	\checkmark	\checkmark	\checkmark
Community Colleges of Spokane	Mentor	✓	✓	
Clover Park Technical College	Demonstration	\checkmark	\checkmark	
Joliet Junior College	Demonstration	✓		✓
Luzerne County Community College	Demonstration	\checkmark	\checkmark	
Richland College	Demonstration	✓	✓	✓
Santa Fe College	Demonstration	\checkmark	\checkmark	
St. Louis Community College	Demonstration	\checkmark	\checkmark	
Wake Technical Community College	Demonstration	\checkmark	\checkmark	
Western Dakota Technical Institute	Demonstration	\checkmark		\checkmark

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Course Offerings and Enrollment at Plus 50 Colleges

Exhibit 2 shows the change in two types of courses offered to plus 50 students (enrichment and workforce training), specifically as part of plus 50 programming. There was a slight rise in the number of unique⁵ enrichment courses, and a dramatic rise in the number of workforce training courses. Colleges are primarily focusing their Plus 50 programs on workforce training: Plus 50 grantees collectively offered 856 more workforce training courses for plus 50 students in year one than at baseline. This is a reflection of two things: the initiative encouraged colleges to move beyond the focus of enrichment for this age group, and to meet the workforce training needs of plus 50 students as

Courses Offered for Plus 50 Students (Changes from Baseline to Year One)¹ Exhibit 2



⁵ The unique number of courses represents a college's "course portfolio:" the number of unique courses that are offered at least once during the year to this population.

well. This rise also reflects the response of the colleges to the downturn in the economy, which resulted in growing needs of the plus 50 age cohort for workforce training courses.

Exhibit 3 provides aggregate enrollment numbers for the grantee colleges. The bottom line shows the total number of plus 50 students enrolled in courses that grantee colleges included as part of their Plus 50 programming. (This number at baseline was already quite high due to the fact that mentor (and some demonstration) colleges already had programs and courses targeted to students in this age group.) The top line shows the change in the total number of plus 50 students enrolled at all the colleges (in *any* course, *including* courses that grantee colleges included as part of their Plus 50 programming).

The graph shows that although the total number of plus 50 students enrolled





college-wide at grantee colleges decreased over the last year, the number of students enrolled in courses associated with the **Plus 50 Program increased by approximately 2,500 individuals.** This increase can be traced at least partially to the fact that there are more courses associated with Plus 50 programming. However, survey data from students participating in Plus 50 programs also suggest that program outreach is drawing plus 50 students to the college. During the 2008-2009 academic year, 77% of survey respondents took a workforce training course for the first time, and 38% of survey respondents took an academic and enrichment course for the first time.

Why, then, did overall enrollment in this age group decline for the grantee colleges in the aggregate? One explanation may be the downturn in the economy. While the disappearance of retirement savings might draw some students to campus for workforce training courses, it can have the opposite effect for courses that people take for enrichment and personal interest. It may be that many plus 50 students no longer had the time or disposable income to enroll in such courses because they had to cut back on non-essential expenses or had to return to the workplace. It is the hope that in future years of the initiative, the ability of Plus 50 programming to draw students to campus will positively affect enrollment numbers overall.

Meeting the Needs of Plus 50 Customers

Ultimately, the goal of the Plus 50 Initiative is to better meet the needs of plus 50 students. The proof is in the pudding: are students satisfied with the training, learning, and volunteering offerings? As part of the evaluation, the LFA team supported the colleges in administering a participant survey to their customers. The results are described below.

Workforce Training and Career Development

The results of the student surveys reveal that students are very satisfied with what they are getting out of their workforce training courses. About 90% agree that the courses have helped them to acquire new skills or improve upon their current job skills; and 80% agree that the coursework is helping them make progress toward a license or certificate. A remarkable 72% agree that their workforce training program has helped them to get hired into a job. All of these results show that the workforce training programs that community colleges offer to plus 50 students are showing very positive student-level outcomes: they are supporting students in their efforts to



achieve a range of career objectives, including finding a job in this very difficult employment environment.

In answering open-ended questions in the surveys, students spoke about the ways that courses had helped them to pursue their career goals. In attending workforce training courses, students were able to think about what their new options were, and what next steps they might want to take. Students also appreciated the new skills they got through taking the courses. Appreciation for new skills most clearly showed through in students' discussion of their computer classes. Several colleges offered computer courses geared to the needs and learning styles of plus 50 students. These courses aim to provide instruction in a supportive learning environment that makes students feel more comfortable with computers. These courses are

The classes made me more aware of where I wanted to be going in my career at this time in my life.

> [The classes] provided pertinent information to improve my skills in a timely fashion.

The classes helped me to prepare to reenter the job market by improving my computer skills.

Plus 50 Participants

especially designed for those who may not be up on the latest computer technology, and they got very positive reviews from their participants.

The results of the student surveys show that students also have high levels of satisfaction with how career development services are helping them to adequately prepare for a job search (between about 75% and 85% agree that the services have helped them in several areas of preparing for a job search). They have lower levels of satisfaction with how these services are able to help them actually find a job.

A comparison of the results for how the *services* have helped students land a job (47% agree) with how *training* has helped students land a job (72%, as reported above) suggests that training is



a critical element in actually getting hired – and that training may be more helpful in getting hired than are career services. Nevertheless, these results show very positive student outcomes: services are supporting students in learning job search skills, preparing for a job search, locating job openings, and finding a job.

Customers of the career development services spoke about the ways that career services were helpful to them. These include services such as career assessment tools, career counseling, career workshops (e.g. resume writing, interviewing, networking), and job matching. Students were able to use these tools and services in a way that helped them find direction and brush up on the skills they

Reviewing my skills and abilities, personality traits and strengths, I was able to direct my energy toward solid decisions.

Plus 50 Participant

needed to conduct an effective job search. They reported that they had received assistance to: define career objectives; create or update resumes; learn new job-hunting skills; network; learn

how to efficiently look for job openings; and use new technologies to hunt for jobs.

The job market in 2008 and 2009 was very challenging to begin with, and seeking to re-enter the workforce is even more difficult for those 50 and older. Bureau of Labor Statistics figures show that older workers are out of work much longer than younger workers: those in the 45-54 and 55-64 age groups are out of work for over 22 weeks; those in the in the 25-34 and 35-44 age groups are out of work 15.3 and 18.7 weeks (respectively).⁶ In this difficult environment, plus 50 customers were especially appreciative of the helpfulness and supportiveness of the career services staff, and the [I had] abundant support from staff who exhibited a sincere desire to help me succeed ... and I did.

[What was valuable to me was] speaking finally with a person who understands the age problem and job market in our society.

[The staff person] was very understanding of what the job search for someone over 50 might require and was very encouraging and helpful.

Plus 50 Participants

⁶ Bureau of Labor Statistics. (2008). Current Population Survey: Unemployed Persons by Age, Sex, Race, Hispanic or Latino ethnicity, Marital Status and Duration of Unemployment. Washington, DC.
fact that they understood the particular needs and challenges of those 50 and older seeking to reenter the workforce and advance their careers. These customer reviews show that the Plus 50 colleges have found success in tailoring their career service offerings to this age group.

Learning and Enrichment

The variety of enrichment programming available at Plus 50 colleges provides opportunities for plus 50 learners to do everything from updating technology skills to taking cooking classes to learning new languages. Nearly all survey respondents agree that Plus 50 enrichment classes increased their knowledge and helped them to learn **new skills.** Plus 50 learners pointed out that the enrichment courses helped them hone their interests and goals, as well as develop plans for pursuing further training or coursework that might contribute to earning a degree or certificate.

In addition to valuing the intellectual stimulation of the enrichment courses, plus 50 learners also expressed appreciation for the social aspect of Plus 50 enrichment programming. Nearly all respondents agree that the enrichment courses contributed to their enjoyment of returning to school. In response to open-ended questions, plus 50 learners talked about looking forward to getting out of the house and

I tried something I had never tried before. I got to get out of the house and do something besides errands. It gave me something to look forward to.

Plus 50 Participant

attending classes with like-minded people. Sharing new experiences with other plus 50 learners reduces feelings of isolation and fosters feelings of community and excitement.



Volunteering

Altruism, a desire to stay engaged, and connecting to community members of all ages inspired plus 50 volunteers. Baby boomers have higher rates of volunteerism than previous generations⁷ and continuing to capitalize on their capacity and desire to volunteer will have profound effects for community organizations. Through Plus 50 volunteering programs, students have found opportunities to use their skills and knowledge to benefit their communities.

Fewer than half of Plus 50 colleges are focusing on the volunteer track, and one of the programs had not been in place long enough to survey participants.



However, among this small group of respondents, the results are very positive. Very large majorities agree that through their volunteering opportunities they have been able to learn new skills, explore new career options, feel more connected to the community, and feel that their skills and experiences are valued.

There were 22 participants who reported on their surveys the number of hours they had spent in volunteer work. The results from these surveys showed that **volunteers averaged 174 hours of community service during the first year of the Plus 50 Initiative.** I was able to use my skills, talents, and knowledge in a setting that was beneficial to the organizations I volunteered with. It also allowed me to become more familiar with the community.

Plus 50 Participant

⁷ Corporation for National & Community Service (2007). Baby Boomers and Volunteering: Findings from Corporation Research. Retrieved on February 3, 2009 from: http://www.nationalservice.gov/pdf/07_0307_boomer_research.pdf

Support Services

Many plus 50 learners are operating outside their comfort zones, given that they may have been out of college for several decades or may have never attended college. To help plus 50 learners navigate the college system and become familiar with the colleges' offerings, grantee colleges are implementing services tailored to the needs of this age cohort. Nearly all survey respondents agree that streamlined registration processes facilitated their integration into the **college.** Course catalogues tailored to plus 50 learners, support for financial aid, and advising also aided plus 50 students' access to Plus 50 community colleges and garnered favorable satisfaction ratings from participants.



Putting in Place the Fundamentals for Plus 50 Programming

Program implementation is not simply a matter of offering enrichment and training courses, career services and volunteering programs, and supports to facilitate plus 50 student access. High-quality program implementation also depends on *how* these offerings are put in place. Do colleges base program planning on assessing the needs of their target population? Do they sufficiently tailor their offerings to those needs? Do they leverage expertise of community partners? Are their programs sustainable? The sections below address these implementation issues.

Conducting a Needs Assessment

Several of the colleges had conducted needs assessments even before they applied for the Plus 50 grant; and several more conducted needs assessments during the grant's first year. These colleges have found that needs assessments were vital to really understanding what their customers wanted. Using the results of needs assessments, they were able to better understand how to tailor their offerings to plus 50 students. Our experience [is]: don't go into a community and tell them what they need. Let them tell us what classes, seminars, and programs would be of interest to them. [...] Some make the mistake of going into communities [without] knowing what they need. [If you assume you know what they need], you might be sorely disappointed.

Demonstration College

Innovating to Meet the Needs of Plus 50 Students

To ensure that plus 50 learners engage successfully in coursework and services that are offered as part of plus 50 programming, grantee colleges are tailoring their offerings in a variety of ways.

Tailoring courses to plus 50 students'

learning styles. Plus 50 colleges are making efforts to ensure that the teaching style for classes offered to plus 50 students fits with the learning styles of plus 50 students. For example, a Program Associate from one college spoke about taking an asset-based approach to working with plus 50 students. This approach explicitly capitalizes on the

skills and capacities those students bring into a classroom – in particular, how their work and life experience provides them with perspectives that can be shared with other students to enrich the learning experience for all.

 Creating inviting learning classrooms and workshop spaces. Designing classrooms tailored to plus 50 learners includes being aware of how physical abilities change over time such as hearing and vision loss. Several colleges have adapted their learning spaces to accommodate these and other physical needs. Meeting these needs means removing a barrier

Meeting these needs means removing a barrier to learning that might otherwise obstruct plus 50 learners' access to courses.

 Offering short-terms courses. For plus 50 students who need to upgrade their skills to enter or re-enter the job market, time is usually a major consideration. These students do not want to enter a program that could take them several years to complete; instead, they are interested in learning or brushing up on skills quickly, or in obtaining certification on an accelerated schedule. Colleges also I must say that the classes were taught in a manner that took into consideration that plus 50 [students] had skill levels different from younger [students]. Excellent teaching techniques.

Plus 50 Participant

[We] use dual monitors so they can enlarge the text so that they can read on one monitor and do their work on another.

Mentor College

Short-term [course offerings] are very much in demand [as] opposed to something long-term over many semesters. We're looking at short- programming that gets people out and on their way.

Demonstration College

recognize that plus 50 learners who found themselves out of work and needing to retool require that courses be available immediately: it is a hardship for them to have to wait for the next semester to enroll. Grantee colleges have recognized both of these needs, and are working actively to implement short-term training programs, including very short-term offerings that students can enroll in before the next semester arrives.

Marketing and Outreach to Bring Plus 50 Students to the Program

Plus 50 colleges are using a wide variety of marketing and outreach efforts to raise the visibility of Plus 50 programming and attract students to the campus. Strategies adopted include:

Media Coverage. The hard work of Plus 50 colleges in the areas of marketing and public relations has paid off. All of the colleges have reached out to the local media, and have been featured in newspaper articles, radio spots, and online updates. This has raised the profile of the colleges' Plus 50 programs, and brought new students to the campus.

One of the greatest successes has been on how well the local media has responded to this initiative. [...] This has in turn provided an influx of registrations from the community.

Demonstration College

- **Establishing and using the Plus 50 brand.** With the support of marketing and public relations consultants hired by AACC, Plus 50 community colleges received logos, photos, templates, and guidelines to brand the Plus 50 program. The Plus 50 brand also represents the entire initiative further strengthening the brand and visibility of Plus 50 programs nationwide.
- Harnessing the power of Websites, social marketing, blogs, and electronic newsletters. Plus 50 colleges were savvy users of college Websites, blogs, and e-newsletters to spread the Plus 50 programming message. Additionally, Plus 50 colleges' e-mail listservs helped colleges communicate to specific audiences, spread consistent messages, and get the word out about last minute updates.
- Using plus 50 students' stories to raise awareness. Some Plus 50 colleges capitalized on the experiences of plus 50 students to tell the story of their programs and/or services. Through student blogs, student videos, and word of mouth, more plus 50 students connect to community colleges. Hearing the stories from and about plus 50 students helps others to envision themselves as students at the college, and to feel excited and encouraged about the new possibilities of participating in community college programming.

Always go back to the student successes – if you can develop relationships with your participants and keep communicating with them and what their successes are – people want that real-life experience to relate to.

Demonstration College

- Getting the word out through college catalogues, brochures, and fliers. Traditional community college marketing opportunities such as course catalogues, brochures, and college magazines continue to play an important role in getting the word out about Plus 50 programs and services including direct mail. Some colleges are collaborating with organizations such as their local AARP to share targeted "ready-made" mailing address lists.
- Offering open houses to bring Plus 50 learners into community college campuses. To welcome plus 50 learners into the community college campus, increase awareness of their programming, and facilitate an easier process of connecting to and registering for Plus 50 programs, some colleges have been holding open houses.

These [open house] nights have grown from a few participants to almost 100 at our last event.

Demonstration College

These have served as an opportunity to engage many stakeholders in the community college including admissions staff, faculty, and volunteers to welcome and market offerings to plus 50 learners.

- Marketing to internal stakeholders to ensure they are aware of the colleges' Plus 50 programs. Plus 50 community colleges conducted "inreach" to their internal stakeholders from staff and faculty to their presidents. Some Plus 50 colleges capitalized on professional development days to raise awareness about the Plus 50 Initiative to their faculty and staff.
- **Community outreach**. Plus 50 program staff are hitting the streets of their communities to meet some of the plus 50 learners they are hoping to serve and raise awareness about Plus 50 offerings at their colleges. Many Plus 50 program staff attend local events such as open houses and job fairs to talk about their program offerings and establish a presence in the community.

Community Partnerships

Program staff extol the virtues of involving community partners in their programming. Partners provide a wide range of supports, described below.

- Membership in the college's Plus 50
 Advisory Committee. As part of the initiative design, community partners participate in an Advisory Committee to the Plus 50 program. This is a way for community partners to have regular communication with program staff, and to offer their expertise and connections to additional resources in a timely way.
- Providing marketing and outreach support to the Plus 50 programs. Partners offer free publicity, advertising, and outreach for the Plus 50 program, and they provide marketing expertise to program staff. Several

marketing expertise to program staff. Several colleges have been able to take advantage of the mailing lists of community partners – lists that would have taken a great deal of effort and expense to compile.

Referring new customers to the Plus 50 program. Almost half of the grantees reported on the fact that they have also enlisted their community partners in referring their own clients and members to the community college Plus 50 programs. While program staff say that sometimes these referrals result in new participants in volunteering programs, the main benefit is receiving new students in training programs

(such as nursing or truck-driving), or people who want to use the career development services (such as workshops or job fairs). This probably does not denote that workforce partners are better at referring people; more likely, it is a function of the fact that – due to the current economic client – plus 50 individuals have an increasing need for workforce training and career development.

- **Partnering in course or workshop development, instruction, and hosting.** Over half the Plus 50 grantees say that community partners have either developed courses or workshops for their programs, or else partnered with them in developing courses or workshops. In addition to developing workshops and courses, community partners often provide free instruction, or host entire workshops or seminars.
- **Contributing to career services events.** Program staff from several colleges reported that community partners have worked with them on job fairs or career counseling events. For example, one college has partnered with its local Workforce Investment Board to offer an annual Job Search Expo and Job Fair. At another college, the local workforce council assists with teaching interviewing skills.

The community partners have become invaluable to [our college's] Plus 50 successes. They extend our ability to reach out to the plus 50 demographic; they monitor emerging needs of boomers in the workforce and in our community; and they can always supply a "success story" when one is needed.

Mentor College

What works well [is] working with the local Workforce Development Council. We get a lot of student referrals from workforce agencies. They handle dislocated workers – that drives a lot of our students to our campus.

Demonstration College

Sustainability

Community colleges are actively working toward making their programs sustainable. They are using a variety of strategies to this end, and they usually use multiple strategies.

Course revenues. For 12 of the 13 grantee colleges, courses are central to Plus 50 programming. An important part of sustainability, then, is the ability to develop courses that generate sufficient revenue. Colleges charge tuition for their courses, and tuition fees (plus the state funding that supports credit courses) generally cover the

We hope to have about 20 new [training] programs. And then they have to bring in their own revenue and [become] selfsufficient.

Mentor College

cost of offering a course. Thus, as long as a course is targeted in some way to the needs of plus 50 students, the sustainability model is already built in to the way that community colleges do business.

- Applying for additional grants to pay for staff time and program activities. Community colleges routinely seek grants from public and private funders to support their programs. Their participation in the Plus 50 initiative has built their capacity to provide programming to students in this age group. Thus, the Plus 50 grantees find themselves at the intersection of growing funder interest in two areas: community colleges and support of the baby boom generation. They are ahead of the curve in applying for additional funding.
- Embedding an orientation toward plus 50 learners in the standard operating procedures of college departments.
 Colleges are going beyond efforts to create and sustain a specific Plus 50 program; institutionalization also happens by embedding specific practices in standard operating procedures. A very good example of this is to have advising personnel for whom

No matter what, we have [federal] funding [for a specific training program]. [...] We ... will continue to have outreach [to plus 50 students] from there. One of our college focal points is plus 50 issues.

Demonstration College

part of their job description is serving plus 50 students, and who are trained to provide highquality, tailored services to this population.

- Writing program components into the annual college budget. When programs are funded by grants, they can easily be discontinued when the grant is over. By making program components or the program as a whole part of the annual college budget process, colleges will ensure that there is a steady funding source for plus 50 activities.
- Leveraging community partnerships to contribute to sustainability. Partnerships contribute to sustainability in several ways, including: referring customers to the plus 50 program; providing in-kind services; participating in revenue-sharing; and making commitments to provide funding if there is a shortfall in any given year.

[When there is] a real solid partnership, [when] one of the partners runs out of funding, the other partner takes up that slack and keeps the partnership going. [...] They should be sustainable as long as one or two is doing well.

Demonstration College

Effectiveness at the Initiative Level: AACC Support to Grantees, Knowledge Dissemination, Advocacy, and Expansion to More Colleges

Effectiveness of the Plus 50 Initiative is measured not only in terms of how program implementation for grantee colleges is progressing; it is also measured at the initiative level. Initiative-wide process and outcome goals include:

- AACC support provided to Plus 50 grantee colleges (including marketing and public relations support, as well as the development of a learning community);
- The production, aggregation, and dissemination of knowledge to the field;
- Advocacy designed to place on the policy agenda the issues of plus 50 students at community colleges; and
- Expansion of Plus 50 programming to colleges beyond the initial pilot group.

Support to Grantees from AACC

AACC has provided a wide range of support for grantee colleges. AACC staff are in frequent phone and email contact with grantees to act as thought partners, provide support with marketing and public relations, collect and distribute a large amount of valuable information and tools, and facilitate a learning community that allows grantees to learn from one another.

AACC Responsiveness

AACC received extremely positive reviews for their responsiveness to grantees, and for the large store of ideas and resources they had to share. Plus 50 program staff express a deep appreciation for the general support they have received from AACC staff. They describe communication as quick, easy, informative, and encouraging. Many colleges describe AACC as "another mentor" and feel that

AACC staff are interested in and supportive of what the colleges are doing. Plus 50 program staff reported that they felt they could pick up the phone to call AACC staff with questions and receive help at any time: the Program Director and Senior Program Associate were described by one college as "a phone call away." Staff at another college said about AACC staff that "I feel like [they are] on our team in some ways."

Marketing and Public Relations Support

AACC staff share marketing strategies, materials, and public relations tools to help spread the word about the Plus 50 program. The Reingold partnership allows all Plus 50 grantees to benefit from the work of one firm, creating valuable economies of scale. Reingold makes the process of marketing the Plus 50 program simpler and more cost-effective for all the participating grantee colleges. All materials include the Plus 50 branding Being able to use some of the slogans and the logos [have been most helpful to implementation]. The whole slogan with "rehired, re-inspired, rewired" was genuine.... It's the heading for our brochure. It really says what program is about. Simple, effective, and it was very beneficial for us.

Demonstration College

AACC has been marvelous. [...] They're very responsive on the phone and email. The best thing about them is how accessible they are.

I've been 100% pleased with the support

we have received from AACC. [They have]

been very helpful with advice and counsel

and encouragement.

Demonstration College

Mentor College

while allowing each college to customize the materials and brand their institution and its individual programs. The strong Plus 50 brand and the work of Reingold increase grantees' marketing efficiency while offering flexibility for colleges to accomplish their individual goals.

Learning Community

In order to maximize information-sharing and collegiality, AACC has established a Plus 50 learning community that includes all grantee colleges and AACC staff. Participation in the Learning Community involves active participation in the Plus 50 listserv, attending the annual Plus 50 Initiative Conferences, hosting site visits, visiting other Plus 50 colleges, and sharing ideas for project implementation strategies and resources. The colleges find participation in this learning community to be very

We've gotten a lot out of the others in the initiative. Just having access to what their projects are [and] how they're doing things. "Oh we could do that; that's easier; maybe we could incorporate that." It's helpful to have that coalition of people, so we're not having to think of everything on our own.

Demonstration College

helpful; they learn from the other colleges on their team, and they learn from all of the colleges in the pilot cohort.

Knowledge Dissemination

Goals of the Plus 50 Initiative extend beyond that of supporting individual colleges to implement programming for plus 50 students: its ultimate goal is systemic change. As part of the Plus 50 vision, high-quality programming tailored to the needs of plus 50 students will eventually be institutionalized in community colleges nationwide. A critical ingredient for systemic change is the dissemination of knowledge to practitioners in the field, and AACC is actively working to produce, aggregate, and disseminate knowledge to the stakeholders who will be agents of change.

Media Exposure

A public relations firm (Steppingstone) and AACC provide support to individual colleges to succeed in getting covered in their local media outlets. They have also been successful in reaching national media outlets. During year one, the Plus 50 Initiative or at least one of its grantee programs appeared in 160 media spots reaching over 74 million readers, viewers, and listeners.⁸ Plus 50 programs have been featured in major news outlets such as the New York Times, the Wall Street Journal, and National Public Radio.

Conference Presentations

As another way to disseminate knowledge to the field, AACC has also put considerable effort into ensuring that it presents at regional and national conferences the lessons learned and promising practices for Plus 50 program implementation. AACC always invites grantees to co-present. During year one, AACC and ten grantees presented at seven conferences. These conferences were hosted by AARP, AACC, Maturity Works (with the National Council on Aging), The League for Innovation in the Community College, and the National Institute for Staff and Organizational Development. Conference presentations included such titles as: *Are You Ready for Plus 50 Learners?* and *Serving Plus 50s through Public and Private Partnerships*.

⁸ Media coverage data provided by Steppingstone LLC

The Ageless Learning Newsletter

AACC sends out a bi-monthly newsletter: *Ageless Learning*. The newsletter always includes updates on what the grantee colleges are doing, as well as links to and descriptions of resources that are useful in implementing programs in each of the three tracks. It systematically aggregates information that colleges implementing Plus 50 programming will find useful.

I open up those links [in the newsletter] and those have been really beneficial. [...] It's always helpful to have information on a national level – I can have statistics at my fingertips.

Mentor College

Knowledge Creation

AACC not only aggregates existing knowledge in the field, but also generates it. In year one, AACC commissioned a study of the programming that community colleges nationwide offer to plus 50 students. It also commissioned a publication that lays out the business case to community colleges for how they can tap into the growing market of plus 50 learners.

Webinars

To help promote the Plus 50 Initiative, to encourage participation in Plus 50 programming, and to support grantees, AACC is developing and hosting a series of six interactive Webinars. The development of these Webinars began during the first year of the initiative and the rollout occurs during the second year. Webinars include topics such as *Tools to Assess the Needs of Your Plus 50 Population*, and *Creating and Sustaining Your Program for Adult Learners*.

The Plus 50 Website

The Plus 50 Website is a vital repository of information and resources related to Plus 50 programming. Accessible on this Website are the original Plus 50 publications; links to the Webinars; practical tips for serving plus 50 students; descriptions of promising practices at the grantee colleges; links to media stories; an archive of all past *Ageless Learning* Newsletters; and conference

The Website they've created for the initiative gives us access to what's going on at other places ... to understand what's going on across the country. And that's been invaluable to us.

Mentor College

presentations. AACC uses this Website to aggregate and disseminate a great deal of information that practitioners can use to build support for and implement their own colleges' Plus 50 programs.

Advocacy

All of the knowledge production, aggregation, and dissemination constitute advocacy activities: they are all designed to put the issue of plus 50 students on the public agenda. AACC has additional accomplishments in this area, however. AACC has partnered with the Association of Community College Trustees (ACCT) to create a Joint Legislative Agenda for 111th Congress. Included in this legislative agenda is the statement that AACC and ACCT support the following legislative priority: "Improve new opportunities for education and training for a maturing workforce by tailoring federal programs to meet its unique needs and preferences; help colleges provide comprehensive life-long learning opportunities for the older student."

AACC has also created two templates for op-ed pieces that members of the National Advisory Committee and college presidents can use to write op-eds for local and national media outlets. These templates were created at the end of year one; it is expected that in year two these national and local spokespeople will have published op-eds in multiple media outlets.

Initiative Expansion to New Colleges

As a result of the success of the initiative, AACC has expanded the Plus 50 program beyond the original 13 colleges and added expansion colleges. The expansion links new community colleges to the success of current Plus 50 colleges. The expansion plans include:

- Century College will be a learning partner for nine Minneapolis community colleges. Century will host a regional meeting for the local expansion colleges to work on Plus 50 Initiative program implementation in the workforce training and retraining area.
- Western Dakota Technical Institute will host a conference for community colleges near National Parks to form partnerships and disseminate lessons learned from their innovative pilot program working with the National Park Service to train plus 50 adults to serve as seasonal rangers and interpretive guides.
- Three Plus 50 Initiative community colleges in Washington Clark College, Clover Park Technical College, and the Community Colleges of Spokane will host a regional conference focused on how to start a Plus 50 Initiative program, involving as many as 30 community colleges from Washington and Oregon.
- St. Louis Community College (STLCC) will be a Learning Partner for Metropolitan Community College, Longview. STLCC and this Kansas City area community college share regional concerns and have similar economic and educational demographics that make them ideal partners.
- Central Florida Community College will serve as a learning partner for Rose State College. Both of these colleges are expanding training and retraining opportunities for plus 50 students seeking to stay in the workforce.
- Joliet Junior College will serve as a learning partner for neighboring Moraine Valley Community College, which will expand its efforts to help unemployed plus 50 workers who want to find employment.

Preliminary Findings on Standards of Excellence

It is a goal of the Plus 50 Initiative that at the conclusion of the grant from The Atlantic Philanthropies, formal standards of excellence will be announced. The search for standards of excellence is embedded in AACC's ongoing efforts as it works with the colleges and experts in the field to understand the success factors that facilitate program implementation, as well as what works best for plus 50 students.

AACC is also leveraging the work with its evaluator (the LFA team) and the National Advisory Committee to uncover standards of excellence. The LFA team used qualitative data collected through interviews with grantee colleges to develop an initial list of standards of excellence, and presented this list at the second annual convening to the National Advisory Committee. This list was used as the basis for a facilitated discussion of the Advisory Committee members. Using the notes from that discussion, the qualitative data from grantee colleges, and the survey data collected from plus 50 students, the LFA team can offer preliminary insights on what the standards of excellence may be. The word *preliminary* should be stressed here: this is meant only as an initial foray into the standards of excellence. The preliminary findings can be used as a basis upon which to build during the coming years of the initiative.

- Plus 50 offerings should be tailored to the needs, interests, and objectives of the plus 50 population. Colleges should conduct needs assessments so that they can base program design and development on the needs of their target market. There are also some clear messages about the *ways* in which offerings should be tailored, aside from the particular interests of the local plus 50 population. First, short-term programming is in high demand for the workforce training courses. Second, the learning environment for all courses should be comfortable for this age group. This can mean physical accessibility (e.g. large print on handouts), but it also means taking into account the learning styles of the plus 50 student. Instructors who were able to do this got high marks from the plus 50 students in their survey responses.
- Related to the issue of tailoring: faculty and staff should receive professional development that provides them with the skills they need to teach courses and provide services that effectively meet the needs of plus 50 students. Professional development for instructors will enable them to take into account the learning styles of plus 50 students as they are conducting their courses. Professional development is also important for staff providing services, such as career counseling. In the open-ended responses on surveys, students made very clear when they felt that staff understood their situations, and also when they did *not* feel that this was the case. When staff had a good understanding of plus 50 assets, constraints, and challenges, their customers were very happy with the services they received. When customers felt that they were *not* understood by the staff serving them, they did not feel that the services were useful. It is important that colleges recognize that plus 50 students are not the same as students in their 20s, 30s, and 40s, and thus that it is important to provide professional development to faculty and staff in order to build their capacity to work effectively with this population.
- Plus 50 offerings should be marketed in such a way that does not appeal to a student's identity as a "senior." Plus 50 marketing must walk a fine line between (1) letting the customer know that the offerings are tailored to their needs, and (2) not making people feel like "senior citizens." It is clear that tailoring the offerings is important. In addition, to attract plus 50 customers, colleges need to let them know that they understand the needs and interests of this market. However, there are those (especially in the 50-64 age bracket) that don't necessarily want to see themselves as grouped into one plus 50 age group. The Advisory Committee suggested that colleges implementing Plus 50 programming should segment the market in ways that appeal to life-stage rather than to age (e.g. "retired and interested in lifelong learning;" "retired but want to work to stay active;" and "can't afford to retire;" "unemployed and need to work;" and "employed but interested in career-switching").
- **To attract plus 50 students to campus, colleges should publicize student stories.** There is nothing like a story to draw people in. When people hear from someone that they can identify with about their experience at community colleges, this is very likely to entice them to try out college offerings. Student successes will set other students up to believe in themselves, and to know that they can find success as well.
- Colleges should set up a Plus 50 Advisory Committee to help develop programming and to support sustainability efforts, and should ensure that it includes community partners, as well as people who have expertise with this age group. The colleges have found that local expertise has provided invaluable support in program development. They have also found that Advisory Committees are most successful when members have experience with this age group: this type of experience is just as important as functional expertise. In other words, when the Committee includes someone with experience in workforce development, it is especially helpful if that person understands the issues involved with workforce development specifically for those 50 and older.

Conclusion: The Factors Contributing to the Successes of the Plus 50 Initiative in Year One

The Plus 50 Initiative has been extraordinarily successful in a very short period of time. Not only have its 13 grantees greatly expanded their offerings to plus 50 students, but, program quality is also high: the survey results from students show that the programs have done an excellent job in bringing about positive outcomes at the level of the individual customer. AACC has also generated and aggregated a great deal of knowledge, information, and tools, which it effectively disseminates through its *Ageless Learning* newsletter and its Website. The initiative has also expanded beyond its pilot cohort, bringing in new community colleges to attend regional convenings, or to be learning partners with pilot grantees. It has designed a Webinar series that provides additional information and tools to community colleges nationwide that they can use in designing and launching their own plus 50 programs. The grantee programs and the initiative as a whole have attained a high level of media exposure, with over 160 media spots reaching 74 million readers, listeners, and viewers.

The LFA team has experience evaluating other multi-grantee initiatives that seek to bring about systemic change. From the perspective of the evaluator, the progress of the Plus 50 Initiative in one year represents an unusually high level of accomplishment. These types of initiatives generally take much longer to build momentum, and typically have a lower public profile. What are the factors that contribute to Plus 50's success? In the opinion of the members of the LFA evaluation team, these factors include:

- A very high level of engagement between AACC and the grantee colleges. Grantee colleges report that AACC staff have been highly supportive and responsive. Staff conduct site visits, work actively with colleges to problem-solve and improve their programs, are always "just a phone call away," and have set up an active learning community from which grantee colleges benefit.
- Active engagement of a National Advisory Committee. While LFA has seen other initiatives include Advisory Committees, they are sometimes convened only at the beginning of the initiative and then fade away. AACC is making a strong effort to leverage the expertise and influence of those on its Advisory Committee. They returned to the second annual convening and dove enthusiastically into their assignment of identifying Plus 50 programming standards of excellence.
- The choice to hire marketing and public relations firms that build grantees' marketing capacity as well as their ability to generate media coverage. In offering the support to grantees that its marketing and public relations contractors provide, AACC is efficiently building grantees' capacity to market its programs, conduct outreach, and

I would say that out of all the initiatives that I've been a part of, I've never received this great [an amount of] support for marketing....

Demonstration College

maximize media exposure. The attention to how a funder with multiple grantees can make use of these scale economies to build awareness is unusual.

A deep commitment to building the capacity community colleges nationwide. AACC has
not stopped at its focus on its pilot grantees, but has actively worked to leverage their pilot
colleges' success into a variety of efforts to build capacity for colleges nationwide. Capacity
building efforts include all of the information disseminated through the Website, and
especially the Webinar series for which design began during year one.

The enthusiasm of AACC staff, and their commitment to their grantees and the field as whole, position the Plus 50 Initiative to build on its year one accomplishments during years two and three. The initiative is well on its way to leaving a strong legacy, enabling community colleges nationwide to develop and sustain high-quality programming for plus 50 students.



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STEPS TO SUCCESS:

Analyzing Milestone Achievement to Improve Community College Student Outcomes

> Colleen Moore Nancy Shulock Jeremy Offenstein Institute for Higher Education Leadership & Policy

> > October 2009



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Executive Summary

The Obama Administration has brought increased attention to community colleges as institutions that will help the nation once again become a world leader in postsecondary degree attainment. Billions of dollars in new funding are being proposed as a means to improve graduation rates and other student outcomes across the nation's community colleges.

But there is widespread recognition that the current means of measuring and accounting for outcomes in community colleges is deficient. Among the weaknesses of current systems is an under-emphasis on the reporting of intermediate outcomes that students achieve along the way to completion. Understanding the patterns by which students make, or fail to make, progress toward completion is vital to the national mobilization to improve student outcomes. The more that is understood about what helps students make forward progress and where that progress typically stalls, the greater the chances of reaching these lofty but essential national goals.

This report offers a framework for guiding educators in using available knowledge and tools to improve student outcomes. It shows how better use of available data can help diagnose why students fail to make progress toward a degree and can better demonstrate the progress students make along the pathway to a degree. The framework consists of two factors: *milestones*, or intermediate educational achievements that students reach along the path to degree completion, and *indicators of success*, or academic patterns students follow including remediation, gateway courses, and credit accumulation, that have been demonstrated in research studies to correlate with forward progress and completion.

Data to demonstrate the value of the framework are from the California Community Colleges (CCC). These 110 colleges are key to the future social and economic health of California as well as to the success of national efforts to restore America's position among nations. The demand for college-educated workers in California is projected to greatly exceed the supply. The state's community colleges play a vital role in meeting the demand for workers as they are the primary producers of postsecondary certificates and associate degrees and help produce bachelor's degrees through the transfer process. We show how the framework can be applied to:

- analyze student achievement of various milestones, by subgroup
- identify where student progress gets stalled on the path toward a degree
- analyze enrollment patterns to diagnose why students fail to make progress
- draw connections between campus or system policies and the patterns revealed by the analyses, in order to suggest changes that would foster better student outcomes.

The framework also provides a means of improving accountability by including measures that demonstrate the progress students are making along the pathway to college completion. This is important given the challenges of identifying students' goals and the many obstacles that community college students face on the road to completion of an academic program.

Our analysis shows that too few students reach each of the milestones along the path to degree completion, especially older students, part-time students, and black and Latino students. Data also show that students who complete college-level math and English within the first two years of enrollment, complete at least 20 credits in the first year of enrollment, take summer courses, complete at least 80% of the courses in which they enroll, register for courses on time, and/or attend full time are more likely to complete than students who do not follow these patterns.

See Table A-1 in the Appendix for a complete listing of how following each "success indicator" pattern affects the achievement of each milestone. For example, 83% of students passing college-level math within two years of initial enrollment complete 30 or more college credits within seven years, compared to just 33% of students not passing college level math within two years. As another example, 27% of students who attend full time in their first term complete a transfer curriculum compared to just 9% of students who do not attend full time in their first term.

The analyses in the report point to several broad findings about the utility of the proposed framework and the two key components of milestones and indicators of success.

The framework is a useful addition to existing analytic approaches:

- It provides policy makers and college leaders a means for diagnosing where and why students fall off the path to success, allowing changes to be targeted to improve student outcomes.
- It provides a means of improving accountability by including measures that demonstrate progress students make on the way to earning a degree.

Data systems should be improved to make best use of the framework:

- Information on which students need remediation would allow for monitoring the progress of this important segment of community college students.
- Data that identify the specific programs students intend to complete or the support services they receive would aid colleges in monitoring the effectiveness of these programs and services.
- Data on student academic preparation upon enrollment would allow for better understanding of the relative impact of preparation and enrollment patterns on college success.

Results can guide policy changes:

• We show in Table 5 examples of specific actions that could be taken in response to identified problems in student progress using the milestone and success indicator framework.

Increasing Educational Attainment: A Framework for Success

The Obama Administration has made it a national priority to increase educational attainment and to recognize and bolster the role that the nation's community colleges play in achieving that goal. Billions of dollars in new funding are being proposed as a means to improve graduation rates and other student outcomes across the nation's community colleges.

As educators, government officials, and foundations have begun to address this national priority, they have recognized a major deficiency in the way that student outcomes are tracked in community colleges. With students enrolling for many different reasons and facing myriad obstacles to completion, the traditional measure of graduation rates does not tell the full story or provide guidance about how to increase student success. Much more information is needed about the intermediate outcomes that students reach along the way to completion. Understanding the patterns by which students make, or fail to make, progress toward completion is vital to the national mobilization to improve student outcomes. The more that is understood about what helps students make forward progress and where that progress typically stalls, the greater the chances of reaching these lofty but essential national goals.

Fortunately, the research literature on college success offers extensive information about the factors that lead to student progress and degree completion,¹ providing useful information to policy makers and education leaders for developing policies and practices to increase rates of certificate and degree completion.² Some research has begun to address the need for better information than is provided by traditional measures of student outcomes,³ which:

- are generally limited to retention and graduation rates
- ignore the intermediate outcomes that students must achieve on the path to degree completion
- provide no information on students' patterns of enrollment and success, which can indicate whether or not students are gaining momentum on the path to a college degree

offer no guidance on diagnosing where and why students fall off the pathway to graduation, or how changes in policy and practice might be used to increase degree completion.

This report extends that literature by proposing a framework for using available knowledge and tools to improve student outcomes. The framework consists of two components:

- 1. Milestones measurable, intermediate educational achievements that students reach along the path to degree completion
- 2. Indicators of Success measurable academic patterns that students follow (in addition to continued progression along milestones) that predict the likelihood they will reach milestones and ultimately earn a degree.

The framework is intended to help colleges diagnose the reasons students fail to make progress toward a degree and target their responses accordingly. It also addresses the call to provide greater accountability by giving colleges a systematic way to describe the progress students make along the pathway to a degree.

We demonstrate the value of the framework by applying it to the California Community Colleges (CCC). Nowhere is the national priority of improving community college outcomes more important than in California. Nearly one-fourth of the nation's community college students are enrolled in California's community colleges.⁴ These 110 colleges are key to the future social and economic health of California as well as to the success of national efforts to restore America's position among nations. The demand for college-educated workers in California is projected to greatly exceed the supply.⁵ The economic downturn has hit California particularly hard and threatens to exacerbate the ongoing decline in California's position relative to other states (see Table 1).

California is Becoming Less Educated than Other States							
Age Group	Rank among States in Share of Population with Associate's Degree or Higher						
65 and older	3rd						
45 to 64	14th						
35 to 44	26th						
25 to 34	31st						

Tabla 1

Source: NCHEMS Information Center for Higher Education Policymaking and Analysis (www.higheredinfo.org) based on data from the US Census Bureau, 2007 American Community Survey

As we show in the subsequent analyses of data from the CCC system, the framework can be applied to:

- analyze student achievement of various milestones, by subgroup, to identify places where forward progress gets stalled and how that may vary by subgroup
- analyze indicators of success to see where students, and which students, are not following successful enrollment patterns
- draw connections between current policies and practices and the patterns that have been revealed in the analyses

change current policies and practices to foster better student outcomes.

Table 2 displays the two key components of the framework, based on the research literature on student success. The success indicators are grouped into three categories of student enrollment patterns:

- 1. **Remediation** the importance of addressing any remedial needs immediately on enrollment
- 2. **Gateway courses** the benefit of early enrollment in and completion of certain gateway courses
- Credit accumulation and related academic behaviors – the importance of building academic momentum through behaviors that lead to the timely earning of college credits.

The remainder of this report describes our findings that CCC patterns of student progress and success conform to those noted in the research literature and demonstrates the value of the framework for diagnosing problems and working to increase student success. We focus on students identified as enrolling in community college for the purpose of earning a certificate or degree or transferring to a university (see Data and Methods box on page 6).

Table 2 Milestones and Indicators of Success							
Milestones	Success Indicators						
 Retention Complete needed remediation Transition to college-level coursework Earn one year of college-level credits Complete general education (GE) coursework Complete a community college transfer curriculum Transfer from community college to a university After completing transfer curriculum Without completing transfer curriculum Complete a certificate or degree 	 Remediation: Begin remedial coursework in first term, if needed Gateway Courses: Complete college-level math / English in the first year or two Complete a college success course or other first year experience program Credit Accumulation and Related Academic Behaviors: High ratio of course completion (<i>low rate of course dropping and failure</i>) Complete 20-30 credits in the first year Earn summer credits Enroll full time Enroll continuously, without stop-outs On-time registration for courses Maintain adequate academic performance 						

Too Few Students Reach Milestones on the Road to Degree Completion

Figure 1 shows the percent of degree seekers in a cohort of students in the CCC that achieved different milestones within seven years. While many students enter the CCC needing remediation, the Chancellor's Office does not collect data on assessment test results or placement recommendations. These data would be necessary to measure the share of students who complete remediation and transition to college-level coursework, important milestones included in Table 2. As an alternative, Figure 1 shows the percent of degree seekers who completed 12 college-level units, a measure that has been used in other research to indicate achievement of "college pathway status."⁶ As shown in the figure, 62% of degree seekers reach this milestone. The milestone marked "any completion" refers to completing a certificate or degree or transferring to a university.7

Among degree seekers in the CCC:

- 42% earned one year of college-level credits (30 semester credits), the level often cited as the point associated with increased earnings⁸
- about one in six completed a transfer curriculum, defined as 60 transferable units, including at least one course in both English and math
- 3% completed a certificate and about 8% completed an associate degree

- about half (54%) of those who transferred to a university completed a transfer curriculum prior to transfer (not shown), indicating that large numbers of community college transfers in California are not entering universities as upper-division students
- about 29% completed a certificate or degree or transferred to a university within seven years of enrolling in the CCC.

Given the large number of non-traditional students in community colleges, it is important to examine outcomes by age and attendance status. Full-time students and those of traditional college age are more likely to reach each of the milestones (Figure 2).

Racial/ethnic disparities in outcomes are important to consider given the growing populations of underrepresented minority students in the CCC. White and Asian⁹ students were more likely to reach each of the milestones than black and Latino students (Figure 3). Latino students were about as likely as white students to persist to the second term and the second year (not shown), but they were less likely to reach the other milestones.

Figure 4 shows the percent of degree seekers completing a certificate or degree or transferring to a university by year. The largest numbers of completions occurred in the third and fourth years after initial enrollment.



Figure 1: Milestone Achievement Among Degree-Seekers CCC Cohort (within 7 years)



Figure 2: Milestone Achievement Among Degree-Seekers by Age and Enrollment Status CCC Cohort (within 7 years)

Figure 3: Milestone Achievement Among Degree-Seekers by Race/Ethnicity CCC Cohort (within 7 years)



Too Few Students Reach Milestones on the Road to Degree Completion



The next section of the report shows the relationship between the likelihood of reaching the ultimate milestone of "completion" and the success indicators shown earlier in Table 2 (or at least those indicators we were able to measure given data limitations). While the discussion will focus on completion, the data suggest similar relationships between the success indicators and the other milestones. Table A-1 in the Appendix shows the complete set of relationships between success indicators and milestone achievement.

Data and Methods

Data Source: California Community Colleges Chancellor's Office

The student unit record (SUR) data from the Chancellor's Office Management Information System (COMIS) include demographic information, course-taking records, and records of degrees/certificates earned and transfers to 4-year universities (based on matches to the California State University, the University of California, and the National Student Clearinghouse). We analyzed data for the entering cohort of first-time CCC students who enrolled in one or more credit courses during the 2000-01 academic year. Non-credit students and high school students concurrently enrolled in community college were excluded. We tracked the students over a 7-year period, through 2006-07. The primary limitations of the data include a lack of information about students' income or other indicators of socioeconomic status and about assessment test scores, placement recommendations, or other indicators of academic preparation for college-level study.

Methods

The analyses focus on a subset of students identified as "degree seekers" (a term we use to include both degrees and certificates) based on having enrolled in more than six units during the first year. This definition is based on a recent suggestion by Dr. Clifford Adelman as part of national discussions about revising the federal methodology for calculating graduation rates.¹⁰ Using Adelman's suggested criterion, 63% of students in the cohort were identified as degree seekers (N= 247,493). Degree seekers were somewhat younger, with an average age of 24 compared to 26 for the entire cohort of students. Fifty-three percent of degree seekers were under age 20 and 10% were age 40 or older, compared to 45% and 17%, respectively, for the entire cohort. The gender and racial/ethnic distributions were about the same.

We calculated the percent of students who reached milestones, and the rates of milestone achievement for different groups of students. We examined the probability of degree completion by whether or not students met the success indicators. We used regression analysis to test whether the success indicators predicted completion after controlling for other factors, and whether the relationships held across all groups of students (e.g., racial/ethnic groups, age groups). More details about the statistical analyses are described in the appendix, along with a complete listing of the relationships between success indicators and milestone achievement.

Indicators of Success: Students Should Take Gateway Courses Early

College-Level Math and English

Degree-seeking students were more likely to complete (i.e., earn a certificate, degree, or transfer) if they completed college-level (CL) math and English, with a grade of C or better, early in their enrollment (Figure 5). Students who completed a college-level math course within two years of initial enrollment were nearly three times as likely to complete as students who did not finish college-level math





in that time period. Students who completed a college-level English course within the first two years were more than twice as likely to complete as those who did not.

Success Courses

Many colleges offer courses designed to help students succeed in college and in their careers. These courses are often called college orientation or college success courses. Completing such a course appears to help some students earn a degree or certificate or to transfer. Older students and traditional-age, part-time students who completed a success course had higher completions rates (Figure 6). Completing a success course did not appear to make a difference for full-time, traditional-age students. Interestingly, we found that black students in the CCC who finished a success course were less likely to complete than black students who did not take such a course, and that taking a success course was unrelated to completion for Asian students (not shown). It may be the case that success courses in the CCC are aimed at students with more risk factors rather than being more widely available to all students, complicating the relationship of taking a success course and completion.¹¹



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Indicators of Success: Credit Accumulation Provides Momentum

First-Year Credits Earned

The probability of completion rises with the number of credits earned in the first year, with a fairly linear relationship between the two measures (Figure 7). We found a similar relationship with the probability of completion if we limited the credits earned to only college-level (non-remedial) credits rather than all credits, although the percentage of degree seekers who completed was somewhat higher at each level of college-level credits earned in the first year. Given the large number of CCC students who enroll in college with remedial needs, we chose to include all credits, and selected 20 credits in the first year as a reasonable threshold indicator of success (other research has used a range of first-year credits, generally from 20 to 30). Fiftyeight percent of degree seekers who earned at least 20 credits in the first year completed – three times as many as those who did not earn that threshold level of credits (Figure 8).





Summer Credits

Students who earned summer credits¹² were three times as likely to complete (Figure 9). The strong relationship between earning summer credits and completion may not mean that it is summer attendance per se that helps students complete a certificate, degree or transfer. Students who attend regularly and persist over a number of years are likely as well to take summer classes. Therefore, summer attendance is in part an indicator that students are being retained and taking a continuous progression of coursework. However, summer terms also afford students an opportunity to build momentum and sustain progress by earning additional credits or re-taking courses not completed during other terms.¹³

Indicators of Success: Credit Accumulation Provides Momentum

Credit Completion Ratio

To accumulate credits and build momentum toward completion, students need to complete the courses in which they enroll. We calculated the first-year credit completion ratio as the number of credits earned divided by the number of credits attempted, so that either failing or withdrawing from a course led to non-completion of credits.¹⁴ We found that the rate of earning a certificate or degree or transferring was 24 percentage points higher among students who completed at least 80% of the credits they enrolled in during the first year compared to those who completed a smaller percentage of first-year credits (Figure 10).

Attendance Patterns

Students who attend full time and enroll continuously can accumulate credits faster than students who enroll part time and stop out. Students who enrolled full time in their first term were almost twice as likely to complete as students who began as part-time students (Figure 11). Continuously enrolled students had a completion rate that was 7 percentage points higher than students who stopped out. Continuous enrollment did not correlate with completion for older students (age 25+), who may be better able to use periods of stopping out to manage job and family responsibilities without getting off track in their pursuit of a college credential.

Late registration for courses also affected the probability of completion, with the likelihood of completion declining as the share of courses enrolled in late increased. "Late" registration was defined as enrolling in a course after the start date of the term. Among students who registered late for no more than one in five of their courses, the completion rate was 32%, compared to 24% for students who registered late more often. Late registration affected completion for all student groups. Nearly half (47%) of degree seekers registered late for at least one in five of their courses.



Figure 11: Probability of Completion Based on Attendance Patterns



Using Milestones and Success Indicators to Improve Student Outcomes – Some Examples

Using the framework of milestones and indicators of success outlined on pages 1-2, we have presented analyses of (1) student progress in reaching various milestones on the pathway to earning a college credential and (2) patterns of student behavior with respect to the indicators of success. We now illustrate how these analyses can be used to identify problems and design policy interventions or changes in practice to improve student outcomes.

Understanding Transfer

Transferring to a university is a typical outcome measure for community colleges, and is generally assumed to signify a student having earned two years of credit toward a bachelor's degree. Under the typical understanding of transfer, a student completes at least 60 semester credits of lower-division coursework at a community college and then moves to a university to complete an additional 60 credits of upper-division coursework for the typical bachelor's degree requiring a total of 120 credits. However, few CCC students follow this ideal transfer path to the baccalaureate, and research that measures "transfer" (including this report) typically counts as a transfer any instance where a student enrolled in a community college then enrolled in a fouryear university at some later point during the time period students are tracked (in this case, 7 years). Published transfer rates based on this method overstate transfer success as it is typically understood because many students move on to a university after accumulating far fewer than 60 credits.

As shown in Table 3, among the students in the 2000-01 CCC cohort who transferred, nearly half (46%) did so without having completed a transfer curriculum (60 transferable credits, including at least one math and one English course).¹⁵ On average, such students had completed only 31 units at a community college and one-third of them had completed fewer than 15 units (not shown). Older transfer students and black transfer students were far less likely to have completed a transfer curriculum, with about 70% of both groups moving on to a university without having completed the curriculum. Even fewer transfer students complete an associate degree at the CCC.¹⁶ Clearly, "transfer" does not always represent two years of progress toward a bachelor's degree.

The majority of students who transferred without completing a transfer curriculum enrolled in in-state private or out-of-state institutions, since the University of California (UC) and California State University (CSU) have taken relatively few lower-division transfers in recent years.¹⁷ Related to their lower likelihood of completing a transfer

Table 3 Transfer among Degree Seekers										
			Among Transfers							
	Transferred to University	Completed Transfer Curriculum	<i>Did Not</i> Complete Transfer Curriculum	Completed AA/AS Degree	<i>Did Not</i> Complete AA/ AS Degree	Transferred to UC/CSU	Transferred to <i>Other</i> University			
All Degree Seekers	23.0%	53.8%	46.2%	19.5%	80.5%	68.1%	31.9%			
Age at Enrollment: Traditional, 17-24 Age 25+	28.3% 9.2%	56.6% 31.0%	43.4% 69.0%	18.8% 24.8%	81.2% 75.2%	70.1% 52.0%	29.9% 48.0%			
Race/Ethnicity: White Asian/Pacific Islander Black Latino(a)	26.6% 30.2% 17.7% 15.9%	51.6% 64.7% 29.6% 55.9%	48.4% 35.3% 70.4% 44.1%	19.8% 15.8% 16.1% 24.2%	80.2% 84.2% 83.9% 75.8%	66.2% 79.8% 43.8% 68.3%	33.8% 20.2% 56.2% 31.7%			

Using Milestones and Success Indicators to Improve Student Outcomes – Some Examples

curriculum, older students and black students were far less likely to transfer to UC or CSU. Only 52% of older transfer students went to UC/CSU compared to 70% of younger transfer students. An even smaller portion (44%) of black transfer students went to UC/CSU compared to about two-thirds of white and Latino transfer students and 80% of Asian transfer students. Latino transfer students are more likely than white transfer students to complete a transfer curriculum and to complete an associate degree, and a slightly larger share of them transfer to the public universities.

In listing milestones in Table 1, we made a distinction between transferring with or without having completed a transfer curriculum because, as demonstrated here, "transfer" itself does not provide adequate information about the degree of progress students have made toward a degree. There are benefits associated with completing a full transfer curriculum (and, ideally, an associate degree) before transferring to a public university:¹⁸

- Attending the CCC for all lower-division coursework is more cost-effective for students and the state, given the lower cost of attendance.
- Following a prescribed pathway to transfer into a major at a university with upper-division status increases efficiency in the state's higher education system, by minimizing the need to repeat courses or take additional courses because some CCC coursework does not apply to the intended university campus or major.
- Reducing such "excess" units not only lowers the cost per degree, it increases access by freeing up enrollment slots in courses for additional students.
- Earning an associate degree before transfer is associated with a higher likelihood of completing the baccalaureate,¹⁹ and students who do not finish a bachelor's degree at least end up with an associate degree for their (and the state's) investment.

Tracking student completion of a transfer curriculum would also improve accountability reporting for the CCC. The system's accountability reporting system includes a Student Progress and Achievement Rate (SPAR) that subsumes two partial measures of transfer curriculum completion under a broader set of outcomes.²⁰ Reporting the share of students that complete a transfer curriculum would allow the system to demonstrate the extent to which it accomplishes the part of the transfer mission for which it is most responsible. Factors like limited enrollment capacity at universities and students' finances can impede transfer even when community colleges have succeeded with the transfer preparation mission, making completion of a transfer curriculum a more valid indicator of community college performance than actual transfer rates.

We can use the success indicators in our framework to examine differences in enrollment patterns between transfer students who completed a full transfer curriculum and those who enrolled in a university without meeting that milestone, in an effort to identify areas where changes in policy and practice might increase the number of transfer students taking the preferred transfer path. Table 4 summarizes the findings for all transfer students, and separately for black students and older students because of their greater likelihood of transfer without completing a transfer curriculum.

As shown in the table, transfer students who did not complete a transfer curriculum were less likely to have completed the important gateway courses in English and math within two years of enrolling in the CCC. They may have entered college with lower levels of academic preparation, requiring enrollment in remedial coursework in these subjects. Policies requiring early enrollment in English and math for degreeseeking students, and effective practices for getting underprepared students through developmental coursework expeditiously, would likely get more transfer-oriented students on the pathway to completing a full transfer curriculum. The students not completing a transfer curriculum were also less likely to have taken a college success course, giving them less opportunity to gain an understanding of the transfer process through the curriculum in those courses.

A primary factor distinguishing students who did complete a transfer curriculum from those who did not was completing at least 20 credits in the first year. Students who did not complete a transfer curriculum had a substantially lower credit completion ratio in the first year, likely contributing to their lesser likelihood of accumulating 20 credits. Examples of interventions in response to this finding include integrating supplemental instruction into courses with high drop/failure rates, instituting "early alert" systems to identify students having trouble in courses, and implementing policies that limit the number of course withdrawals.

Table 4 Percent of Transfer Students Meeting Selected Success Indicators											
	All Transfe	r Students	Black Trans	fer Students	Older Transfer Students						
Success Indicators	Completed Transfer Curriculum	<i>Did Not</i> Complete Transfer Curriculum	Completed Transfer Curriculum	<i>Did Not</i> Complete Transfer Curriculum	Completed Transfer Curriculum	<i>Did Not</i> Complete Transfer Curriculum					
Gateway Courses:	Gateway Courses:										
CL Math	51.5%	24.3%	42.2%	14.3%	43.6%	18.5%					
CL English	57.2%	35.1%	53.0%	27.2%	50.1%	29.8%					
College Success	33.5%	19.0%	37.2%	24.2%	31.4%	12.0%					
Credit Accumulation:											
Enroll Continuously	49.4%	42.2%	46.0%	40.4%	39.4%	39.9%					
Year 1 CCR 80% or higher	69.7%	52.3%	61.9%	38.7%	82.5%	62.8%					
Earn 20+ Credits Year 1	63.8%	29.8%	57.9%	21.9%	61.6%	23.3%					
Timely Registration for 80% or More of Courses	64.4%	55.0%	50.7%	43.6%	63.2%	57.8%					

Targeting Institutional Change to Address Unsuccessful Patterns

As shown earlier in Table 1, our review of the research literature yielded three sets of academic patterns that correlate with degree completion and therefore serve as "indicators of success." Data limitations prevented us from analyzing issues related to one set of indicators – remediation. But the analyses we were able to do confirmed the importance of:

- early enrollment in and completion of college-level gateway courses in math and English, and completion of a college success course for some groups of students (see Figures 5 and 6)
- early accumulation of credits through enrollment in an adequate number of courses (full time is ideal), completion of those courses, and use of summer terms and continuous enrollment to increase momentum (see Figures 8-11).

System and college leaders in the CCC can use indicators to monitor student patterns and to intervene with effective policies and practices to increase the number of students completing certificates and degrees and transferring to a university. When a success indicator signals a problem, further analysis can help point to the types of changes in policy and practice that would best address the problem and increase student success. As examples, we analyzed patterns related to two important success indicators – early completion of college-level math and credit accumulation during the first year of enrollment.

As shown in Figure 12, a large percentage of degree-seeking students in the CCC did not complete college-level math within two years of entry. About half of those students did not enroll in any math courses within two years (further analysis could reveal more about these students, including whether they remained enrolled for the two years or dropped/stopped out). The other half enrolled in math, with some students taking only remedial courses, and others attempting but not successfully completing college-level math. Different kinds of changes in policies and practice could be used to increase the share of students completing college-level math, depending on the reason students are not doing so (as noted in green type).

Figure 13 shows a similar analysis of patterns related to early credit accumulation. Three-quarters of degree-seeking students in the CCC did not complete at least 20 credits in

Using Milestones and Success Indicators to Improve Student Outcomes – Some Examples

the first year (any credits, including credits in non-degree applicable and basic skills courses). Most (76.5%) of those students did not even enroll in 20 credits during the first year, an issue that could be addressed through financial aid policy and practices to encourage more full-time attendance. Policies limiting course drops and repeats, along with more comprehensive academic support programs, could increase course completion and credit accumulation.





Summary of Findings

The analyses described in this report point to several broad findings about the proposed framework and the two key components of milestones and indicators of success.

The Framework is a Useful Addition to Existing Analytical Approaches

Monitoring the intermediate outcomes of degree-seeking students in the CCC, and the degree to which they are following the academic patterns that correlate with success, is useful in two respects:

- It offers policy makers and college leaders a means of diagnosing where and why students fall off the pathway to college completion, allowing them to target changes in policy and practice to improve student outcomes.
- It provides a means of improving accountability for the CCC by including measures that demonstrate the progress students are making along the pathway to college completion, an important addition that would recognize the challenges of precisely identifying students' goals and of getting them through to completion given the many barriers faced by community college students.

Data Systems Should be Improved to Make Best Use of the Framework

In order to maximize the value of the framework, the CCC Chancellor's Office (CO), and individual colleges, need to collect additional data and improve the quality and use of data currently collected. In one sense, the CCC is ahead of many higher education systems – the CO collects course enrollment data for every student in every term, allowing for the creation of some of the measures we used in this report (e.g., completion of gateway courses within a particular period of time). Such term-by-term information on individual course enrollments adds a level of detail about students' patterns of enrollment that is very useful for diagnosing where students are falling off-track. However, the CO does not collect, or collects but does not report, some information that is important for monitoring and improving student success:

- No data are available at the CCC system level to identify students who need remediation of basic skills, so outcomes for such students cannot be monitored.
- The central data system does not identify the academic program a student is intending to complete, or the student support services they receive, making it impossible to evaluate the effectiveness of various programs and services at helping students succeed.
- The system does not collect information about students' level of academic preparation in high school, such as GPA or whether particular college-preparation courses were taken, that would be valuable in attributing student outcomes to the impact of enrollment patterns and experiences in college rather than to academic preparation.
- There is no code that allows for identifying college success courses or courses that are grouped into learning communities, making it difficult to evaluate their impact on student outcomes.
- The CCC accountability reporting system does not report on any measures of student progress or success for sub-populations of students (e.g., by race/ethnicity or age group).

Results Can Guide Policy Changes

The results of applying the framework can guide college, system, and state leaders in making changes to policy and practice to improve student outcomes in the CCC. Table 5 lists some examples of specific actions that could be considered in response to the findings that emerged from our analyses or, in the case of remediation, in response to problems that are widely recognized across the system.²¹ Most of the changes suggested in the table would be within the purview of the CCC system or individual colleges, although several of the possible changes would require legislative action.

Table 5 Using Indicators of Success to Make Changes in Policies and Practices							
Problem Identified	Possible Changes to Policy/Practice						
Not all new degree-seeking students who need remediation enroll in basic skills courses and many who do enroll do not enroll in the first term ²²	 Adopt system-wide definitions of college readiness, and standardized procedures for assessment and placement across the colleges Ensure that all degree-seeking students are assessed for college readiness and directed to appropriate courses Use results of the Early Assessment Program to give students the senior year to remedy identified deficiencies in college readiness Require early enrollment and completion of basic skills course work 						
Low percentage of basic skills students complete needed remediation	 Ensure that policies support innovative practices such as intensive summer orientation programs for new developmental students Contextualize basic skills instruction into content courses Implement learning communities for developmental students Incorporate incentives for colleges to increase success in basic skills courses Redesign developmental courses into modules so students only repeat needed sections Provide brief brush-up courses for students who test near proficiency levels Enroll students in college-level courses and provide supplementary instruction/summer sessions for nearly-proficient students 						
Gateway Courses:							
Low percentage of students completing college-level math in first two years	 Better align curriculum and assessment with high schools to improve college readiness, and use the Early Assessment Program to send early signals about college readiness to high school students Ensure early advising that focuses on the importance of taking math early in college career 						
Low percentage of students completing college success course	 Ensure adequate course offerings and flexible scheduling Improve advising for new students about advantages of such courses Require degree-seeking, non-traditional students to enroll in a success course 						
Credit Accumulation:							
Low percentage of first-year degree- seeking students reaching a threshold of credit accumulation	 Increase use of college success courses, early advising, etc. Improve financial aid counseling to emphasize benefits of full-time enrollment Consider lower per-credit fees for enrolling in a full-time credit load (state action required) Encourage full-time attendance through provision of financial aid and other incentives (state action required) Provide financial aid for enrollment in summer terms (state action required) Offer on-line summer courses 						
Low credit completion ratio in first year	 Use early alert systems and improved tutoring services to provide more academic assistance Limit course drops and repeats or impose extra fee for course withdrawal past a certain date or for repeating a course (state action required to allow campus-based fees) 						
High percentage of course enrollments for which students registered late	 Limit late registration or impose extra fee for registering late (state action required to allow campus-based fees) Use college success courses to teach students about more effective enrollment patterns 						

Appendix

Table A-1 Milestone Achievement by Indicator Attainment										
Success Indicators	Retention to 2nd term (74%)	Retention to 2nd year (58%)	Earned 12+ college-level Credits (62%)	Earned 30+ college-level Credits (42%)	Completed transfer curriculum (17%)	Earned certificate (3.3%)	Earned associate degree (8%)	Transferred (23%)	Any completion (29%)	
College-Level Math										
Completed within 2 Years (21%)	92.8%	86.7%	95.9%	83.4%	50.4%	3.2%	20.6%	53.1%	61.1%	
Did Not Complete within 2 Years (79%)	70.1%	52.2%	55.4%	33.3%	9.9%	3.4%	5.3%	16.9%	22.0%	
College-Level English										
Completed within 2 Years 28%)	91.4%	84.0%	92.4%	76.1%	37.9%	3.5%	17.0%	43.7%	51.2%	
Did Not Complete within 2 Years (72%)	68.2%	49.5%	52.3%	30.4%	9.7%	3.3%	4.9%	16.2%	21.2%	
Success Course										
Completed (22%)	83.7%	72.6%	76.6%	58.6%	26.1%	3.4%	11.8%	26.9%	34.5%	
Did Not Complete (78%)	71.2%	53.8%	58.1%	36.9%	14.0%	3.3%	6.8%	21.4%	26.8%	
First-Year Credits										
Earn 20+ Credits (ANY) (24%)	99.3%	89.0%	97.7%	86.5%	44.2%	6.2%	20.6%	46.4%	57.9%	
Did not earn 20 Credits (ANY) (76%)	66.0%	48.3%	51.1%	27.7%	8.1%	2.4%	3.9%	15.7%	19.4%	
Summer Credits										
Completed Any (46%)	84.5%	75.4%	85.9%	67.6%	30.7%	4.9%	13.9%	36.5%	45.0%	
Did Not Complete Any (54%)	64.9%	43.1%	41.9%	19.6%	4.7%	2.0%	2.8%	10.8%	14.5%	
First-Year Credit Completion Ratio										
Completion Ratio 80%+ (62%)	80.5%	66.6%	73.8%	52.0%	21.9%	4.5%	10.9%	27.8%	38.7%	
Completion Ratio < 80% (38%)	63.4%	44.1%	43.3%	25.1%	8.2%	1.5%	3.0%	15.2%	14.6%	
Full-Time Attendance										
Full Time in First Term (41%)	81.6%	69.2%	78.3%	59.1%	27.3%	3.8%	12.3%	31.8%	38.9%	
First Term Part-Time (59%)	68.6%	50.3%	51.0%	29.7%	9.3%	3.0%	4.8%	16.9%	21.4%	
On-Time Course Registration										
On-Time for 80%+ of Courses (53%)	75.1%	60.3%	65.3%	46.3%	20.0%	3.8%	9.9%	26.1%	32.4%	
On-Time for < 80% of Courses (47%)	72.6%	55.4%	58.8%	36.6%	13.0%	2.8%	5.6%	19.6%	24.3%	
Continuous Enrollment*										
Continuously Enrolled (40%)	100.0%	68.8%	68.2%	48.7%	23.3%	3.9%	12.1%	29.1%	36.0%	
Not Continuously Enrolled (60%)	77.3%	67.5%	73.8%	49.1%	17.1%	3.7%	7.3%	22.9%	28.9%	

* Excludes students enrolled for only one term.

Regression Results

We ran two logistic regression models for all degree seekers and for each of several subgroups. Each model included demographic variables, and the first model added first-year success indicators while the second model included indicators from the second year as well as indicators based on the students' full enrollment period. Dummy variables were used in all models to control for institutional effects. For simplicity, we have summarized the findings to use a "+" to indicate a statistically significant positive relationship and a "-" to indicate a statistically significant negative relationship with completion.

Table A-2 Regression Models on the Likelihood of Completing a Certificate/Degree/Transfer									
	All Degree Seekers	Full-Time Traditional Age	Part-Time Traditional Age	Full-Time Older	Part-Time Older	White	Asian	Black	Latino
First Year Indicator Models									
Demographic and Attendance Characteristics									
Female	+	+	+	+	+	+	+	+	+
Age 25+	-					-	-	-	-
Asian	+	-	+	ns	ns				
Black	ns	ns	-	+	-				
Hispanic	-	-	-	-	-				
Other/Unknown Race/Ethnicity	ns	ns	ns	ns	ns				
Ever Received BOG Waiver	+	+	+	ns	+	+	+	ns	+
Success Indicators									
Full-Time (based on first term)	+					+	+	+	+
Year 1 Credits Earned	+	+	+	+	+	+	+	+	+
First Year GPA	+	+	+	+	+	+	+	+	+
Complete Success Course	+	ns	+	+	+	+	ns	-	+
First Year Credit Completion Ratio	+	+	+	+	+	+	+	+	+
Completed College Level Math in Year 1	+	+	+	+	+	+	+	+	+
Completed College Level English in Year 1	+	+	+	+	+	+	+	+	+
Second Year and Beyond Indicator Models									
Demographic and Attendance Characteristics									
Female	+	+	+	+	ns	+	+	+	+
Age 25+	-					-	-	-	-
Asian	-	-	ns	ns	-				
Black	ns	ns	ns	-	+				
Hispanic	-	-	-	-	-				
Other/Unknown Race/Ethnicity	ns	ns	ns	ns	ns				
Ever Received BOG Waiver	+	ns	+	-	+	ns	+	-	ns
Success Indicators									
Full-Time (based on first term)	+					+	+	+	+
Year 2 Credits Earned	+	+	+	+	+	+	+	+	+
Second Year GPA	+	+	+	+	+	+	+	+	+
Complete Success Course	+	+	+	+	+	+	+	+	+
Percent of Courses Registered Late	-	-	-	-	-	-	-	-	-
Summer Credits (yes/no)	+	+	+	+	+	+	+	+	+
Continuous Enrollment	+	+	+	ns	ns	+	ns	+	+

+ indicates a statistically significant (.05 level or better) positive correlation between the indicator and the likelihood of completion

- indicates a statistically significant (.05 level or better) negative correlation between the indicator and the likelihood of completion

ns indicates no statistically significant relationship | Shaded cells are not applicable to the student group

Endnotes

- When we refer to "degree completion" in this report, we include completion of postsecondary certificates as well as associate and bachelor's degrees.
- ² For a review of the research literature on factors related to student success and graduation, see Moore, C. & Shulock, N. (2009). *Student progress toward degree completion: Lessons from the research literature*. Sacramento, CA: Institute for Higher Education Leadership & Policy.
- ³ See, for example: Leinbach, D.T. & Jenkins, D. (2008). Using longitudinal data to increase community college student success: A guide to measuring milestone and momentum point attainment. New York: Community College Research Center; Achieving the Dream Cross-State Data Workgroup (2008). Test drive: Six states pilot better ways to measure and compare community college performance. Boston, MA: Jobs for the Future.
- ⁴ U.S. Department of Education, *Digest of Education Statistics 2008* (Table 215).
- ⁵ Johnson, H. & Sengupta, R. (2009). Closing the gap: Meeting California's need for college graduates. San Francisco: Public Policy Institute of California; Reed, D. (2008). California's future workforce: Will there be enough college graduates? San Francisco: Public Policy Institute of California
- ⁶ Horn, L. & Lew, S. (2007). California community college transfer rates: Who is counted makes a difference. Berkeley, CA: MPR Associates, Inc.
- ⁷ We recognize that transferring to a university is not really "completion" given that the goal of transfer students is a bachelor's degree, and many students do not complete an associate degree before transferring (81% of transfers in the CCC cohort did not earn an associate's degree). However, transfer is commonly used as a completion measure for community colleges. We were not able to track student outcomes after transfer, but we recognize that the majority of students who transfer to universities do ultimately earn a baccalaureate.
- ⁸ For example, see Marcotte, D.E. (2006). *The earnings effect of education at community colleges*. Baltimore, MD: University of Maryland.
- ⁹ Although this report combines all persons of Asian or Pacific Islander descent into one category, we recognize that there may be substantial differences across Asian sub-populations in measures related to college success that are masked by using one category. CCC collects data for 13 categories of Asian/Pacific populations but it is not feasible or practical to analyze all 13 categories separately, in part because the validity of findings would be compromised by small group sizes. Perhaps when more research has been conducted to help determine meaningful subgroupings among those 13 categories, it will be possible to refine the analysis of the Asian/Pacific Islander population.
- ¹⁰ Adelman, C. Proposed amendment for the Student-Right-to-Know and Campus Security Act of 1990 (P.L. 101-542) to produce a full and honest account of college completion rates. Obtained through personal communication on June 2, 2008.
- ¹¹ Also, the CCC does not have a code to identify success courses, so we relied on a combination of Taxonomy of Programs (TOP) code and course title. We could have misclassified some courses, affecting the results. Better data are needed to accurately identify these courses.
- ¹² We counted a student as completing summer credits if they earned any number of credits during any summer term over the tracking period.

- ¹³ Adelman, C. (2006). *The toolbox revisited: Paths to degree completion from high school through college*. Washington, DC: National Center for Education Statistics.
- ¹⁴ There are a number of other possible measures that could be used related to course completion, including the percent of courses dropped, the percent of courses failed, or the percent of courses that were "successfully" completed (i.e., completed with a grade of C or better). Also, different levels of credit completion could be selected as the cut-off point for a success indicator, other than the 80% we use here. We tried several other measures and several other threshold levels, and found similar relationships to the probability of completion.
- ¹⁵ This only approximates, and likely overestimates, the share of students who actually complete a full transfer curriculum. It does not account for whether they have completed specific course requirements across the various categories of general education, or whether they have completed the lower-division major prerequisites that would make them eligible for enrollment in a specific university program. It is not feasible to create a measure of the exact number of students who are actually eligible for transfer, given the wide variation in curriculum across the community colleges and the variation in requirements for transfer into specific majors across all the campuses of the UC and CSU.
- ¹⁶ Completing an associate degree is generally considered a milestone on the path to transfer, representing completion of the first two years of a bachelor's degree (at least for "academic" associate degrees rather than those in vocational or technical fields). That is not the case in California because the requirements for an associate degree do not match the requirements for transfer, even in the more "academic" subjects. Associate degrees are considered terminal degrees in California, and while there is some overlap in coursework, the degrees are not intended as transfer preparation or designed to meet transfer requirements.
- ¹⁷ In fall 2002, which would have been year 3 of the studied cohort (the most common year for transfer), only 5.5% of transfers from CCC to UC, and 15.1% of transfers to CSU, were freshmen or sophomores (based on CPEC custom data reports, Enrollments – Fall Term Transfers to Public Institutions for 2002). The share of transfers at the lower-division level has declined since then, to 3.4% of transfers to UC and 5.8% of transfers to CSU in fall 2008.
- ¹⁸ For more information, see Moore, C., Shulock, N., & Jensen, C. (2009). *Crafting a student-centered transfer process in California: Lessons from other states*. Sacramento, CA: Institute for Higher Education Leadership & Policy.
- ¹⁹ Wellman, J. (2002). State policy and community college baccalaureate transfer. Washington, DC: Institute for Higher Education Policy; McCormick, A. & Carroll, C.D. (1997). Transfer behavior among beginning postsecondary students: 1989-1994. Washington, DC: National Center for Education Statistics; Grubb, W.N. (1991). The decline of community college transfer rates. Journal of Higher Education 62(2), 194-222.
- ²⁰ Students who become "transfer prepared" (complete 60+ transferable units) or "transfer directed" (complete transfer-level English and math, regardless of total units completed) are currently included in the Student Progress and Achievement Rate (SPAR) in the system's annual accountability report, which also includes the completion of certificates and degrees and actual transfer to a university. Transfer outcomes are also reported separately, but completion of a transfer curriculum is not reported.
- ²¹ Moore, C. & Shulock, N. (2007). *Beyond the open door: Increasing student success in the California community colleges.* Sacramento, CA: Institute
for Higher Education Leadership & Policy; Center for Student Success (2007). Basic skills as a foundation for student success in California community colleges. Sacramento, CA: Research and Planning Group for California Community Colleges; Academic Senate for California Community Colleges (2004). Issues in basic skills assessment and placement in the California community colleges. Sacramento, CA: Author

²² About one-third of students who enrolled in a basic skills course at some point did not do so in the first term.



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