

# The Community College Green Genome Framework:

Integrating Sustainability and  
Clean Technology Workforce  
Development Into an  
Institution's DNA

A national guide and institutional  
self-assessment created by  
community colleges, for  
community colleges

THE KRESGE FOUNDATION





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This publication is a product of the SEED Center, an initiative of the American Association of Community Colleges and ecoAmerica. With its more than 460 community college members, SEED (Sustainability Education and Economic Development) aims to advance sustainability and green workforce development practices at community colleges by sharing innovative practices to help college administrators, faculty, and staff to build the green economy. For more information about AACC and community colleges see [www.aacc.nche.edu](http://www.aacc.nche.edu).

For more information about the SEED Center see [www.theseedcenter.org](http://www.theseedcenter.org).

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## OVERVIEW

This guide provides details about the American Association of Community Colleges (AACC) SEED Center **Green Genome Framework**. The framework is designed to help community colleges expand their local green economies by aligning green-focused workforce education programs with other campus and community sustainability initiatives. Along with the **Genome Self-Assessment Tool**, the framework allows colleges to gauge how well their institutions are leading these kinds of efforts today and where to prioritize future investments. Facing shrinking resources, colleges need this kind of strategic alignment to maintain their sustainability commitments to build healthy and economically vibrant communities with career opportunities for all. As such, this framework also supports the recommendations of the AACC's 21st-Century Commission on the Future of Community Colleges to increase access and completion on college campuses.

This tool was developed with input from more than 50 community colleges and a national advisory panel made up of industry representatives, the U.S. Department of Energy, and other national experts. Colleges that received the 2012 SEED Center **Green Genome Awards** are highlighted in this report in single-page spotlights.

## INTRODUCTION

The past decade has seen a growing consensus about the importance of sustainability and green (or clean technology) workforce and economic development as essential components of a responsive, healthy, and effective community college institution. Many colleges, even in recent difficult economic times, have helped drive job growth across various green sectors and prepared workers for careers that help create healthy and sustainable communities. Colleges in some regions, for example, have increased the number of students gaining industry-recognized

### SEED's Genome Tools: Helping Community Colleges Integrate Green

**Green Genome Framework:** a set of measures to assist colleges in organizing this integration

**Genome Self-Assessment Tool:** a 47-question guide to help colleges prioritize and measure progress over time (see appendix and online at [www.theseedcenter.org/greengenome](http://www.theseedcenter.org/greengenome))

**Genome Awards Program:** National awards program for colleges that have made progress toward this integration (the five 2012 winners are spotlighted in this report).

credentials in high-demand renewable energy sectors. Others have advanced energy efficiency technological innovations through entrepreneurship and small business partnerships. And in regions where there is not yet great demand for what some might consider conventional green jobs, colleges are working with manufacturers, hospitals, and other businesses to "green" existing practices and occupations.

Despite these pockets of success, much work remains—nationally and institutionally—to realize the full potential of the green economy. As a nation, the United States has a critical need for consistent public policies that incentivize clean technology market growth, lead to more consumers embracing sustainable goods and services, and create a more coordinated approach to labor market information and credentials. There is no question that for community colleges, the pursuit of sustainability and the delivery of responsive workforce development programs for clean industry sectors have been constrained in part by these national issues.

Just as much work, however, remains to be done at the *institutional* college level. While many community

colleges have built innovative green-related courses and programs and have made important operational changes to minimize emissions and waste, few have aligned their efforts in a strategic way to have a bigger and lasting impact.

Community colleges require *whole systems thinking and action* to be true leaders in educating for and building thriving regional green economies. As a college develops quality and responsive workforce programs in these clean technology areas, it must do so not in isolation, but rather as part of a broader institutional commitment to green. For example, the college must look across all programs of study to determine where and how sustainability principles fit. In addition, the college must connect this education to operational greening where students apply learning to real-world campus-based energy and environmental challenges. And, as importantly, the college must engage in regional green economy planning and in efforts to raise community awareness about making smart sustainable choices. These kinds of strategic and comprehensive institutional approaches, executed throughout the college, can yield deeper outcomes: highly skilled, marketable, and environmentally conscious students learning in an institution that is reducing its own carbon footprint and is located in a region where newly educated residents, consumers, and policymakers begin to demand greener products and resources.

If done right, this approach will help set the conditions to expand the green economy and strengthen career pathways for students. Simultaneously it will improve the college's organizational alignment to the point that green becomes part of the institution's DNA.

To encourage more 2-year colleges to think and act in this way, the AACC SEED Center Green Genome project developed a framework, assessment tool, and awards program. This publication lays out this framework and highlights promising practices of community colleges working toward green transformation. It is designed to bring together college leadership, faculty, and staff to gauge how well they are collaborating and meeting certain measures and

to determine how to prioritize future sustainability resources. The assessment tool (see appendix), now being used by more than 40 community colleges, will bring more 2-year colleges into the higher education sustainability movement. In that regard, the framework and tool complement the great work that the Association for the Advancement of Sustainability in Higher Education (AASHE) and the American College & University Presidents' Climate Commitment have already done to guide higher education institutions in pursuing climate neutrality and sustainability literacy.

## THE GREEN GENOME FRAMEWORK

**What would an integrated approach to sustainability and green workforce and economic development look like at a community college, and how would a college know whether it was making progress toward long-term systemic change?**

The AACC SEED Green Genome Framework aims to answer these questions. It seeks to advance the practical understanding of the college's ecosystem—its policies, practices, structures, partnerships, and programs—and how they influence, interact, and intersect to affect the community. By following this framework, colleges can take *action* to strengthen connections and align efforts systematically to truly achieve “green transformation,” incorporating green into the institution's DNA.

Recognizing that few community colleges have realized an ideal state of green transformation and that there is no simple roadmap or tool to help get there, the Genome project's approach begins with four institutional competency areas—or DNA strands—needed to achieve transformation. Within each competency area there is a set of indicators needed to master the competencies, and together the competencies and indicators provide a framework to allow colleges to assess their performance and identify areas of progress and improvement. Although taking

action in just one DNA strand would begin to move a college toward a systematic approach, colleges would have to master each strand to truly achieve change.

## THE FOUR DNA STRANDS



### GOVERNANCE:

Does your college have personnel, policies, plans, resources, and practices in place that reflect a commitment to sustainability and green-focused education and training?



### PROGRAM DESIGN AND DELIVERY:

Is your college preparing a qualified, green-skilled workforce by facilitating the delivery of high-quality programs based on industry needs?



### STRATEGIC PARTNERSHIPS:

Has your college formed the necessary partnerships to advance campus sustainability goals and green workforce development programs?



### COMMUNITY ENGAGEMENT:

Does your college serve as a catalyst in moving the community toward building a sustainable region and an economically vibrant green economy?

## COMPETENCY STATEMENTS AND INDICATORS

### COMPETENCY STATEMENTS:

A college's aspirational green goals

### INDICATORS:

Aligned to each competency statement, measures that help the college determine progress toward these goals

The Genome project created *competency statements* to provide an aspirational goal for each DNA strand. The competencies are represented as a general statement to allow for flexibility and are supported by a set of *indicators* to help administrators and faculty at colleges understand how green transformation can be operationalized and measured. Multiple indicators were identified to help answer the question, “*How would a college know it has reached the tipping point toward long-term systemic change or is making progress?*”

These indicators do not represent the universe of possible indicators, and in some cases, the indicators may not be inherently green but were considered best-in-class practices to ensure quality and innovation related to the competency. Please note that mastering each competency requires all of the indicators listed. However, implementation of the full list of indicators is considered the “ideal state” for colleges to work toward.

To provide additional context, examples of promising practices are incorporated and aligned to a specific indicator. In addition, colleges that received a 2012 Green Genome Award are spotlighted at the end of each DNA strand. An overall winner is also highlighted to show how one college has been working toward green transformation in all DNA strands.



## GOVERNANCE

### INSTITUTIONAL COMPETENCY STATEMENT:

Design and establish the college's structure, facilities, policies, plans, resources, processes, and practices to reflect a commitment to sustainability and green workforce and economic development that confers benefits to the institution, community, and students.

### MASTERY OF THIS COMPETENCY REQUIRES THE FOLLOWING INDICATORS:

- An understanding by leadership (e.g., cabinet, trustees) of the importance of ensuring that the college implements sustainability policies and practices aimed at reducing individual and collective impact on the environment and that promotes a green economy/job expansion.

#### Indicator in Action

While the **Austin Community College (ACC)** District (TX) was implementing a variety of sustainability projects, from the installation of water-saving plumbing fixtures to a district-wide effort to phase out incandescent light bulbs, the adoption of Board Policy C-9 in 2009 coalesced the college's efforts. C-9 emphasizes ACC's commitment to fostering "environmental awareness by providing educational leadership in energy conservation efforts, efficient energy use, renewable energy, and recycling." As the college's Director of Environmental Stewardship explains, "The policy formalized everything so there is accountability and a strategic structure for what we are doing." Now the college's sustainability efforts, from purchasing to monitoring greenhouse gas emissions to green-focused student learning opportunities, are presented to the board during the annual Policy Compliance Report.

- Fostering and establishing an institutional culture of and commitment to the triple bottom line—preserving the environment, increasing economic prosperity, and promoting social equity.
- Establishing a formal commitment to campus sustainability (e.g., the American College & University Presidents' Climate Commitment, AASHE's STARS program, SEED).
- Integrating sustainability principles and practices as well as green workforce development practices into the institution's strategic master, educational plans, and campus procedures manual.

#### Indicator in Action

In 2009, **Palm Beach State College (FL)** adopted a specific sustainability goal as part of its strategic plan to help coordinate a range of sustainability activities that were previously dispersed across organizational units. The college's Institute for Energy and Environmental Sustainability, an outgrowth of the plan, has become a visible center point for where the collaboration occurs and where clean technology innovation and education happens among Palm Beach State College students.



- Appointing key, high-level decision-makers and committing resources to coordinate and integrate sustainability and green workforce development efforts within the college.

#### Indicator in Action

**Alfred State College's (NY)** chief sustainability officer, a direct report to the president, works with students and staff to enable and align campus sustainability initiatives. The officer works with faculty to integrate campus and community sustainability projects into courses and looks for opportunities to incentivize teaching sustainability.

- Creating and empowering a sustainability/green committee or task force of faculty, staff, students, and others to formulate policy related to green education and workforce development including curriculum, methods of instruction, academic standards, program development, and degree requirements—and integrating these efforts with other campus sustainability efforts (e.g., greening of facilities).
- Committing resources to provide faculty and staff conceptual, physical, and virtual professional development opportunities and spaces to support the scholarship of teaching and learning about sustainability, green technical skills, and new and emerging technologies.

- Obtaining resources and creating capacity to serve as the "leverager" of multiple funding sources to expand and sustain green sector activities.
- Supporting institutional research related to sustainability and green skills/competencies and student learning, development, and outcomes to increase capacity to deliver high-quality green education and training.
- Maintaining flexibility to develop or enhance curriculum and courses as needed to match the growth of the green economy through sufficiently streamlined course approval processes and effective use of external advisory committees.





“A lot of these [sustainability] initiatives die because you don’t have an alignment of effort . . . throughout the organization. The board policy was really helpful in that regard.”  
Les Jauron, vice president of planning and information

## Butte College (CA): Winner, Governance

Butte College, a rural college situated on a remote 928 acres designated as a wildlife area, set out to create a governance structure to ensure commitment to sustainability practices in all facets of the college, with ambitious plans and goals to ensure action. As early as 2002, the college developed a long-term plan to implement a solar energy project that would generate all the power needed for the campus. In 2011, the college achieved that goal and became “grid positive” when it produced more electricity than it needed. It was in 2006, however, with the establishment of a sustainability steering committee made up of college leadership, faculty, staff, and students that the college truly began strategically planning for its sustainable future.

To bolster efforts to make sustainability part of the DNA of the college, in 2007 the president signed the American College & University Presidents’ Climate Commitment and the college reworked its five-year master plan through a community collaboration process. Sustainability became one of the college’s main strategic initiatives and a core institutional value. In 2008, the board of trustees implemented a critical, leading-edge policy to support the work of the sustainability steering committee and authorize the college president to pursue sustainability leadership strategies across all areas of the college. The Board Policy #6666 states, “The Board delegates to the Superintendent/President or designee the authority to develop practices and procedures that continue the legacy of leadership in sustainability in all areas of the college, including instruction, operations,

construction, facilities, land use, energy conservation, and environmental integrity.” Les Jauron, vice president of planning and information at Butte College, said that when trustees approved their sustainability policy, it “created the framework for the many employees who were passionate about sustainability to move ahead with their ideas without worrying they were going to get the rug pulled out from under them. A lot of these kinds of initiatives die because you don’t have an alignment of effort and purpose throughout the organization. The board policy was really helpful in that regard.”

Butte College also engaged students and faculty early on in building its commitment to sustainability. An example for faculty is the Clear Creek Project, a sustainability curriculum development initiative on campus, which included workshops to aid faculty in infusing sustainability topics and issues into existing courses and programs. This effort led faculty to begin to envision an interdisciplinary sustainability studies certificate and degree program. Under development is an AA degree in sustainability studies, a certificate and AS degree in construction management of sustainable projects; sustainability program management, sustainable engineering technologies; and sustainable architectural studies. In addition, the excitement generated by Butte’s focus on sustainability means that many students are now active at the regional, state, and national levels: In 2012, the college will host the California Student Sustainability Coalition fall convergence, the first time this annual meeting has been held at a community college.



## PROGRAM DESIGN AND DELIVERY

### INSTITUTIONAL COMPETENCY STATEMENT:

Prepare and educate a skilled and qualified green workforce by facilitating the development and delivery of high-quality, effective credit and/or noncredit education and training programs based on clean economy industry needs that lead to credentials and family-sustaining jobs.

### MASTERY OF THIS COMPETENCY REQUIRES:

- Utilizing existing labor market data and workforce planning information to create and enhance curricula and short- and long-term training for the most promising and current green employment opportunities.
- Identifying and engaging regional employers in a variety of sectors that produce green goods and services and/or use environmentally friendly production processes and practices to help identify industry-specific skill requirements, define learning outcomes and assessment, and create industry-relevant curricula and credentials with currency.

### Indicator in Action

In 2007, **Georgia Piedmont Technical College** convened a summit of the region’s building automation and controls employers—approximately 50 Fortune 500 companies and small suppliers—all of which cited a need for standardized training for entry-level personnel who can manufacture, sell, install, and service increasingly green commercial building controls systems. All the companies participated in the design and delivery of the college’s new AAS program in building automation systems, and the college has solicited employer feedback as part of a continuous improvement process. More than 150 students have been trained since the program began in 2009, and more than 80% of those graduates are currently working in the industry within the region.

- Understanding the regional economic conditions (e.g., energy prices, industry incentives) that would drive the growth of a particular green sector.
- Incorporating clean technology (e.g., hybrid technology, solar photovoltaics) and sustainability concepts into *existing* courses and/or certificate/degree programs—particularly in targeted green/clean technology industry segments.



- Integrating sustainability literacy, principles, and concepts across the college's academic disciplines and technical programs of study.

### Indicator in Action

**Santa Fe Community College** (NM) has made a commitment that all students who graduate with a degree will demonstrate an understanding of “responsible and sustainable living” through personal accountability and cultural and global awareness. All students must complete at least three credit hours of designated coursework in the area of sustainable living. To achieve this designation from the college's curriculum committee, a course must include at least three of eight identified competencies including principles, skills and perspectives related to sustainability, and analyzing social, economic, technological, and environmental systems holistically.

- Identifying and utilizing enhanced career assessment, counseling, and coaching tools and resources to encourage students to consider green careers in high-demand, high-skill sectors.



- Developing noncredit curricula/courses for the greening of sectors to provide immediate access to certification programs to either expand employment options in existing trades or learn new skills.
- Demonstrating capability to innovate through strategies that accelerate learning and advancement and improve curricular and instructional strategies through modularization and contextualization reflecting real-world applications related to sustainability concepts and practices.
- Utilizing and integrating college's sustainability practices for student experiential learning opportunities.

### Indicator in Action

The Energy Management Technician Program at **Lane Community College** (OR) is a 2-year AAS degree, designed to prepare students for a variety of careers in energy management, renewable energy, and resource conservation management. Built in 1965, the campus provides an array of opportunities to analyze older building systems to determine how to improve energy efficiency of existing facilities. Students study one campus building or community facility each year. They conduct energy and water audits under the supervision of a faculty member and use data loggers to record detailed information. Students then present to the facilities department a formal report that includes results of the audits, evaluation of the data, simple payback calculations, and a lifecycle cost analysis.

- Developing new and expanding pre-apprenticeship or apprenticeship programs to target green/clean energy technology industries.
- Designing and implementing “learn and earn” education models with employers such as on-the-job training, cooperative education, and paid internships, focused on green workforce skills and sustainability practices.

- Developing and implementing new and/or enhanced clean economy industry career pathways to credentials, with intermediate certifications, that allow for multiple entries and exits and that facilitate completion and a seamless articulation to the next level of education and employment.

### Indicator in Action

With a diverse student body including many disadvantaged students, **Los Angeles Trade-Technical College** (LATTTC) focuses on entry-level occupations in multiple clean technology sectors including energy efficiency, renewable energy, and hybrid and electric transportation that will lead to family-sustaining wage jobs. For example, for the energy efficiency program of study, LATTTC used a 5-step process to develop the career pathway, specifically: 1) conducting an industry labor market analysis to understand which occupations have the greatest potential for job growth; 2) creating a diagram of occupational ladders and lattices; 3) identifying employment eligibility requirements, work tasks, and industry-recognized credentials; 4) developing a competency model for the targeted green career pathway; and 5) engaging business and industry partners to ensure pathways are aligned with industry standards.

- Incorporating soft skills training—encompassing a range of interpersonal skills—into technical training to ensure workplace readiness and success in targeted clean economy sectors.
- Incorporating business (e.g., sales and marketing) training into green sector technical courses to prepare students, once they are employed, to drive local green market growth.

### Indicator in Action

After discovering gaps in training for incumbent construction workers, **Red Rocks Community College** (CO) encouraged students in construction technology courses and programs to view sustainable practice as a competitive edge for their businesses. Faculty teaches students several energy efficiency strategies, from air sealing to combinations of insulation, and ways they can articulate the cost benefits and energy savings to clients as part of a long-term client communication strategy. The college reports that students who have taken this training are faring better than their competitors in the local residential construction and remodeling market.

- Providing academic and student support services to help students successfully complete green-focused programs.
- Conducting and incorporating online and technology-enabled learning courses and/or blended learning approaches to support flexible, accelerated learning.
- Identifying, defining, and tracking measures of program and student success, with continual improvement processes built into the program.
- Aligning entrepreneurship education programs to the college's existing green-focused training program areas and regional clean technology opportunities.

“When our students graduate, we have equipped them not only with the skills to do their work, but also with the ... ability to articulate to others why ... conservation can powerfully impact their communities.”  
Bud Marchant, president



## Central Carolina Community College (NC): Winner, Program Design and Delivery

Sustainability has been a central tenet of Central Carolina Community College (CCCC) since the 1990s, and for the past five years, has been an institutional value in the college’s long-range plan. The administration sees green not just as a means to a healthy campus environment but also, by incorporating it across degree and non-degree curriculum, as a way to increase student retention and completion.

CCCC’s holistic approach to renewable energy, energy efficiency, resource conservation, and entrepreneurship has been the hallmark of its green education and training programs. The college has nine degree programs with 81 “sustainability-related” and 35 “sustainability-focused” classes in which sustainability concepts and clean technology are embedded into the curriculum. “Our institutional values include innovation, excellence, and empowering our students to improve their lives and their communities,” said CCCC President Bud Marchant. “A large part of that is providing high quality, effective training in all our sustainability programs. When our students graduate, we have equipped them not only with the skills to do their work, but also with the understanding and ability to articulate to others why energy efficiency and conservation can powerfully impact their communities for good.”

The college has a track record of being strategic by initiating green programming on the continuing education side, and then over time, when the capacity and reputation of the programs have been built, shifting them to credit degree programs. In 1996, a group of farmers approached the college asking to teach sustainable agriculture techniques. A year later CCCC had opened its own sustainable campus farm and

launched a certificate program. Today it has grown into an associate degree program in sustainable agriculture, the first of its kind in the United States. The program has now also expanded to include development of the natural chef program, furthering education about local and seasonal foods.

The college’s biofuels program also began in continuing education and the college has steadily built it into a state-of-the-art attraction, with a training facility, a fuel testing laboratory, and a mobile biodiesel reactor. Today, as the biofuels industry faces serious challenges, the college works aggressively with national industry associations on student marketing and outreach campaigns to effectively attract students and place graduates in good careers.

Rachel Burton, a former CCCC student, co-founded Piedmont Biofuels, a 10-person firm that transforms cooking oil and grease waste into clean fuel. Her company is the only biodiesel facility in the state to be BQ9000 certified (an ISO certification for which CCCC’s lab provides testing). The certification permits her company to sell its biodiesel to many public sector entities, from school systems to the military.

Burton described the comprehensive education she received: “It wasn’t just biofuels or another sustainability class in isolation that was important. [Central Carolina Community College] showed the integration of fuel production, food, and solar, all working together as components. Tie that to the small business development support from the college (through its Rural Entrepreneurship through Action Learning) that I received and I had the tools I needed to launch and run my business.”



## STRATEGIC PARTNERSHIPS

### INSTITUTIONAL COMPETENCY STATEMENT:

Develop and maintain responsive, collaborative, and mutually beneficial external relationships that help inform, sustain, and advance the college’s efforts to create a sustainable and economically viable workforce, community, and college.

### MASTERY OF THIS COMPETENCY REQUIRES:

- Engaging with green regional and state alliances and workforce collaboratives/intermediaries to advance the competitiveness, leadership, and capabilities of clean economy industries.
- Facilitating meaningful participation of employers to help define the program’s strategy and goals, identify necessary green skills and competencies, provide resources to support education/training (e.g., equipment, instructors, funding, internships), provide assistance with program design, and, where appropriate, hire qualified students who complete related education and training programs.
- Participating in and contributing to state, regional, and local economic development plans and initiatives to attract and expand new and existing clean economy industry firms to the region, by focusing on educating and training a skilled workforce.

## Indicator in Action

Northern Maine Community College has been the key convener of the regional economic development partnership Mobilize Northern Maine. The collaboration is moving on several fronts to create residential and commercial renewable energy markets, products, and businesses, including biomass conversion, wind installations, and the creation of financing structures to support energy-efficient modifications in the area. The college also leads development of a pipeline of energy and construction field technicians, administrators, and managers that will be required from area partner companies.

- Boosting economic development through entrepreneurship education programs to help startups and owners of existing small businesses gain the knowledge and skills to succeed in the emerging green economy.
- Establishing partnerships with labor unions to advise on curriculum design to embed green skills and competencies, create pre-apprenticeship courses and programs, and align training and curriculum with apprenticeship programs.
- Developing and building partnerships with 4-year colleges and universities, to align curriculum and course credit, share resources, and connect to institutional innovations such as new green technologies, processes, products, new ideas—to create advanced pathways for students and to advance local and regional green economies.
- Expanding and creating partnerships with community-based organizations to reach out to populations that are currently underrepresented in green sectors, provide social and academic support services, and align skills training and job placement activities with green career pathways at the postsecondary level, leading to family-sustaining employment.



- Working with entities including K–12 school systems, career and technical education programs, and adult education programs to align and provide a bridge from secondary and community college education, showing clearly articulated pathways to attain a degree, industry-recognized certificate, or other credentials required by the emerging green economy.

### Indicator in Action

Partnering with Francis Tuttle Technology Center, Tulsa Community College, Oklahoma State University-Oklahoma City, and the University of Oklahoma's K20 Center, **Oklahoma State University Institute of Technology** conducted academies to introduce middle school educators to green concepts and processes. Teachers learned concepts of wind and solar power and green engineering, and developed lesson plans that incorporated green concepts.

- Engaging and fostering partnerships with the workforce system, including state and local workforce boards, state workforce agencies, and one-stop career centers, to actively engage the system in identifying, assessing, and referring candidates for college's green education and training programs, and providing support services to students in programs, if appropriate.
- Seeking or expanding partnerships with state and local government agencies, national organizations, foundations, and nonprofit organizations that work on sustainability issues to seed, grow, and enhance college's sustainability and green-focused workforce efforts.
- Collaborating with other community colleges and training providers, where appropriate, to build clean technology-related curriculum and/or share sustainability best practices.

### Indicator in Action

For two years, more than 50 of **North Carolina's community colleges** collaborated to create the Code Green Super Curriculum Improvement Project (CIP), which has been referred to as the most sweeping curriculum project in the history of the state's community college system. The aim of the CIP was to consolidate curricula in the areas of energy, building, environment, transportation, and engineering technology while integrating sustainability skills across all areas. In doing so, the colleges have created the infrastructure that will enable more students to receive credentials in these key clean technology sectors. The North Carolina State Board of Community Colleges approved the project in the summer of 2012.



Student demonstrating the flat plate heat exchanger of a solar thermal system



"The partnerships that have been established ... to promote energy efficiency are ... vital to our community."  
Rhonda Tracy, senior vice president of academic affairs

## West Virginia University at Parkersburg: Winner, Strategic Partnerships

West Virginia University at Parkersburg (WVU-P) has forged partnerships over many years to serve some of the most economically distressed counties in the nation. The college's approach to green is founded on jobs and cost savings for community members. In 2009, WVU-P became a charter member of the Community College Alliance for Sustainability, a network formed to devise green economic and workforce strategies in central Appalachia and the Mississippi Delta regions. The alliance has helped solidify a host of campus sustainability activities including reductions in the institution's carbon footprint, a recycling program, an EPA Brownfields Cleanup project, and implementation of energy and agriculture programs.

An important partnership emerged with the Wood County school system in which WVU-P's commercial energy audit students conducted an energy audit of a school building as part of a required internship. Built in the 1940s, the school has had no major heating, cooling or window upgrades. As part of the coursework, students assumed the role of energy engineers and technicians for a startup company acquiring a new client in the Wood County School Board. The students collected and analyzed the school's energy usage data and presented final recommendations to the Wood County schools maintenance department.

WVU-P is also collaborating with the Wood County Commission, the local homebuilders association, and several regional lending agencies in the Energy Efficiency Upgrades partnership. The college's weatherization and residential energy audit students are studying area homeowners' attitudes toward energy efficiency upgrades and performing comprehensive energy audits in targeted neighborhoods. A unique feature of this project is the participation of the college's

communications program students, who serve as "professional communications consultants" working with weatherization students to hone their presentation skills as they go door-to-door to conduct energy efficiency surveys.

Dr. Rhonda Tracy, WVU-P senior vice president of academic affairs, noted the importance of strategic partnerships: "The partnerships that have been established among our students, our faculty, and area businesses to promote energy efficiency are important and vital to our community. The real-world, hands-on experience gained by our students will better prepare them for the workforce, and the services provided to the community by the students will enhance the community's understanding of energy efficiency concepts while improving the bottom line of their energy operations."

WVU-P's industry partnerships are also critical to its efforts to reduce its own campus greenhouse gases. Its performance contracting partnership with Siemens Corporation has helped achieve \$400,000 in utility savings per year.

### Four Interrelated Energy Programs

The college's programs in Residential and Commercial Electricity; Heating, Ventilation, Air Conditioning and Refrigeration; Energy Assessment and Management Technology; and Solar Energy Technology share a series of common foundational energy technology classes designed to enable students to get college-level and industrial certifications in a number of related fields, broaden their exposure, and provide diverse opportunities for employment after college.



## COMMUNITY ENGAGEMENT

### INSTITUTIONAL COMPETENCY STATEMENT:

Pursue substantive and meaningful regional, state, and local community engagement strategies, policies, and partnerships to leverage and align community college assets and resources to build and advance clean economy industry job growth and healthy sustainable regions.

### MASTERY OF THIS COMPETENCY REQUIRES:

- Developing an explicit sustainability strategy for the college that incorporates, enhances, and aligns with the surrounding community's sustainable development plans and practices, as appropriate.



- Providing specific sustainability-themed service learning opportunities, combining community service with classroom instruction.

### Indicator in Action

**Guam Community College (GCC)** established the Eco-Warriors, a nonprofit student organization that is open to community members. GCC Eco-Warriors' recycling kept nearly 300 pounds of aluminum and plastics out of Guam's landfill. Eco-Warriors conduct eco-tours to showcase the sustainability features of the learning resource center on campus, which serves as a model for the island community.

- Mobilizing and empowering college staff, faculty, and administrators to engage in effective community participation and productive dialogue on sustainability and green economic growth issues to create strong alliances with residents and regional groups (e.g., through college forums, speaker series, conferences).
- Facilitating appointment of college leaders, faculty, and staff to serve at highest levels of local, regional, and multijurisdictional entities to help formulate comprehensive regional sustainability vision, policies, and plans; incorporate college's assets;

and inform clean economy industry workforce and economic development investments.

- Advocating for state and/or local sustainability and clean energy public policy (e.g., building energy code changes, net metering programs) that, if implemented, would create jobs.

### Indicator in Action

At **Santa Fe Community College (NM)**, engaging in clean energy-related public policy development is core to its mission and critical to ensuring that students get and succeed in jobs. Faculty and students worked with the Santa Fe Area Home Builders Association to green the local building codes that were adopted by the city of Santa Fe. The college is now training building inspectors on the new building codes.

- Providing informational resources for campus and community sustainability education programs, including career information to help community members learn about promising green jobs in targeted green/clean technology industries.
- Engaging students to serve as educators and ambassadors to the community on sustainability concepts, principles, and practices.
- Serving as a model for sustainability practices and exemplary green workforce development programs by using the campus as a living laboratory/ demonstration site for community residents.
- Developing and implementing continuing education and community enrichment workshops promoting sustainability concepts and practices (e.g., home energy savings) to drive regional behavior change.
- Educating and engaging small businesses in the community about green products, processes, and technologies to build awareness, foster new green business models (e.g., HVAC company adding an energy auditing service), and take action on broader sustainability issues.

### Indicator in Action

In an effort to reduce communitywide greenhouse gas emissions, **Haywood Community College (NC)** partnered with the Haywood County Chamber of Commerce to launch the Green Business Initiative to help area businesses become more efficient and sustainable. The college works with companies to develop sustainability plans to track and measure energy efficiency, water quality, and recycling on their way to Green Leader certification status.

- Educating policymakers on positive results produced by college green sector initiatives and the potential to strengthen workforce and economic development by targeting and supporting key green industries through national, state, and local strategic investments.



Students building a Habitat for Humanity house



“Beyond the campus, we want to show how Delta [College] can influence sustainability at a community level.”  
Jean Goodnow, president

Students analyzing electric and hybrid vehicle technologies



“We recognize that to be successful, sustainability must truly become part of the fabric of the college’s culture.”  
Ken Atwater, president

## Delta College (MI):

### Winner, Community Engagement DNA Strand

Delta College plays an integral role in the social, environmental, and economic health of Michigan’s Great Lakes Bay (GLB) region. Delta’s commitment began in 2007 with the signing of the American College & University Presidents’ Climate Commitment. That same year, the school was selected as an AASHE Sustainability Tracking, Assessment, and Rating System (STARS) pilot campus. In 2008, Delta convened a campuswide green summit, created a sustainability office, and began developing a comprehensive plan to reduce the carbon footprint of the campus and the community. “Beyond the campus, we want to show how Delta [College] can influence sustainability at a community level,” emphasizes Delta College President Jean Goodnow.

Delta has collaborated with community partners on numerous alternative transportation activities, including installation of an electric vehicle plug-in station that is accessible to the community and helping to create a nonmotorized greenway, the first link to connect two counties. The college’s effort in spearheading the greenway brought together 10 organizations including the state, counties, townships, foundations, and other regional colleges. In addition, the college joined with local transit authorities, a big-box store, and a neighboring university to establish a park-and-ride, hybrid-conversion bus route called the Green Line that was introduced with a yearlong bus ride subsidy

in celebration of the college’s 50th anniversary. The park-and-ride provided the impetus to seek a viable regional transportation plan, and since then the college has been involved in several major initiatives, including the Saginaw Transit Authority Master Plan Advisory Committee, the GLB regional transportation initiative group, and the Bay Metropolitan Planning Summit.

Delta’s leadership in providing alternative energy training and engaging employers to create alternative energy solutions is recognized throughout the community. The college offers a range of training in automotive, wind, and chemical process technology and provides personal enrichment and professional development courses focused on sustainability. Delta has partnerships to provide training for businesses including Dow Chemical Company, which manufactures solar shingles; Dow Kokam, an advanced lithium polymer battery technology manufacturer; and Hemlock Semiconductor, a manufacturer and distributor of hyperpure polysilicon for solar cell applications.

In addition, more than 500 students have built sustainable Habitat for Humanity homes, and more than 400,000 student hours have been contributed to community service in the last year to promote sustainability.

## Hillsborough Community College (FL):

### Winner, Overall Category

The “Overall” category represents all four DNA Strands, representing a comprehensive and strategic approach to achieve green transformation.

Hillsborough Community College (FL) has a record of environmental stewardship that dates back to the earliest days of the college’s existence. One of its first signs of commitment was a community-based environment of resource and education center, the Institute of Florida Studies. Over the next four decades, the college embarked on a variety of activities focused on sustainability and the development of a green workforce, including building strategic partnerships and engaging the community along the way. New academic programs in environmental science, aquaculture, engineering technology, and alternative energy were established, and existing programs including architecture, early childhood education, and automotive technologies, were updated to include green technologies or sustainability-related learning outcomes.

Yet, as significant as these individual activities were, they did not function collectively to produce the type of synergy needed for systemic change within the institution. Two pivotal actions, however, did: the signing of the American College & University Presidents’ Climate Commitment and the engagement of a small group of volunteers who assembled to form a Green Team, later the Sustainability Council, focusing on environmentally oriented projects. From these actions, three strategies emerged as critical to moving the college toward an integrated and comprehensive sustainability action plan. The strategies were: 1) mobilizing the disparate grassroots efforts to develop personal connections, leverage expertise for future planning, and generate the synergy

needed to pursue more large-scale projects; 2) aligning sustainability initiatives with broader college priorities as a means of fostering new partnerships and promoting a “value-added” view of sustainability among college leaders; and 3) building “collaborative knowledge partnerships” among colleges, private firms, nonprofit organizations, and government agencies to promote program development and entrepreneurship within the green sector.

The comprehensive approach has been successful for the college because it works from and builds on the college’s strengths, operates from the perspective that sustainability is a systemic issue and must be addressed in a multifaceted manner, and leverages the college’s twin priorities of education and community engagement. Perhaps one of the most significant achievements for the college that highlights its commitment was the opening of the SouthShore Campus, which was designed and built for Gold LEED (Leadership in Energy and Environmental Design) certification. The campus incorporates numerous sustainable features including a rainwater recycling system to service restrooms, a raised HVAC system for greater heating and cooling efficiencies, maximum use of natural light and cutting-edge lighting technology, landscaping with all native plants, and on-site renewable energy.

“We recognize that to be successful, sustainability must truly become part of the fabric of the college’s culture,” said Ken Atwater, president of Hillsborough Community College. “We’re seeing this occur every day. It’s not just about operations, or curriculum, but sustainability is now a core institutional value, and we will continue to build upon this commitment as we plan for the future.”

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## Conclusion

The Green Genome Framework and Self-Assessment Tool are critical first steps for community colleges in determining how their green initiatives can become more aligned with strategic institutional priorities and thus more indispensable to how the college does business. As more colleges move forward to create an integrated and systemic approach to sustainability and green workforce and economic development, the chances grow greater of community colleges reaching the collective goal of a viable and vibrant green economy.



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## APPENDIX: GREEN GENOME INSTITUTIONAL SELF-ASSESSMENT TOOL

### Is Sustainability Part of the DNA of Your Community College?

The following is a 47-question self-assessment tool designed by the SEED Center and Los Angeles Trade-Technical College to help colleges determine the structures, programs, policies, and partnerships needed to integrate green and sustainability as part of the institution's DNA. The assessment aligns with the Green Genome Framework. See [www.theseedcenter.org/greengenome](http://www.theseedcenter.org/greengenome) to download and for more information.



**INSTRUCTIONS**

To maximize the value of this tool, colleges should consider the following data collection and analysis process (although colleges should determine the course of action that makes the most sense for their institutions):

STEP	DESCRIPTION
Identify a process “owner.”	Choose an individual with responsibilities for coordinating the delivery of sustainability programs and services (curricular, facilities, etc.) across the institution.
Disseminate to other key campus stakeholders.	Include senior administrators from finance, academic and student affairs, planning, and facilities as well as key faculty leaders and department chairs.
Convene stakeholders to discuss results.	<p>As a group, discuss findings:</p> <ul style="list-style-type: none"> <li>• What areas represent our strengths (indicated by high scores)? Why?</li> <li>• What areas represent growth opportunities (indicated by low scores)? Why?</li> <li>• Is there important sustainability work that we are not doing represented on the self-assessment? If so, what?</li> <li>• Do we have internal disagreements about our self-assessment scoring? What can we learn from the different perspectives?</li> <li>• Are we at or near critical mass in any area? Where can we have the greatest impact?</li> <li>• What are our priorities for the next year? Three years?</li> <li>• What are our immediate next steps? Who is accountable for meeting near-term objectives?</li> <li>• How does this self-assessment fold into existing strategic planning at the college?</li> </ul>

This assessment tool is designed to be taken periodically by the same campus stakeholders to measure progress over time.

**RATING SCALE**

Haven’t Started = 1 Beginning (rarely) = 2 Emerging (sometimes) = 3 Competent (often) = 4 Innovating (consistently; best in class) = 5

MY/OUR COLLEGE OR ORGANIZATION:	RATING	SUPPORTING EVIDENCE/NOTES
<b>GOVERNANCE</b>		
1. Has leadership (administration, trustees) that understands the importance of making sure the college implements green or sustainability policies and practices aimed at reducing individual and collective impact on the environment and promoting the green economy/job expansion		
2. Has established a formal commitment to campus sustainability (e.g., through the president’s Climate Commitment; STARS program; SEED)		

**RATING SCALE**

Haven’t Started = 1 Beginning (rarely) = 2 Emerging (sometimes) = 3 Competent (often) = 4 Innovating (consistently; best in class) = 5

MY/OUR COLLEGE OR ORGANIZATION:	RATING	SUPPORTING EVIDENCE/NOTES
3. Has an overall institutional culture that supports the “triple bottom line” concept (preserving the environment, increasing economic prosperity, and promoting social equity)		
4. Has integrated sustainability principles and green workforce development practices and programs into the institution’s strategic master and educational plans		
5. Has appointed a key, high-level decision-maker(s) and committed resources to coordinate and integrate sustainability and green workforce development efforts within the college		
6. Has created and empowered a sustainability/green committee or task force of faculty, staff, and others to formulate policy related to green workforce development including curriculum, methods of instruction, academic standards, and degree requirements—and integrated these efforts with other campus sustainability efforts (e.g., greening of facilities)		
7. Has committed resources to provide faculty conceptual, physical, and virtual professional development opportunities to support the scholarship of teaching and learning for sustainability, green technical skills, and new and emerging technologies		
8. Has obtained resources and the capacity to serve as the “leverager” of multiple funding sources to expand and sustain campus and/or community green-sector initiative activities		
9. Has the agility and flexibility to make changes to programs and courses as new occupations, standards, and technology become available in the green economy		

**Subtotal, Governance: \_\_\_\_\_ out of 45**

**RATING SCALE**

Haven't Started = 1 Beginning (rarely) = 2 Emerging (sometimes) = 3 Competent (often) = 4 Innovating (consistently; best in class) = 5

MY/OUR COLLEGE OR ORGANIZATION:	RATING	SUPPORTING EVIDENCE/NOTES
<b>PROGRAM DESIGN AND DELIVERY</b>		
10. Understands the region's most important green/clean tech industry sectors (e.g., wind, solar, energy efficiency, alternative fuels, water)		
11. Has used rigorous labor market data and workforce planning information to create and enhance curricula and training for the most promising and current green employment opportunities		
12. Identifies and engages regional employers in a variety of sectors that are producing green goods and services and/or using environmentally friendly production practices to help identify industry-specific skill requirements, define learning standards, and create industry-relevant curricula		
13. Tracks national green industry standards (e.g., NABCEP, U.S. Department of Energy's home energy professional certifications) and, where appropriate, taught to these standards		
14. Has developed curriculum/courses for the greening of sectors on the noncredit side of the college to provide immediate access to certification programs to either expand employment options in existing trades or learn new skills		
15. Incorporates clean technology (e.g., hybrid technology, solar photovoltaics) and sustainability concepts into existing courses and/or certificate/degree programs—particularly in targeted green/clean tech industry segments		
16. Has developed new green/sustainability-focused courses and/or certificate/degree programs—particularly in targeted green/clean tech industry segments		
17. Formally integrates sustainability literacy, principles, and concepts across disciplines		
18. Has an institutional approach to using campus sustainability practices (e.g., the new LEED building, recycling program) as "living laboratory" experiential learning opportunities for students (e.g., students performing energy audit on existing campus buildings)		

**RATING SCALE**

Haven't Started = 1 Beginning (rarely) = 2 Emerging (sometimes) = 3 Competent (often) = 4 Innovating (consistently; best in class) = 5

MY/OUR COLLEGE OR ORGANIZATION:	RATING	SUPPORTING EVIDENCE/NOTES
19. Incorporates soft skills (e.g., people skills, problem-solving) into technical training to ensure workplace readiness in targeted green sectors		
20. Incorporates business (e.g., sales and marketing) training into green-sector technical courses to prepare students, once employed, to drive local green-market growth		
21. Has developed and implemented contextualized basic education with examples and real-world applications related to sustainability to help learners—regardless of career path—more quickly acquire skills to transition into credit-bearing programs		
22. Has designed and implemented, with employers, "learn and earn" education models such as on-the-job training, cooperative education, paid internships, and registered apprenticeships focused on green workforce skills and sustainability practices		
23. Has modularized curricula in green areas so students have multiple entry and exit points and are awarded certificates or other credentials (e.g., "stackable" certificates) on successful completion of each module		
24. Has developed new and/or expanded pre-apprenticeship or apprenticeship programs that target green/clean tech industry(industries) and/or partners with labor unions to embed green skills and competencies into these programs		
25. Provides career assessment, counseling, and coaching tools to encourage students to consider current green careers in high-demand, high-skill sectors		
26. Has shortened the time it takes a student to complete green education and training programs—including innovations to decrease time in adult basic and developmental education (e.g., accelerated degree programs, accelerated basic skills programs)		
27. Identifies, defines, and tracks measures of program and student success, with continuous improvement processes built in		
28. Conducts and uses appropriate online and technology-enabled learning courses and/or blended learning approaches to support accelerated learning in a flexible manner		

**RATING SCALE**

Haven't Started = 1 Beginning (rarely) = 2 Emerging (sometimes) = 3 Competent (often) = 4 Innovating (consistently; best in class) = 5

MY/OUR COLLEGE OR ORGANIZATION:	RATING	SUPPORTING EVIDENCE/NOTES
29. Has explicitly aligned entrepreneurship education programs to the college's existing green training program areas and regional clean technology opportunities		

Subtotal, Program Design and Delivery: \_\_\_\_\_ out of 100

**STRATEGIC PARTNERSHIPS**

30. Facilitates the meaningful participation of employers (e.g., advisory boards, industry panels) to help define program strategy and goals, identify necessary green skills and competencies, provide resources to support education (e.g., equipment, instructors, internships), and, where appropriate, hire qualified students who complete programs		
31. Has a working relationship with a wide array of industry associations, alliances, and community organizations (e.g., local homebuilders, unions, weatherization assistance programs, workforce collaboratives) that support the training and possible placement of workers		
32. Works with the workforce system (e.g., workforce boards, state workforce agencies, one-stop career centers) to identify, assess, and refer candidates for the college's education and training programs, connect students with employers, and provide support services to students in programs (particularly in targeted green/clean tech industry segments)		
33. Participates in state, regional, and/or local economic development plans and initiatives to attract new green firms to the region and/or support the expansion of existing firms		
34. Works with K-12, career and technical education, and adult education programs to align and provide a bridge from secondary and community college education to attain a degree or other credentials required by the emerging green economy		
35. Partners with four-year institutions to align curriculum and course credit, share resources, and connect to institutional research in green areas—to create advanced pathways for students		

**RATING SCALE**

Haven't Started = 1 Beginning (rarely) = 2 Emerging (sometimes) = 3 Competent (often) = 4 Innovating (consistently; best in class) = 5

MY/OUR COLLEGE OR ORGANIZATION:	RATING	SUPPORTING EVIDENCE/NOTES
36. Works with community-based organizations to reach populations that are underrepresented in green sectors, provide adequate support services, and align training and placement activities with green career pathways		

37. Collaborates with other community colleges and training providers to build clean technology-related curriculum and/or share sustainability activity best practices		
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38. Builds partnerships with state and local government agencies, national organizations, foundations, and nonprofits that work on environmental and energy issues, to seed, grow, and enhance the college's sustainability and green workforce efforts		
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Subtotal, Strategic Partnerships: \_\_\_\_\_ out of 45

**COMMUNITY ENGAGEMENT**

39. Has an explicit sustainability vision and strategy that incorporates, enhances, and aligns with the surrounding community's sustainable development plans and practices		
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40. Provides specific sustainability-themed service-learning opportunities, combining community service with classroom instruction		
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41. Mobilizes college staff, faculty, administrators, and students to engage in effective community dialogue on sustainability to create strong alliances with residents and regional groups (e.g., through college forums, speaker series, conferences)		
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42. Facilitates college leaders serving at the highest levels of local, regional, and multijurisdictional public-sector bodies to help formulate comprehensive regional sustainability vision, policies, plans, and workforce and economic development investments		
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43. Administers informational resources for campus and community sustainability education programs, including career information to help community members learn about promising green jobs in targeted green/clean tech industries		
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**RATING SCALE**

Haven't Started = 1   Beginning (rarely) = 2   Emerging (sometimes) = 3   Competent (often) = 4   Innovating (consistently; best in class) = 5

MY/OUR COLLEGE OR ORGANIZATION:	RATING	SUPPORTING EVIDENCE/NOTES
44. Educates small businesses in the community about green products and practices (e.g., energy auditing as a possible new service offering for an HVAC company)		
45. Serves as a model for sustainability practices by using the campus' green built environment (e.g., new green building, sustainable campus garden) as a demonstration site for community members		
46. Develops continuing education and community enrichment workshops promoting sustainability practices (e.g., home energy savings) to drive regional behavior change		
47. Advocates for sustainability and clean energy public policy at regional, state, and/or local levels		

Subtotal, Community Engagement: \_\_\_\_\_ out of 45

**TOTAL SCORE: \_\_\_\_\_ OUT OF 235**



This publication is a product of the SEED Center, an initiative of the American Association of Community Colleges and ecoAmerica. With its more than 460 community college members, SEED (Sustainability Education and Economic Development) aims to advance sustainability and green workforce development practices at community colleges by sharing innovative practices to help college administrators, faculty, and staff to build the green economy. Information can be found at [www.theseedcenter.org](http://www.theseedcenter.org).

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